From KVS ZIET Bhubaneswar

To

Students

Appearing for

AISSCE 2016

Faculty of ZIET Bhubaneswar

A compilation of materials (4 Booklets)

Graded Test Papers

in

Biology, Chemistry, Mathematics & Physics

Besides this any student of Kendriya Vidyalaya can

"ASK US"

available in the website of ZIET Bhubaneswar for any assistance

www.zietbbsr.org

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Practice Test in Biology

Kendriya Vidyalaya Sangathan
New Delhi

This booklet is written for every category of students. It is a preparatory test series for the students of XII appearing in the Board exams. There are three level question papers A,B and C where questions are in increasing difficulty levels. The Biology syllabus which contains 16 chapters have been divided into 4 quarters. So there are 12 question papers for the four quarters. So why wait any longer, Go for it. Your preparation from the NCERT Text book is over.

Class XII

Guidance
Ms. L. Chari, D.C.
Director, ZIET Bhubaneswat

Prepared by:
Dr. Abhijit Saha, PGT (Biology)
ZIET Bhubaneswar

Zonal Institute of Education and Training, Bhubaneswar
Kendriya Vidyalaya No.4 Campus
Neeladri Vihar, Bhubaneswar, Odisha, India 751-023
Website: zietbbsr.org E.mail: zietbbsr@yahoo.com

FOREWARD

I am happy that **Dr. Abhijit Saha,** PGT (Biology) has been able to bring out the booklet, which contains questions of different difficulty levels in all chapters of Class XII in Biology, which is the first of its kind.

This should help the students decide the level of mastery in each of the topics / chapters. If the student is able to solve all the questions in level 'A', he can proceed to the next higher level i.e. 'B' and from that to level 'C'. The principle of video games has been adopted here so that the pupil is not dubbed as average or bright, but each one gets an opportunity to move from one level to another. Incidentally, this also provides the clue to the areas of learning that need to be strengthened in the student.

Such an endeavour demands the combination of good knowledge of the subject with experience in classroom teaching and testing. The rich experience and expertise of Dr. Saha along with the willingness to walk the extra mile has resulted in this achievement.

I whole heartdly congratulate , who could give a concrete form to the concept visulalised by me, to enable the students to move from one level to another at his / her pace and space.

In addition to this, at ZIET, we have another option called 'ASK US' to clarify any doubt or solve any problem of students of any KV. The students should go to the website of ZIET BBSR, fill up the particulars and mail to us. The reply will be sent to the students' e-mail directly.

I wish 'Good Luck' to all the students appearing in the Board Exam this year and wish to encourage them to utilize all the avenues and options open in order to get the best from the KVS.

A similar booklet is available for Maths, Physics, Chemistry and Biology also and all the booklets are up-loaded in the website of ZIET. I sincerely thank the faculty of ZIET for enthusiastically taking up the assignments and completing them on time for the benefit of students' community.

I wish everybody a bright future.

Deputy Commissioner
KVS, RO, BBSR &
Director, ZIET BBSR

Practice Test (Level A)

Subject : Biology

Quarter- I (Chapters 1-4)

Time: 90min **Class XII** **Max. Marks: 40**

Instructions:

a) **This question paper consists of 20 questions. You are to answer all the questions.**
b) **Q.1-5 are very short answer type and carries 1 mark each.**
c) **Q.6-15 are short answer type and carries 2 mark each**
d) **Q.16-20 are short answer type and carries 3 mark each**

1 **How does vegetative propagation take place in plant like *Bryophyllum*?** **P7**

2 **Name the two parts of a typical anther.** **P21**

3 **Name the primary sex organs in human male and female.**

4 **Why a ban has been imposed on amniocentesis?** **P58**

5 **Write the functions of Leydig cells and Sertoli Cells.** **P43**

6 **Differentiate between GIFT and ZIFT.** **P64**

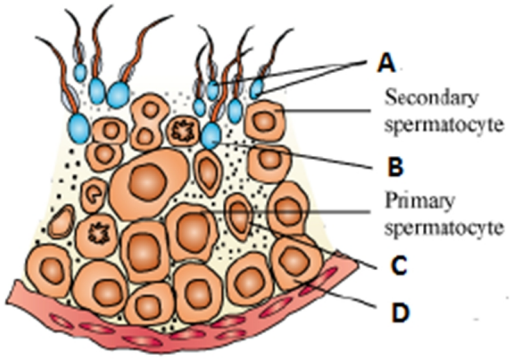
7 **a) Name the layers of the uterus from outside to inside.** **P45**
b) Write the name of the location where fertilization takes place in humans.

8 **A typical pollen grain has two layers. Name them and mention its chemical composition.** **P23**

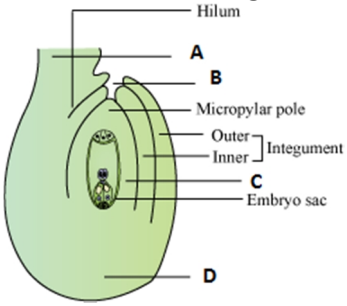
9 **Name the common asexual reproductive structure in** **P6**
a) Sponge
b) Penicillium
c) Hydra
d) Chlamydomonas

10 **Explain the natural methods of preventing pregnancy.** **P59**

11 **You are given the structure of TS of seminiferous tubule. Label the parts A to D.** **P47**



12 Given below is a diagram of an anatropous ovule. Label the four parts A-D. **P25**



13 Explain why meiosis and gametogenesis always interlinked?

14 What is the difference between spermatogenesis and Spermiogenesis? **P47**

15 What are the features of a wind pollinated flower? **P29**

16 Name the three phases of Menstrual cycle and write the major ovarian events during the phases. **P50**

17 What are the devices developed by plants to encourage cross pollination? **P31**

18 Draw a schematic representation of events during Oogenesis in human. **P49**

19 Explain in brief the types of endosperm formation in angiosperms. **P36**

20
a) Differentiate between pericarp and perisperm. **P36**
b) Why do you say that apple is not a true fruit? **P37**
c) If a farmer keeps the harvested seed of a hybrid crop for planting next year what may be the effect on the productivity and why? **P39**

Practice Test (Level B)

Subject : Biology

Quarter- I (Chapters 1-4)

Time: 90min **Class XII** **Max. Marks: 40**

Instructions:

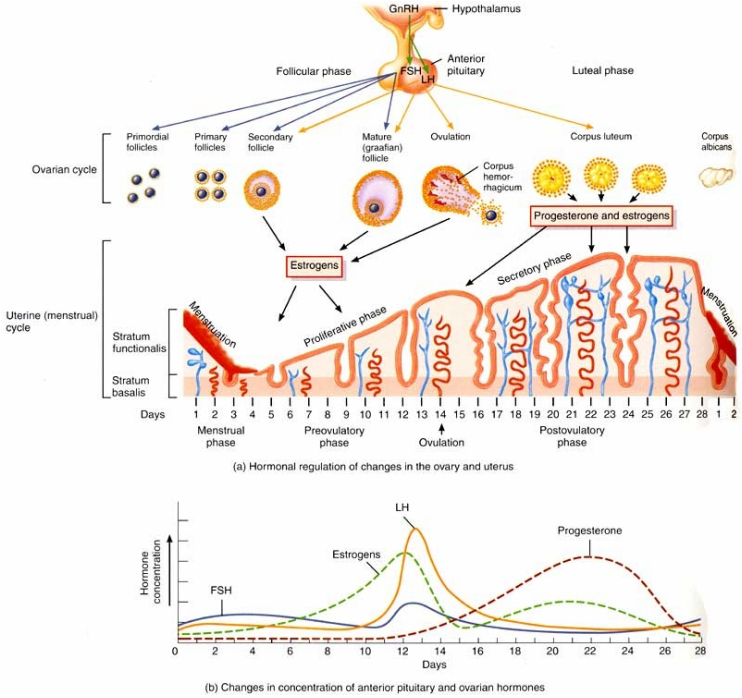
a) **This question paper consists of 20 questions. You are to answer all the questions.**
b) **Q.1-5 are very short answer type and carries 1 mark each.**
c) **Q.6-15 are short answer type and carries 2 mark each**
d) **Q.16-20 are short answer type and carries 3 mark each**

1	**How does the progeny formed from asexual reproduction differ from those formed by sexual reproduction?**	
2	**How many microsporangia are found in a typical anther? How are they arranged in the anther lobes?**	**P21**
3	**Name the fluid filled cavity in tertiary follicle.**	**P48**
4	**What is the statutory marriageable age for Indian couples?**	**P59**
5	**What happens to menstrual cycle during pregnancy?**	**P51**
6	**What role has the Government of India played in promoting awareness regarding reproductive health?**	**P58**
7	**Write the tubules in sequence to represent the path of sperms from testis to outside the testis.**	**P43**
8	**What makes the pollen grains resistant to strong acids and high temperatures? Which part of this layer lacks this property?**	**P23**
9	**What is the difference between Menstrual cycle and Oestrus cycle?**	**P9**
10	**Enlist the characteristics of an ideal contraceptive.**	**P59**
11	**In human, once an ovum is fertilized, the second sperm is unable to fertilize the same ovum. Why?**	**P51**
12	**A typical angiosperm embryo sac at maturity has seven nuclei and eight cells. Rectify the statement if required. Explain why.**	**P27**
13	**Mention one important condition required for external fertilization to be successful? What is the disadvantage of this process?**	**P14**

14 **Human Placenta also acts as endocrine organ. Name the hormones it secretes. Out of the list which hormones are secreted only during pregnancy?** **P53**

15 **Mention the function of filiform apparatus in the embryo sac. Name the two ends of an embryo sac.** **P27**

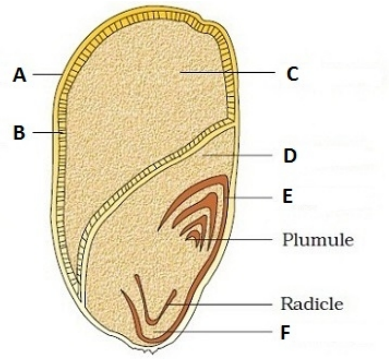
16 **Study the diagram showing the phases of menstrual cycle. Explain the uterine and hormonal changes during the cycle.** **P50**



17 **Explain in brief the development of embryo in a dicot plant.** **P34**

18 **Explain the mechanism of child birth in human.** **P54**

19 **a) Label the different parts of the monocot seed labelled A to F.** **P37**



20 **a) What is apomixis?** **P38**
b) How are apomict seeds developed? **39**
c) How can apomict seeds be useful to farmers? **39**

Practice Test (Level C)

Subject : Biology

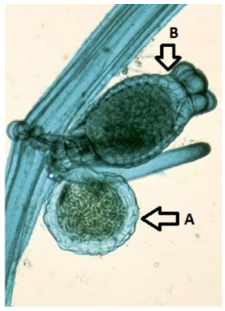
Quarter- I (Chapters 1-4)

Time: 90min **Class XII** **Max. Marks: 40**

Instructions:

a) **This question paper consists of 20 questions. You are to answer all the questions.**
b) **Q.1-5 are very short answer type and carries 1 mark each.**
c) **Q.6-15 are short answer type and carries 2 mark each**
d) **Q.16-20 are short answer type and carries 3 mark each**

1	**Transfer of pollen grains from anther to stigma is called pollination in dioecious plants. Is the term applicable to monoecious plants also? Yes or No?**	**P27**
2	**How are pollen sacs related to microsporangia?**	**P21**
3	**Write the difference in function of urethra in human male and female.**	
4	**What are emergency contraceptives?**	**P61**
5	**Why is the milk produced during initial days of lactation essentially fed to new born babies?**	**P54**
6	**Classify IUDs and explain the functioning of any one of them.**	**P60**
7	**Name the male accessory glands associated with reproductive system. Write their function.**	**P44**
8	**In most of the angiosperms pollen grains are shed in the two celled stage. Name the cells. Why are the cells different in size?**	**P23**
9	**What is the difference between seasonal breeders and continuous breeding mammals?**	**P9**
10	**Explain the following processes related to ART:** **a) ICSI** **b) IUI**	**P64**
11	**Differentiate between spermatogenesis (male) and Oogenesis (Female) in human.**	**P49**
12	**What will be the ploidy and number of chromosomes of the following cells of pea plant when it is known that the male gamete has seven chromosomes?** **a) Megaspore** **b) Microspore mother cell**	

13 

This is a photograph showing reproductive structures of *Chara*. Name the structures. Which one is male and female? **P12**

14 **Where in the mammary glands milk is secreted. Name the tubules in sequence to trace the path of milk to be ejected out.** **P47**

15 **What difference will you find in a mature unfertilized embryo sac and a fertilized embryo sac in a typical angiosperm?**

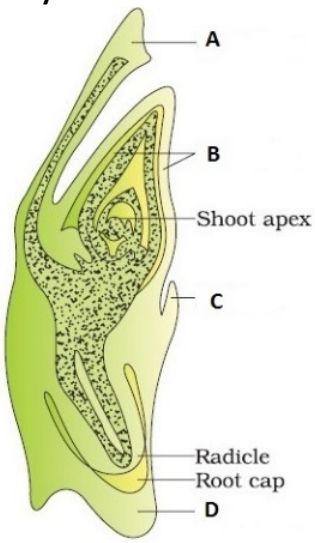
16 **Discuss in brief the embryonic development in human up to implantation.** **P53**

17
a) **In which type of flowers emasculation is mandatory?** **P33**
b) **When should the bag opened after pollen dusted on stigma?**
c) **Why pollen of same species succeeds in fertilization?**

18 **Match the following columns:** **P54**

Duration of Pregnancy	Development of human foetus
5th month	Foetus develops limbs and digits
End of 6th month	Hair on head appears
2nd month end	Body covered with fine hair, eye lash formed

19
a) **Identify the structure and label the parts A-D. (embryo of grass)** **P35**



b) **Name the different shapes of embryo formed in dicot plants.**

20
a) **What is the cause of seed dormancy?** **P38**
b) **What advantages does seed offer to angiosperms?** **37**
c) **Which part of apple is edible? How is apple different from banana in fruit formation?**

Practice Test (Level A)

Subject : Biology

Quarter- II (Chapters 5-8)

Time: 90min **Class XII** **Max. Marks: 40**

Instructions:

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c) Q.6-15 are short answer type and carries 2 mark each
d) Q.16-20 are short answer type and carries 3 mark each

1	**What was the term used by Mendel for 'gene'?**	**P72**
2	**How are two nucleotides linked?**	**P96**
3	**Who proved experimentally that Life comes from pre-existing life?**	**P127**
4	**Name a common plant which is used as drugs. Which part of the plant is used for the purpose?**	**P158**
5	**Which disease is confirmed by Widal Test? Name the pathogen.**	**P146**
6	**What is the difference between Co-dominance and Incomplete dominance?**	
7	**Explain in brief the structure of a Nucleosome.**	**P99**
8	**Distinguish between homologous and analogous organs citing examples.**	**P131**
9	**Differentiate between active and passive immunity.**	**P152**
10	**Write the characteristics of Klinefelter's syndrome. Write the chromosomal composition.**	**P91**
11	**Mention the criteria to be fulfilled by a molecule to be a genetic material.**	**P103**
12	**Draw a flow chart showing stepwise evolution of human starting from *Dryopithecus*.**	
13	**What is female heterogamety. Give an example.**	**P86**
14	**Give explanation to why the genetic codon should be a triplet.**	**P111**
15	**Explain the terms: genetic Drift, Founder effect, Gene flow**	**P137**
16	**Write any 6 symbols and their interpretation used in a pedigree chart**	**P88**
17	**Draw a replication fork and explain continuous and discontinuous synthesis of DNA.**	**P106**

18	**In pea plant a Round Yellow seeded flower (RrYy) was crossed with a wrinkled Green seeded flower (rryy). Show the cross and write the phenotypic ratio. What type of cross it is?**	**P**
19	**Write the steps in DNA fingerprinting.**	**P122**
20	**Draw the stages (Diagrammatic) showing life cycle of *Plasmodium*.**	**P148**

Practice Test (Level B)

Subject : Biology

Quarter- II (Chapters 5-8)

Time: 90min **Class XII** **Max. Marks: 40**

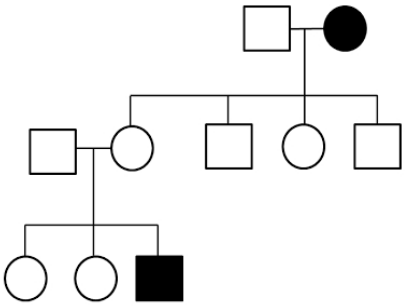
Instructions:

a) ***This question paper consists of 20 questions. You are to answer all the questions.***
b) ***Q.1-5 are very short answer type and carries 1 mark each.***
c) ***Q.6-15 are short answer type and carries 2 mark each***
d) ***Q.16-20 are short answer type and carries 3 mark each***

1	**When heterozygous tall pea plants were crossed, 25% plants appeared dwarf. Why?**	**P73**
2	**Name the Scientists who worked to determine the biochemical nature of *Transforming principle* of Griffith?**	**P101**
3	**What is extraterrestrial concept of origin of life?**	**P127**
4	**'Don't die of ignorance'. Which disease does it refer to?**	
5	**Explain the terms: Metastasis, Contact Inhibition**	**P157**
6	**How can you cite ABO blood grouping in human to be an example of both Multiple allelism and Co dominance simultaneously?**	**P77**
7	**Why is DNA better option over RNA to be a genetic material?**	**P103**
8	**Explain Oparin-Haldane's concept of origin of life.**	**P127**
9	**Differentiate between Primary and Secondary Lymphoid organs with examples.**	**P154**
10	**Which type of mutation results into the disease Sickle celled anemia? What causes Frame shift mutation?**	**P87**
11	**The genetic code is unambiguous and degenerate. What does it mean?**	**P112**
12	**Draw graphs to show operation of natural selection on different traits leading to Stabilization, Disruption and Directional change.**	**P136**
13	**What is aneuploidy? Name any such disorder in human and mention the specific cause.**	**P90**
14	**Explain the functioning of Lac operon when *E.coli* is cultured in medium containing lactose.**	**P117**
15	**How has antibiotic resistance developed in bacteria? Whose theory of evolution applies on it?**	**P132**
16	**A haemophilic man marries a normal woman has a haemophilic daughter. Explain the possibility with a cross. Name the type of Inheritance. Cite any other example.**	**P89**

17 Differentiate between Replication of DNA and Transcription.

18 Study the pedigree given below and comment whether the inheritance is



a) Autosomal or Sex linked
b) Dominant or Recessive trait
c) How did you identify it?

19 Explain the methodologies applied in Human gene mapping. P119

20 What are carcinogens? How are genes associated with cancer? P157

Practice Test (Level C)

Subject : Biology

Quarter- II (Chapters 5-8)

Time: 90min **Class XII** **Max. Marks: 40**

Instructions:

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c) ***Q.6-15 are short answer type and carries 2 mark each***
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1	**How is segregation different from Independent assortment?**	**P**
2	**What is a coding strand in DNA Transcription process?**	**P108**
3	**Homology is based on divergent evolution while analogy is just the opposite. Write TRUE or FALSE.**	**P130**
4	**Name any two genera of fungi causing ring worm in human.**	**P149**
5	**Write the common names of Heroin and Cocaine.**	**P**
6	**Explain the validity of the Principle of dominance and law of segregation in explaining an experiment involving Incomplete dominance.**	**P**
7	**How gene splicing occurs?**	**P110**
8	**Why do you consider Darwin's finches a typical example of Adaptive radiation?**	**P133**
9	**Differentiate between T and B lymphocyte.**	**P**
10	**How recombination frequency may be used to map the position of genes on the chromosome. Explain with an example.**	**P84**
11	**What is a translational unit of an mRNA? Where are UTRs located?**	**P115**
12	**How does study of comparative anatomy and morphology help in studying evolution?**	**P129**
13	**Human Females have less chance of being hemophilic. Explain.**	**P89**
14	**Why tRNA is called adapter molecule?**	**P114**
15	**Explain Hardy –Weinberg principle.**	**P137**
16	**What was the basic difference between the experiments conducted by Mendel and Morgan? Which new concepts developed after Morgan's experiment?**	**P**
17	**Describe in brief the functioning of Lac operon in the bacteria when there is no lactose in the medium?**	**P117**

18	**What is Non-disjunction? Name any two disorders in human caused due to it. Mention specific reason for the disorder.**	**P**
19	**Explain the principles of DNA fingerprinting.**	**P121**
20	**After entering into macrophages, how does HIV establish in human body?**	**P156**

Practice Test (Level A)

Subject: Biology

Quarter -III (Chapters 9-12)

Time: 90min **Class XII** **Max. Marks: 40**

Instructions:

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c) Q.6-15 are short answer type and carries 2 mark each
d) Q.16-20 are short answer type and carries 3 mark each

1	**What is Blue Revolution associated with?**	**P170**
2	**Now a days Lipase is added to detergent formulations and is claimed to be effective for the specific purpose. What is the purpose?**	**P183**
3	**What is a Recombinant Protein?**	**P203**
4	**What is Biotechnology?**	**P193**
5	**Which of the following are produced without distillation?** **Whisky, Wine, Brandy, Beer, Rum**	**P182**
6	**Write the steps in MOET.** **OR** **What are the advantages of artificial insemination?**	**P168**
7	**Describe the construction of a Biogas plant.**	**P185**
8	**How is DNA isolated from a cell?**	**P201**
9	**How can you introduce an alien DNA in a host cell directly?**	**P201**
10	**What is Interspecific hybridization? Name any example and how it was developed.**	**P168**
11	**How can microbes be used as Biofertilizers?**	**P187**
12	**What are molecular scissors? Why is plasmid DNA called vector?**	**P195**
13	**Write a common Palindromic nucleotide sequence and cut with an appropriate Restriction enzyme. Which type of cut ends were obtained? Show.**	**P196**
14	**If you plan to improve the nutritional quality of crop which characteristics of the crop should you target for improvement?**	**P176**
15	**Explain in brief the secondary treatment of effluent before release into water bodies.**	**P184**
16	**Provide a schematic diagram showing the steps in Recombinant DNA Technology**	**P197**

17 What are the three basic steps followed in genetically modifying an organism. P195

18 Discuss in brief the steps in amplifying a gene using PCR. P202

19 How does the insecticidal protein in Bt cotton kill target pest? P208

20 Describe in brief how Transgenic animals are beneficial to us? P212

Practice Test (Level B)

Subject: Biology

Quarter -III (Chapters 9-12)

Time: 90min **Class XII** **Max. Marks: 40**

Instructions:

a) This question paper consists of 20 questions. You are to answer all the questions.
b) Q.1-5 are very short answer type and carries 1 mark each.
c) Q.6-15 are short answer type and carries 2 mark each
d) Q.16-20 are short answer type and carries 3 mark each

1 **Why is inbreeding in animals necessary though it is known to cause inbreeding depression?** **P167**

2 **Why is cattle dung best suited for the Biogas plant?** **P185**

3 **What will happen if you use DNA polymerase in the *in vitro* DNA polymerization process? Why?**

4 **Why presence of more than one recognition site in a cloning vector not desirable?** **P199**

5 **What is Integrated Pest management?** **P178**

6 **How are somatic hybrids produced?** **P177**

7 **Explain the significance of the BOD used in Biological treatment of sewage.** **P184**

8 **How a bacterial cell is made competent to take up the recombinant plasmid?** **P200**

9 **What are the two core techniques which gave birth to modern Biotechnology?** **P193**

10 **Fill in the blanks:** **P174**

Crop	Variety	Resistance to Disease
Wheat	A	Leaf and stripe rust
B	Pusa swarnim	White rust
Cow pea	C	Bacterial Blight
Chilli	D	Chilli mosaic virus

11 **How are *Bt* powder (dried spores) effective in controlling pests?** **P187**

12 **How are the DNA strands separated by gel electrophoresis visualized?** **P198**

13 **Explain in brief Downstream processing of a biotech product.** **P204**

14 **Write the main steps in breeding a new genetic variety of crop.** **P171**

15 **a) Why are bottled fruit juice purchased from market clearer than homemade ones?** **P183**

b) What is the use of activated sludge? **P184**

16	**What are the features that are required to facilitate cloning into a vector?**	**P199**
17	**Recombinant DNA technology involves several steps in specific sequence. Name them.**	**P201**
18	**How was the first recombinant DNA constructed? What does gene cloning mean?**	**P194**
19	**How are genes transferred into plant and animal cells from bacteria or viruses?**	**P200**
20	**What was the problem in using insulin produced by conventional methods? How was it solved?**	**P211**

Practice Test (Level C)

Subject: Biology

Quarter -III (Chapters 9-12)

Time: 90min **Class XII** **Max. Marks: 40**

Instructions:

a) This question paper consists of 20 questions. You are to answer all the questions.
b) Q.1-5 are very short answer type and carries 1 mark each.
c) Q.6-15 are short answer type and carries 2 mark each
d) Q.16-20 are short answer type and carries 3 mark each

1 **What are single cell proteins?** **P176**

2 **Why large holes are found in Swiss cheese?** **P181**

3 **A gene is somehow transferred into an alien organism. It will naturally not multiply. Why?** **P194**

4 **Name the cry genes to control cotton bollworms.** **P209**

5 **What are flocs?** **P184**

6 **Insect resistance in crop plants may be due to morphological, biochemical or physiological characteristics of the plant. Cite two examples in support of this statement.** **P175**

7 **What is organic farming? What role does fungi play in acting as biofertilizer?** **P188**

8 **How Agarose gel electrophoresis works in separating DNA fragments?** **P198**

9 **Expand ELISA. Why it is used as a disease diagnostic tool?** **P212**

10 **Differentiate between Out-crossing and cross-breeding.** **P168**

11 **What are Baculoviruses? Why are they preferred as insecticide?** **P187**

12 **With the help of an example explain how Restriction enzymes are named.** **P195**

13 **Why the milk produced by the cow Rosie superior to normal cow milk for feeding human babies?** **P213**

14 **What are somaclones? How are they produced?** **P177**

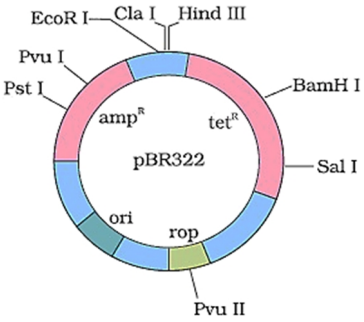
15 **Fill in the blanks:** **P183**

Organism	Genus	Product	Use
Bacteria	*Streptococcus*	Streptokinase	A
Fungus	B	Cyclosporin- A	C
Yeast	*Monascus purpureus*	D	Blood cholesterol lowering agent

16 **Explain a valid technique to identify recombinant bacterial colonies grown on medium in petri dishes.** **P200**

17 **Name three Restriction enzymes with the DNA sequence which it recognizes. Show the position where it acts.**

18



Study the diagram of plasmid pBR322 and answer the following questions: **P199**

a) What does 'rop' code for?

b) What does BamH1 and Pst1 represent?

c) If BamH1 is used to cut the alien DNA (gene of interest) then which gene of the plasmid would be affected if the alien gene is inserted in the plasmid?

19 **How can gene therapy be a treatment in ADA deficient patient?** **P211**

20 **Explain how the concept of gene silencing using RNA interference can be used to protect tobacco roots from being infected by *Meloidegyne incognitia*?** **P209**

Practice Test (Level A)

Subject: Biology

Quarter- IV (Chapters 13-16)

Time: 90min **Class XII** **Max. Marks: 40**

Instructions:

a) This question paper consists of 20 questions. You are to answer all the questions.
b) Q.1-5 are very short answer type and carries 1 mark each.
c) Q.6-15 are short answer type and carries 2 mark each
d) Q.16-20 are short answer type and carries 3 mark each

1	**Give an example to show that when an exotic species was introduced into an area, it posed threat to native species.**	**P233**
2	**What is 10% law?**	**P247**
3	**Indian Biodiversity is Genetically diverse. Give an example.**	**P259**
4	**What is Jhum cultivation?**	**P284**
5	**Name the Hotspots in India.**	**P266**
6	**The shape of the age pyramid shows the growth status of the population. Draw the different types of age pyramids.**	**P227**
7	**Write the important steps in decomposition process.**	**P243**
8	**How does Biodiversity vary with latitude and altitude?**	**P261**
9	**Why is CNG a better fuel than convention automobile fuel?**	**P273**
10	**Why cattle do not browse *Calotropis* growing in the abandoned fields? Name two chemical substance produced by plants for its own defense but commercially exploited by man.**	**P234**
11	**Write the stages in succession of a pond from Phytoplankton to Forest stage.**	**P252**
12	**Name four animals considered to have been extinct in the recent past.**	**P263**
13	**Explain Bio-magnification of DDT in an aquatic food chain.**	**P276**
14	**When does co evolution occur? Explain with an example.**	**P237**
15	**Explain the role of women in conservation of Indian forests.**	**P284**
16	**Why is the earth compared with a green house? Explain the fate of light entering into the earth.**	**P281**
17	**Describe the causes of Biodiversity loss.**	**P264**

18 What is an ecological pyramid? Mention the different types. Cite examples. P248

19 The population density of a habitat at a given period fluctuated due to certain factors. Define them and write an equation to relate them. P228

20 Define the following with examples: P

a) **Commensalism**
b) **Competition**
c) **Resource Partitioning**

Practice Test (Level B)

Subject: Biology

Quarter- IV (Chapters 13-16)

Time: 90min **Class XII** **Max. Marks: 40**

Instructions:

a) This question paper consists of 20 questions. You are to answer all the questions.
b) Q.1-5 are very short answer type and carries 1 mark each.
c) Q.6-15 are short answer type and carries 2 mark each
d) Q.16-20 are short answer type and carries 3 mark each

1	**What are conformers? Give an example.**	**P224**
2	**Can a given species occupy more than one trophic level in the same ecosystem? If yes give example.**	**P249**
3	**Why India is considered as mega Biodiversity country?**	**P261**
4	**What is Joint Forest Management?**	**P285**
5	**Write the full form of IUCN.**	
6	**In many cases we estimate population sizes indirectly (e.g. without counting them). Cite two such examples.**	**P228**
7	**Pyramid of Biomass and pyramid of number may be inverted. Give examples.**	**P249**
8	**Ex situ conservation of Biodiversity.**	**P267**
9	**What is New auto fuel policy?**	**P273**
10	**Many fish thrive in Antartic water while human cannot. Why?**	**P226**
11	**Explain the factors which affects the rate of decomposition.**	**P244**
12	**Write the contribution of the following:** **a) Paul Ehrlich** **b) Alexander Von Humboldt**	**P**
13	**How does a catalytic convertor work?**	**P272**
14	**How does organisms respond to abiotic factors when the stressful external condition is for short period only?**	**P224**
15	**What are e-wastes? How is radioactive waste disposed?**	**P280**

16	**How are solid wastes disposed?**	**P278**
17	**Explain evil quartet.**	**P**
18	**A pond is a self- sustainable ecosystem. Which characteristics of a pond supports the claim.**	**P242**
19	**Differentiate between exponential and Logistic growth.**	**P**
20	**Write the type of interaction in the following:**	**P**
	a) Cactus and moth	**233**
	b) Flamingoes and fishes in South American lakes	**234**
	c) Cuckoo and crow	**236**
	d) Fig and wasp	**237**
	e) Sea anemone and clown fish	**237**
	f) Ticks and dog	**236**

Practice Test (Level C)

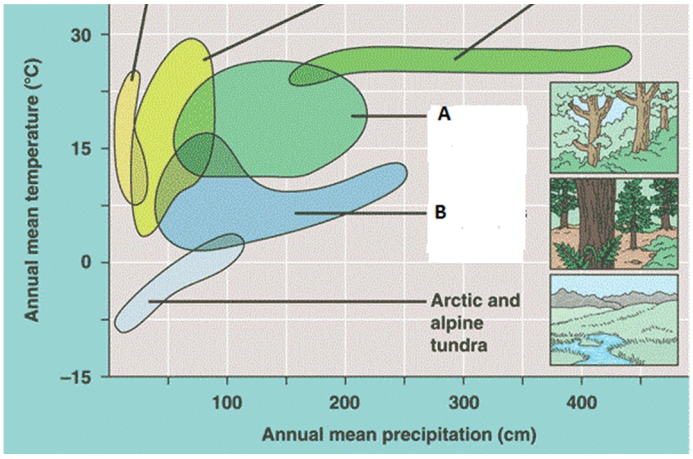
Subject: Biology

Quarter- IV (Chapters 13-16)

Time: 90min **Class XII** **Max. Marks: 40**

Instructions:

a) This question paper consists of 20 questions. You are to answer all the questions.
b) Q.1-5 are very short answer type and carries 1 mark each.
c) Q.6-15 are short answer type and carries 2 mark each
d) Q.16-20 are short answer type and carries 3 mark each

1	**What is Darwinian fitness (high r value)?**	**P231**
2	**Why pyramid of energy can never be inverted?**	**P249**
3	**Who popularized the term 'Biodiversity'?**	**P258**
4	**According to CPCB what is the minimum size of particulate matter which causes greatest harm to human health? Why?**	**P271**
5	**What is sixth extinction?**	**P264**
6	**Explain Gause's 'Competitive Exclusion Principle'. How can organisms overcome the situation?**	**P235**
7	**Differentiate between standing crop and standing state.**	**P**
8	**Alien species invasion causes threat to indigenous species. Give two examples.**	**P265**
9	**Explain the principle involved in working of an Electrostatic precipitator.**	**P271**
10	 **The diagram shows Biome distribution with respect to annual temperature and precipitation. Which biomes do A and B represent?**	**P220**
11	**Explain how the laws of Thermodynamics applied in different ecosystems.**	**P245**
12	**List three important consequences of Biodiversity loss in an area.**	**P264**

13 **Explain how ozone depletion occurs.** **P282**

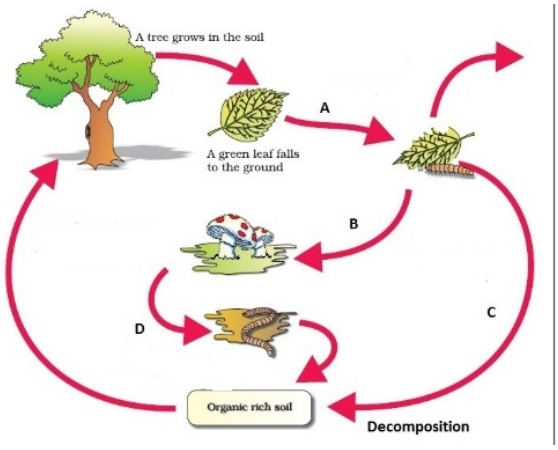
14 **Why small animals are rarely found in polar regions?** **P224**

15 **Explain the strategies taken to improve the air quality in Delhi.** **P273**

16 **Explain the Integrated waste water management system developed in Arcata town (California)** **P277**

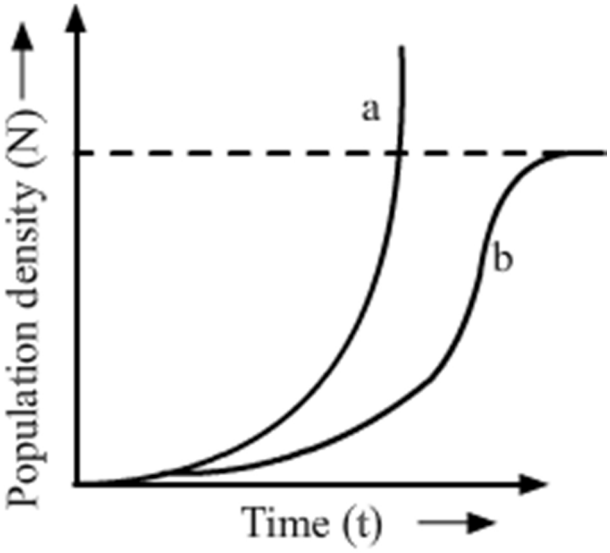
17 **a) Explain the concept Species – Area relationship using a graph. Provide mathematical equation in support of your answer.** **P262**

18 **Study the diagram and describe in brief the process with special reference to points marked a-d.** **P244**



19 **Write brief answers:** **P226**

a) What is Allen's rule?
b) How do aquatic mammals survive in polar seas?
c) How does our body respond to Altitude sickness?

20 

The diagram shows Population growth curve.
a) When do you obtain curve 'a'?
b) Plot 'K' i.e. carrying capacity on this graph
c) Write mathematical equations for curve 'a' and 'b'.

P

PRACTICE TEST BOOKLET

Class XII

CHEMISTRY

KENDRA VIDYALAYA SANGATHAN

Zonal Institute of Education & Training, Bhubaneswar

(Under the Ministry of Human Resource Development, Government of India)

Kendriya Vidyalaya No. – 4 Campus

Neeladri Vihar, Post: - Sailashree Vihar

BHUBANESWAR (Odisha)- 751021 Phone: **(0674) 2748035**

Website: **www.zietbbsr.org**

Message from the Desk of Director

Dear children;

It's my pleasure to publish online "Practice test Booklet for Chemistry- Class XII"

For all the 16 chapters of Class XII Chemistry practice test papers are presented at level A, B and level C. There are 11 questions of full marks 20 for 40 minute time duration. There are 4 questions for 1 marks each, 5 questions for 2 marks each & 2 questions each for 3 marks. Please practice test paper of level B after solving practice test paper of level A, and level C after level B.

Some students simply don't have faith in themselves. Due to this lack of trust they develop inferiority complex and run away from responsibilities. Quite often they are found grumbling "I cannot do this" or "I cannot do that". Slowly and gradually it turns into habit and the student repeatedly implements these thoughts knowingly and unknowingly. Consequently his working capacity reduces; he does not do justice to his work and thereby the ratio of being unsuccessful increases. The inferiority complex becomes deep rooted by embracing continuous failures. And they believe firmly, "I cannot do it."

Dear children this type of harmful statement about yourself, spoken by yourself will slowly damage your self-confidence. You will start feeling morally weak causing downfall.

Right at this moment, you must divorce this line and adopt the new one which goes thus, "If somebody else can do it then I too can do it."

Dear children, one of the most powerful success principles ever preached is: **Never give up!**

Richard Nixon mused "A person is not finished when he is defeated. He is finished when he quits." Nobody and nothing can keep you down unless you decide not to rise again. Find a way to, not a way not to. All the people that are successful

have conquered the temptation to give up. One of the best way to give your best a chance, is to rise up when you're knocked down.

The choice is simple. You can either stand up and be counted or lie down and be counted out. Defeat never comes to people until they admit it. Your success will be measured by your willingness to keep on trying.

Here is a burning question, do you want to live a life of self-respect, successes and abundance? If yes, then free yourself from chains of you past, maintain a decently high opinion about yourself and kick start a new success story in a new light. Stop making excuses, get rid of insignificant words like "I can…t……."

Have the courage to live. Anyone can quit. ***Just pledge to yourself-"I will do what I can do, putting all my strength and passion into work"***

I am sure this would help you to cease worrying since the results would prove beyond your expectations. Now the circumstances will bow before you because this world worships the rising sun.

All my good wishes are with you.

God Bless You.

L.Chari

Director & Deputy Commissioner

ZIET Bhubaneswar

Ashok Kumar Gupta

PGT Chemistry

M.Sc. M.Ed.

Certified NLP Practitioner

It's my pleasure to present "Practice test Booklet for Chemistry Class XII".

On this opportunity, I thank our learned, highly experienced, dynamic and ambitious director madam L Chari for her valuable guidance, encouragement and support to completion of this project.

Dear students, I am very much impressed by Charles Schwab who said "when a person put a limitation what he will do, he has put a limit on what he can do." Life is too short to think small. Most people can do more than they think they can, but they unusually do less than they think they can. You never know what you cannot do until you try. If you devaluate your dreams, no one else will raise the price.

No improvement is as certain as that which proceeds from the right and timely use of what you have. **You can't know what you can do until you try**.

Dear students, successful people believe that mistakes are just feedback. Opportunity is all around you. What matters is where you put your focus. You create strength and momentum in area where you **focus**. The first law of success is …….**concentration** – to bend all the energies to one point, and to go directly to that point, looking neither to the right nor to the left.

There is a great distance between most people's dreams and the result they achieve. It is due to the difference in their commitment to bring together all the options of their ability and to focus them upon one point. I request you all not to be one who is uncertain about future and hazy about the present. Yesterday ended last night. So today is more valuable to look ahead and prepare than to look back and regret. It is more valuable to look where you are going than to see where you

have been. You are created for creativity. Your eyes are designed to look for opportunity, your years listen for direction, your mind requires a challenge, and your heart longs for the best way. Board examination is knocking at the door. There is a time when we must firmly choose the course which we will follow, otherwise relentless drift of events will make the decision for us. Being indecisive affects every area of our lives. If you have will to win, you have achieved half your success.

There is a difference between thinking and deciding. When you are thinking about something, you only do it when it is convenient. When you are decisive about something, you accept no excuses, only results. Lack of decisiveness has caused more unsuccessful than lack of intelligence or ability.

Are you ready?

Make some decisions. The moment you definitely decide, all sorts of things happen to help you. Not what we have, but what we use, not what we see, but that we choose- these are things that matter or bless human being. If you remain indecisive you will never grow. To move from where you are, you must decide where you wish to be. No one can predict to what heights you can soar. Even you will not know until you spread your wings.

There is no thrill in easy sailing when skies are clear and blue,

There is no joy in merely doing things which any man can do.

But there is some satisfaction that is mighty sweet to take,

When you reach a destination that you thought you would never make.

All my god wishes are with you.

See you successful in forthcoming board examination and life ahead.

Best of luck, God bless you.

Ashok Kumar Gupta

PRACTICE TEST

Level A

CLASS: XII

Unit 1: The Solid State

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	How many unit cells constitute one unit cell of a face centered cubic crystal?	1
2	Solid A is a very hard electrical insulator in solid as well as in molten state and melts at extremely high temperature. What type of solid is it?	1
3	What type of magnetism is shown in the following alignment of magnetic moments? ↓↓↓↓↓↓↓↓↓↓	1
4	What type of stoichiometric defect is shown by AgCl?	1
5	What is semiconductor? Describe two main types of semiconductors and contrast their mechanism.	2
6	Explain the following terms with suitable example: i. F centre ii. 13-14 compounds	2
7	Calculate the packing efficiency of a simple cubic unit cell structure.	2
8	An alloy of gold and cadmium crystallises with a cubic structure in which gold atoms occupy the corners and cadmium atoms fit into the face centres. Assign formula for this alloy.	2
9	A compound is forms hcp structure. What is the total number of voids in 0.5 mol of it? How many of these are tetrahedral voids?	2
10	Silver crystallises in a fcc lattice. The edge length of its unit cell is 4.077×10^{-8} cm and its density is 10.5 g cm^{-3}. Calculate the atomic mass of silver. ($N_A = 6.02 \times 10^{23} mol^{-1}$)	3
11	Explain the following terms with suitable example: i. Doping ii. Anisotropy iii. Frenkel defect	3

PRACTICE TEST

Level B

CLASS: XII

Unit 8: The Solid State

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	What type of substances would make better permanent magnets: Ferromagnetic or Ferrimagnetic?	1
2	Why does presence of excess lithium make LiCl crystals pink?	1
3	A solid with cubic crystal is made of two elements P & Q. atoms of Q are at the corners of the cube and P at the center. What is the formula of the compound?	1
4	What change occurs when AgCl is doped with $CdCl_2$?	1
5	If NaCl is doped with 10-3mole% $SrCl_2$, what will be the concentration of cationic vacancies ?	2
6	Calculate the packing efficiency of a ccp structure.	2
7	Chromium metal crystallises in a body centred cubic lattice. The length of the unit cell edge is found to be 287pm. Calculate the atomic radius of chromium.	2
8	If the radius of the octahedral void is r and radius of the atoms in close-packing is R, derive relation between r and R.	2
9	Analysis shows that nickel oxide has the formula $Ni_{0.98}O_{1.00}$. What fractions of Ni exist as Ni^{2+} and Ni^{3+}.	2
10	How will you account for the following: i. Frenkel defects are not found in alkali metal halides ii. Schottky defect lowers the density of related solids iii. Impurity doped silicon is a semiconductor.	3
11	The well-known mineral fluorite is chemically calcium fluoride. It is known that in one unit cell of this mineral there are 4 Ca^{2+} ions and 8F^- ions and that Ca^{2+} ions are arranged in a fcc lattice. The F^- ions fill all the tetrahedral holes in the face centred cubic lattice of Ca^{2+} ions. The edge of the unit cell is 5.46×10^{-8} cm in length. The density of the solid is 3.18 g cm^{-3}. Use this information to calculate Avogadro's number. (Molar mass of CaF_2 = 78.08 g mol^{-1})	3

PRACTICE TEST

Level C

CLASS: XII

Unit 8: The Solid State

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Calculate the number of atoms in a face centred cubic unit cell.	1
2	Which type ionic substance show Schottky defect in solids?	1
3	What is meant by "doping" in a semiconductor?	1
4	Why does LiCl acquire pink colour when heated in Li vapours?	1
5	Aluminium crystallises in an fcc structure. Atomic radius of the metal is 125pm. What is the length of the side of the unit cell of the metal?	2
6	The unit cell of an element of atomic mass 108u and density 10.5 g cm^{-3} is a cube with edge length 409 pm. Find the type of unit cell of the crystal. (Given: Avogadro's number NA= $6.02 \times 10^{23} mol^{-1}$)	2
7	Calculate the packing efficiency of a fcc structure	2
8	What is the distance between Na^+ & Cl^- ions in NaCl crystal if its density is $2.165 gcm^{-3}$? (At. Mass of Na=23u, Cl=35.5u, Avogadro's number $N_A= 6.02 \times 10^{23} mol^{-1}$)	2
9	What makes a glass different from a solid such as quartz? Under what conditions quartz could be converted into glass	2
10	Niobium (Nb) crystallises in bcc structure. If density is 8.55 g cm^{-3}, calculate atomic radius of niobium, given its atomic mass 93u.	3
11	Explain the following terms with suitable example: a. Ferromagnetism b. Ferrimagnetism c. Paramagnetism	3

PRACTICE TEST

Level A

CLASS: XII

Unit 2: Solutions

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	What is meant by reverse osmosis?	1
2	200 mL of water is added to 500 mL of 0.2M solution. What is the molarity of the diluted solution?	1
3	Increase in temperature of an aqueous solution will cause ……..in its molarity.	1
4	Give one example of maximum boiling azeotrope.	1
5	Define the term "Osmotic Pressure". Describe how the molecular mass of a substance can be determined by a method based on measurement of osmotic pressure?	2
6	Define the following terms: i. Mole fraction ii. Van't Hoff factor	2
7	Define the following terms: i. Colligative Properties ii. Molality of solution	2
8	Define the following terms: i. Isotonic solution ii. Ideal solution	2
9	Explain the following- i. Boiling point elevation constant for a solution ii. Vant Hoff factor	2
10	What is the freezing point of 0.4 molal solution of acetic acid in benzene in which it dimerises to the extent of 85%. Freezing point of benzene is 278.4 K and its molar heat of fusion is 10.042 $kJmol^{-1}$.	3
11	Calculate the boiling point of a solution containing 0.61 g of benzoic acid in 5g of CS_2. Assume 84% dimerization of acid. The boiling point and K_b of CS_2 are 46.2^0C and 2.3 K kg mol^{-1} respectively.	3

PRACTICE TEST

Level B

CLASS: XII

Unit 2: Solutions

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Give one example of minimum boiling azeotrope	1
2	The molal freezing point constant of water is 1.86^0 C/M. What is the expected freezing point of 0.1M NaCl solution?	1
3	The osmotic pressure of 0.1M aqueous solution of NaCl is ……..osmotic pressure of 0.1M aqueous solution of glucose.	1
4	If an aqueous solution of glucose is allowed to freeze, then crystals of which will separate out first?	1
5	Calculate the mass of ascorbic acid ($C_6H_8O_6$) to be dissolved in 75 g of acetic acid to lower its melting point by 1.5^0C. [For acetic acid K_f = 3.9 K kg mol^{-1}]	2
6	Find the boiling point of a solution containing 0.520 of glucose ($C_6H_{12}O_6$) dissolved in 80.2 g of water. (Given K_b for water = 0.52 K/m)	2
7	Differentiate between molarity & molality for a solution. How does a change in temperature influence their values?	2
8	Define the term “osmosis” and “osmotic pressure”. Is the osmotic pressure of a solution colligative property? Explain.	2
9	Explain why a solution of chloroform and acetone shows negative deviation from Raoult’s law.	2
10	Calculate the temperature at which a solution containing 54g of glucose ($C_6H_{12}O_6$), in 250g of water will freeze. (K_f for water= 1.86 K mol^{-1} kg)	3
11	A solution containing 8 g of a substance in 100 g of diethyl ether boils at 36.86^0C, whereas pure ether boils at 35.60^0C. Determine the molecular mass of the solute. (For ether K_b= 202 K mol^{-1} kg)	3

PRACTICE TEST

Level C

CLASS: XII

Unit 2: Solutions

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Which of the following 0.1M aqueous solution is likely to have highest boiling point? i. Na_2SO_4 ii. KCl iii. Glucose iv. Urea	1
2	What is Vant Hoff factor for 0.1 M ideal solution?	1
3	10cc of a liquid were mixed with 10cc of liquid B. The volume of the resulting solution was found to be 19.9 cc. What do you conclude?	1
4	Two liquids A and B on mixing produce a warm solution. Which type of deviation from Raoult's law does it show?	1
5	Explain the following: i. Solution of chloroform and acetone is an example of maximum boiling azeotrope. ii. A doctor advises a person suffering from high blood pressure to take less quantity of common salt.	2
6	State Raoult's Law for the solution containing non-volatile solute. Give its mathematical expression also.	2
7	At the same temperature, hydrogen is more soluble in water than helium. Which of them will have a higher value of K_H and why?	2
8	The molecular mass of polymers are determined by osmotic pressure method and not by measuring other colligative properties. Give two reasons.	2
9	Why does a solution of ethanol & cyclohexane show positive deviation from Raoult's law?	2
10	100mg of a protein is dissolved in just enough water to make 10.0mL of solution. If this solution has an osmotic pressure of 13.3 mm Hg at 25^0C, what is the molar mass of the protein? (R= 0.0821 L atm mol^{-1} K^{-1} and 760 mm Hg = 1 atm)	3
11	Calculate the freezing point depression expected for 0.071m aqueous solution of Na_2SO_4. If this solution actually freezes at -0.320^0C, what would be the value of Van't Hoff factor? (K_f for water= 1.86^0C mol^{-1} kg)	3

PRACTICE TEST

Level A

CLASS: XII

Unit 8: The d- and f- Block elements

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	The electronic configuration of a transition element X in +3 oxidation state is $[Ar]3d^5$. What is its atomic number?	1
2	Which acid is used to make the medium acidic in oxidation reactions of $KMnO_4$ in acidic medium?	1
3	Name the oxometal anions of the first series of the transition metals in which the metal exhibits the oxidation state equal to its group number.	1
4	Which of the *d*-block elements may not be regarded as the transition elements?	1
5	With the help of suitable reaction explain why colour of $KMnO_4$ disappears when oxalic acid is added to its solution in acidic medium.	2
6	What is lanthanoid contraction? What are the consequences of lanthanoid contraction?	2
7	What are the characteristics of the transition elements and why are they called transition elements?	2
8	Describe the preparation of potassium dichromate from iron chromite ore. What is the effect of increasing pH on a solution of potassium dichromate?	2
9	write the ionic equations for its reaction of potassium permanganate with: (i) iodide (ii) iron(II) solution	2
10	Match the catalysts given in column I with the process given in column II	

Column I (Catalyst)	Column II (Process)	
Cu_2Cl_2	Ziegler Natta catalyst	
V_2O_5	Sandmeyer Reaction	
$TiCl_4 + Al(CH_3)_3$	Contact Process	3

11	When chromite ore (A) is fused with sodium carbonate in free excess of air and the product is dissolved in water, a yellow solution of compound (B) is obtained. After treatment of this yellow solution with sulphuric acid, compound (C) can be crystalized from the solution. When compound (C) is treated with KCl, orange crystals of compound (D) crystallizes out. Identify A to D and also write the reaction involved.	3

PRACTICE TEST

Level B

CLASS: XII

Unit 8: The d- and f- Block elements

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Which of the following configuration of transition element will show highest magnetic moment- a.$3d^7\,4s^2$ b. $3d^5 4s^2$ c.$3d^8 4s^2$ d. $3d^2 4s^2$	1
2	Why is HCl not used to make the medium acidic in oxidation reactions of $KMnO_4$ in acidic medium?	1
3	In what way is the electronic configuration of the transition elements different from that of the non-transition elements?	1
4	Write the ionic equations for reaction of potassium permanganate with H_2S.	1
5	When orange solution containing $Cr_2O_7^{2-}$ ion is treated with an alkali, an yellow solution is formed and when H^+ ions are added to yellow solution, an orange solution is obtained. Explain why does this happen?	2
6	Explain giving reasons: (i) Transition metals and many of their compounds show paramagnetic behavior (ii) The enthalpies of atomization of the transition metals are high.	2
7	How is the variability in oxidation states of transition metals different from that of the non-transition metals? Illustrate with examples.	2
8	Describe the preparation of potassium permanganate. Write the reaction involved when acidified permanganate solution react with SO_2.	2
9	Compare the chemistry of actinoids with that of the lanthanoids with special reference to: (i) electronic configuration (iii) oxidation state (ii) atomic and ionic sizes and (iv) chemical reactivity.	2
10	Match the properties given in column I with the metal given in column II **Column I (Property)** / **Column II (Metal)** i. An element which can show +8 oxidation element ii. 3d block element that can show upto +7 oxidation state. iii. 3d block elements with highest melting point a. Mn b. Cr c. Os d. Fe	3
11	When an oxide of manganese (A) is fused with KOH in the presence of an oxidizing agent and dissolved in water, it gives a dark green solution of compound (B). Compound (B) disproportionate in neutral or acidic solution to give purple compound (C). An alkaline solution of compound (C) oxidizes potassium iodide solution to a compound (D) and compound (A) is also formed. Identify compound A to D and write the reaction involved.	3

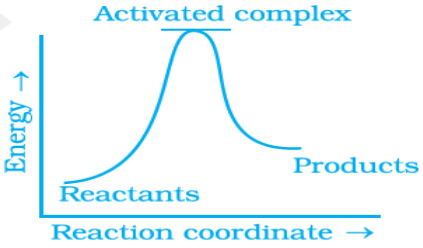
PRACTICE TEST
Level C
CLASS: XII
Unit 8: The d- and f- Block elements

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	What is the common oxidation state for all the lanthanoids?	1
2	Why is HCl not used to make the medium acidic in oxidation reactions of $KMnO_4$ in acidic medium?	1
3	Write the electronic configuration of Cu (at. No. 29).	1
4	Complete the reaction: $Cu^{2+} + I^- \rightarrow$	1
5	The halides of transition elements become more covalent with increasing oxidation state of the metal. Why?	2
6	Explain giving reasons: i. The transition metals generally form coloured compounds. ii. Transition metals and their many compounds act as good catalyst.	2
7	What are interstitial compounds? Why are such compounds well known for transition metals?	2
8	How would you account for the following: (i) Of the *d*4 species, Cr^{2+} is strongly reducing while manganese (III) is strongly oxidizing. (ii) Cobalt (II) is stable in aqueous solution but in the presence of complexing reagents it is easily oxidised.	2
9	Why is the E^0 value for the Mn^{3+}/Mn^{2+} couple much more positive than that for Cr^{3+}/Cr^{2+} or Fe^{3+}/Fe^{2+}? Explain.	2
10	Match the solutions given in column I with the colour given in column II **Column I (Aqueous solution of salt)** i. $FeSO_4.7H_2O$ ii. $NiCl_2.4H_2O$ iii. $CoCl_2.6H_2O$ iv. Cu_2Col_2 **Column II (Colour)** a. Green b. Light pink c. Blue d. Pale green e. Pink f. Colourless	3
11	A violet coloured compound of manganese (A) decomposes on heating to liberate oxygen and compound (B) and (C) of manganese are formed. Compound (C) reacts with KOH in the presence of potassium nitrate to give compound (B). On heating compound (C) with conc. $H_2SO_4$and NaCl, chlorine gas is liberated and a compound (D) of manganese along with other products is formed. Identify compound A to D and also write the reactions involved.	3

PRACTICE TEST
Level A
CLASS: XII
Unit 4: Chemical Kinetics

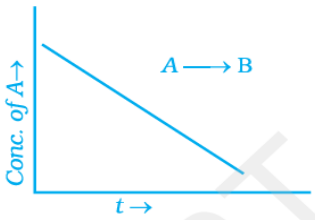
Full marks: 20 **Time: 40 Min**

<table>
<tr><th>Q.No</th><th>Questions</th><th>M</th></tr>
<tr><td>1</td><td>Activation energy of a chemical reaction can be determined by _____.
(i) determining the rate constant at standard temperature.
(ii) determining the rate constants at two temperatures.
(iii) determining probability of collision.
(iv) using catalyst.</td><td>1</td></tr>
<tr><td>2</td><td>Predict whether the following reaction is endothermic or exothermic?
 
</td><td>1</td></tr>
<tr><td>3</td><td>For the reaction R → P, the concentration of a reactant changes from 0.03M to 0.02M in 25 minutes. Calculate the average rate of reaction.</td><td>1</td></tr>
<tr><td>4</td><td>Identify the reaction order from each of the following rate constants.
(i) $k = 2.3 \times 10^{-5}$ L mol^{-1} s^{-1}
(ii) $k = 3 \times 10^{-4}$ s^{-1}</td><td>1</td></tr>
<tr><td>5</td><td>Define the following terms:
i. Activation energy ii. Rate constamt</td><td>2</td></tr>
<tr><td>6</td><td>Define molecularity. Why can't molecularity of any reaction be equal to zero?</td><td>2</td></tr>
<tr><td>7</td><td>Match the items of Column I and Column II.
<table>
<tr><th>Column I</th><th>Column II</th></tr>
<tr><td>(i) Mathematical expression for rate of reaction</td><td>(a) rate constant</td></tr>
<tr><td>(ii) Rate of reaction for zero order reaction is equal to</td><td>(b) rate law</td></tr>
<tr><td>(iii) Units of rate constant for zero order reaction is same as that of</td><td>(c) order of slowest step</td></tr>
<tr><td>(iv) Order of a complex reaction is determined by</td><td>(d) rate of a reaction</td></tr>
</table></td><td>2</td></tr>
<tr><td>8</td><td>i. For a reaction, A + B → Product; the rate law is given by,
$r = k[A]^{1/2}[B]^2$. What is the order of the reaction?
ii. The conversion of molecules X to Y follows second order kinetics. If concentration of X is increased to three times how will it affect the rate of formation of Y?</td><td>2</td></tr>
<tr><td>9</td><td>Show that in a first order reaction, time required for completion of 99.9% is 10 times of half-life ($t1/2$) of the reaction.</td><td>2</td></tr>
<tr><td>10</td><td>What is pseudo first order reaction? Explain with the help of one example.</td><td>3</td></tr>
<tr><td>11</td><td>The rate constants of a reaction at 500K and 700K are 0.02s^{-1} and 0.07s^{-1} respectively. Calculate the values of activation energy (Ea).</td><td>3</td></tr>
</table>

PRACTICE TEST
Level B
CLASS: XII
Unit 4: Chemical Kinetics

Full marks: 20 **Time: 40 Min**

<table>
<tr><th>Q.No</th><th>Questions</th><th>M</th></tr>
<tr><td>1</td><td>In the presence of a catalyst, the heat evolved or absorbed during the reaction_____.
(a) increases. (b) decreases. (c) remains unchanged. (d) may increase or decrease.</td><td>1</td></tr>
<tr><td>2</td><td>Write the rate equation for the reaction 2A + B ⟶ C if the order of the reaction is zero.</td><td>1</td></tr>
<tr><td>3</td><td>For which type of reactions, order and molecularity have the same value?</td><td>1</td></tr>
<tr><td>4</td><td>In a reaction if the concentration of reactant A is tripled, the rate of reaction becomes twenty seven times. What is the order of the reaction?</td><td>1</td></tr>
<tr><td>5</td><td>For a certain reaction large fraction of molecules has energy more than the threshold energy, yet the rate of reaction is very slow. Why?</td><td>2</td></tr>
<tr><td>6</td><td>A first order reaction is 50% completed in 1.26×10^{14} s. How much time would it take for 100% completion</td><td>2</td></tr>
<tr><td>7</td><td>Compounds ‘A’ and ‘B’ react according to the following chemical equation.
A (g) + 2 B (g) --> 2C (g)
Concentration of either ‘A’ or ‘B’ were changed keeping the concentrations of one of the reactants constant and rates were measured as a function of initial concentration. Following results were obtained. Establish the rate equations for this reaction.
<table>
<tr><th>Experiment</th><th colspan="2">Initial concentration of</th><th>Initial rate of formation of</th></tr>
<tr><th></th><th>[A]/mol L^{-1}</th><th>of [B]/mol L^{-1}</th><th>[C]/mol L^{-1} s^{-1}</th></tr>
<tr><td>1</td><td>0.30</td><td>0.30</td><td>0.10</td></tr>
<tr><td>2</td><td>0.30</td><td>0.60</td><td>0.40</td></tr>
<tr><td>3</td><td>0.30</td><td>0.30</td><td>0.20</td></tr>
</table></td><td>2</td></tr>
<tr><td>8</td><td>The decomposition of NH_3 on platinum surface is zero order reaction. What are the rates of production of N_2 and H_2 if $k = 2.5 \times 10^{-4}$ mol^{-1} L s^{-1}?</td><td>2</td></tr>
<tr><td>9</td><td>The reaction between A and B is first order with respect to A and zero order with respect to B. Fill in the blanks in the following table:
<table>
<tr><th>Experiment</th><th>[A]/ mol L^{-1}</th><th>[B]/ mol L^{-1}</th><th>Initial rate/ mol L^{-1} min^{-1}</th></tr>
<tr><td>I</td><td>0.1</td><td>0.1</td><td>$2.0X10^{-2}$</td></tr>
<tr><td>II</td><td>-</td><td>0.2</td><td>$4.0X10^{-2}$</td></tr>
<tr><td>III</td><td>0.4</td><td>0.4</td><td>-</td></tr>
<tr><td>IV</td><td>-</td><td>0.2</td><td>$2.0X10^{-2}$</td></tr>
</table></td><td>2</td></tr>
<tr><td>10</td><td>For a general reaction A ⟶ B, plot of concentration of A vs time is given in Figure below. Answer the following question on the basis of this graph.
(i) What is the order of the reaction?
(ii) What is the slope of the curve?
(iii) What are the units of rate constant?</td><td>3</td></tr>
</table>



11 Match the statements given in Column I and Column II

Column I	Column II
(i) Catalyst alters the rate of reaction	(a) cannot be fraction or zero
(ii) Molecularity	(b) proper orientation is not there always
(iii) Second half life of first order reaction	(c) by lowering the activation energy
(iv) $e^{-Ea/RT}$	(d) is same as the first
(v) Energetically favourable reactions are sometimes slow	(e) total probability is one
(vi) Area under the Maxwell Boltzman curve is constant	(f) refers to the fraction of molecules with energy equal to or greater than activation energy

3

PRACTICE TEST
Level C
CLASS: XII
Unit 4: Chemical Kinetics

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	The role of a catalyst is to change _____. (i) Gibbs energy of reaction. (ii) enthalpy of reaction. (iii) activation energy of reaction. (iv) equilibrium constant.	1
2	According to Arrhenius equation rate constant k is equal to $Ae^{-Ea/RT}$. Draw a graph between ln k vs 1/T.	1
3	Rate law for the reaction A + 2B –→ C is found to be Rate = k [A][B] Concentration of reactant 'B' is doubled, keeping the concentration of 'A' constant, the value of rate constant will be_____.	1
4	State a condition under which a bimolecular reaction is kinetically first order reaction.	1
5	A first order reaction is 50% completed in 1.26×10^{14} s. How much time would it take for 100% completion?	2
6	For a zero order reaction will the molecularity be equal to zero? Explain.	2
7	Define & differentiate the following terms – i. Order & Molecularity ii. Rate and rate constant of reaction.	2
8	The rate constant for a first order reaction is 60 s–1. How much time will it take to reduce the initial concentration of the reactant to its $1/16^{th}$ value?	2
9	Explain- 1. how does the enthalpy of reaction remain unchanged when a catalyst is used in the reaction. 2. the difference between instantaneous rate of a reaction and average rate of a reaction.	2
10	The following data were obtained during the first order thermal decomposition of SO_2Cl_2 at a constant volume. SO_2Cl_2 (g)→ SO_2 (g) + Cl_2 (g) Experiment | Time/ s^{-1} | Total pressure/ atm 1 | 0 | 0.5 2 | 100 | 0.6 Calculate the rate of the reaction when total pressure is 0.65 atm.	3
11	The rate of a reaction quadruples when the temperature changes from 293 K to 313 K. Calculate the energy of activation of the reaction assuming that it does not change with temperature.	3

PRACTICE TEST
Level A
CLASS: XII
UNIT 5: SURFACE CHEMISTRY

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	What is the difference between adsorption and absorption?	1
2	Why is adsorption always exothermic?	1
3	What are lyophobic colloids? Give one example.	1
4	Why is finely divided substance a more effective adsorbent than its crystalline form?	1
5	What are lyophibic & lyophilic sols? Give one example of each type. Which one of these two types of sols is easily coagulated and why?	2
6	Describe the following- i. Tyndall effect ii. Shape-selective catalyst	2
7	Describe the following- i. Peptization ii. Reversible sol	2
8	Explain the following terms: i. Electrophoresis ii. Coagulation.	2
9	Distinguish between physiosorption & chemisorption	2
10	Give reason for the for the following: i. Rough surface of catalyst is more effective than smooth surface. ii. Smoke passed through charged plates before allowing it to come out of chimneys in factories. iii. Ne gets easily adsorbed over charcoal than He.	3
11	Explain what is observed when- i. KCl , an electrolyte is added to hydrated ferric oxide sol, ii. An electric current is passed through a colloidal solution, iii. A beam of light is passed through a colloidal solution.	3

PRACTICE TEST
Level B
CLASS: XII
UNIT 5: SURFACE CHEMISTRY

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	What is an emulsion? Give one example.	1
2	What do you mean by shape selective catalyst? Give one example.	1
3	What is the role of desorption in the process of catalyst?	1
4	Explain what you mean by "dialysis".	1
5	i. What is the role of activated charcoal in gas mask used in coal mines? **ii.** How does a delta form at the meeting place of sea and river water?	2
6	Give an example where physisorption changes to chemisorption with rise in temperature. Explain the reason for change.	2
7	What is the role of diffusion in heterogenous catalysis? Explain with example.	2
8	How does a solid catalyst enhance the rate of combination of gaseous molecules?	2
9	Match the items given in Column I and Column II.	

Column I	**Column II**
(i) Protective colloid	(a) FeCl3 + NaOH
(ii) Liquid - liquid colloid	(b) Lyophilic colloids
(iii) Positively charged colloid	(c) Emulsion
(iv) Negatively charged colloid	(d) FeCl3 + hot water

2

10	Differentiate between multimolecular and macromolecular colloids. Give one example of each. How are these two types of colloids different from associated colloids?	3
11	How are the following colloids different from each other in respect of dispersion medium and dispersed phase? Give one example of each type. i. An aerosol ii. A hydrosol iii. An emulsion	3

PRACTICE TEST
Level C
CLASS: XII
UNIT 5: SURFACE CHEMISTRY

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Which of the following is most effective electrolyte in the coagulation of AgI/Ag^+ sol? **K_2SO_4, MgCl, $K_4[Fe(CN)_6]$**	1
2	Describe "electrophoresis" briefly.	1
3	Define the term "Tyndal effect".	1
4	What is the "coagulation" process?	1
5	Define sorption.	2
6	1. What is collodion? 2. How does the precipitation of colloidal smoke take place in Cottrell precipitator?	2
7	i. How will you distinguish between dispersed phase and dispersion medium in an emulsion? ii. Why is $Fe(OH)_3$ colloid positively charged, when prepared by adding $FeCl_3$ to hot water?	2
8	Explain how the phenomenon of adsorption finds application in each of the following processes: i. Production of vacuum ii. Froth floatation process	2
9	Define each of the following terms- i. Peptization ii. Desorption.	2
10	What is the difference between multimolecular and macromolecular colloids? Give one example of each. How are associated colloids different from these two types of colloids?	3
11	What are micelles? "Action of soap is due to emulsion and micelle formation." Comment.	3

PRACTICE TEST

Level A

CLASS: XII

Unit 6: GENERAL PRINCIPLES AND PROCESSES OF ISOLATION OF ELEMENTS

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Out of C and CO, which is better reducing agent at 673K?	1
2	What is the principal of Zone refining?	1
3	Name a metal which can be refined by electrolytic method.	1
4	Name the metal extracted by *Hall-Heroult* process.	1
5	Suggest a condition under which magnesium could reduce alumina.	2
6	Why the reduction of a metal oxide is easier if the metal formed is in liquid state at the temperature of reduction?	2
7	The reaction, $Cr_2O_3 + 2\ Al \rightarrow Al_2O_3 + 2Cr$ ($\Delta G^0 = -421$ kJ) is thermodynamically feasible as is apparent from the Gibbs energy value. Why does it not take place at room temperature?	2
8	Copper can be extracted by hydrometallurgy but not zinc. Explain why?	2
9	Write chemical reactions taking place in the extraction of zinc from zinc blende.	2
10	Write two basic requirements for refining of a metal by Mond process and by Van Arkel Method.	3
11	Explain the following : (a) CO2 is a better reducing agent below 710K whereas CO is a better reducing agent above 710K. (b) Generally sulphide ores are converted into oxides before reduction. (c) Silica is added to the sulphide ore of copper in the reverberatory furnace.	3

PRACTICE TEST

Level B

CLASS: XII

Unit 6: GENERAL PRINCIPLES AND PROCESSES OF ISOLATION OF ELEMENTS

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	How is 'cast iron' different from 'pig iron"?	1
2	What is the role of cryolite in the metallurgy of aluminium?	1
3	Out of C and CO, which is a better reducing agent for ZnO ?	1
4	How can we extract Copper from Low Grade Ores and Scraps	1
5	Define and differentiate between "minerals" and "ores".	2
6	Giving example differentiate between 'roasting' and 'calcination'.	2
7	Name the processes from which chlorine is obtained as a by-product. What will happen if an aqueous solution of NaCl is subjected to electrolysis?	2
8	Match the items of Column I with the items of Column II :	2

Column I	Column II
(A) Coloured bands	(1) Zone refining
(B) Impure metal to volatile complex	(2) Fractional distillation
(C) Purification of Ge and Si	(3) Mond Process
(D) Purification of mercury	(4) Chromatography
	(5) Liquation

9	Describe the extraction of zinc .	2
10	Outline the principles of refining of metals by the following methods: (i) Zone refining (ii) Electrolytic refining (iii) Vapour phase refining	3
11	Give one example of a metal which can be refined by **(a)** Distillation **(b)** Liquation **(f)** Chromatographic methods	3

PRACTICE TEST

Level C

CLASS: XII

Unit 6: GENERAL PRINCIPLES AND PROCESSES OF ISOLATION OF ELEMENTS

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	What is the role of graphite rod in the electrometallurgy of aluminium?	1
2	The mixture of compounds A and B is passed through a column of Al2O3 by using alcohol as eluant. Compound A is eluted in preference to compound B. Which of the compounds A or B, is more readily adsorbed on the column?	1
3	Why copper *matte* is put in silica lined converter?	1
4	What is the role of cryolite in the metallurgy of aluminium?	1
5	The value of $\Delta fG0$ for formation of Cr_2O_3 is – 540 $kJmol^{-1}$and that of Al_2O_3 is – 827 $kJmol^{-1}$. Is the reduction of Cr_2O_3 possible with Al?	2
6	Describe a method for refining nickel.	2
7	How do we separate two sulphide ores by Froth Floatation Method? Explain with an example.	2
8	Which method is used for refining Zr and Ti? Explain with equation.	2
9	Write the chemical reactions involved in the extraction of gold by cyanide process. Also give the role of zinc in the extraction	2
10	Match the items of Column I with items of Column II-	

Column I	Column II
(A) Pendulum	(1) Chrome steel
(B) Malachite	(2) Nickel steel
(C) Calamine	(3) Na3AlF6
(D) Cryolite	(4) CuCO3.Cu (OH)2
(E) Cyanide process	(5) (5) ZnCO3
(F) Froth Floatation Process	(6) Ultrapure Ge
(G) Electrolytic reduction	(7) Dressing of ZnS
(H) Zone refining	(8) Extraction of Al
	(9) Extraction of Au
	(10) Purification of Ni

3

11 Define the following terms each with one example- 3

i. Roasting
ii. Calcinations
iii. smelting

PRACTICE TEST
Level A
CLASS: XII
Unit 7: The p-Block Elements

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	The oxides of the type E_2O_3 of nitrogen and phosphorus are acidic. True/False?	1
2	Complete the reaction: $Ca_3N_2 + H_2O \rightarrow$	1
3	Write the reaction for What happens when ammoniumdichromate is heated?	1
4	Write the reaction for What happens when bariumazide is heated?	1
5	Explain why dinitrogen is relatively less reactive while phosphorous is highly reactive.	2
6	Mention the conditions required to maximise the yield of ammonia in Habers process.	2
7	Answer the following: i. Why does PCl_3 fume in moisture? ii. What happens when sulphur dioxide is passed through an aqueous solution of Fe(III) salt? OR Arrange the following in the order of property indicated for each set: (ii) HF, HCl, HBr, HI - increasing acid strength. (iii) NH3, PH3, AsH3, SbH3, BiH3 – increasing base strength.	2
8	i. Elements of Group 16 generally show lower value of first ionisation enthalpy compared to the corresponding periods of group 15. Why? ii. What inspired N. Bartlett for carrying out reaction between Xe and PtF_6? OR i. With what neutral molecule is ClO^- isoelectronic? ii. Arrange the following in the order of increasing bond dissociation enthalpy. F_2, Cl_2, Br_2, I_2	2
9	Write the conditions to maximise the yield of H_2SO_4 by Contact process.	2
10	1. Halogens have maximum negative electron gain enthalpy in the respective periods of the periodic table. Why? 2. Although electron gain enthalpy of fluorine is less negative as compared to chlorine, fluorine is a stronger oxidising agent than chlorine. Why? 3. Fluorine exhibits only -1 oxidation state whereas other halogens exhibit + 1, + 3, + 5 & + 7 oxidation states also. Explain.	3
11	Answer the following- a. How does ammonia react with a solution of Cu^{2+}? b. Why does NO_2 dimerise? c. What is the covalence of nitrogen in N_2O_5?	3

PRACTICE TEST

Level B

CLASS: XII

Unit 7: The p-Block Elements

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	In the case of nitrogen, all oxidation states from +1 to +4 tend to disproportionate in acid solution. Write the disproportionation reaction of HNO_2.	1
2	The maximum covalency of nitrogen is _____.	1
3	Phosphorous can form PF_6^- . True/False?	1
4	Name the strongest reducing agent among all the hydrides of group 15.	1
5	Write the sequence of the reactions involved in Ring Test of nitrogen.	2
6	Answer the following- i. Why does PCl_5 in solid state exists as ionic compound in solid state? ii. What happens when PCl_5 is heated?	2
7	i. Elements of Group 16 generally show lower value of first ionization enthalpy compared to the corresponding periods of group 15. Why? ii. Why does NH_3 form hydrogen bond but PH_3 does not? OR i. Why are the elements of Group 18 known as noble gases? ii. Why is helium used in diving apparatus?	2
8	i. H_2S is less acidic than H_2Te. Explain why? ii. H_2O a liquid and H_2S a gas. Explain why? OR i. Explain why inspite of nearly the same electronegativity, nitrogen forms hydrogen bonding while chlorine does not. ii. Why are halogens coloured?	2
9	i. Why does O_3 act as a powerful oxidising agent? ii. Which form of sulphur shows paramagnetic behaviour? Why?	2
10	Explain: i. Why Nitrogen exists as diatomic molecule and phosphorus as P_4? ii. Why does nitrogen show catenation properties less than phosphorus? iii. Why is dioxygen a gas but sulphur a solid?	3
11	Write the reaction for what happens when- i. Orthophophorous acid (or phosphorous acid) is heated. ii. $AgNO_3 + H_2O + H_3PO_2 \rightarrow$ iii. H_3PO_3 is heated?	3

Level C
CLASS: XII
Unit 7: The p-Block Elements

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	The single N–N bond is weaker than the single P–P bond. True/False?	1
2	The oxides of the type E_2O_3 of arsenic and antimony are amphoteric. True/False?	1
3	Complete the reaction: $Ca_3P_2 + H_2O \rightarrow$	1
4	PH3 has lower boiling point than NH3. Why?	1
5	Though nitrogen exhibits +5 oxidation state, it does not form pentahalide. Give reason.	2
6	Why is BiH_3 the strongest reducing agent amongst all the hydrides of Group 15 elements?	2
7	Provide chemical evidence to prove that- i. PH_3 is basic in nature? ii. All the five P-Cl bonds in PCl_5 are not of same strength. OR i. Discuss the molecular shape of BrF_3 on the basis of VSEPR theory. ii. Why is ICl more reactive than I_2?	2
8	Gove two examples to show the anomalous behaviour of fluorine. OR Arrange the following in the order of property indicated for each set: (i) HF, HCl, HBr, HI - increasing acid strength. iii) NH_3, PH_3, AsH_3, SbH_3, BiH_3 – increasing base strength.	2
9	1. Considering the parameters such as bond dissociation enthalpy, electron gain enthalpy and hydration enthalpy, compare the oxidising power of F_2 and Cl_2. 2. Write balanced chemical equation for the reaction of Cl_2 with hot and concentrated NaOH.	2
10	a. Give the reason for bleaching action of Cl_2. b. Name two poisonous gases which can be prepared from chlorine gas. c. When HCl reacts with finely powdered iron, it forms ferrous chloride and not ferric chloride. Why?	3
11	On heating compound (A) gives a gas (B) which is a constituent of air. This gas when treated with 3 mol of hydrogen (H2) in the presence of a catalyst gives another gas (C) which is basic in nature. Gas C on further oxidation in moist condition gives a compound (D) which is a part of acid rain. Identify compounds (A) to (D) and also give necessary equations of all the steps involved.	3

PRACTICE TEST

Level A

CLASS: XII

Unit 8: The d- and f- Block elements

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	The electronic configuration of a transition element X in +3 oxidation state is [Ar]$3d^5$. What is its atomic number?	1
2	Which acid is used to make the medium acidic in oxidation reactions of $KMnO_4$ in acidic medium?	1
3	Name the oxometal anions of the first series of the transition metals in which the metal exhibits the oxidation state equal to its group number.	1
4	Which of the *d*-block elements may not be regarded as the transition elements?	1
5	With the help of suitable reaction explain why colour of $KMnO_4$ disappears when oxalic acid is added to its solution in acidic medium.	2
6	What is lanthanoid contraction? What are the consequences of lanthanoid contraction?	2
7	What are the characteristics of the transition elements and why are they called transition elements?	2
8	Describe the preparation of potassium dichromate from iron chromite ore. What is the effect of increasing pH on a solution of potassium dichromate?	2
9	write the ionic equations for its reaction of potassium permanganate with: (i) iodide (ii) iron(II) solution	2
10	Match the catalysts given in column I with the process given in column II	

Column I (Catalyst)	Column II (Process)	
Cu_2Cl_2	Ziegler Natta catalyst	
V_2O_5	Sandmeyer Reaction	
$TiCl_4 + Al(CH_3)_3$	Contact Process	3

11	When chromite ore (A) is fused with sodium carbonate in free excess of air and the product is dissolved in water, a yellow solution of compound (B) is obtained. After treatment of this yellow solution with sulphuric acid, compound (C) can be crystalized from the solution. When compound (C) is treated with KCl, orange crystals of compound (D) crystallizes out. Identify A to D and also write the reaction involved.	3

PRACTICE TEST

Level B

CLASS: XII

Unit 8: The d- and f- Block elements

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Which of the following configuration of transition element will show highest magnetic moment- a.$3d^7\,4s^2$ b. $3d^5 4s^2$ c.$3d^8 4s^2$ d. $3d^2 4s^2$	1
2	Why is HCl not used to make the medium acidic in oxidation reactions of $KMnO_4$ in acidic medium?	1
3	In what way is the electronic configuration of the transition elements different from that of the non-transition elements?	1
4	Write the ionic equations for reaction of potassium permanganate with H_2S.	1
5	When orange solution containing $Cr_2O_7^{2-}$ ion is treated with an alkali, an yellow solution is formed and when H^+ ions are added to yellow solution, an orange solution is obtained. Explain why does this happen?	2
6	Explain giving reasons: (i) Transition metals and many of their compounds show paramagnetic behavior (ii) The enthalpies of atomization of the transition metals are high.	2
7	How is the variability in oxidation states of transition metals different from that of the non-transition metals? Illustrate with examples.	2
8	Describe the preparation of potassium permanganate. Write the reaction involved when acidified permanganate solution react with SO_2.	2
9	Compare the chemistry of actinoids with that of the lanthanoids with special reference to: (i) electronic configuration (iii) oxidation state (ii) atomic and ionic sizes and (iv) chemical reactivity.	2
10	Match the properties given in column I with the metal given in column II **Column I (Property)** / **Column II (Metal)** i. An element which can show +8 oxidation element ii. 3d block element that can show upto +7 oxidation state. iii. 3d block elements with highest melting point a. Mn b. Cr c. Os d. Fe	3
11	When an oxide of manganese (A) is fused with KOH in the presence of an oxidizing agent and dissolved in water, it gives a dark green solution of compound (B). Compound (B) disproportionate in neutral or acidic solution to give purple compound (C). An alkaline solution of compound (C) oxidizes potassium iodide solution to a compound (D) and compound (A) is also formed. Identify compound A to D and write the reaction involved.	3

PRACTICE TEST

Level C

CLASS: XII

Unit 8: The d- and f- Block elements

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	What is the common oxidation state for all the lanthanoids?	1
2	Why is HCl not used to make the medium acidic in oxidation reactions of $KMnO_4$ in acidic medium?	1
3	Write the electronic configuration of Cu (at. No. 29).	1
4	Complete the reaction: $Cu^{2+} + I^- \rightarrow$	1
5	The halides of transition elements become more covalent with increasing oxidation state of the metal. Why?	2
6	Explain giving reasons: i. The transition metals generally form coloured compounds. ii. Transition metals and their many compounds act as good catalyst.	2
7	What are interstitial compounds? Why are such compounds well known for transition metals?	2
8	How would you account for the following: (i) Of the *d*4 species, Cr^{2+} is strongly reducing while manganese (III) is strongly oxidizing. (ii) Cobalt (II) is stable in aqueous solution but in the presence of complexing reagents it is easily oxidised.	2
9	Why is the E^0 value for the Mn^{3+}/Mn^{2+} couple much more positive than that for Cr^{3+}/Cr^{2+} or Fe^{3+}/Fe^{2+}? Explain.	2
10	Match the solutions given in column I with the colour given in column II **Column I (Aqueous solution of salt)** i. $FeSO_4.7H_2O$ ii. $NiCl_2.4H_2O$ iii. $CoCl_2.6H_2O$ iv. Cu_2Col_2 **Column II (Colour)** a. Green b. Light pink c. Blue d. Pale green e. Pink f. Colourless	3
11	A violet coloured compound of manganese (A) decomposes on heating to liberate oxygen and compound (B) and (C) of manganese are formed. Compound (C) reacts with KOH in the presence of potassium nitrate to give compound (B). On heating compound (C) with conc. $H_2SO_4$and NaCl, chlorine gas is liberated and a compound (D) of manganese along with other products is formed. Identify compound A to D and also write the reactions involved.	3

PRACTICE TEST

Level A

CLASS: XII

Unit 9: Coordination Compounds

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Write the formula of - Tris(ethane–1,2–diamine) chromium(III) chloride.	1
2	Indicate the types of isomerism exhibited by the following complexe and draw the structures of their isomers: $[Co(NH_3)_5(NO_2)](NO_3)_2$	1
3	Using IUPAC norms write the systematic names of: $[Co(en)_3]^{3+}$	1
4	How many ions are produced from the complex $Co(NH_3)_6Cl_2$ in solution?	1
5	$[Fe(CN)_6]^{4-}$ and $[Fe(H_2O)_6]^{2+}$ are of different colours in dilute solutions. Why?	2
6	What is spectro-chemical series? Explain the difference between a weak field ligand and a strong field ligand.	2
7	Explain with two examples each of the following terms: i. coordination entity ii. ligand.	2
8	Draw all the isomers (geometrical and optical) of: $[Co(NH_3)_2Cl_2(en)]^+$	2
9	$[NiCl_4]^{2-}$ is paramagnetic while $[Ni(CO)_4]$ is diamagnetic though both are tetraherdral. Why?	2
10	Some important extraction processes of metals, like those of silver and gold, make use of complex formation. Gold, for example, combines with cyanide in the presence of oxygen and water to form the coordination entity $[Au(CN)_2]^-$ in aqueous solution. Gold can be separated in metallic form from this solution by the addition of zinc. **Based on the above paragraph answer the following questions-** i. Write the chemical reaction for "Gold combines with cyanide in the presence of oxygen and water to form the coordination entity $[Au(CN)_2]^-$ in aqueous solution. ii. Write the chemical reaction for "Gold can be separated in metallic form from this solution by the addition of zinc." iii. Write IUPAC name of : $[Au(CN)_2]^-$	3
11	Coordination compounds are of great importance in biological systems. The pigment responsible for photosynthesis, chlorophyll, is a coordination compound of magnesium. Haemoglobin, the red pigment of blood which acts as oxygen carrier is a coordination compound of iron. Vitamin B_{12}, cyanocobalamine, the anti–pernicious anaemia factor, is a coordination compound of cobalt. Among the other compounds of biological importance with coordinated metal ions are the enzymes like, carboxypeptidase A and carbonic anhydrase (catalysts of biological systems). **Based on the above paragraph answer the following questions-** i. Name the metal present in chlorophyll ii. Name the metal present in- Haemoglobin iii. What is the chemical name of Vitamin B_{12}?	3

PRACTICE TEST

Level B

CLASS: XII

Unit 9: Coordination Compounds

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Write the formulas of- Amminebromidochloridonitrito-N-platinate(II).	1
2	Out of the following two coordination entities which is chiral (optically active)? (a) *cis*-$[CrCl_2(ox)_2]^{3-}$ (b) *trans*-$[CrCl_2(ox)_2]^{3-}$	1
3	Using IUPAC norms write the systematic name of the following compound. $[Co(NH_3)_4Cl(NO_2)]Cl$	1
4	What is meant by chelate effect? Give an example.	1
5	A solution of $[Ni(H_2O)_6]^{2+}$ is green but a solution of $[Ni(CN)_4]^{2-}$ is colourless. Explain.	2
6	Draw figure to show the splitting of *d* orbitals in an octahedral crystal field.	2
7	Explain with examples each of the following terms: i. homoleptic and ii. heteroleptic.	2
8	Draw all the isomers (geometrical and optical) of the complex $[CoCl_2(en)_2]^+$.	2
9	On the basis of valence bond theory explain that $[Ni(CN)_4]^{2-}$ ion with square planar structure is diamagnetic and the $[NiCl_4]^{2-}$ ion with tetrahedral geometry is paramagnetic.	2
10	Hardness of water is estimated by simple titration with Na2EDTA. The Ca^{2+} and Mg^{2+} ions form stable complexes with EDTA. The selective estimation of these ions can be done due to difference in the stability constants of calcium and magnesium complexes. Answer the following questions based on the above paragraph – i. What is EDTA? ii. Write the structure of EDTA iii. What is the denticity of EDTA	3
11	Define the following terms- i. Ambidentate ligand ii. Coordination polyhedron iii. Spectrochemical series.	3

PRACTICE TEST

Level C

CLASS: XII

Unit 9: Coordination Compounds

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Write the formula of - Iron(III) hexacyanidoferrate(II).	1
2	Give evidence that $[Co(NH_3)_5Cl]SO_4$ and $[Co(NH_3)_5SO_4]Cl$ are ionisation isomers.	1
3	Using IUPAC norms write the systematic name of $CrCl_3(py)_3$.	1
4	What is the oxidation number of cobalt in $K[Co(CO)_4]$?	1
5	$[Cr(NH_3)_6]^{3+}$ is paramagnetic while $[Ni(CN)_4]^{2-}$ is diamagnetic. Explain why?	2
6	Write all the geometrical isomers of $[Pt(NH_3)(Br)(Cl)(py)]$ and how many of these will exhibit optical isomers?	2
7	$FeSO_4$ solution mixed with $(NH_4)_2SO_4$ solution in 1:1 molar ratio gives the test of Fe^{2+} ion but $CuSO_4$ solution mixed with aqueous ammonia in 1:4 molar ratio does not give the test of Cu2+ ion. Explain why?	2
8	Draw all the isomers (geometrical and optical) of: $[Co(NH_3)Cl(en)_2]^{2+}$	2
9	$[Fe(H_2O)_6]^{3+}$ is strongly paramagnetic whereas $[Fe(CN)_6]^{3-}$ is weakly paramagnetic .Explain.	2
10	Coordination compounds are used as catalysts for many industrial processes. Examples include rhodium complex, $[(Ph_3P)_3RhCl]$, a Wilkinson catalyst, is used for the hydrogenation of alkenes. In black and white photography, the developed film is fixed by washing with hypo solution which dissolves the undecomposed AgBr to form a complex ion, $[Ag(S_2O_3)_2]^{3-}$. Answer the following questions- i. Write IUPAC name of $[(Ph_3P)_3RhCl]$ ii. Write IOUPAC name of $[Ag(S_2O_3)_2]^{3-}$ iii. What is the oxidation number of Rh in $[(Ph_3P)_3RhCl]$	3
11	There is growing interest in the use of chelate therapy in medicinal chemistry. An example is the treatment of problems caused by the presence of metals in toxic proportions in plant/animal systems. Thus, excess of copper and iron are removed by the chelating ligands D penicillamine and desferrioxime B via the formation of coordination compounds. EDTA is used in the treatment of lead poisoning. Some coordination compounds of platinum effectively inhibit the growth of tumours. Examples are: *cis*–platin and related compounds. Answer the following questions- i. What do you mean by chelating ligand? Give one example. ii. Draw the structure of cis-platin. iii. What is the coordination number of the central metal ion in cis-platin	3

PRACTICE TEST

Level A

CLASS: XII

Unit 10: HALOALKANES AND HALOARENES

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Write structures of the following compounds: (i) 2-Chloro-3-methylpentane (ii) 1-Chloro-4-ethylcyclohexane	1
2	Name the following halides according to IUPAC system and classify them as alkyl, allyl, benzyl (primary, secondary, tertiary), vinyl or aryl halides: (i) $(CH_3)_2CHCH(Cl)CH_3$ (ii) $CH_3CH_2CH(CH_3)CH(C_2H_5)Cl$	1
3	Complete the reaction: $CH_3CH_2CH_2OH + SOCl_2 \rightarrow$	1
4	Arrange the compounds of each set in order of reactivity towards SN2 displacement: 1-Bromobutane, 1-Bromo-2,2-dimethylpropane, 1-Bromo-2-methylbutane, 1-Bromo-3-methylbutane.	1
5	Out of $C_6H_5CH_2Cl$ and $C_6H_5CHClC_6H_5$, which is more easily hydrolyzed by aqueous KOH? Explain why?	2
6	Write a chemical test to distinguish between the following pairs of compounds- i. Ethanol and Methanol ii. Penta-2-ol and Penta-3-ol	2
7	What happens when (i) n-butyl chloride is treated with alcoholic KOH, (ii) methyl chloride is treated with KCN?	2
8	Arrange each set of compounds in order of increasing boiling points. (i) Bromomethane, Bromoform, Chloromethane, Dibromomethane. (ii) 1-Chloropropane, Isopropyl chloride, 1-Chlorobutane.	2
9	How will you bring about the following conversions? (i) Ethanol to but-1-yne (ii) Ethane to bromoethene	2
10	Among the isomeric alkanes of molecular formula C_5H_{12}, identify the one that on photochemical chlorination yields (i) A single monochloride. (ii) Three isomeric monochlorides. (iii) Four isomeric monochlorides.	3
11	Illustrate the following reactions each with one example: i. Wurtz-Fittig reaction ii. Fittig reaction iii. Sandmeyer reaction	3

PRACTICE TEST

Level B

CLASS: XII

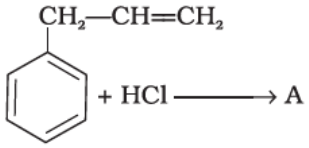
Unit 10: HALOALKANES AND HALOARENES

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Write structures of the following compounds: (i) 4-tert. Butyl-3-iodoheptane (ii) 1,4-Dibromobut-2-ene	1
2	Why is sulphuric acid not used during the reaction of alcohols with KI?	1
3	Name the following halides according to IUPAC system and classify them as alkyl, allyl, benzyl (primary, secondary, tertiary), vinyl or aryl halides: (i) $CH_3CH_2C(CH_3)_2CH_2I$ (ii) $(CH_3)_3CCH_2CH(Br)C_6H_5$	1
4	Complete thr reaction: $CH_3CH_2Br + KCN \rightarrow$	1
5	Write structures of different dihalogen derivatives of propane.	2
6	A hydrocarbon C_5H_{10} does not react with chlorine in dark but gives a single monochloro compound C_5H_9Cl in bright sunlight. Identify the hydrocarbon. Write its structure and IUPAC name.	2
7	Which compound in each of the following pairs will react faster in SN2 reaction with –OH? (i) CH_3Br or CH_3I (ii) $(CH_3)_3CCl$ or CH_3Cl	2
8	How will you bring about the following conversions? (i) Bromomethane to propanone (ii) But-1-ene to but-2-ene	2
9	Illustrate the following each with one example: i. Finkelstein reaction ii. Swartz Reaction	2
10	Explain why (i) The dipole moment of chlorobenzene is lower than that of cyclohexyl chloride? (ii) Alkyl halides, though polar, are immiscible with water? (iii) Grignard reagents should be prepared under anhydrous conditions?	3
11	Write the equations for the preparation of 1-iodobutane from (i) 1-butanol (ii) 1-chlorobutane (iii) but-1-ene.	3

PRACTICE TEST
Level C
CLASS: XII
Unit 10: HALOALKANES AND HALOARENES

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Name the following halides according to IUPAC system and classify them as alkyl, allyl, benzyl (primary, secondary, tertiary), vinyl or aryl halides: (i) $CH_3CH(CH_3)CH(Br)CH_3$ (ii) *p*-$ClC_6H_4CH_2CH(CH_3)_2$	1
2	Write the structures of the following organic halogen compounds. (i) 1-Chloro-4-ethylcyclohexane (ii) 2-(2-Chlorophenyl)-1-iodooctane	1
3	Which one of the following has the highest dipole moment? (i) CH_2Cl_2 (ii) $CHCl_3$ (iii) CCl_4	1
4	What is "A" in the following reaction-  	1
5	How will you bring about the following conversions? (i) Propene to propyne (ii) Ethanol to ethyl fluoride	2
6	Write the mechanism of the following reaction: nBuBr + KCN → nBuCN	2
7	Arrange the compounds of each set in order of reactivity towards SN2 displacement: (i) 2-Bromo-2-methylbutane, 1-Bromopentane, 2-Bromopentane (ii) 1-Bromo-3-methylbutane, 2-Bromo-2-methylbutane, 2-Bromo-3-methylbutane	2
8	Write a chemical test to distinguish between the following pairs of compounds- i.Ethanol and Phenol ii.Benzylalcohol and Cyclohexanol	2
9	What happens when (i) n-butyl chloride is treated with alcoholic KOH, (ii) methyl bromide is treated with sodium in the presence of dry ether,	2
10	Why are aryl halides less reactive towards nucleophilic substitution reactions than alkyl halides? How can we enhance the reactivity of aryl halides?	3
11	Primary alkyl halide C_4H_9Br (a) reacted with alcoholic KOH to give compound (b). Compound (b) is reacted with HBr to give (c) which is an isomer of (a). When (a) is reacted with sodium metal it gives compound (d), C_8H_{18} which is different from the compound formed when n-butyl bromide is reacted with sodium. Give the structural formula of (a) and write the equations for all the reactions.	3

PRACTICE TEST

Level A

CLASS: XII

Unit 11: ALCOHOLS, PHENOLS AND ETHERS

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Write IUPAC name of $(CH_3)_2CH\text{-}OCH_3$.	1
2	Which of the following is most acidic? (i) Benzyl alcohol (ii) Cyclohexanol (iii) Phenol (iv) *m*-Chlorophenol	1
3	Arrange the following compounds in increasing order of boiling point: Propan-1-ol, butan-1-ol, butan-2-ol, pentan-1-ol	1
4	What is the structure and IUPAC name of glycerol?	1
5	Out of *o*-nitrophenol and *p*-nitrophenol, which is more volatile? Explain.	2
6	Write the mechanism of hydration of ethene to yield ethanol.	2
7	You are given benzene, conc. H_2SO_4 and NaOH. Write the equations for the preparation of phenol using these reagents.	2
8	Name the reagents used in the following reactions: (i) Oxidation of a primary alcohol to carboxylic acid. (ii) Oxidation of a primary alcohol to aldehyde. (iii) Bromination of phenol to 2,4,6-tribromophenol. (iv) Benzyl alcohol to benzoic acid.	2
9	How are the following conversions carried out? (i) Propene → Propan-2-ol. (ii) Benzyl chloride → Benzyl alcohol.	2
10	Explain the following with an example. (i) Kolbe's reaction. (ii) Reimer-Tiemann reaction. (iii) Williamson ether synthesis.	3
11	Show how will you synthesise: (i) 1-phenylethanol from a suitable alkene. (ii) cyclohexylmethanol using an alkyl halide by an SN^2 reaction. (iii) pentan-1-ol using a suitable alkyl halide?	3

PRACTICE TEST

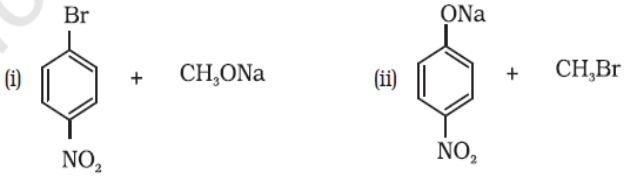
Level B

CLASS: XII

Unit 11: ALCOHOLS, PHENOLS AND ETHERS

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Write IUPAC name of m-cresol.	1
2	What is denatured alcohol?	1
3	Name the reagents used in the following reactions: (v) Dehydration of propan-2-ol to propene. (vi) Butan-2-one to butan-2-ol.	1
4	Give reason for the higher boiling point of ethanol in comparison to methoxymethane.	1
5	Out of 2-chloroethanol and ethanol which is more acidic and why?	2
6	Arrange the following compounds in increasing order of acidity and give a suitable explanation. Phenol, *o*-nitrophenol, *o*-cresol	2
7	Give the equations of reactions for the preparation of phenol from cumene.	2
8	How are the following conversions carried out? (i) Ethyl magnesium chloride → Propan-1-ol. (ii) Methyl magnesium bromide → 2-Methylpropan-2-ol.	2
9	Which of the following is an appropriate set of reactants for the preparation of 1-methoxy-4-nitrobenzene and why?	2



10 Match the items of column I with items of column II.

column I	column II
(i) Antifreeze used in car engine	(a) Neutral ferric chloride
(ii) Solvent used in perfumes	(b) Glycerol
(iii) Starting material for picric acid	(c) Methanol
(iv) Wood spirit	(d) Phenol
(v) Reagent used for detection of phenolic group	(e) Ethleneglycol
(vi) By product of soap industry used in cosmetics	(f) Ethanol

3

11 Explain the following with an example.
(i) Kolbe's reaction.
(ii) Reimer-Tiemann reaction.
(iii) Williamson ether synthesis. 3

PRACTICE TEST

Level C

CLASS: XII

Unit 11: ALCOHOLS, PHENOLS AND ETHERS

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Name the product obtained on monochlorination of toluene in sunlight followed by hydrolysis with aq. NaOH.	1
2	How many alcohols with molecular formula C4H10O are chiral in nature?	1
3	Write IUPAC name of CH_3-CHCl-CH_2-CH_2-CH(OH)-CH_3	1
4	What happens when benzene diazonium chloride is heated with water?	1
5	Why is the reactivity of all the three classes of alcohols with conc. HCl and $ZnCl_2$ (Lucas reagent) different?	2
6	Explain why is *ortho* nitrophenol more acidic than *ortho* methoxyphenol ?	2
7	Explain how does the –OH group attached to a carbon of benzene ring activate it towards electrophilic substitution?	2
8	Write the mechanism of acid dehydration of ethanol to yield ethene.	2
9	Write the names of reagents and equations for the preparation of the following ethers by Williamson's synthesis: (i) 1-Propoxypropane (ii) Ethoxybenzene (iii) 2-Methoxy-2-methylpropane (iv) 1-Methoxyethane	2
10	Match the items of column I with items of column II.	3

column I	column II
(i) Methanol	(a) Conversion of phenol to *o* -hydroxysalicylic acid
(ii) Kolbe's reaction	(b) Ethyl alcohol
(iii) Williamson's synthesis	(c) Conversion of phenol to salicylaldehyde
(iv) Conversion of 2° alcohol to ketone	(d) Wood spirit
(v) Reimer-Tiemann reaction	(e) Heated copper at 573K
(vi) Fermentation	(f) Reaction of alkyl halide with sodium alkoxide

11	Explain the following with an example. (i) Kolbe's reaction. (ii) Reimer-Tiemann reaction. (iii) Williamson ether synthesis.	3

PRACTICE TEST

Level A

CLASS: XII

Unit 12: ALDEHYDES, KETONES & CARBOXYLIC ACID

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Write the structures of the following compounds- (i) Di-sec. butyl ketone (ii) 4-Fluoroacetophenone	1
2	Write the structures of products of the following reactions- $(C_6H_5CH_2)_2Cd + 2\ CH_3COCl \rightarrow$	1
3	Give names of the reagents to bring about the transformation of But-2-ene into ethanal.	1
4	Give the IUPAC names of the following compounds: (i) Ph CH_2CH_2COOH (ii) $(CH_3)_2C=CHCOOH$	1
5	Would you expect benzaldehyde to be more reactive or less reactive in nucleophilic addition reactions than propanal? Explain your answer.	2
6	Illustrate the following reaction with one example: i. Clemmensen reduction ii. Wolff-Kishner reduction	2
7	Write the sequence of reactions involved in the following conversions- i. Bromobenzene into benzoic acid ii. Phenylethene (Styrene) into benzoic acid	2
8	Which acid of each pair shown here would you expect to be stronger? (i) CH_3COOH or CH_2FCOOH (ii) CH_2FCOOH or $CH_2ClCOOH$	2
9	What is meant by the following terms? Give an example of the reaction in each case. i. Hemiacetal ii. Oxime	2
10	Give plausible explanation for each of the following: (i) Cyclohexanone forms cyanohydrin in good yield but 2,2,6 trimethylcyclohexanone does not. (ii) There are two –NH2 groups in semicarbazide. However, only one is involved in the formation of semicarbazones. (iii) During the preparation of esters from a carboxylic acid and an alcohol in the presence of an acid catalyst, the water or the ester should be removed as soon as it is formed.	3
11	Give simple chemical tests to distinguish between the following pairs of compounds. (i) Propanal and Propanone (ii) Acetophenone and Benzophenone (iii) Phenol and Benzoic acid	3

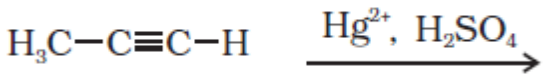
PRACTICE TEST

Level B

CLASS: XII

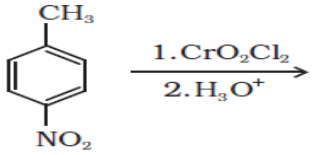
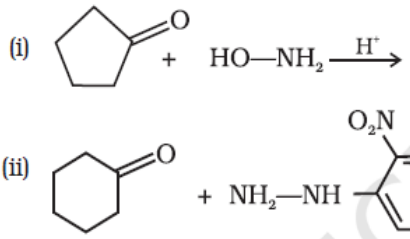
Unit 12: ALDEHYDES, KETONES & CARBOXYLIC ACID

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Write the structures of the following compounds- (i) 2-Hydroxycyclopentane carbaldehyde (ii) 4-Oxopentanal	1
2	Write the structures of products of the following reactions- 	1
3	Arrange the following compounds in the increasing order of their boiling points: $CH_3CH_2CH_2CHO$, $CH_3CH_2CH_2CH_2OH$, H_5C_2-O-C_2H_5, $CH_3CH_2CH_2CH_3$	1
4	What is Jones reagent? What is its function?	1
5	Arrange the following compounds in increasing order of their reactivity in nucleophilic addition reactions. (i) Ethanal, Propanal, Propanone, Butanone. (ii) Benzaldehyde, *p*-Tolualdehyde, *p*-Nitrobenzaldehyde, Acetophenone.	2
6	Illustrate the following reaction with one example: i. Aldol condensation ii. *Cannizzaro reaction:*	2
7	Write the sequence of reactions involved in the following conversions- i. Cyclohexene to hexane-1,6-dioic acid ii. Ethylbenzene into Benzoic acid	2
8	Which acid of each pair shown here would you expect to be stronger? (i) $CH_2FCH_2CH_2COOH$ or CH_3CHFCH_2COOH (ii) [p]F_3C-C_6H_4-COOH or [p]H_3C-C_6H_4-COOH	2
9	What is meant by the following terms? Give an example of the reaction in each case. i. Cyanohydrin ii. Semicarbazone	2
10	An organic compound (A) (molecular formula C8H16O2) was hydrolysed with dilute sulphuric acid to give a carboxylic acid (B) and an alcohol (C). Oxidation of (C) with chromic acid produced (B). (C) on dehydration gives but-1-ene. Write equations for the reactions involved.	3
11	Give simple chemical tests to distinguish between the following pairs of compounds. (i) Benzoic acid and Ethyl benzoate (ii) Pentan-2-one and Pentan-3-one (iii) Benzaldehyde and Acetophenone	3

PRACTICE TEST
Level C
CLASS: XII
Unit 12: ALDEHYDES, KETONES & CARBOXYLIC ACID

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Write the structures of the following compounds- (i) α-Methoxypropionaldehyde (ii) 3-Hydroxybutanal	1
2	Write the structures of products of the following reactions-  	1
3	Arrange the following compounds in increasing order of their boiling points. CH_3CHO, CH_3CH_2OH, CH_3OCH_3, $CH_3CH_2CH_3$	1
4	What is Bayer's regent? What is its function?	1
5	Predict the products of the following reactions:  	2
6	Illustrate the following reaction with one example: i. Hell-Volhard-Zelinsky reaction ii. Hofmann bromamaide reaction	2
7	Write the sequence of reactions involved in the following conversions- iii. 3-Nitrobromobenzene to 3-nitrobenzoic acid iv. Benzyl alcohol to phenylethanoic acid	2
8	Arrange the following compounds in increasing order of their property as indicated: (i) $CH_3CH_2CH(Br)COOH$, $CH_3CH(Br)CH_2COOH$, $(CH_3)_2CHCOOH$, $CH_3CH_2CH_2COOH$ (acid strength) (ii) Benzoic acid, 4-Nitrobenzoic acid, 3,4-Dinitrobenzoic acid, 4-Methoxybenzoic acid (acid strength)	2
9	What is meant by the following terms? Give an example of the reaction in each case. i. Imine ii. Schiff's base	2
10	Although phenoxide ion has more number of resonating structures than carboxylate ion, carboxylic acid is a stronger acid than phenol. Why?	3
11	An organic compound contains 69.77% carbon, 11.63% hydrogen and rest oxygen. The molecular mass of the compound is 86. It does not reduce Tollens' reagent but forms an addition compound with sodium hydrogensulphite and give positive iodoform test. On vigorous oxidation it gives ethanoic and propanoic acid. Write the possible structure of the compound.	3

PRACTICE TEST

Level A

CLASS: XII

Unit 13: AMINES

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Which of the following is a 3° amine? (i) 1-methylcyclohexylamine (ii) Triethylamine (iii) *tert*-butylamine (iv) N-methylaniline	1
2	Write IUPAC name of $CH_2=CHCH_2\ NHCH_3$.	1
3	Amongst the following, the strongest base in aqueous medium is __. (i) CH_3NH_2 (ii) $NCCH_2NH_2$ (iii) $(CH_3)_2\ NH$ (iv) $C_6H_5NHCH_3$	1
4	Benzylamine may be alkylated as shown in the following equation : $C_6H_5CH_2NH_2 + R—X \rightarrow C_6H_5CH_2NHR$ Which of the following alkylhalides is best suited for this reaction through SN^1 mechanism? (i) CH_3Br (ii) C_6H_5Br (iii) $C_6H_5CH_2Br$ (iv) C_2H_5Br	1
5	Arrange the following: (i) In decreasing order of the p*Kb* values: $C_2H_5NH_2$, $C_6H_5NHCH_3$, $(C_2H_5)_2NH$ and $C_6H_5NH_2$ (ii) In increasing order of basic strength: $C_6H_5NH_2$, $C_6H_5N(CH_3)_2$, $(C_2H_5)_2NH$ and CH_3NH_2	2
6	Account for the following: (i) Aniline does not undergo Friedel-Crafts reaction. (ii) Ethylamine is soluble in water whereas aniline is not.	2
7	What is coupling reaction? Under what reaction conditions (acidic/basic), the coupling reaction of aryldiazonium chloride with aniline is carried out?	2
8	i. Predict the product of reaction of aniline with bromine in non-polar solvent such as CS_2. ii. Arrange the following compounds in increasing order of dipole moment. $CH_3CH_2CH_3$, $CH_3CH_2NH_2$, CH_3CH_2OH	2
9	Write the reaction involved in following conversions: (i) nitrobenzene −→acetanilide (ii) acetanilide −→*p*-nitroaniline	2
10	Illustrate the following reaction with one example- i. Gabriel phthalimide synthesis ii. Hofmann bromamide reaction iii. Ammonolysis	3
11	Write test to distinguish the following pairs of compounds- (i) Methylamine and dimethylamine (ii) Secondary and tertiary amines (iii) Ethylamine and aniline	3

PRACTICE TEST

Level B

CLASS: XII

Unit 13: AMINES

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	The best reagent for converting 2–phenylpropanamide into 2-phenylpropanamine is _____. (i) excess H_2 (ii) Br_2 in aqueous NaOH (iii) iodine in the presence of red phosphorus (iv) $LiAlH_4$ in ether	1
2	Hoffmann Bromamide degradation reaction is shown by _____. (i) $ArNH_2$ (ii) $ArCONH_2$ (iii) $ArNO_2$ (iv) $ArCH_2NH_2$	1
3	Complete the reaction: $CH_3NH_2 + HNO_2 \rightarrow$	1
4	Arrange the following: (i) In decreasing order of the p*Kb* values: $C_2H_5NH_2$, $C_6H_5NHCH_3$, $(C_2H_5)_2NH$ and $C_6H_5NH_2$ (ii) In increasing order of basic strength: $C_6H_5NH_2$, $C_6H_5N(CH_3)_2$, $(C_2H_5)_2NH$ and CH_3NH_2	1
5	Explain why CH_3NH_2 is stronger base than CH_3OH?	2
6	Write down the IUPAC name of: i. allyl amine ii. $C_6H_5N(CH_3)_2$	2
7	Match the reaction given in Column I with the statement given in Column II.	2
8	Arrange the following in increasing order of basic strength: a. Aniline, *p*-nitroaniline and *p*-toluidine b. $C_6H_5NH_2$, $C_6H_5NHCH_3$, $C_6H_5CH_2NH_2$.	2
9	Illustrate the following with one example: i. Carbylamine reaction ii. Diazotization	2
10	How will you convert (i) Benzene into aniline (ii) Benzene into N, N-dimethylaniline (iii) $Cl–(CH_2)_4–Cl$ into hexan-1,6-diamine?	3
11	An aromatic compound 'A' on treatment with aqueous ammonia and heating forms compound 'B' which on heating with Br2 and KOH forms a compound 'C' of molecular formula C6H7N. Write the structures and IUPAC names of compounds A, B and C.	3

Column I	Column II
(i) Ammonolysis	(a) Amine with lesser number of carbon atoms
(ii) Gabriel phthalimide synthesis	(b) Detection test for primary amines.
(iii) Hoffmann Bromamide reaction	(c) Reaction of phthalimide with KOH and R—X
(iv) Carbylamine reaction	(d) Reaction of alkylhalides withNH_3

PRACTICE TEST
Level C
CLASS: XII
Unit 13: AMINES

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Which of the following reagents would not be a good choice for reducing an aryl nitro compound to an amine? (i) H_2 (excess)/Pt (ii) $LiAlH_4$ in ether (iii) Fe and HCl (iv) Sn and HCl	1
2	In order to prepare a 1° amine from an alkyl halide with simultaneous addition of one CH_2 group in the carbon chain, the reagent used as source of nitrogen is _____. (i) Sodium amide, $NaNH_2$ (ii) Sodium azide, NaN_3 (iii) Potassium cyanide, KCN (iv) Potassium phthalimide, $C_6H_4(CO)_2N^-K^+$	1
3	Among the given set of reactants, the most appropriate for preparing 2° amine is _____. (i) 2° R—Br + NH_3 (ii) 2° R—Br + NaCN followed by H_2/Pt (iii) 1° R—NH_2 + RCHO followed by H_2/Pt (iv) 1° R—Br (2 mol) + potassium phthalimide followed by H_3O^+/heat	1
4	The best reagent for converting, 2-phenylpropanamide into 1-phenylethanamine is ____. (i) excess H_2/Pt (ii) NaOH/Br_2 (iii) $NaBH_4$/methanol (iv) $LiAlH_4$/ether	1
5	A compound Z with molecular formula C_3H_9N reacts with $C_6H_5SO_2Cl$ to give a solid, insoluble in alkali. Identify Z. write the reaction.	2
6	i. A primary amine, RNH_2 can be reacted with CH_3—X to get secondary amine, R—$NHCH_3$ but the only disadvantage is that 3° amine and quaternary ammonium salts are also obtained as side products. Can you suggest a method where RNH_2 forms only 2° amine?	2
7	Write the reaction involved in following conversions. (i) toluene →*p*-toluidine (ii) *p*-toluidine diazonium chloride →*p*-toluic acid	2
8	Illustrate the following reactions each with one example- i. Coupling reaction ii. Diazotization	2
9	Give one chemical test to distinguish the following pairs of compounds- (i) Ethylamine and aniline (ii) Aniline and benzylamine	2
10	Arrange the following in i. decreasing order of basic strength in gas phase: $C_2H_5NH_2$, $(C_2H_5)_2NH$, $(C_2H_5)_3N$ and NH_3 ii. increasing order of boiling point: C_2H_5OH, $(CH_3)_2NH$, $C_2H_5NH_2$ iii. increasing order of solubility in water: $C_6H_5NH_2$, $(C_2H_5)_2NH$, $C_2H_5NH_2$.	3
11	Accomplish the following conversions: (i) Nitrobenzene to benzoic acid (ii) Benzene to *m*-bromophenol (iii) Benzoic acid to aniline	3

PRACTICE TEST

Level A

CLASS: XII

Unit 14: BIOMOLECULES

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Write two main functions of carbohydrates in plants	1
2	What is meant by "reducing sugars"?	1
3	What are monosaccharide?	1
4	What are the products of hydrolysis of sucrose?	1
5	Describe the following giving one example of each: i. Glycosidic linkage ii.Peptide linkage	2
6	Describe the following terms in reference of proteins: i. Primary structure ii.Denaturation	2
7	Name the four bases present in DNA .Which one of these is not present in RNA?	2
8	Name two fat soluble vitamins, their sources and the diseases caused due to their deficiency in diet.	2
9	Amino acids may be alkaline; neutral of acidic .How does this happen? What are essential and non essential amino acids? Name one of each type.	2
10	What happens when D-glucose is treated with the following reagents? i.HI ii. Bromine water iii.HNO_3	3
11	Mention one use of – i. Ranitidine ii. Paracetamol iii.Tincture of iodine	3

PRACTICE TEST

Level B

CLASS: XII

Unit 14: BIOMOLECULES

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Which of the following is not stored in liver of animals? i.Amylose ii. Cellulose iii.Amylopectin iv. Glycogen	1
2	What are the monosaccharides present in cane sugar?	1
3	Define anomers.	1
4	Name the bond which stabilizes α-Helix structure of protein.	1
5	1. Name B group vitamins which can be stored in our body? 2. Which of the following bases is not present in DNA- a. Adenine b. Thymine c. Cytosine d. Uracil	2
6	How do you explain that all the six carbon atoms in glucose are present in a straight chain?	2
7	Which sugar is called invert sugar? Why is it called so?	2
8	a. Why must vitamin C be supplied regularly? b. Amino acids behave like salts rather that simple amines or carboxylic acids. Explain.	2
9	How will you distinguish 1° and 2° hydroxyl groups present in glucose? Explain with reaction.	2
10	Differentiate between fibrous protein and globular proteins. What is meant by the denaturation of a protein?	3
11	Explain the terms primary and secondary structure of proteins. What is the difference between α-helix and β-pleated sheet structure of proteins?	3

PRACTICE TEST
Level C
CLASS: XII
Unit 14: BIOMOLECULES

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Which of the following acids is a vitamin? (i) Aspartic acid (ii) Ascorbic acid (iii) Adipic acid (iv) Saccharic acid	1
2	Name the linkage connecting monosaccharide units in polysaccharides.	1
3	Monosaccharides contain carbonyl group hence are classified, as aldose or ketose. The number of carbon atoms present in the monosaccharide molecule is also considered for classification. In which class of monosaccharide will you place fructose?	1
4	During curdling of milk, what happens to sugar present in it?	1
5	Name the sugar present in milk. How many monosaccharide units are present in it? What are such oligosaccharides called?	2
6	How do you explain the presence of all the six carbon atoms in glucose in a straight chain?	2
7	Under what conditions glucose is converted to gluconic and saccharic acid? Write the reaction involved.	2
8	Which sugar is called invert sugar? Why is it called so?	2
9	How do you explain the presence of five —OH groups in glucose molecule?	2
10	i. Why must vitamins C be supplied regularly in diet? ii. Sucrose is dextrorotatory but the mixture obtained after hydrolysis is laevorotatory. Explain. iii. Amino acids behave like salts rather than simple amines or carboxylic acids. Explain.	3
11	Match the vitamins given in Column I with the deficiency disease they cause given in Column II.	

Column I (Vitamins)	Column II (Diseases)
(i) Vitamin A	(a) Pernicious anaemia
(ii) Vitamin B_1	(b) Increased blood clotting time
(iii) Vitamin B_{12}	(c) Xerophthalmia
(iv) Vitamin C	(d) Rickets
(v) Vitamin D	(e) Muscular weakness
(vi) Vitamin E	(f) Night blindness
(vii) Vitamin K	(g) Beri Beri
	(h) Bleeding gums
	(i) Osteomalacia

3

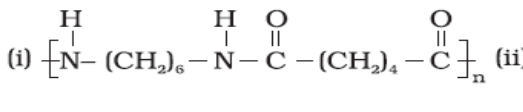
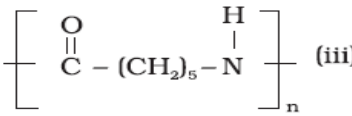
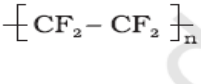
PRACTICE TEST

Level A

CLASS: XII

Unit 15: POLYMERS

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Is --$\{CH_2\text{-}CH(C_6H_5)\}_n$ a homopolymer or a copolymer?	1
2	How do you mean by the functionality of a monomer? Illustrate with one example.	1
3	Classify the following as addition and condensation polymers: Terylene, Bakelite, Polyvinyl chloride, Polythene.	1
4	Write the name and structure of one of the common initiators used in free radical addition polymerisation.	1
5	Define thermoplastics and thermosetting polymers with two examples of each.	2
6	With the help of the diagram explain the difference between Buna-N and Buna-S.	2
7	Arrange the following polymers in increasing order of their intermolecular forces. (i) Nylon 6, 6, Buna-S, Polythene. (ii) Nylon 6, Neoprene, Polyvinyl chloride.	2
8	What are natural and synthetic polymers? Give two examples of each type.	2
9	How can you differentiate between addition and condensation polymerisation?	2
10	Write the names of monomers of the following polymers: (i)  (ii)  (iii) 	3
11	Write the monomers used for getting the following polymers. (i) Polyvinyl chloride (ii) Terylene (iii) Bakelite	3

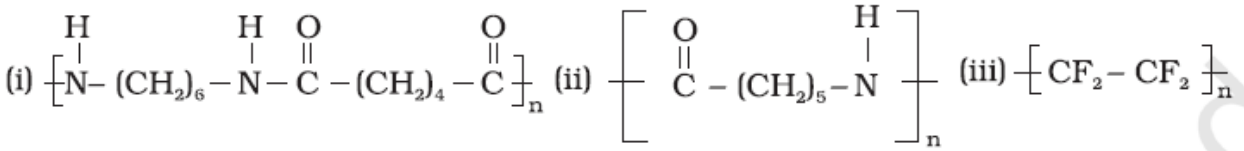
PRACTICE TEST

Level B

CLASS: XII

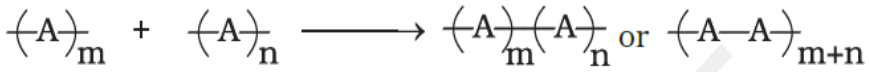
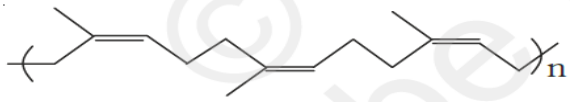
Unit 15: POLYMERS

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Is $-(NH\text{-}CHR\text{-}CO)_n-$, a homopolymer or copolymer?	1
2	What is a biodegradable polymer? Give an example of biodegradable aliphatic polyester.	1
3	Which of the following polymers are condensation polymers? (i) Bakelite (ii) Teflon (iii) Butyl rubber (iv) Melamine formaldehyde resin	1
4	Which of the following are addition polymers? (i) Nylon (ii) Melamine formaldehyde resin (iii) Orlon (iv) Polystyrene	1
5	Explain the term copolymerisation and give two examples.	2
6	Write the free radical mechanism for the polymerisation of ethene.	2
7	What is vulcanization? How does vulcanization improves the quality of rubber?	2
8	What are the monomeric repeating units of Nylon-6 and Nylon-6,6? Write their structure.	2
9	Write the names and structures of the monomers of the following polymers: (i) Buna-S (ii) Buna-N (iii) Dacron (iv) Neoprene	2
10	Write the names of monomers of the following polymers: 	3
11	Write the name & structure of the monomers of- i. PHBV ii. Nylon 2–nylon 6 iii. Bakelite	3

PRACTICE TEST
Level C
CLASS: XII
Unit 15: POLYMERS

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	What is the commercial name of polyacrylonitrile ?	1
2	Out of chain growth polymerisation and step growth polymerisation, in which type will you place the following. 	1
3	Identify the polymer given below : 	1
4	Which of the following are addition polymers? (i) Nylon (ii) Melamine formaldehyde resin (iii) Orlon (iv) Polystyrene	1
5	Classify the following as addition and condensation polymers: Terylene, Bakelite, Polyvinyl chloride, Polythene.	2
6	Which of the following statements is **not** true about low density polythene? (i) Tough (ii) Hard (iii) Poor conductor of electricity (iv) Highly branched structure	2
7	What is the structural difference between HDP and LDP? How does the structure account for different behaviour and nature, hence the use of a polymer?	2
8	i. Why are rubbers called elastomers? ii. Why does *cis*-polyisoprene possess elastic property?	2
9	What is the role of benzoyl peroxide in addition polymerisation of alkenes? Explain its mode of action with the help of an example.	2
10	Match materials given in Column I with the polymers given in Column II.	3

Column I	Column II
I. Natural rubber Latex	(a) Nylon
II. Wood laminates	(b) Neoprene
III. Ropes and fibres	(c) Dacron
IV. Polyester fabric	(d) Melamine formaldehyde resins
V. Synthetic rubber	(e) Urea-formaldehyde resins
VI. Unbreakable crockery	(f) cis-polyisoprene

11	Match the polymers given in Column I with their main applications given in Column II.	3

Column I	Column II
(i) Bakelite	(a) Unbreakable crockery
(ii) Low density polythene	(b) Non-stick cookware's
(iii) Melamine-formaldehyde resin	(c) Packaging material for shock Absorbance
(iv) Nylon 6	(d) Electrical switches
(v) Polytetrafluoroethane	(e) Squeeze bottles
(vi) Polystyrene	(f) Tyre, cords

PRACTICE TEST

Level A

CLASS: XII

Unit 16: CHEMISTRY IN EVERY DAY LIFE

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	Define the term "Chemotherapy"	1
2	What are the main constituents of Dettol?	1
3	Why is use of aspartame limited to cold foods and drinks?	1
4	How are synthetic detergents better than soaps?	1
5	Name the antipyretic which also prevents blood clotting.	
6	What is meant by the term 'broad spectrum antibiotics'? Give one example.	2
7	What is tincture of iodine? What is its use?	2
8	What are food preservatives? Give one example	2
9	What are biodegradable and non-biodegradable detergents? Give one example of each.	2
10	Explain the following terms with suitable examples (i) cationic detergents (ii) anionic detergents and (iii) Non-ionic detergents.	3
11	Define the following terms each with one example: i. Tranquilizer ii. Antioxidant iii. Antipyretics	3

PRACTICE TEST

Level B

CLASS: XII

Unit 16: CHEMISTRY IN EVERY DAY LIFE

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	What is the difference between drug and medicine?	1
2	What do you mean by competitive inhibitor?	1
3	What type of detergent has germicidal property?	1
4	Name the chemical which is added to soap to impart antiseptic property.	1
5	What do you mean by sulpha drugs?	2
6	What is meant by the term 'broad spectrum antibiotics'? Give one example.	2
7	What is the difference between antiseptic and disinfectant? Give one example of each.	2
8	What are food preservatives? Give one example	2
9	What are bactericidal and bacteriostatic antibiotic. Give one example of each.	2
10	Mr. Roy, the principal of one reputed school organized a seminar in which he invited parents and principals to discuss the serious issue of diabetes and depression in students. They all resolved this issue by strictly banning the junk food in schools and to introduce healthy snacks and drinks like soup, lassi, milk etc. in school canteens. They also decided to make compulsory half an hour physical activities for the students in the morning assembly daily. After six months, Mr. Roy conducted the health survey in most of the schools and discovered a tremendous improvement in the health of students. After reading the above passage, answer the following : (i) What are the values (at least two) displayed by Mr. Roy? (ii) What are tranquilizers? Give an example. (iii) Why is use of aspartame limited to cold foods and drinks?	3
11	Define the following terms : i. Agonists ii. Antagonist iii. Barbiturates	3

PRACTICE TEST
Level C
CLASS: XII
Unit 16: CHEMISTRY IN EVERY DAY LIFE

Full marks: 20 **Time: 40 Min**

Q.No	Questions	M
1	What is hypnotic? Give one example.	1
2	Who discovered antibiotic?	1
3	Write name of a substance which can be used both as antiseptic and disinfectant.	1
4	Name an artificial sweetener which is derivative of sucrose.	1
5	Write one important use of- i.Sodium benzoate ii. Paracetamol iii.Bithional iv.Phenol	2
6	Explain why- i. For the preparation of synthetic detergent, it is preferred to use long chain hydrocarbons over the branched chain hydrocarbons. ii. Persons suffering from diabetes should take artificial sweeteners	2
7	Mention the action of the following on human body- i. Brompheniramine ii. Equanil	2
8	What is the difference between- a. Saccharin and saccharic acid? b. Washing soap and bathing soap?	2
9	Answer the following- i. What is the advantage of using antihistamine over antacids in the treatment of acidity? ii. Hair shampoo belongs to which class of synthetic detergents.	2
10	Seeing the growing cases of diabetes and depression among young children, Mr. Lugani, the principal of one reputed school organized a seminar in which he invited parents and principals. They all resolved this issue by strictly banning junk food in schools and introducing healthy snacks and drinks like soup, lassi, milk, etc. in school canteens. They also decided to make compulsory half an hour of daily physical activities for the students in the morning assembly. After six months, Mr. Lugani conducted the health survey in most of the schools and discovered a tremendous improvement in the health of the students. After reading the above passage, answer the following questions : (i) What are the values (at least two) displayed by Mr. Lugani? (ii) What are antidepressant drugs? Give an example. (iii) Name the sweetening agent used in the preparation of sweets for a diabetic patient.	3
11	Distinguish between & give one example of each. i. Food preservatives and antioxidants ii. antipyretic and analgesics iii. broad spectrum and narrow spectrum antibiotic	3

शिक्षा एंव प्रशिक्षण का आंचलिक संस्थान, भुवनेश्वर

ZONAL INSTITUTE OF EDUCATION & TRAINING, BHUBANESWAR

PRACTICE TEST PAPER IN
MATHEMATICS
FOR CLASS XII
FOR THE SESSION 2015-2016

PREPARED BY

MR. NABAGHAN NAYAK

PGT (MATHEMATICS)

UNDER THE GUIDANCE OF

Ms. L. CHARI

DIRECTOR & DEPUTY COMMISSIONER

ZIET BHUBANESWAR

केन्द्रीय विद्यालय संगठन, नई दिल्ली

KENDRIYA VIDYALAYA SANGATHAN, NEW DELHI

MESSAGE

Reading should not be just for brain cramming. It should develop one's problem solving abilities and mental vigour. These skills are essential for higher studies and to face competitive examinations. With this in mind, a path breaking effort has been undertaken by ZIET, KVS, Bhubaneswar by publishing practice test papers in Mathematics for class XII students. These papers are not conventional question banks but unique in the sense that they take the students through different difficulty levels in a play way method. This attempt bridges the divide between knowing a thing and understanding it. To further assist the students, ***'Ask Me'*** portal has been made available from ZIET, Bhubaneswar through which the students can seek clarifications from the teachers. We, in ZIET, Bhubaneswar, are confident that the students will immensely benefit from these facilities.

In addition, this endeavour helps recast teaching into a facilitation of students' discovery of their own potential and understanding. The feedback obtained through interactions and examination results will also help the teachers improve their subject knowledge and teaching methodology.

Such an attempt has been possible only through the mastery of the subject, rich teaching experience and painstaking efforts on the part of Mr Nabaghan Nayak Kudos to the teacher and I sincerely trust the effort will soon be translated into impressive results. I congratulate the teacher who has given shape to my dream of introducing more creative pedagogic means for achieving quality in education and hope to sustain and continually improve our efforts so that the students don't slither back into mediocrity.

Ms. L. Chari

Director

Zonal Institute of Education and Training

Kendriya Vidyalaya Sangathan

Bhubaneswar

Mr Nabaghan Nayak

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL ONE TEST PAPER –1 (CH.- 1, 2 & 3)

Q1 to 2 carry 1 mark each. Q3 to 10 carry 4 marks each, Q. 11 carry 6 marks

M.M = 40 **TIME -1.5 HRS.**

1. If $f : R \to R$ is defined by $f(x) = x^2 - 3x + 2$, find $f(f(x))$. Also evaluate $f(f(5))$.

2. Find fog, if $f(x) = 8x^3$ and $g(x) = x^{\frac{1}{3}}$

3. If $A = \begin{bmatrix} 1 & 2 \\ 4 & 2 \end{bmatrix}$ *then show that* $|2A| = 4|A|$

4. Find the values of x, y and z from the following equation:-

$$\begin{bmatrix} y+4 & x+z \\ 1 & 5 \end{bmatrix} = \begin{bmatrix} 4 & 3 \\ x & 5 \end{bmatrix}$$

5. Prove that, every square matrix can be expressed as the sum of a symmetric & a skew symmetric matrix.

6. $If\ A = \begin{bmatrix} 3 & -2 \\ 4 & -2 \end{bmatrix}, then\ find\ k\ if\ A^2 = kA - 2I$

7.Prove that the relation R on the set Z of all integers defined by $(a,b) \in R \Leftrightarrow a-b$ is divisible by 5 is an equivalence relation.

8. Let A=NxN and * be the binary operation on A defined by
(a, b) * (c, d) = (a + c, b + d) where a,b,c&d ϵN.Show that * is commutative and associative.Find the identity element for * on A If any.

9 .If f and g be the greatest integer function and modulus function respectively, find the value of gof(- $\frac{5}{3}$) - fog(- $\frac{5}{3}$)

10. Consider f: $R_+ \to [4, \infty)$ given by $f(x) = x^2 + 4$. Show that f is invertible with the inverse f^{-1} given by $f^{-1}(y) = \sqrt{y-4}$, where R_+ is the set of all non-negative real numbers.

11. Solve by matrix method:
x + y – 2z = 0, 2x – 3y + 4z = 3, 4y – 5z = --1

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL TWO TEST PAPER –2 (CH.- 1, 2, 3 & 4)

Q1 to 2 carry 1 mark each, Q3 to 10 carry 4 marks each, Q11 carry 6 marks.

M.M = 40 TIME -1.5 HRS.

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1. If f: R $\rightarrow R$ be given by f (x) = $(3- x^3)^{\frac{1}{3}}$ then find $fof(x)$

2. Find the value of : $\cos\left\{\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)+\frac{\pi}{6}\right\}$

3 .Let A = R − {0} and $B = A \times$ R. Let the binary operation * on B be defined as (a, b) * (c, d) = $\left(\frac{ac}{4}, b+d+5\right)$. (i)Find the identity element of B with respect to the operation *. (ii) Show that set B is invertible with respect to the operation *.Also, find the inverse of (−5, 3).

4. If $\sin^{-1} x+\sin^{-1} y+\sin^{-1} z=\pi$ then find the value of the expression $\frac{x}{z}\cos\left(\sin^{-1} y\right)+\frac{y}{z}\sin(\cos^{-1} x)$

5. Solve the following equation:

$$2\tan^{-1}(\cos x) = \tan^{-1} 2(\operatorname{cosec} x)$$

6. If A is a non-singular square matrix such that $A^{-1} = \begin{bmatrix} 5 & 3 \\ -2 & -1 \end{bmatrix}$,

then find $(A^T)^{-1}$.

7. Ravi bought 3 pens and 2 pencils for Rs 38.00. and Shyam bought 5 pens and 3 pencils for Rs 62.00. for the same work. Represent this in the matrix form and find the cost of each. Who is more economical and what values does he possess?

8.Prove that : $\begin{vmatrix} (b+c)^2 & ab & ac \\ ab & (c+a)^2 & bc \\ c^2 & c^2 & (a+b)^2 \end{vmatrix}$ =

$2abc(a + b + c)^3$

9.Using properties of determinants,

Prove that $\begin{vmatrix} b+c & q+r & y+z \\ c+a & r+p & z+x \\ a+b & p+q & x+y \end{vmatrix} = 2\begin{vmatrix} a & p & x \\ b & q & y \\ c & r & z \end{vmatrix}$

10.Prove that the points (a,b+c), (b,c+a), (c,a+b) are collinear.

11. Two real valued functions f and g are defined as

$f(x) = e^{2x}$ and $g(x) = x - 3$.

Show that the functions $(fog): \mathbf{R} \to (0, \infty)$ and $(gof): \mathbf{R} \to (-3, \infty)$ are one-to-one and onto, and thus, find their inverse.

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL THREE TEST PAPER –3 (CH.- 1, 2, 3 & 4)

Q1 to 2 carry 1 mark each, Q3 to 10 carry 4 marks each , Q11 carry 6 mark.

M.M = 40 TIME -1.5 HRS.

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1. If $\oplus$ is a binary operation on R defined by a $\oplus$ b = a/4 + b/7

for a, b $\in$ R, find the value of (2 $\oplus$ 5) $\oplus$ 7

2. Construct a matrix of order 3X2, whose elements are given by $a_{ij} = i - 3j$

3. A function $f:\left(\frac{3}{2}, \infty\right) \to \left(-\frac{1}{4}, \infty\right)$ is defined as $f(x) = x^2 - 3x + 2$.

Show that f is invertible. Find the inverse of f.

4. Solve for x : $\tan^{-1}(x+2) + \tan^{-1}(x-2) = \cos^{-1}\frac{2}{\sqrt{5}}$

5. Prove that $\sin^{-1}\frac{12}{13} + \cos^{-1}\frac{4}{5} + \tan^{-1}\frac{63}{16} = \pi$

6. IfA+B+C=π, Showthat $\begin{vmatrix} \sin(A+B+C) & \sin B & \cos C \\ -\sin B & 0 & \tan A \\ \cos(A+B) & -\tan A & 0 \end{vmatrix}$ =0

7.Prove, without expanding, that $\begin{vmatrix} 1+a & 1 & 1 \\ 1 & 1+b & 1 \\ 1 & 1 & 1+c \end{vmatrix}$

= abc + ab + bc + ca = abc $\left(1 + \frac{1}{a} + \frac{1}{b} + \frac{1}{c}\right)$

8.Using determinants find if the points (2,-3),(-2,0),&(5,3) are collinear or not.

9. Find the inverse of $\begin{bmatrix} 3 & 5 \\ 2 & 1 \end{bmatrix}$ by elementary transformation.

10.Prove that the relation " Has the same number of books" in a library is an equivalence relation.

11.Solve by matrix method:

2x – y –z = 0, x + y + 2z = 4 , 3y – 2z = 1

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL THREE TEST PAPER –4 (2nd TEST PAPER) (CH.-1, 2, 3 & 4)

Q1 to 2 carry 1 mark each, Q3 to 10 carry 4 marks each , Q11 carry 6 marks.

M.M = 40 **TIME -1.5 HRS.**

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1. Find the number of binary operations defined in A={1,2,3}.

2. If A is a third order matrix such $|A| = 5$. Find $|\text{adj } A|$

3.If f: N → N is one-one and onto function, then find the value of $(fof^{-1})^{-1}(1^2)+(fof^{-1})^{-1}(2^2)+(fof^{-1})^{-1}(3^2)+...(fof^{-1})^{-1}(50^2)$.

4. Let f: R → R be a function defined by $f(x) = 2x + 3$. Find a function g: R → R satisfying the condition $gof = fog = I_R$.

5.Consider f : R+⟶(-5, ∞) given by $f(x) = 9x^2 + 6x - 5$. Show that f is invertible with

$$f^{-1}(y) = \frac{\sqrt{y+6}-1}{3}$$

6. A function f: R → R is defined as $f(x) = 3x - 5$.

Find α such that $f(\alpha) = f^{-1}(\alpha)$.

7.If $\sin^{-1} x = \cos^{-1} y$, $|x|, |y| \le 1$, then prove that . $x^2 + y^2 = 1$

8.If $\cos^{-1}x = \alpha$, $0 < x < 1$ and $\sin^{-1}\left(2x\sqrt{1-x^2}\right)+\sec^{-1}\left(\frac{1}{2x^2-1}\right)=\frac{2\pi}{3}$, then find the value of $\tan^{-1} 2x$.

9.Show that : $\begin{vmatrix} x+2 & x+3 & x+a \\ x+3 & x+4 & x+b \\ x+4 & x+5 & x+c \end{vmatrix} = 0,$

where a, b, c are in A.P.

10. If A= $\begin{matrix} 1 & 4 \\ 3 & 0 \end{matrix}$ B= $\begin{matrix} 2 & 4 \\ 1 & 3 \end{matrix}$ prove that $(AB)^{-1} = B^{-1} A^{-1}$

11. Two schools A and B decided to award prizes to their students for three values honesty (x),punctuality (y) and obedience (z).School A decided to award a total of Rs 11,000 for the three values to 5,4,and 3 students respectively while school B decided to award Rs 10,700 for the three values to 4,3 and 5 students respectively. If all the three prizes together amount to Rs 2700, then

(1) Represent the above situation by a matrix equation and form linear equation using matrix multiplication.

(2) Is it possible to solve the system of equations so obtained using matrices?. If so, solve them.

(3)Which value you would prefer to be rewarded by most of the students & why?

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL ONE **TEST PAPER –5** **(CH.-5 & 6)**

Q1 to 2 carry 1 mark each, Q3 to 10 carry 4 marks each , Q11 carry 6 marks.

M.M = 40 **TIME -1.5 HRS.**

1.Find d/dx $\sin(x^2 + 3)$

2.Find the second derivative of logx

3. Verify Mean Value Theorem for the function $f(x) = e^{4x^2-9}$ in the interval $\left[-\frac{3}{2}, \frac{3}{2}\right]$.

4 .If $x^{\cos y} + y^{\cos x} = 1$, then find the value of $\frac{dy}{dx}$.

5. If y= $\sin(m \sin^{-1} x)$ then prove that

$(1-x^2)y_2 - xy_1 + m^2 y = 0$

6. **Find** $\frac{dy}{dx}$ **if y =** $\tan - 1\left(\frac{\sqrt{1-\sin x} + \sqrt{1+\sin x}}{\sqrt{1-\sin x} - \sqrt{1+\sin x}}\right)$

7.A particle moves along the curve $y = \frac{4}{3}x^3 + 5$. Find the points on the curve at which Y-Coordinate changes as fast as x coordinate

8. Sand is pouring from a pipe at the rate of $12cm^3$/sec. the falling sand forms a cone on the ground in such a way that the height of the cone is always one- sixth of the radius of the base. How fast is the height of the sand-cone increasing, when height is 4 cm.

9. Find the interval in which the function given by

$f(x)= x^3-6x^2+6x+15$ is strictly increasing or decreasing.

10. Find the equation of the normal to the curve $x=a\cos^3\theta$ &

$y= a\sin^3\theta$ at $\theta=\frac{\pi}{4}$.

11. Show that the volume of the greatest cylinder that can be inscribed in a cone of height 'h' and semi vertical angle α is

$\frac{4}{27}\pi h^3 tan^2\alpha$.

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL TWO **TEST PAPER –6** **(CH.-5 & 6)**

Q1 to 2 carry 1 mark each, Q3 to 10 carry 4 marks each , Q11 carry 6 marks.

M.M = 40 **TIME -1.5 HRS.**

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1. If x = a cost & y = b sint find dy/dx

2. Find the slope of the tangent to the curve $y=x^3-3x+2$ at the point whose x – coordinate is 3.

3.Find the area bounded by the tangent to the ellipse $\frac{x^2}{36}+\frac{y^2}{64}=1$ at the point $(3,\ 4\sqrt{3})$, *x*-axis and *y*-axis.

4. Find the equations of tangent lines to the curve $y=4x^3-3x+5$ which are perpendicular to the line 9y+x+3=0

5.Separate the interval $[0\ ,\frac{\pi}{2}]$ into sub-intervals in which

f(x)= sin^4x+cos^4x is increasing or decreasing.

6.Find the interval in which the function *f* given by

$$f(x)=\sin\left(2x+\frac{\pi}{4}\right)-\cos\left(2x+\frac{\pi}{4}\right),0\le x\le\pi \text{ is increasing or decreasing.}$$

7. At which point(s) on the curve $y = x^3 - 2x^2 - 2x$ is the *y*-coordinate changing twice as fast as the *x*-coordinate?

8. If $x^{\cos y}+y^{\cos x}=1$, then find the value of $\frac{dy}{dx}$.

9.Show that function

$f(x)=\cos\left|\frac{3x+4\sin x}{5x}\right|$ is continuous for $x \in R - \{0\}$.

10. If $f(x) = 3^x - 2x$, then find the quadratic polynomial

$q(x) = ax^2 + bx + c$ such that $q(0) = f(0)$, $q'(0) = f'(0)$

and $q''(0) = f''(0)$.

11. Show that the semi-vertical angle of a right circular cone of maximum volume and given slant height is $\tan^{-1}\sqrt{2}$.

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL THREE **TEST PAPER –7** **(CH.-5 & 6)**

Q1 to 2 carry 1 mark each, Q3 to 10 carry 4 marks each , Q11 carry 6 marks.

M.M = 40 **TIME -1.5 HRS.**

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1. Find dy/dx if $x^2 + y^2 = 3xy$

2. Test the continuity of $f(x) = x^3 - 2x + 1$ at $x = 2$

3. Separate the interval $[0, \frac{\pi}{2}]$ into sub-intervals in which

$f(x) = sin^4x + cos^4x$ is increasing or decreasing.

4.Find the appx. value of $(0.037)^{1/2}$ using differentials.

5. Find the equations of tangent lines to the curve $y=4x^3-3x+5$ which are perpendicular to the line $9y+x+3=0$

6. The amount of pollution content added in air in a city due to x-diesel vehicles is given by $P(x)=0.005x^3+0.02x^2+30x$. Find the marginal increase in pollution content, when 3 diesel vehicles are added and write also which value is indicated in the above question.

7.Verify Rolle's Theorem for the function $f(x) = \sin x + \cos x - 1$

in the interval $[0,\pi]$

8. Find $\frac{dy}{dx}$ if $y = (log\ x)^x + x^{log\ x}$

9.Find all points of discontinuity of $f(x) = |x - 1| + |2x + 3|$

10.Find dy/dx for $f(x) = \sin^{-1}[2^{x+1}/(1 + 4^x)]$

11. The section of corner window is a rectangle surmounted by an equilateral triangle. Given the perimeter is 16 m. find the width of the window in order that the maximum light may be admitted.

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL THREE **TEST PAPER –8** **(CH.-5 & 6)**

Q1 to 2 carry 1 mark each, Q3 to 10 carry 4 marks each , Q11 carry 6 marks.

M.M = 40 **TIME -1.5 HRS.**

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1. Give the example of a function which is continuous at a point but not differentiable there.

2.Find the maximum & minimum value of sinx + cosx

3. Show that the function defined by $f(x) = x - \log\left(\frac{x+1}{x}\right),\ x \in \mathbf{R} - [-1, 0]$ is strictly increasing in this interval.

4. Find the appx. value of $(0.009)^{1/3}$ using differentials.

5. Find all the points of discontinuity of f in the interval, $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$ where $f(x) = \frac{\tan 6x - \tan x}{\sec^2 x - 2}$

6. An edge of a variable cube is increasing at the rate of 5 cm per second. How fast is the volume increasing when the side is 15 cm.

7. If $y = \left(\tan^{-1} x\right)^2 + \left(\cot^{-1} x\right)^2$, then prove that $\left(1 + x^2\right)^2 \frac{d^2y}{dx^2} + 2x\left(1 + x^2\right)\frac{dy}{dx} - 4 = 0$

8.Find the derivative of $\sqrt{x^2 + \sqrt{x^2 + \sqrt{x^2 + \sqrt{x^2 + \ldots}}}}$ with respect to x.

9. Show that the curve $2x=y^2$ and $2xy=k$ cut at right angle if $k^2=8$

10.Find the intervals in which the function f given by

f(x) = sinx - cosx , $0 \le x \le 2\pi$. is strictly increasing or strictly decreasing

11.An open cylinder is to be constructed from a metal sheet so as to hold a given quantity of liquid. Show that cost of material will be least when the height of the cylinder is equal to its radius

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL ONE **TEST PAPER –9** **(CH. - 7)**

Q1 to 4 carry 1 mark each. Q5 to 13 carry 4 marks each.

M.M = 40 **TIME -1.5 HRS.**

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1) Evaluate $\int \frac{\cos\sqrt{x}}{\sqrt{x}}\, dx$

2) Evaluate $\int \frac{(\log x)^2}{x} dx$

3) $\int \frac{1-tanx}{1+tanx} dx$

4) $\int sec^3x\ tanx\ dx$

5) Evaluate $\int_{\frac{-\pi}{2}}^{\frac{\pi}{2}} |sinx| dx$

6) Evaluate $\int \frac{2x(\tan^{-1}(x^2)}{1+x^4} dx$

7) Evaluate $\int \frac{dx}{x^2-6x+13}$

8) Evaluate $\int_{\frac{\pi}{6}}^{\frac{\pi}{3}} \frac{dx}{1+\sqrt{\tan x}}$

9) Evaluate $\int_0^{\frac{\pi}{4}} \log(1+\tan x) dx$

10) Evaluate $\int \frac{1-x^2}{x(1-2x)} dx$

11) Using property of definite integrals evaluate $\int_0^{\frac{\pi}{2}} sin2x.logtanx\ dx$

12) $\int_0^{\frac{\pi}{2}} logsinx\ dx$

13) $\int_0^a \sin^{-1}\sqrt{\frac{x}{a+x}}\ dx$

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL ONE (SECOND) TEST PAPER –10 (INTEGRATION)

Q1 to 4 carry 1 mark each. Q5 to 13 carry 4 marks each.

M.M = 40 **TIME -1.5 HRS.**

Evaluate the following:

1. $\int \frac{sin^2x}{1+cosx}dx$
2. 2) $\int sin3xcos4xdx$
3. $\int \frac{dx}{x^2-12}$
4. $\int \sqrt{1+x^2}dx$
5. $\int \frac{\sqrt{tanx}}{sinx\ cosx}dx$
6. $\int \tan^{-1}\sqrt{\frac{1-\cos 2x}{1+\cos 2x}}$dx
7. $\int x\tan^{-1}xdx$
8. $\int \frac{1-x^2}{x(1-2x)}dx$
9. $\int_0^{\frac{\pi}{2}} logsinx\ dx$
10. $\int \frac{1}{x+\sqrt{x}}dx$
11. $\int \frac{e^{5logx}-e^{4logx}}{e^{3logx}-e^{2logx}}dx$
12. $\int_0^{\frac{\pi}{2}} \frac{\sqrt{sinx}}{\sqrt{sinx}+\sqrt{cosx}}dx$
13. $\int \frac{1}{1+cotx}dx$

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL TWO TEST PAPER –11 (Ch-7 INTEGRATION)

Q1 to 4 carry 1 mark each. Q5 to 13 carry 4 marks each.

M.M = 40 **TIME -1.5 HRS.**

Evaluate the following

1) $\int \left(\frac{sec^2x}{cosec^2x}\right) dx$

2) $\int sec^3x\ tanx\ dx$

3) $\int \frac{x^2}{x^2+1} dx$

4) $\int_{-1}^{1} |x| dx$

5) $\int \sin x \sin 2x \sin 3x\ dx$

6) $\int \frac{\sqrt{tanx}}{sinx\ cosx} dx$

7) $\int \frac{1}{\cos(x-a)\cos(x-b)} dx$

8) $\int \frac{2x}{1-x^2-x^4} dx$

9) $\int x(\log x)^2 dx$

10) $\int_1^4 [|x-1| + |x-2| + |x-3|] dx$

11) $\int \sqrt{\tan x}\ dx$

12) $\int_{-1}^{\frac{3}{2}} |xsin\pi x| dx$

13) $\int_0^{\frac{\pi}{2}} \frac{dx}{5+4\sin x}$

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL THREE TEST PAPER –12 (Ch-7 INTEGRATION)

Q1 to 4 carry 1 mark each. Q5 to 13 carry 4 marks each.

M.M = 40 **TIME -1.5 HRS.**

Evaluate the following

1. $\int(1-x)\sqrt{x}dx$
2. 2.$\int sec^2(7-4x)dx$
3. $\int_0^1 \frac{dx}{1+x^2}$
4) $\int \frac{(\sin^{-1}x)^2}{\sqrt{1-x^2}}$dx
5)$\int cotx\ logsinxdx$
6)$\int \frac{1}{sinx\ cos^3x}dx$
7) $\int \frac{\sin x}{\sin(x+a)}dx$
8) $\int \frac{5x+3}{\sqrt{x^2+4x+10}}dx$
9) $\int \frac{1}{e^x-1}dx$
10)$\int_{-1}^{2}|x^3-x|dx$
11) $\int \tan^{-1}\sqrt{\frac{1-x}{1+x}}dx$
12) $\int\{\log(logx)+\frac{1}{(logx)^2}\}dx$
13 $\int dx/(1+x4)$

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL ONE TEST PAPER –13 (Ch-13 APPLICATION OF INTEGRATION)

Q.1 & 2 are of 1mark each , Q.3 to 9 are of 4marks each.

M.M = 30 **TIME -1 HRS.**

1-Find the area bounded by the parabola $y = 4x^2$,x≥0, the axis of y and lines y= 1 and y=4.

2-Find the area bounded by the curve $y = 2\cos x$ and the x-axis from x = 0 to $x = \pi$.

3-Find the area bounded by the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$

4- Find area included between the curves $x^2 = 4ay$ and

$y^2 = 4ax$, $a > 0$.

5)-Find the area bounded by curves y= Sin x and y= Cos x between x=0 , $x = \frac{\pi}{2}$ and the x-axis

6-Using Integration find the area of the triangle ABC whose vertices are A (2,0), B (4,5) and C (6,3)

7-Find the area of the region enclosed between the two circles $x^2 + y^2 = 1$ and $(x-1)^2 + y^2 = 1$.

8- Sketch the graph of y = $|x+3|$ and evaluate $\int_{-6}^{0} |x+3|\, dx$. What does this integral represent ?

9-Sketch the region common to the circle $x^2 + y^2 = 16$ and the parabola $x^2 = 6y$. Also find the area of the region using Integration.

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL TWO TEST PAPER –14 (Ch-13 APPLICATION OF INTEGRATION)

Q.1 to 4 are of 1mark each , Q.5 to 10 are of 6 marks each.

M.M = 40 **TIME -1.5 HRS.**

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1) $Y = x^2 + 1$, $x=0$, $x = 2$

2) $Y = 4\sqrt{x-1}$; $x =1$, $x = 3$

3) $y = \sin x$, $x = 0$, $x = \pi$

4) $x^2 = 8y$; $y =4$, $y = 9$

5) Find the area bounded by the curve $x^2 = 4y$ and the straight line $x = 4y – 2$

6) Find the area of the region in the 1ST quadrant enclosed by $x^2+y^2= 32$ and $y = x$

7) Using integration find the area of the region bounded by the parabola $y^2 =4x$ and the circle $4x^2+ 4y^2= 9$

8) Find area of the region : $\{(x,y)|x^2 + y^2 \leq 1 \leq x + y\}$

9) Using integration Find the area lying above x-axis and included between the circle $x^2+y^2= 8x$ and parabola $y^2 =4x$

10) Using the method of integration , find the area of the region bounded by the following lines

$5x - 2y = 10$, $x + y – 9 = 0$, $2x – 5y – 4 =0$

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL ONE TEST PAPER –16 (DIFF. EQUATION)

M.M = 45 TIME -1.5 HRS.

Instruction :-Q.1 to 5 are of 1 mark each, Q.6 to 15 are of 4 marks each.

1) Form a differential equation which represents the family curves y = a sin(x+b) where a and b are constants.

2) Find the integrating factor of the differential equation x logx $\frac{dy}{dx}$ + y = 2 logx.

3) Find the order and degree of the differential equation $\frac{d^4y}{dx^4} + \sin\left(\frac{d^3y}{dx^3}\right) = 0$

4) Verify the given function y = $\sqrt{1 + x^2}$ is a solution of the given differential equation $y^1 = \frac{xy}{1+x^2}$

5) Verify that the given differential equation (x – y)$\frac{dy}{dx}$ = x + 2y is homogeneous.

6) Find the general solution of the differential equation-: x$\frac{dy}{dx} + 2y = x^2$

7) Find the equation of the curve passing through the points (-2,3) given that the slope of the tangent to the curve at any point (x,y) is $\frac{2x}{y^2}$.

8) Solve the differential equation : $(3xy - y^2)dx + (x^2 + xy)dy = 0$

9) Find the differential equation of the family of circles touching the y axis at origin?

10) Solve the differential equation: $(1 + y^2)(1 + logx)dx + xdy = 0$

11) Find the general solution of the differential equation e^xtan y dx + (1-e^x) $sec^2y\ dy$ = 0

12) Solve the following differential equation: x dy – (y+2x^2)dx = 0

13) Form the differential equation representing the given family of curves

$\frac{x}{a} + \frac{y}{b} = 1$, where a and b are constants.

14) Find the particular solution of the diferential equation $\frac{dy}{dx} = y\tan x$, given that y=1when x= 0.

15) Verify the equation y= a cos x + b sin x is solution of the differential equation $\frac{d^2y}{dx^2}$ + y = 0,where a,b are constants.

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL TWO TEST PAPER –17 (DIFF. EQUATION)

M.M = 40 TIME -1.5 HRS.

Instruction :-Q.1 to 10 are of 4 marks each.

1) Solve: x dy – y dx = $\sqrt{x^2+y^2}$dx

2) Solve $\frac{dy}{dx} + \sqrt{\frac{1-y^2}{1-x^2}} = 0$

3) Solve : $\frac{dy}{dx} + 2y\tan x = \sin x$, given that y=0 where x=$\frac{\pi}{3}$

4) Find the equation of the curve passing through the point (0,1) if the slope of the tangent to the curve at any point (x,y) is equal to the sum of the abscissa and the product of the abscissa and ordinate of the point.

5) Solve: $\frac{dy}{dx} = \cos(x+y) + \sin(x+y)$

6) Show that the family of the curves for which the slope of the tangent at any point (x,y)on it is $\frac{x^2+y^2}{2xy}$ is given by $x^2 - y^2 = cx$

7) Solve : $(x^3 + x^2 + x + 1)\frac{dy}{dx} = 2x^2 + x$

8) Solve: $x\frac{dy}{dx} + y - x + xy\cot x = 0$

9) Find a particular solution of the differential equation $(1+e^x)dy + (1+y^2)e^x dx = 0$ given that y=1 when x=0.

10) Solve $(x + 2y^2)\frac{dy}{dx} = y$, given that when x=2 , y=1.

If x denotes the % of people who are polite and y denotes the % of people who are intelligent. Find x when y= 2%

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL THREE (First) TEST PAPER –18 (DIFF. EQUATION)

M.M = 40 TIME -1.5 HRS.

Instruction :- Each question carries 4 marks.

1) $\frac{dy}{dx} + \frac{y}{x} = 0$, Where x denotes the percentage population living in a city and y denotes the area for living a healthy life. Find the particular solution when x=100 , y=1,Is higher density of population harmful? Justify your answer?

2) Prove that $x^2 - y^2 = c(x^2 + y^2)^2$ is the general solution of the differential equation $(x^3 - 3xy^2)dy = (y^3 - 3xy^2)dy$ where C is a parameter.

3) Find the particular solution of the differential equation $(x - y)(dx + dy) = (dx - dy)$,Given that y = -1 when x = 0.

4) Solve : $\left[\frac{e^{-2\sqrt{x}}}{\sqrt{x}} - \frac{y}{\sqrt{x}}\right]\frac{dx}{dy} = 1$ where $x \neq 0$

5) Solve the differential equation $(\tan^{-1}y - x)dy = (1 + y^2)dx$.

6) Solve : $(1+ y^2)(1+ \log x)\,dx + x\,dy = 0$

7) Solve: $\frac{dy}{dx} + 2y \tan x = \sin x$

8) Solve : $(x-1)\frac{dy}{dx} = 2x^3 y$

9) The population of a village increases continuously at the rate proportionl to the number of its inhabitants present at any time.If the popillation of the village was 20000 in the year 2000 & 250000 in the year 2005 what will be the population of the village in 2010.

10) Solve : $y\, e^{\frac{x}{y}}dx = \left(xe^{\frac{x}{y}} + y^2\right)dy$ where $y \neq 0$

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL THREE (Second) TEST PAPER –19 (DIFF. EQUATION)

M.M = 40 TIME -1.5 HRS.

Instruction :- Each question carries 4 marks.

1) 1.Solve: $e^{\frac{dy}{dx}} = x^2$

2) Determine the order and degree:

$$Y = x.\frac{dy}{dx} + \sqrt{a^2}\left(\frac{dy^2}{dx}\right) + b^2$$

3) State whether $y = e^{-x}(x+a)$ is the solution of the differential equation

$$\frac{dy}{dx} + y = e^{-x}$$

4) Solve $(1+x^2).\frac{dy}{dx} + y = \tan^{-1} x$

5) Solve the following differential equation

$\frac{dy}{dx} = y \sin 2x$ given that y(0)=1

6) Show that $Y = a\, e^{2x} + b\, e^{-x}$ is a solution of the differential equation

$$\frac{d^2y}{dx^2} - \frac{dy}{dx} - 2y = 0$$

7) Find the differential equation of the family of curves given by

$$x^2 + y^2 = 2ax$$

8) Solve the differential equation

$$ye^y\, dx = (y^3 + 2xe^y)\, dy$$

9) Solve

$$x.\frac{dy}{dx}.\sin\frac{y}{x} + x - y\sin\frac{y}{x} = 0 \quad \text{given that } y(1) = \frac{\pi}{2}$$

10) Solve $(1 + y^2)\, dx + (x - e^{-\tan^{-1} y})\, dy = 0$. Given that y (0)=0

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL - ONE TEST PAPER –20 (VECTORS)

M.M = 30 TIME -1.5 HRS.

Instruction :- Q.1 to 10 are of 1mark each, Q.11 to 15 are of 4 marks each.

1) Find the angle between the vectors $\vec{a}=\hat{\imath}-\hat{\jmath}+\hat{k}$ and $\vec{b}=\hat{\imath}+\hat{\jmath}-\hat{k}$

2) For what value of λ are the vectors $\vec{a}=2\hat{\imath}+\lambda\hat{\jmath}+\hat{k}$ and $\vec{b}=\hat{\imath}-2\hat{\jmath}+3\hat{k}$ perpendicular to each other?1

3) If $\vec{a}=2\hat{\imath}+\hat{2\jmath}-\hat{k}$ and $\vec{b}=3\hat{\imath}+\hat{\jmath}-5\hat{k}$, find a unit vector in the direction of $\overrightarrow{a-}\vec{b}$.

4) If $|\vec{a}|=2$, $|\vec{b}|=\sqrt{3}$, and $\vec{a}\,.\,\vec{b}=\sqrt{3}$, find the angle between $\vec{a}$ and $\vec{b}$.

5) Find $|\overrightarrow{a}\times\vec{b}|$ if $\vec{a}=\hat{\imath}-7\hat{\jmath}+7\hat{k}$ and $\vec{b}=3\hat{\imath}-\hat{2\jmath}+2\hat{k}$.

6) Find the projection of $\vec{a}$ on $\vec{b}$ if $\vec{a}.\,\vec{b}=8$ and $\vec{b}=\ 2\hat{\imath}+\hat{6\jmath}+3\hat{k}$.

7) Write the values of P for which $\vec{a}=3\hat{\imath}+\hat{2\jmath}+9\hat{k}$ and $\vec{b}=\hat{\imath}+p\hat{\jmath}+3\hat{k}$ are parallel vectors.

8) If $\overrightarrow{p}$ is a unit vector and $(\overrightarrow{x}-\overrightarrow{p})(\ (\overrightarrow{x}+\overrightarrow{p})=80$, find $\overrightarrow{x}$.

9) Find the vector of the magnitude 9 units in the direction of the vector $-2\hat{\imath}+\hat{\jmath}+2\hat{k}$

10) If $|\overrightarrow{a}+\vec{b}|^2=|\vec{a}|^2+|\vec{b}|^2$ what can you say about $\overrightarrow{a}$ *and* $\overrightarrow{b}$.

11) Find a vector of magnitude 5units perpendicular to each of the vectors $(\overrightarrow{a+}\vec{b})$ and $(\overrightarrow{a-}\vec{b})$ where $\overrightarrow{a}=\hat{\imath}+\hat{\jmath}+\hat{k}$, $\overrightarrow{b}=\hat{\imath}+\hat{2\jmath}+3\hat{k}$

12) If $\overrightarrow{a}=\hat{\imath}+\hat{\jmath}+\hat{k}$, $\overrightarrow{b}=-\hat{\jmath}+\hat{k}$ find the vector $\vec{c}$ such that $\overrightarrow{a}\times\vec{c}=\vec{b}$ and $\overrightarrow{a}.\vec{c}=3$.

13) If $\overrightarrow{a}\times\vec{b}=\overrightarrow{c}\times\vec{d}$ and $\overrightarrow{a}\times\vec{c}=\overrightarrow{b}\times\vec{d}$ prove that $\overrightarrow{a}-\vec{d}$ is parallel to $\overrightarrow{b}-\vec{d}$ provided $\overrightarrow{a}\neq\vec{d}$ and $\overrightarrow{b}\neq\vec{c}$.

14) For any two vectors $\overrightarrow{a}$ *and* $\overrightarrow{b}$ prove that $(\overrightarrow{a}\times\vec{b})^2=\overrightarrow{a^2}\vec{b}^2-(\overrightarrow{a}\,.\,\vec{b})^2$

15) Find the vector whose magnitude is 3 units and which is perpendicular to the vectors $\overrightarrow{a}=\hat{3\imath}+\hat{\jmath}-4\hat{k}$ And $\overrightarrow{\ \ b}=\hat{6\imath}+\hat{5\jmath}-2\hat{k}$

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL - TWO TEST PAPER –21 (VECTORS)

M.M = 40 TIME -1.5 HRS.

Instruction :- Q.1 to 10 are of 4 marks each.

1) Show that the area of the parallelogram having diagonals $\overrightarrow{d_1}=3\hat{\imath}+\hat{\jmath}-2\hat{k}$ and $\overrightarrow{d_2}=\hat{\imath}-3\hat{\jmath}+4\hat{k}$ is $5\sqrt{3}$ square units.

2) Express the vector $\vec{a}=5\hat{\imath}-2\hat{\jmath}+5\hat{k}$ as the sum of two vectors such that one is parallel to vector $\vec{b}=3\hat{\imath}+\hat{k}$ and other is perpendicular to $\vec{b}$.

3) If $\vec{a}$ and $\vec{b}$ are unit vectors and θ is the angle between them prove that $\sin\frac{\theta}{2}=\frac{1}{2}|\vec{a}-\vec{b}|$.

4) Show that the points A, B,C,D whose positions vectors are $2\hat{\imath}+4\hat{\jmath}+2\hat{k}$, $\hat{\imath}+2\hat{\jmath}+\hat{k}$, $3\hat{\imath}+\hat{\jmath}-3\hat{k}$, $4\hat{\imath}+3\hat{\jmath}-2\hat{k}$ are the vertices of the parallelogram .

5) Find the unit vector perpendicular to the plane ABC where A,B,C are the points (3,-1,2) ,(1,-1,-3), (4,-3,1) respectively.

6) Find x such that the four points A (3, 2, 1), B (4, x, 5), C (4, 2, –2) and D (6, 5, –1) are coplanar.

7) What is the angle between vectors $\vec{a}$ and $\vec{b}$ with magnitude $\sqrt{3}$ and 2 respectively such that $\vec{a}.\vec{b}=\sqrt{3}$.

8) If $\vec{a},\vec{b}$ *and* $\vec{c}$ are unit vectors such that

$\vec{a}+\vec{b}+\vec{c}=\vec{0}$, find the value of $\vec{a}.\vec{b}+\vec{b}.\vec{c}+\vec{c}.\vec{a}$.

9) Let $\vec{a}=\hat{\imath}+4\hat{\jmath}+2\hat{k}$, $\vec{b}=3\hat{\imath}-2\hat{\jmath}+7\hat{k}$ and $\vec{c}=2\hat{\imath}-\hat{\jmath}+4\hat{k}$ .Find a vector $\vec{d}$ which is perpendicular to both the vectors $\vec{a}$ *and* $\vec{b}$, *and* $\vec{c}.\vec{d}$ =15.

10) The scalar product of the vector $\hat{\imath}+\hat{\jmath}+\hat{k}$ with the unit vector along the sum of the vectors $2\hat{\imath}+4\hat{\jmath}-5\hat{k}$ and $\lambda\hat{\imath}+2\hat{\jmath}+3\hat{k}$ equal to 1. Find λ.

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL - ONE TEST PAPER –22 (3- Dimentional Geometry)

M.M = 45 TIME -1.5 HRS.

Instruction :-Qn.1 to 5 are of 1mark each, Qn.6 to 15 are of 4 marks each.

1) Find the direction cosines of X axis , Y axis & Z axis ?

2) Find the direction cosines of a line which makes equal angles with the coordinate axes .

3) If al line has direction ratios -18,12,-4 then what are its direction cosines?

4) The cartesian equation of a line AB is $\frac{2x-1}{2}=\frac{4-y}{7}=\frac{z+1}{2}$. Write the direction ratios of a line parallel to AB.

5) Write the direction cosines of the line joining the points (1,0,0) and (0,1,1)

6) Find the distance of the point (-1,-5,-10)from the plane x –y + z = 5 measured parallel to the line $\frac{x-2}{3}=\frac{y}{4}=\frac{z}{12}$.

7) Find the equation of plane passing through the line of intersection of the planes x+2y+3z =4 and 2x+y-z+5 =0 and perpendicular to the plane 5x+3y-6z+8 =0.

8) Find the equation of the plane through $2\hat{i}+\hat{j}-\hat{k}$ and passing through the line of intersection of the planes

$\vec{r}\cdot(\hat{i}+3\hat{j}-\hat{k})=0$ and $\vec{r}\cdot(\hat{j}+2\hat{k})=0$.

9)Show that the lines $\frac{x+1}{3}=\frac{y+3}{5}=\frac{z+5}{7}$ and $\frac{x-2}{1}=\frac{y-3}{4}=\frac{z-6}{7}$ are coplanar.

10) Find the image of the point (1,2,-3) w.r.t the line $\frac{x+1}{2}=\frac{y-3}{-2}=\frac{z}{-1}$

11) Find the vector equation of the line passing through the point (1, 2, − 4) and perpendicular to the two lines:

$\frac{x-8}{3}=\frac{y+19}{-16}=\frac{z-10}{7}$ and $\frac{x-15}{3}=\frac{y-29}{8}=\frac{z-5}{-5}$

12) Show that the lines $\vec{r} = (\hat{\imath} + \hat{\jmath} - \hat{k}) + \lambda(3\hat{\imath} - \hat{\jmath})$ and

$\vec{r} = (4\hat{\imath} - \hat{k}) + \mu(2\hat{\imath} + 3\hat{k})$ intersect . Find their point of intersection.

13) Find the coordinates of the point where the line through

(5, 1, 6) and (3, 4, 1) crosses the YZ-plane .

14) Find the equation of the plane which contains line of intersection of planes $\vec{r}.(\hat{i} + 2j + 3k) - 4 = 0$, $\vec{r}.(2\hat{i} + j - k) + 5 = 0$ and which passes through the Point

(1,0,-2).

15). Find the shortest distance between the two lines $\vec{r} = 6\hat{i} + 2\hat{j} + 2\hat{k} + \lambda(\hat{i} - 2\hat{j} + 2\hat{k})$ and

$\vec{r} = -4\hat{i} - \hat{k} + \mu(3\hat{i} - 2\hat{j} - 2\hat{k})$.

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL - TWO TEST PAPER –23 (3- Dimentional Geometry)

M.M = 40 TIME -1.5 HRS.

Instruction :- Q.1 to 10 are of 4 marks each.

1) Find the vector equation of the line passing through the point (1, 2, − 4) and perpendicular to the two lines:

$\frac{x-8}{3}=\frac{y+19}{-16}=\frac{z-10}{7}$ and $\frac{x-15}{3}=\frac{y-29}{8}=\frac{z-5}{-5}$

2) Find the equation of a line , both in Cartesian & which passes through the point (1,2,3) and is parallel to the vector $3\hat{\imath} + 2\hat{\jmath} - 2\hat{k}$

3) Find the equation of the plane that passes through three points. (1, 1, −1), (6, 4, −5), (−4, −2, 3)

4) Find the coordinates of the point where the line through

(3, −4, −5) and (2, − 3, 1) crosses the plane $2x + y + z = 7$.

5) If the points (1, 1, p) and (−3, 0, 1) be equidistant from the plane $\vec{r}\cdot\left(3\hat{i}+4\hat{j}-12\hat{k}\right)+13=0$ then find the value of p.

6. Find the equation of the plane which is parallel to x-axis & passes through the line of intersection of the planes $\vec{r}\cdot\left(\hat{i}+\hat{j}+\hat{k}\right)=1$ and $\vec{r}\cdot\left(2\hat{i}+3\hat{j}-\hat{k}\right)+4=0$

7) A line makes angles α, β, ϒ ,Ϭ with the four diagonals of a cube. Prove that $\cos^2 \alpha + \cos^2 \beta + \cos^2 \Upsilon + \cos^2 \text{Ϭ} = 4/3$

8) Find the equation of the plane through the intersection of the planes $x+y+z=1$ and $2x+3y+4z=5$ & perpendicular to the plane $x - y + z = 0$

9) Find the vector equation of the plane which is at a distance of 7 units from the origin and which is normal to the vector $3\hat{\imath} + 5\hat{\jmath} - 6\hat{k}$.

10)) Find the equation of the plane through the intersection of the planes 3x –y+2z-4 = 0 and x +y+z-2 = 0 and the point (2,2,1)

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL - ONE TEST PAPER –24 (LPP)

M.M = 40 TIME -1.5 HRS.

Instruction :- Q.1 to 5 are of 6 marks each.

(1) A dealer in rural area wishes to purchase a number of sewing machines. He has only `5,760.00 to invest and has space for at most 20 items. An electronic sewing machine costs him `360.00 and a manually operated sewing machine `240.00. He can sell an Electronic Sewing Machine at a profit of `22.00 and a manually operated sewing machine at a profit of `18.00. Assuming that he can sell all the items that he can buy how should he invest his money in order to maximize his profit. Make it as a linear programming problem and solve it graphically. Keeping the rural background in mind justify the 'values' to be promoted for the selection of the manually op1 . A dietician wishes to mix two types of food in such a way that vitamin contents of the mixture contain atleast 8 units of vitamin A and 10 units of vitamin C . Food I contains 2 units perkg of vitamin A and 1 units perkg of vitamin C. . Food II contains 1 unit perkg of vitamin A and 2 units perkg of vitamin C.It costs Rs 50 perkg to purchase food I and Rs 70 to purchase food II. Formulate this as a linear programming problem to minimise the cost of such a mixture.

Q2. A cooperative society of farmers has 50 hectares of land to grow two crops X and Y. The profit from crops X and Y per hectare are estimated as Rs 10500 and Rs 9000 respectively. To control weeds a liquid herbicide has to be used for crops X and Y at the rates of 20 litres and 10 litres per hectares. Further no more than 800 litres of herbicides should be used in order to protect fish and wild life using a pond which collects drainage from this land. How much land be allocated to each crop so as to maximise the total profit of the society

3) A manufacturing company makes two models A and B of a product. Each piece of model of A requires 9 labor hours for fabricating and 1 labour hour for finishing. Each piece of model B requires 12 labour hours for fabricating and 3

hours for finishing. For fabricating and finishing the maximum labour hours available are 180 and 30 respectively. The company makes a profit of Rs.8000 on each piece of model A and Rs. 12000 on each piece of model B. How many pieces of model A and model B should be manufactured per week to realize maximum profit.Keeping the rural background in mind justify the values to be promoted for the selection of manually operated machines.

4) An aero plane can carry a maximum of 200 passengers. A profit of Rs. 1000 is made on each executive class ticket and a profit of Rs. 600 is made on each economy class ticket. The airline reserves at least 20 seats for the executive class. However al least 4 times as many passengers prefer to travel by economy class than by the executive class. Determine how many tickets of each type must be sold in order to maximize profit for the airline. What is the maximum profit? Make an LPP and solve it graphically.

5) Mona wants to invest at most rs.12000 in saving certificate (sc) and national saving bonds (nsb).she has to invest at least rs.2000 in sc and at least rs.4000 in nsb. if the rate of interest on sc is 8 pa. and the rate of interest on nsb 10pa. how much money should she invest to earn maximum yearly income? also find the maximum income.

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL – TWO (First) TEST PAPER –25 (LPP)

M.M = 30 TIME -1 HRS.

Instruction :- Q.1 to 5 are of 6 marks each.

(1). A furniture firm manufactures chairs and tables, each requiring the use of three machines A, B and C. Production of one chair requires 2 hours on machine A, 1 hour on machine B and 1 hour on machine C. Each table requires 1 hour each on machine A and B and 3 hours on machine C. The profit obtained by selling one chair is Rs. 30 while by selling one table the profit is Rs. 60. The total time available per week on machine A is 70 hours, on machine B is 40 hours and on machine C is 90 hours. How many chairs and tables should be made per week so as to maximize profit?

(2) A dietician wishes to mix two types of foods in such a way that vitamin contents of the mixture contain atleast 8 units of vitamin a and 10 units of vitamin c. food 'i' contains 2 units/kg of vitamin a and 1 unit/kg of vitamin c. food 'ii' contains 1 unit/kg of vitamin a and 2 units/kg of vitamin c. it costs rs 50 per kg to purchase food 'i' and rs 70 per kg to purchase food 'ii'.formulate this problem as a linear programming problem to minimise the cost of such a mixture. In what way a balanced and healthy diet is helpful in performing your day-to-day activities?

(3) There are two factories located one at a place P and the other at place Q. From these locations, a certain commodity is to be delivered to each of the three depots situated at A,B and C. The weekly requirements of these depots are respectively 5,5 and 4 units of the commodity while the production capacity of the factories at P and Q are respectively 8 and 6 units. The cost of transportation per unit is given below. How many units should be transported from each factory to each depot in order that the transportation cost is minimum? What will be the minimum transportation cost?

From/To	Cost in Rs		
	A	B	C
P	160	100	150

Q	100	120	100

(4) A merchant plans to sell two types of personal computers- a desktop model and a portable model that will cost Rs. 25000 and Rs. 40000 respectively. He estimates that the total monthly demand of computers will not exceed 250 units .Determine the number of units of each type of computers which the merchant should stock to get maximum profit if he does not want to invest more Rs 70 lakhs and if his profit on the desktop model is Rs. 4500 and on portable model is Rs. 5000.

(5) There are two types of fertilizers F1 and F2 .F1 consists of 10% nitrogen and 6% phosphoric acid and F2 consists of 5% nitrogen and 10% phosphoric acid. After testing the soil conditions, a farmer finds that it needs at least 14 kg of nitrogen and 14 kg of phosphoric acid for crop. If F1 costs Rs 6/kg and F2 costs Rs 5 /kg, determine how much of each type fertilizer should be used so that the nutrient requirements are met at a minimum cost? What is the minimum cost?

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL – TWO (First) TEST PAPER –26 (LPP)

M.M = 40 TIME -1.5 HRS.

Instruction :- Q1 to 10 are of 1mark each , Q.11 to 15 are of 4 marks each.

1).If a leap year is selected at random, what is the chance that it will contain 53 Sundays?

2. If P(A) = 0.3 and P(B) = 0.4, find $P(A \cap B)$ if A and B are independent events.

3. If the event E is not impossible and E, F are independent events, what is $P(E \mid F)$?

4. If P(A) = 0.8, P(B) = 0.5 and $P(B \mid A) = 0.4$, find $P(A \cap B)$.

5. If $2P(A) = P(B) = \frac{5}{13}$ and $P(A \mid B) = \frac{2}{5}$, find $P(A \cup B)$.

6. If A and B are two events such that $A \subset B$ and $P(A) \neq 0$, then what is the value of $P(B \mid A)$?

7. Given P(A) = 0.2, P(B) = 0.3 and $P(A \cap B) = 0.1$, find $P(A \mid B)$.

8. If P(A) = 0.4. P(B) = p and $P(A \cup B) = 0.7$.Find the value of p,if A and B are independent events.

9. Does the following table represents a probability distribution?

X	0	1	2	3	4
P(X)	0.1	.05	0.2	- 0.1	0.3

10. Find the value of k, such that the following distribution represents a probability distribution:

X	0	1	2	3	4
P(X)	K	0	3k	2k	4k

11. A random variable X has a probability distribution P(X) of the following form where k is some number: P(X) = $\begin{cases} k, & if \quad X = 0 \\ 2k, & if \quad X = 1 \\ 3k, & if \quad X = 2 \\ 0, & otherwise. \end{cases}$ Determine (i) k (ii) P(X<2) (iii) P(x ≤ 2)(iv) P(x≥ 2)

12. Find the probability distribution of the number of kings drawn when two cards are drawn one by one, without replacement, from a pack of 52 playing cards.

13. There are a group of 50 people who are patriotic, out of which 20 believe in non-violence. Two persons are selected at random out of them, write the probability distribution for the selected persons who are non-violent. Also find the mean of the distribution. Explain the importance of non-violence in patriotism.

14. A coin is tossed 4 times. Find the mean and variance of the probability distribution of the number of heads.

15. A speak truth 60% of the cases and B in 90% of the cases. In what percentage of cases are they likely to contradict each other in stating the same fact? Which values A is lacking and should improve upon?

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL – THREE (First) TEST PAPER –27 (PROBABILITY)

M.M = 40 TIME -1.5 HRS.

All questions are compulsory & carry equal marks.

1. Find the binomial distribution, when the sum of mean and variance of five trials is 4.8.

2. A and B & C throw a dice alternately till one of them gets a 6 and wins the game. Find their respective probability of winning if A starts the game followed by B & C.

3. There are 2000 Cycle drivers, 4000 Scooter drivers and 6000 truck drivers all insured. The probabilities of an accident involving a cycle , a scooter, a truck are 0.01, 0.03, 0.15 respectively. One of the insured drivers meets with an accident. What is the probability that he is a cycle driver? Which mode of transport would suggest to a student and why?

Q4.Two numbers are selected from the numbers 1,2,3,4 & 5. Find the mean & variance of the greater of the two numbers.

5. In answering a question on a MCQ test with 4 choice per questions, a student knows the answer, guesses or copies the answer. Let 1/2 be the probability that he knows the answer, be the probability that he guesses and $\frac{1}{4}$ that he copies it. Assuming that a student who copies the answer, will be correct with the probability $\frac{3}{4}$, what is the probability that the student knows the answer, given that he answered it correctly?

Akash does not know the answer to one of the question in the test. Which value would Akash violate if he resorts to unfair means?

Q6.A binomial distribution is given by B(6,1/2). Find the probability of at least three success in six trials.

Q7.There are 5% defective items in a large bulk of items. Find the probability of getting at best three defective items if four are drawn one by one at random with replacement.

Q8.Find the probability distribution of the no. of kings if three cards are drawn at random with replacement from a pack of 52 cards.

PRACTICE TEST

MATHEMATICS - CLASS XII

LEVEL – THREE (Second) **TEST PAPER –27** (PROBABILITY)

M.M = 40 **TIME -1.5 HRS.**

LEVEL—3.(Second) **TEST PAPER – 28(**PROBABILITY**)**

MAX.MARKS:-40 TIME :-1.5 HOUR

Q1.Three people A, B & C try to solve a problem of probability independently & their respective chances of solving the problem are 1/2, 1/3 & 1/4. Find the probability that (i) the problem is not solved.

(ii) at least one of them solves the problem.

(iii) exactly two of them solve the problem.

Q2. Three people A, B & C keep on throwing a die , till one of them gets a six & wins the game. Find their respective chances of winning if A starts the game followed by B & C.

Q3.Each new born child is equally likely to be a boy or a girl. If a family has two children, find the conditional probability that the youngest is a girl, given that the eldest is a girl.

Q4.There are three coins. One is a two headed coin, the other is a biased coin that shows head 75% times & tail 25% times & the third is a unbiased coin. One of the coins is chosen & tossed & it shows head. Find the probability that it is the two headed coin.

Q5.A card from a pack of 52 cards is lost & then two cards are drawn from the remaining cards without replacement. If both are found to be Hearts, find the probability that the lost card being a Heart.

Q6.Three coins are tossed simultaneously. Find the mean & variance of the number of heads appeared.

Q7. A man is known to speak truth 3 out of 4 times. He throws a die and reports that it is a six. Find the probability that it is actually a six.

Q8.A doctor has to attend a patient. The probability that he comes by train,

bus ,scooter or by any other means of transport are 1/7 , 2/5, 3/7 & 1/7 resp.

The probability that he reaches late are 3/4, 2/3 & 1/4 if he comes by train,

bus & scooter resp. & he is never late if he comes by any other means of transport. When he arrived he is late. Find the probability that he came by scooter.

SAMPLE TEST PAPER – 1

M.M –60 (15 X 4) TIME :-2.00 HOURS

Q1. A man is known to speak truth 3 out of 4 times. He throws a die and reports that it is a six. Find the probability that it is actually a six.

Q2.A doctor has to attend a patient. The probability that he comes by train,

bus ,scooter or by any other means of transport are 1/7 , 2/5, 3/7 & 1/7 resp.

The probability that he reaches late are 3/4, 2/3 & 1/4 if he comes by train,

bus & scooter resp. & he is never late if he comes by any other means of transport. When he arrived he is late. Find the probability that he came by scooter.

3)A merchant plans to sell two types of personal computers- a desktop model and a portable model that will cost Rs. 25000 and Rs. 40000 respectively. He estimates that the total monthly demand of computers will not exceed 250 units .Determine the number of units of each type of computers which the merchant should stock to get maximum profit if he does not want to invest more Rs 70 lakhs and if his profit on the desktop model is Rs. 4500 and on portable model is Rs. 5000

4) Find the equation of the plane through the intersection of the planes $3x - y + 2z - 4 = 0$ and $x + y + z - 2 = 0$ and the point (2,2,1)

5) A line makes angles $\alpha, \beta, \gamma, \delta$ with the four diagonals of a cube. Prove that $\cos^2\alpha + \cos^2\beta + \cos^2\gamma + \cos^2\delta = 4/3$

6) Find the coordinates of the point where the line through

(3, −4, −5) and (2, − 3, 1) crosses the plane $2x + y + z = 7$.

7. Express the vector $\vec{a}=5\hat{\imath}-2\hat{\jmath}+5\hat{k}$ as the sum of two vectors such that one is parallel to vector $\vec{b}=3\hat{\imath}+\hat{k}$ and other is perpendicular to $\vec{b}$.

8. If $\vec{a}$ and $\vec{b}$ are unit vectors and θ is the angle between them, prove that

$$\sin\frac{\theta}{2}=\frac{1}{2}\left|\vec{a}-\vec{b}\right|.$$

9.If $\vec{a} \times \vec{b} = \vec{c} \times \vec{d}$ and $\vec{a} \times \vec{c} = \vec{b} \times \vec{d}$ prove that $\vec{a} - \vec{d}$ is parallel to $\vec{b} - \vec{d}$ provided $\vec{a} \neq \vec{d}$ and $\vec{b} \neq \vec{c}$.

10)Find the differential equation of the family of curves given by $x^2 + y^2 = 2$ a x

11.Solve $(1+ x^2)\frac{dy}{dx} + y = \tan^{-1} x$

12)Solve : $\left[\frac{e^{-2\sqrt{x}}}{\sqrt{x}} - \frac{y}{\sqrt{x}}\right]\frac{dx}{dy} = 1$ where $x \neq 0$

13.Solve the differential equation $(\tan^{-1}y - x)dy = (1 + y^2)dx$.

14). There are 2000 Cycle drivers, 4000 Scooter drivers and 6000 truck drivers all insured. The probabilities of an accident involving a cycle , a scooter, a truck are 0.01, 0.03, 0.15 respectively. One of the insured drivers meets with an accident. What is the probability that he is a cycle driver? Which mode of transport would suggest to a student and why?

Q15).Two numbers are selected from the numbers 1,2,3,4 & 5. Find the mean & variance of the greater of the two numbers.

SAMPLE TEST PAPER – 2

M.M –60 (8 X 4 + 6x3) TIME – 1.5 HRS.

1. Sand is pouring from a pipe at the rate of $12cm^3$/sec. the falling sand forms a cone on the ground in such a way that the height of the cone is always one-sixth of the radius of the base. How fast is the height of the sand-cone increasing, when height is 4 cm.
2. Find the interval in which the function given by

   $f(x)=x^3-6x^2+6x+15$ is strictly increasing or decreasing.
3. Find the equation of the tangent to the curve $\sqrt{x}+\sqrt{y}=a,$ (a being constant) at the point where $x=\frac{a^2}{2}$.
4. $Evaluate \int \frac{dx}{(x^2+1)(x^2+4)}$
5. Evaluate $\int_0^a \sin^{-1}\sqrt{\frac{x}{a+x}}\,dx$

6)Evaluate $\int \frac{1}{\cos(x-a)\cos(x-b)}dx$

7)Evaluate $\int_1^4 [|x-1|+|x-2|+|x-3|]dx$ 8)Evaluate $\int_{\frac{\pi}{6}}^{\frac{\pi}{3}} \frac{dx}{1+\sqrt{tanx}}$

9).An open cylinder is to be constructed from a metal sheet so as to hold a given quantity of liquid. Show that cost of material will be least when the height of the cylinder is equal to its radius.

10). A rectangle is inscribed in a semi circle of radius r with one of its sides on diameter of semicircle .find the diamensions of the rectangle so that its area is maximum. Find the area also.

11) -Sketch the region common to the circle $x^2+y^2=16$ and the parabola $x^2 = 6y$.Also find the area of the region using Integration.

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ZOANL INSTITUTE OF EDUCATION & TRAINING, BHUBANESWAR
Kendriya Vidyalya No. 4 Bhubaneswar Campus
Niladri Vihar, P.O. Saileshree Vihar
BHUBANESWAR (Odisha) - 751 021

Visit Us

http://zietbbsr.org

E-mail:

zietbbsr@yahoo.com

dirzietbhubaneswar@kvsedu.org

Contact Number:

0674-2721290

KENDRIYA VIDYALAYA SANGATHAN, NEW DELHI

ZIET BHUBANESWAR

GRADED LEVEL PRACTICE TEST FOR CLASS XII IN PHYSICS KVS-ZIET BHUBANESWAR

2016

This document contains graded level practice test papers prepared as per the CBSE syllabus by combining the relevant units.

Under the Guidance of

Mrs L Chari

D C/ Director

ZIET BHUBANESWAR

Prepared by Mrs. T Samrajya Lakshmi ZIET Bhubaneswar PGT (Physics)

FOREWARD

I am happy that Mrs T Samrajya Lakshmi PGT(Physics) has been able to bring out the booklet, which contains questions of different difficulty levels in all chapters of Class XII in Physics, which is the first of its kind.

This should help the students decide the level of mastery in each of the topics / chapters. If the student is able to solve all the questions in level 'A', he can proceed to the next higher level i.e. 'B' and from that to level 'C'. The principle of video games has been adopted here so that the pupil is not dubbed as average or bright, but each one gets an opportunity to move from one level to another. Incidentally, this also provides the clue to the areas of learning that need to be strengthened in the student.

Such an endeavour demands the combination of good knowledge of the subject with experience in classroom teaching and testing. The rich experience and expertise of _Mrs T Samrajya Lakshmi PGT(physics) along with the willingness to walk the extra mile has resulted in this achievement.

I whole heartdely congratulate Mrs T Samrajya Lakshmi PGT (physics), who could give a concrete form to the concept visulalised by me, to enable the students to move from one level to another at his / her pace and space.

In addition to this, at ZIET, we have another option called 'ASK US' to clarify any doubt or solve any problem of students of any KV. The students should go to the website of ZIET BBSR, fill up the particulars and mail to us. The reply will be sent to the students' e-mail directly.

I wish 'Good Luck' to all the students appearing in the Board Exam this year and wish to encourage them to utilize all the avenues and options open in order to get the best from the KVS.

A similar booklet is available for Maths, Physics, Chemistry and Biology also and all the booklets are up-loaded in the website of ZIET. I sincerely thank the faculty of ZIET for enthusiastically taking up the assignments and completing them on time for the benefit of students' community.

I wish everybody a bright future.

Deputy Commissioner
KVS, RO, BBSR & DIRECTOR ZIET Bhubaneswar

PRACTICE TEST

CLASS XII _PHYSICS

ELECTROSTATICS & CURRENT ELECTRICITY

LEVEL-A

Max Marks: 30 **Times: 90Mts**

General Instructions

Answer all the questions

Q.No 1to 5 carries 1 mark each

Q. No's 6 to 10 carries 2 marks each

Q. No's 11 to 15 carries 3 marks each.

1	Define conductivity of a conductor. Give the SI unit of it.	P:96	1
2	Sketch the electric field lines due to a positive charge.	P:23	1
3	Plot V-I graph for a conductor. Name the quantity that the slope of the curve represents.	P :101	1
4	Find the effective resistances when three resistances each of resistance R are connected in parallel.	P:108	1
5	Give the relation between Electrostatic field and Potential.	P61	1
6	Derive an expression to find the torque acting on an electric dipole when placed in a uniform external field.	P:31	2
7	State &prove Gauss's Law. Also give the significance of Gauss's law.	P:33	2
8	Draw the circuit diagram showing how a potentiometer be used to compare the emf's of two primary cells. Also give the corresponding formula.	P122	2
9	Using Kirchhoff's 'laws obtain the balancing condition of Wheatstone Bridge.	P119	2
10	What is an equipotential surface? What is the direction of electric field at a point on an equipotential surface? Also what is amount of work done in moving a test charge on an equipotential surface from one point to another?	P:60	2
11	Derive an expression to find the potential energy of a dipole in an external field. Also state what is electrostatic shielding?	P:66 & 69	3

12	Give the principle of working of a Meter bridge. Also explain with a neat circuit diagram how will you find the unknown resistance of the given wire using a meter bridge?	P:121	3
13	Derive the expression to find the drift velocity and current density of the electrons.	P97	3
14	Show that the capacitance of a parallel plate capacitor having cross sectional area A and separated by a distance 'd'is $C= \epsilon_0 A/d$	P 74	3
15	Derive the expression to find the Potential energy of a dipole in an external field when the dipole is rotated through an angle Θ_2 from an angle Θ_1 in an external electric field.	P66	3

PRACTICE TEST

CLASS XII _PHYSICS

ELECTROSTATICS & CURRENT ELECTRICITY

LEVEL-B

Max Marks: 30 **Times: 90Mts**

General Instructions

Answer all the questions

Q. No 1 to 5 carries 1 mark each

Q. No's 6 to 10 carry 2 marks each

Q. No's 11 to 15 carry 3 marks each

1	Draw the electric field due to an electric dipole.	P 25	1
2	What is meant by linear charge density? Give its SI unit of measurement.	P32	1
3	Name the materials used in standard resistors. Also give reason why these materials are used for the same.	P 104	1
4	State the fact from which the Kirchhoff's junction rule follows.	P116	1
5	How can you increase the sensitivity of a Potentiometer?	P122	1
6	Give the limitations of Ohm's law. Name the devices used in electrical circuits where the proportionality of V and I does not hold. Also give the characteristic curve of those devices.	P:101	2
7	Define electric flux. Give some important properties of field lines.	P:25	2
8	Derive an expression to find the electric field due to a uniformly charged infinite plane sheet of charge.	P:38	2
9	Find the potential energy of a system of charges.	P:62	2
10	Derive the expression to find the equivalent emf of a series combination of two cells connected in series.	P:113	2
11	Give the properties of electric field lines.	P25	3
12	What is meant by 'power loss'? Give an example. Also give the expression to find the power loss. Give reason why there are high voltage danger signs on transmission lines.	P 106	3

13	In a meter bridge the null point is found at a distance of 33.7cm from A. If now a resistance of 12Ω is connected in parallel with S, the null point occurs at 51.9cm. Determine the values of R and S.	P:121	3
14	(a) Determine the electrostatic potential energy of a system consisting of two charges 7μC and -2μC (and with no external field) placed at (-9cm, 0, 0) and (9cm, 0, 0) respectively. (b) How much work is required to separate the two charges infinitely away from each other?	P:65	3
15	Answer the following (a) Ordinary rubber is an insulator. But special tyres of aircraft are made slightly conducting. Why is this necessary? (b) Vehicles carrying inflammable materials usually have metallic ropes touching the ground during motion. Why? (c) A bird perches on a bare high power line. And nothing happens to the bird. A man standing on the ground touches the same line and gets a fatal shock. Why?	P:70	3

PRACTICE TEST

CLASS XII _PHYSICS

ELECTROSTATICS & CURRENT ELECTRICITY

LEVEL-C

Max Marks: 30 **Times: 90Mts**

General Instructions

Answer all the questions

Q. No 1 to 5 carries 1 mark each

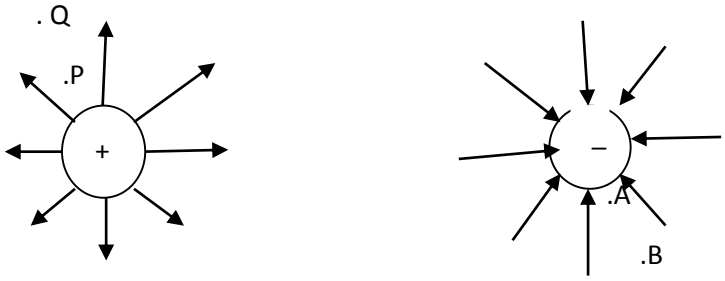
Q. No's 6 to 10 carry 2 marks each

Q. No's 11 to 15 carry 3 marks each

1	Name the device which is not affected by the internal resistance of the source in measuring the voltage.	P123	1
2	What are linear isotropic dielectrics?	P72	1
3	A polythene piece rubbed with wool is found to have a negative charge of 3×10^{-7} C. Estimate the number of electrons transferred.	P8	1
4	Name the quantity that can be found from the slope of the graph of Current density' **j'** and drift velocity **'Vd** 'of the charge carriers.	P 98	1
5	Two wires of equal length, one of aluminum and the other of copper have the same resistance. Which of the two wires is lighter? Hence explain why aluminum wires are preferred for overhead power cables.(ρ_{Al}=2.63 X $10^{-8}\Omega$m, ρ_{Cu}=1.72 X $10^{-8}\Omega$m, Relative density of Al= 2.7, of Cu = 8.9)	Q No 16 P 129	1
6	Given n resistors each of resistance R, how will you combine them to get the (i) maximum (ii) minimum effective resistance? What is the ratio of the maximum to minimum resistance?	P108	2
7	A slab of material of dielectric constant K has the same area as the plates of a parallel –plate capacitor but has a thickness (3/4) d, where d is the separation of the plates. How is the capacitance changed when the slab is inserted between the plates?	P:77	2
8	An infinite line charge produces a field of 9 X 10^4N/C at a distance of 2 cm. Calculate the linear charge density.	P 32	2
9	What is dielectric strength of a medium? Explain how dielectric strength limits the amount of charge that can be stored on a given capacitor without significant leaking?	P 74	2

10 The resistance of the platinum wire of a platinum resistance thermometer at the ice point is 5Ω and at steam point is 5.23Ω. When the thermometer is inserted in a hot bath, the resistance of the platinum wire is 5.795Ω. Calculate the temperature of the bath. P105 2

11 Fig shows the field lines of a Positive and negative charge respectively. 3



P59

(a) Give the signs of the potential difference V_P-V_Q ;V_B-V_A

(b) Give the sign of the work done by the external agency in moving a small negative charge from B to A

(c) Does the kinetic energy of a small positive charge increase or decrease in going from B to A?

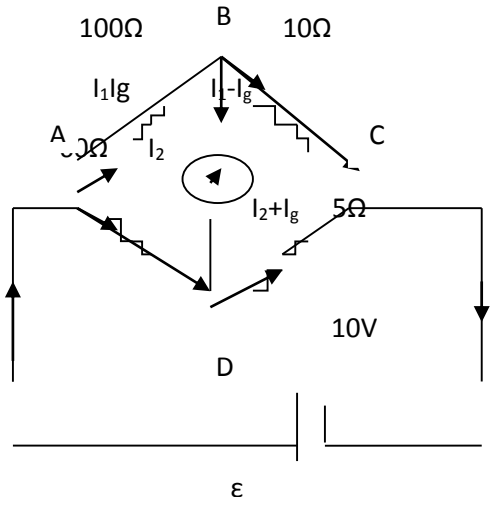
12 In a metre bridge the null point is found at a distance of 33.7cm from A. If now a resistance of 12Ω is connected in parallel with S, the null point occurs at 51.9cm. Determine the values of R and S. P121 3

13 A 900 pF capacitor is charged by 100 V battery. (a)How much electrostatic energy is stored by the capacitor? P82 3

The capacitor is disconnected from the battery and connected to another 900 pF capacitor. What is the electrostatic energy stored by the system?

14 In a potentiometer arrangement, a cell of emf 1.25 V gives a balance point at 35.0cm length of the wire. If the cell is replaced by another cell and the balance point shifts to 63.0cm, what is the emf of the second cell? Is the balance point affected by the internal resistance of the driver cell? (Hint $\varepsilon_1=kl_1$) 3

15 The four arms of a Wheatstone bridge have the following resistances. 3
AB=100Ω,BC=10Ω, CD=5Ω, and DA=60Ω



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A galvanometer of 15 Ω resistance is connected across BD. Calculate the current through the galvanometer when a potential difference of 10 V is maintained across AC.

PRACTICE TEST

CLASS XII _PHYSICS

MAGNETIC EFFECTS OF CURRENT & MAGNETISM

EMI & AC

LEVEL-A

Max Marks: 30 **Times: 90Mts**

General Instructions

Answer all the questions

Q. No 1 to 5 carries 1 mark each

Q. No's 6 to 10 carry 2 marks each

Q. No's 11 to 15 carry 3 marks each

1	What is a Solenoid? Plot the magnetic field due to Solenoid.	P151	1
2	Give the properties of materials that are used in making core of electro magnets.	P196	1
3	Give the formula to find the Q-factor. What are the dimensions of it?	P250	1
4	Give the dimensional formula of rms Voltage.	P264	1
5	Plot the graph showing the variation of reactance with frequency in case of inductance.		1
6	Give the principle and working of a cyclotron. Also give the expression for finding the energy gained by the charged particle in moving through the cyclotron	P 141	2
7	Derive an expression to find the force between two parallel current carrying conductors.	P154	2
8	How will you convert a Galvanometer into an Ammeter? Find the resistance to be connected to the Galvanometer to convert into an Ammeter.	P164	2
9	Draw the magnetic field lines due to (a) a bar magnet and (b) an electric dipole. Give any one difference between them.	P 175	2
10	Show that the average power supplied to an inductor over one complete cycle is zero.	P239	2

11	Derive an expression to find the Magnetic Field at a point on the axis of a circular current loop of radius R	P145	3
12	With a neat labeled diagram explain briefly the principle and working of a Moving Coil Galvanometer	P163	3
13	State Faradays laws of Electromagnetic Induction? Give the expression to find the induced emf. On what factors induced emf setup depends upon?	P207	3
14	Explain briefly the working of an AC generator with a neat labelled diagram and input output waveforms	P225	3
15	Explain how the phenomenon of resonance is achieved in an LCR series circuit? What is the expression to find the resonant frequency? Give any two applications of this phenomenon.	P 248	3

PRACTICE TEST

CLASS XII _PHYSICS

MAGNETIC EFFECTS OF CURRENT & MAGNETISM

EMI & AC

LEVEL-B

Max Marks: 30 **Times: 90Mts**

General Instructions

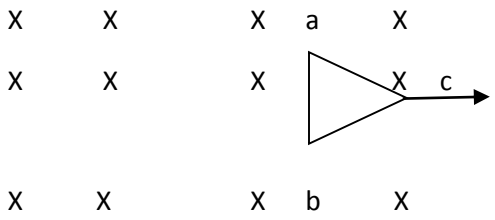
Answer all the questions

Q. No 1 to 5 carries 1 mark each

Q. No's 6 to 10 carry 2 marks each

Q. No's 11 to 15 carry 3 marks each

1	Define voltage sensitivity of a moving coil galvanometer. Also give the formula to find the same.	P165	1
2	Does a bar magnet exert a torque on itself due to it is own field? Does one element of a current –carrying wire exert a force on another element of the same wire?	P 184	1
3	Plot the graph showing the variation of reactance with frequency in case of a capacitance		1
4	Give the direction of induced current in the following.	P211	1



5	Give the formula to find the Quality factor. What is the significance of it?	P250	1
6	What is the principle involved in Mass-spectrometer? What is the advantage of it?	P140	2

7	Define Magnetic Lorentz Force. Name the quantity the unit of which can be defined from the magnetic force	. P134	2
8	Derive an expression to find the magnetic dipole moment of a revolving electron.	P 162	2
9	A loop of irregular shape carrying current is located in an external magnetic field. If the wire is flexible, why does it change to a circular shape?	P160	2
10	Current in a circuit falls from 5.0A to 0.0A in 0.1S. If an average emf of 200V induced, give an estimate of the Self-Inductance of the circuit.	P237	2
11	Show that Lenz's law is in accordance with the law of conservation of energy.	P210	3
12	Give the principle and working of a transformer.	P259	3
13	Explain the working of a LCR series circuit by using the phasor diagram.	P245	3
14	A cyclotron's oscillator frequency is 10 MHz. What should be the operating magnetic field for accelerating protons? If the radius of its 'dees' is 60 cm, what is the kinetic energy (in Mev) of the proton beam produced by the accelerator. (e= 1.60 X 10^{-19}C, m_p= 1.67 X 10^{-27} kg, 1 Mev= 1.6 X 10^{-13} J)	P 142	3
15	Derive an expression to find the Torque acting on a rectangular current carrying coil placed inside a uniform magnetic field.	P 157	3

PRACTICE TEST

CLASS XII _PHYSICS

MAGNETIC EFFECTS OF CURRENT & MAGNETISM

EMI & AC

LEVEL-C

Max Marks: 30 **Times: 90Mts**

General Instructions

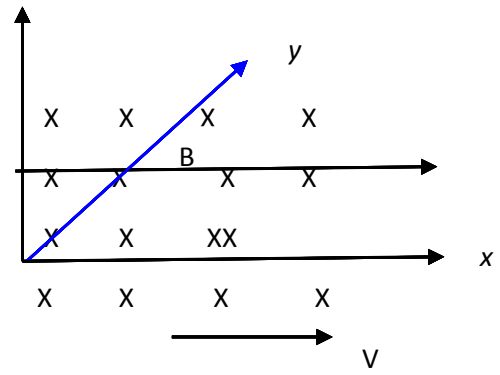
Answer all the questions

Q. No 1 to 5 carries 1 mark each

Q. No's 6 to 10 carry 2 marks each

Q. No's 11 to 15 carry 3 marks each

1	A magnetized needle in a uniform magnetic field experiences a torque but no net force. An iron nail near a bar magnet, however, experiences a force of attraction in addition to a torque. Why?	P179	1
2	If the magnetic field is parallel to the positive y-axis and the charged particle is moving along the positive x-axis which way would the Lorentz force be for an electron	P137	1



3	What is the principle of working of Induction furnace? What is the purpose of Induction furnace?	P219	1
4	What happens to the self-inductance of a Solenoid when the number of turns of the coil is doubled?	P223	1
5	A light bulb is rated at 100 W for a 220 V supply. Find the resistance of the bulb.	P236	1

6	Name the type of motion executed by a charged particle when the velocity of the particle has a component along the direction of the magnetic field. Also define pitch of the particle and give an expression to find the pitch of the particle.	P138	2
7	In a LCR series circuit obtain the conditions under (i) which the impedance of the circuit is minimum (ii) Watt less current flows in the circuit.	P248 P252	2
8	A sinusoidal voltage of peak value 283 V and frequency 50 Hz is applied to a series LCR circuit in which R= 3Ω, L = 25.48 mH, and C =796μF. Find (a) the impedance of the circuit ;(b) the phase difference between the voltage across the source and the current; (c) the power dissipated in the circuit.	P253	2
9	Show that in the free oscillations of an LC circuit, the sum of energies stored in the capacitor and the inductor is constant in time.	P 259	2
10	A closed loop moves normal to the constant electric field between the plates of a large capacitor. Is a current induced in the loop (i) when it is wholly inside the region between the capacitor plates (ii) when it is partially outside the plates of the capacitor? The electric field is normal to the plane of the loop.	P:211	2
11	Two moving coil meters, M_1 and M_2 have the following particulars: R_1=10Ω, N_1= 30, A_1= 3.6 X 10^{-3} m^2, B_1 = 0.25 T R_2=14Ω, N_2= 42, A_2= 1.8 X 10^{-3} m^2, B_2 = 0.50 T (The spring constants are identical for the two meters). Determine the ratio of (a) current sensitivity and (b) Voltage sensitivity of M_2 and M_1	Q No.10 P 169	3
12	(a) A magnetic field that varies in magnitude from point to point but has a constant direction (east to west) is set up in a chamber. A charged particle enters the chamber and travels un deflected along the straight path with constant speed. What can you say about the initial velocity of the particle? (b) A charged particle enters an environment of a strong and non-uniform magnetic field varying from point to point both in magnitude and direction, and comes out of it following a complicated trajectory. Would its final speed equal the initial speed if it suffered no collisions with the environment?	P140 P186	3

(c) Mention the places where a magnetic needle shows true north accurately in India. What is the value at these places?

13	A Resistor of 200Ω and a capacitor of 15.0μF are connected in series to a 200 V, 50 Hz ac source.(i) Calculate the current in the circuit; (b) Calculate the voltage 9rms) across the resistor and the capacitor. Is the algebraic sum of these voltages more than the source voltage? If yes, resolve the paradox.	P251	3
14	A small town with a demand of 800 Kw of electric power at 220 V is situated 15 km away from an electric plant generating power at 440 V. The town gets power from the line through a 4000-220 V step –down transform r at a sub-station in the town. (a) Estimate the line power loss in the form of heat. (b) How much power must the plant supply, assuming there is negligible power loss due to leakage? (c) Characterise the step up transformer at the plant.	P268	3
15	A metallic rod of 1m length is rotated with a frequency of 50 rev/s, with one end hinged at the centre and the other end at the circumference of a circular metallic ring of radius 1 m, about an axis passing through the centre and perpendicular to the plane of the ring. A constant and uniform magnetic field of 1 T parallel to the axis is present everywhere. What is the emf between the centre and the metallic ring?	P213	3

PRACTICE TEST

CLASS XII _PHYSICS

Electromagnetic waves & Optics

Level-A

Max Marks: 30 **Times: 90Mts**

General Instructions

Answer all the questions

Q. No 1 to 5 carries 1 mark each

Q. No's 6 to 10 carry 2 marks each

Q. No's 11 to 15 carry 3 marks each

1	Define Total internal reflection	P320	1
2	Define the focal length of a spherical mirror.	P312	1
3	Draw the wave front that will emerge from a point source.	P354	1
4	Give the conditions under which constructive interference takes place.	P364	1
5	State Malus Law.	P378	1
6	Give the ray diagram showing the image formation in case of a concave mirror.	P312	2
7	What are the postulates of Huygens wave theory?	P354	2
8	What is meant by myopia? With a neat labelled diagram show how will you rectify the defect	P336	2
9	Name the waves that are produced by hot bodies and molecules. Give any one application of these waves	P282	2
10	Give the principle of a Simple Microscope with a neat ray diagram.	P339	2
11	What are the properties of EM waves?	P276	3
12	Derive mirror formula for a concave mirror	P312	3
13	Draw a neat labeled diagram of reflecting telescope. Give any two advantages of this telescope over refracting telescope.	P342	3
14	Give the differences between interference and diffraction	P371	3
15	Describe briefly, with the help of a suitable diagram, how the transverse nature of light can be demonstrated by the phenomenon of polarization?	P377	3

PRACTICE TEST

CLASS XII _PHYSICS

Electromagnetic waves & Optics

Level-B

Max Marks: 30 **Times: 90Mts**

General Instructions

Answer all the questions

Q. No 1 to 5 carries 1 mark each

Q. No's 6 to 10 carry 2 marks each

Q. No's 11 to 15 carry 3 marks each

1	Give the conditions under which total internal reflection takes place.	P320	1
2	Suppose that the lower half of the concave mirror's reflecting surface is covered with an opaque (non-reflective) material. What effect will this have on the image of an object placed in front of the mirror?	P315	1
3	Define resolving power of a microscope. Give the formula to find the same.	P375	1
4	Give the shape of the wave front in the case when Light emerging out of a convex lens when a point source is placed at its focus.	P358	1
5	What is the effect on the interference fringes in a Young's double slit experiment when the separation between the two slits is increased.	P366	1
6	Give the ray diagram showing the image formation in case of a convex lens. Also define the magnifying power of the lens.	P327	2
7	Prove the laws of reflection using Huygens wave theory	P357	2
8	What is Hypermetropia? Show how you will rectify the defect with a ray diagram.	P337	2
9	How Radio waves are produced. What is the frequency range of these waves and give any one application of these waves.	P281	2
10	Derive an expression to find the angular magnification of a Simple microscope.	P339	2
11	Give Maxwell's Equations of EM waves	P273	3
12	Derive Lens formula in case of convex lens		3

13	Define angular magnification of an Astronomical Telescope. Derive an expression to find the magnification of this telescope	P341	3
14	Show that P= $P1 + P2 + P3 + \cdots \ldots \ldots \ldots$ for combination of thin lenses in contact.	P329	3
15	Using Young's double slit experiment derive an expression to find the fringe width.	P362	3

PRACTICE TEST

CLASS XII _PHYSICS

Electromagnetic waves & Optics

Level-C

Max Marks: 30 **Times: 90Mts**

General Instructions

Answer all the questions

Q. No 1 to 5 carries 1 mark each

Q. No's 6 to 10 carry 2 marks each

Q. No's 11 to 15 carry 3 marks each

1	Two slits are made one mm apart and the screen is placed one metre away. What is the fringe separation when blue-green light of wavelength 500 nm is used?	P366	1
2	A magician during a show makes a glass lens with 1.47 disappear in a trough of liquid. What is the refractive index of the liquid? What is the value of focal length of the glass in that medium?	P327	1
3	Assume that light of wavelength 6000^{o}A is coming from a star. What is the limit of resolution of a telescope whose objective has a diameter of 100 inch? (Where 100 inch = 254 cm.)	P 373	1
4	Unpolarised light is incident on a plane glass surface. What should be the angle of incidence so that the reflected and refracted rays are perpendicular to each other?	P381	1
5	Estimate the distance for which ray optics is good approximation for an aperture of 4mm and wavelength 400nm.	P376	1
6	Show that R =2F in case of concave spherical mirror.	P312	2
7	Prove the laws of refraction using Huygens wave theory	. P355	2
8	What focal length should the reading spectacles have for a person for whom the least distance of distinct vision is 50 cm?	P337	2

9	Light with an energy flux of 18 W/cm^{2}falls on a non-reflecting surface at normal incidence. If the surface has an area of 20 cm^2, find the average force exerted on the surface during a 30 minute time span.	P279	2
10	An object is placed at (i) 10 cm, (ii) 5 cm in front of a concave mirror of radius of curvature 15 cm. Find the position, nature, and magnification of the image in each case.	P315	2
11	The magnetic field in a plane electromagnetic wave is given by $B_y = 2X\ 10^{-7}\ \sin(0.5\ X\ 10^3\ x + 1.5\ X\ 10^{11}\ t)$ T. (a) What is the wavelength and frequency of the wave? (b) Write an expression for the electric field.	P 278	3
12	Derive Len-Makers formula	P 325	3
13	Show that for a prism $\mu = \frac{\sin(A+Dm)/2}{\sin(\frac{A}{2})}$ Where A is the angle of the prism and Dm is the angle of minimum deviation.	P330	3
14	Show that the superposition of the waves originating from the two coherent sources S1 and S2 having displacement , $y1 = a\cos\omega t$ and $y2 = a\cos(\omega t + \emptyset)$ at a point produce a resultant intensity, $I = 4a^2\cos^2\phi/2$, Hence write the conditions for the appearance of dark and bright fringes.	P 360	3
15	(i) If= 0.5m for a glass lens, what is the power of the lens? (ii) The radii of curvature of the faces of a double convex lens are 10 cm and 15 cm. Its focal length is 12 cm. What is the refractive index of glass? (iii) A convex lens has 20 cm focal length in air. What is focal length in water? (Refractive index of air-water= 1.33, refractive index for air-glass = 1.5.)	P328	3

PRACTICE TEST

CLASS XII _PHYSICS

Dual nature of Matter & Radiation &

Atoms & Nuclei

Level-A

Max Marks: 30 **Times: 90Mts**

General Instructions

Answer all the questions

Q. No 1 to 5 carries 1 mark each

Q. No's 6 to 10 carry 2 marks each

Q. No's 11 to 15 carry 3 marks each

1	State the law of Radioactive decay	P446	1
2	What is the SI unit of activity of a radioactive sample.. Define the unit	P447 &448	1
3	Give any two differences between Nuclear Fission and Fusion reactions	P452 &455	1
4	Give the plot showing the variation of Photoelectric current with intensity of light.	P390	1
5	Give any two properties of photon	P396	1
6	Define Mass-defect. Give the formula to find out the mass defect.	P443	2
7	What are isotopes? Give an example.	P441	2
8	Give any two differences between nuclear fission and fusion reactions	P452 &455	2
9	Give the postulates of Bhor's atomic theory	P424	2
10	Give the equation representing the dual nature of light. Also state the terms related to the natures	P398	2
11	What is meant by Q-value of a nuclear reaction? How does it helps in differentiating an exothermic reaction and an endothermic reaction? What is the importance of Q-value in a reaction?	P449 &450	3
12	Give the properties of Nuclear Force	P445	3

13	Plot the graph showing the variation of number of undecayed nuclei with time t. Derive the expression to find the number of radioactive nuclei after a time t	P446 &447	3
14	What is photoelectric effect? Do all the metals are photo sensitive to ultraviolet? Name the law on which the phenomenon depends upon.	P405	3
15	Define the following terms. a. Stopping Potential b. Threshold frequency c. Work function	 P391 P392 P394	3

PRACTICE TEST

CLASS XII _PHYSICS

Dual nature of Matter & Radiation &

Atoms & Nuclei

Level-B

Max Marks: 30 **Times: 90Mts**

General Instructions

Answer all the questions

Q. No 1 to 5 carries 1 mark each

Q. No's 6 to 10 carry 2 marks each

Q. No's 11 to 15 carry 3 marks each

1	Name the particle that is emitted in β^--decay	P450	1
2	Mention any one difference between atomic reactions and nuclear reactions	P451	1
3	Give any two properties of Neutrinos	P450	1
4	Give the dimensions of Planck's constant	P406	1
5	An electron, an α-particle, and a proton have the same kinetic energy. Which of these particles has the shortest de-Broglie wavelength?	P402	1
6	Plot the graph showing the variation of Potential energy of a pair of nucleons as a function of their separation. What important conclusions can be drawn from this graph?	P445	2
7	What are the draw backs of Rutherford Model of atom	P422	2
8	Calculate the energy equivalent of 1g of substance.	P442	2
9	Given the mass of iron nucleus as 55.85 u and A=56. Find the nuclear density?	P442	2
10	Derive the relation for finding the de-Broglie wavelength of an electron	P400	2
11	Derive an expression to find the energy of an electron in an atom.		3
12	Plot the graph showing the variation of the binding energy per nucleon as a function of mass number. Explain how the graph helps in finding the release of energy in the process of nuclear fission and fusion reactions.	P444	3
13	Derive the expression to find the half-life period of a radioactive nuclide.	P448	3

14	Give photon picture of electromagnetic radiation.	P396	3
15	Plot the graphs showing the variation of the following a. Variation of photocurrent with collector plate potential for different intensity of incident radiation b. Variation of photoelectric current with collector plate potential for different frequencies of incident radiation. c. Variation of stopping potential with frequency of incident radiation for a given photosensitive material Also give the one conclusion each that can be drawn from the above graphs.	P390	3

PRACTICE TEST

CLASS XII _PHYSICS

Dual nature of Matter & Radiation &

Atoms & Nuclei

Level-C

Max Marks: 30 **Times: 90Mts**

General Instructions

Answer all the questions

Q. No 1 to 5 carries 1 mark each

Q. No's 6 to 10 carry 2 marks each

Q. No's 11 to 15 carry 3 marks each

1	Name the particles which are emitted in β^--decay	P450	1
2	Name the particle that is emitted in the following reactions $_ZX^A \longrightarrow {}_{Z-2}Y^{A-4} + \text{-------}$ $_{Z-2}Y^{A-4} \longrightarrow {}_{Z-1}P^{A-4} + \text{-------}$	P449 &450	1
3	Give the dimensions of the activity of a radioactive sample. Also give the conversion between Becquerel and Curie	P460 & 448	1
4	What is the de- Broglie wavelength associated with an electron, accelerated through a potential difference of 100 Volts?	P403	1
5	Define the unit of energy used in atomic and nuclear physics	P387	1
6	Give the differences between β^-& β^+ decay reactions.	P450	2
7	It is found experimentally that 13.6 eV energy is required to separate a hydrogen atom into a proton and an electron. Compute the orbital radius and the velocity of the electron in a hydrogen atom.	P420	2
8	Draw a neat schematic diagram showing arrangement of the Geiger-Marsden experiment. Also give the plot showing the variation of Number of scattered particles detected with scattering angle.	PP417	2

9	Give the Postulates of Bohr's Model of atom. What is the physical significance of negative sign in the expression $E_n = -\frac{13.6}{n^2}$ eV	P 424	2
10	What are the points on which the wave picture of light could not explain the observations of photoelectric emission?	P393	2
11	The Half-life of $_{92}U^{238}$undergoing α-decay is 4.5 X 10^{9}years. What is the activity of 1g sample of $_{92}U^{238}$	P448	3
12	(a)Why is the binding energy per nucleon found to be constant for nuclei in the range of mass number (A) lying between 30 and 170? (b) Explain why when a heavy nuclei with mass number, A= 240breaks into two nuclei, A=120, energy is released in the process.	P444	3
13	Given the following atomic masses: $_{92}U^{238}$ =238.05079u $_{2}He^{4}$ =4.00260u $_{90}Th^{234}$ =234.04363u $_{1}H^{1}$=1.00783u $_{91}Pa^{237}$ =237.05121u Here is the symbol Pa is for the element Protactinium (Z= 91). (a) Calculate the energy released during the alpha decay of $_{92}U^{238}$ (b) Show that $_{92}U^{238}$ cannot spontaneously emit a proton.	P450	3
14	What is the de-Broglie wavelength associated with (a) an electron moving with a speed of 5.4 X 10^{6} m/s, and (b) a ball of mass 150 travelling at 30.0m/s?	P401	3
15	Discuss about the different spectral lines emitted by Hydrogen atom	P421	3

PRACTICE TEST

CLASS XII _PHYSICS

Electronic Devices & Communication systems

Level-A

Max Marks: 30 **Times: 90Mts**

General Instructions

Answer all the questions

Q. No 1 to 5 carries 1 mark each

Q. No's 6 to 10 carry 2 marks each

Q. No's 11 to 15 carry 3 marks each

1	Draw the wave forms of analog and digital signals	P502	1
2	Define the term Current Amplification factor for a transistor in CE mode.	P495	1
3	What is meant by a Logic Gate?	P502	1
4	Mention the two basic modes of communication systems.	P515	1
5	Give any two uses of E-mail.	P528	1
6	What is meant by Forward bias condition of the diode? Give its V-I characteristic curve.	P480	2
7	Give any two advantages of LEDs over conventional incandescent low power lamps.	P488	2
8	Give any two differences between Analog signal and Digital signal	P501	2
9	What is the truth table of NOT gate? Give the symbol used to represent a NOT gate.		2
10	How Ionisation takes place in the atmosphere? What frequencies of Electromagnetic spectrum can penetrate the ionosphere and escape?	P520	2
11	Basing on energy band theory distinguish between conductors, insulators and semiconductors.	P471	3
12	Explain the working of a diode as a Half Wave rectifier.	P483	3
13	Explain the working of a transistor as an amplifier in CE mode with proper input and output waveforms.		3
14	What is meant by Modulation? Why Modulation is required?	P522	3

15	Draw a neat Block diagram of basic communication system. Name the phenomenon by which propagation of waves takes place through Ionosphere. Also show diagrammatically how propagation of waves takes place through Ionosphere.	P515 & 520	3

PRACTICE TEST

CLASS XII _PHYSICS

Electronic Devices & Communication systems

Level-B

Max Marks: 30 **Times: 90Mts**

General Instructions

Answer all the questions

Q. No 1 to 5 carries 1 mark each

Q. No's 6 to 10 carry 2 marks each

Q. No's 11 to 15 carry 3 marks each

1	What is the biasing condition of a transistor?	P492	1
2	Plot V-I characteristic curve of a Solar cell.	P488	1
3	Give any two uses of LEDs	P488	1
4	What is meant by Amplitude Modulation? Give the equation of an Amplitude Modulated Wave.	P524	1
5	Define the following terms (a) Attenuation (b) Amplification	P516	1
6	How will you realize the truth table of an And gate? Give the symbol used to represent the Gate.	P503	2
7	Give any two differences between the V-I characteristic curves of an LED and a junction diode.	P488	2
8	Explain how emf is generated by a Solar cell when light falls on it.	P488	2
9	What are the important criteria for the selection of a material for solar cell fabrication?	P489	2
10	What is Modulation Index? What is the importance of it in communications?	P525	2
11	Explain how Barrier Potential is formed in case of a P-N Junction Diode	P478	3
12	Draw a neat circuit diagram used for studying the input output characteristics of n-p-n transistor in CE configuration. Also briefly explain these characteristics.	P493	3
13	Define the following terms for a CE Amplifier a. Input resistance	P494	3

b. Output resistance

c. Current Amplification Factor

Also give the formula to find the above quantities.

14	Explain briefly detection of Amplitude Modulated Wave with required input and out waveforms.	P527	3
15	What is a cell in Mobile Telephony? How it helps in communication systems.	P528	3

PRACTICE TEST

CLASS XII _PHYSICS

Electronic Devices & Communication systems

Level-C

Max Marks: 30 **Times: 90Mts**

General Instructions

Answer all the questions

Q. No 1 to 5 carries 1 mark each

Q. No's 6 to 10 carry 2 marks each

Q. No's 11 to 15 carry 3 marks each

1	Plot the V-I characteristic curve of a Photodiode.	P487	1
2	C, Si and Ge have same lattice structure. Why is C insulator while Si and Ge intrinsic semiconductors?	P474	1
3	Does a solar cell always requires sunlight for its working? Give your answer	P489	1
4	Draw the diagram showing the wave form of Frequency Modulated Wave.		1
5	A message signal of frequency 10 kHz and peak voltage of 10 Volts is used to modulate a carrier of frequency 1 MHz and peak voltage of 20 volts. Determine the sidebands produced.	P525	1
6	The current in the forward bias is known to be more than the current in the revere bias. What is the reason than to operate the photodiodes in reverse bias?	P487	2
7	In a Zener regulated power supply a Zener diode with V_z = 6.0V is used for regulation. The load current is to be 4.0mA and the unregulated input is 10.0V. What should be the value of series resistor R_s?	P486	2
8	What are the operating conditions of a photodiode?	P487	2
9	Give any four differences between intrinsic semiconductor and an extrinsic semiconductor	P472& 473	2
10	A transmitting antenna at the top of a tower has a height 32m and the height of the receiving antenna is 50m. What is the maximum distance between them for satisfactory communication in LOS mode? Given radius of earth 6.4 X 10^6m.	P522	2

11	Explain the working of a Zener Diode as a Voltage Regulator	P486	3
12	Draw the input and output waveforms for the following inputs. Also name the gate. • At $t<t_1$: A=0, B=0; Y(output) =0 • For t_1 to t_2 : A=1, B=0 ; Y(output) =1 • For t_2 to t_3 : A=1, B=1; Y(output)= 1 • For t_3 to t_4 : A=0, B=1; Y(output)=1 • For t_4 to t_5 : A=0, B=0; Y(output)=0 • For t_5 to t_6 : A=1, B=0; Y(output)=1 • For $t>t_6$: A=0, B=1; Y(output)=1	P503	3
13	For a CE transistor amplifier, the audio signal voltage across the collector resistance of 2.0 kΩ is 2.0V. Suppose the current amplification factor of the transistor is 100, what should be the value of R_B in series with V_{BB} supply of 2.0 V if the dc base current has to be 10 times the signal current? Also calculate the dc drop across the collector resistance	P500	3
14	Give the differences between the different modes of propagation of Electromagnetic waves.	P519 to522	3
15	Give the Block diagram of a simple modulator for obtaining AM signal. What is the function of square law device which is a non-linear device in obtaining the output? Explain with the respective equations.	P525	3

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OUR OUTPUT

BIOLOGY

Till session ending 2015

1. Cross word Chapter wise Class –XII, online/offline after downloading.
2. Exam alert class XII Preparatory series, two chapter test series
3. Biology XII- Chapter wise test.
4. Chapter wise Work sheet, Biology XII, for Bright learners.
5. Value based question in Biology Class XII
6. Molecular Genetics & Biology Workshop Manual.

Session 2015-16

1. Check you Biology Preparation Set-I, Based on whole syllabus , 70 marks test, objective type to be answered on line
2. Diagram based question in Biology for Class XII.
3. Quarter syllabus Graded test in Biology (at level A,B,C)
4. Chapter wise test , class XI

CHEMISTRY

Till session ending 2015

1. Manual Result Improvement workshop in Chemistry
2. Chemistry workshop manual 2014
3. MCQ Questions X
4. Value Based Questions –XII Chemistry
5. Study Material XI Chemistry

Session 2015-16

1.Graded Practice Test Booklet, Class XII, Chemistry
2.Dealing with STRUCTURE & REACTION BASED Questions in Chemistry – A Booklet
3.Chemical Demonstration Booklets.
4.Developed teaching aids with MS Excel:
a.Calculator_Molarity_Molality_ _
b.Graph of concentration of reactant vs time for study of chemical kinetics
5.Memory map
6.Revision notes
7.Video clips

COMMERCE

Session 2015-16

1. Manual of Workshop on Capacity Building for PGT commerce
2. Question Bank (Accountancy & Business Studies) for Class XII

ECONOMICS

Till session ending 2015

1. Economics Workshop Manuals for PGT (Economics)-2013&2014
2. Study Material for Class XI-2013
3. Value Based Question for Class- XII-2013
4. MCQs in Economics for Class-IX-2014
5. MCQs in Economics for Class-X-2014
6. Inflation Project-Class XI-2013
7. Social Science Workshop Manual for TGT (S.Sc.)-2014
8. OTBA Question and Answer for Class –XI-2014

Session 2015-16

1. Economics Workshop Manual for PGT (Economics)-Sept.2015
2. Study Material for Class XII- Aug-Sept.2015
3. Study Material for Class XI (Teacher's Hand book) - Aug-Sept.2015
4. Social Science Workshop Manual for TGT (S.Sc.)-Aug.2015

MATHEMATICS

Till session ending 2015

1. Value based Questions (Chapter wise) for Class XI.
2. Question Bank for Class VII.
3. Question Bank for Class VIII.
4. OTBA for Class IX.

Session 2015-16

1. Thirty Sample papers (Level wise) for Class XII
2.Chapter wise “Value based questions” for Class XII
3. Strategic action plan for academically challenged learners of class XII.

PHYSICS

Till session ending 2015

1. Value Based Questions Class XI
2. Manual Of 3 Days workshop on Result improvement of Board Result
3. Study materials Class XI
4. MCQ for Class VII Science, Class IX Physics.
5. MCQ for Class X , Physics
6. OTBA Questions for class IX Science
7. Manual of 3 days’ workshop on result improvement
8. Manual of integration of Mathematics & Physics.

Session 2015-16

1.Manual of 3 days’ workshop of capacity building in Physics
2.Manual of 3 Days workshop on Project Based Learning
3.Test Papers for Class XII (can be answered by going through the NCERT Text Book)
4.Graded Level Test papers for Class XII (can be answered by going through the NCERT Text Book)

OTHER

Till session ending 2015

1. Manual for the induction course for newly recruited PRT, TGT & PGT.
2. Module on ‘PERSONALITY DEVELOPMENT’
3. Module on ‘CONFLICT MANAGEMENT’
4. Module on ‘POSITIVE ATTITUDE.

Session 2015-16

1. Module on ‘INTER PERSONAL RELATIONSHIP’
2. Manual for the workshop on “Office procedure.”
3. On-line Quiz on Hindi Rajbhasha

All the materials are available on ZIET Bhubaneswar website www.zietbbsr.org .