TIME:3HRS   **MM:70**

General Instructions:

1.There are a total of 27 questions and five sections in the question paper.   All questions are compulsory.
2.The question paper consists of five sections A, B, C, D and E.
3.Internal choice is given in all the sections. **A student has to attempt only one of the alternatives in such questions.**
4.Section—A contains questions 1-5 multiple choice questions of 1 mark each.
5,Section—B contains questions 6-12 ,short answer type I of 2 marks each.
6.Section—C contains questions 13-21,short answer type II of 3 marks each.
7.Section—D contains questions 22-24,case- based short answer type of 3 marks each.
8.Section – E contains questions 25-27, long answer types of 5 marks each.
8.Wherever necessary, the diagrams drawn should be neat and properly labeled.

SECTION-A

1. Androgens are synthesized by: a.) Sertoli Cells   b.) Leydig cells   c.)   Seminal vesicles d.) Bulbourethral gland

OR

A procedure that finds use in testing for genetic disorders, but is also misused for female foeticide is:
 a.) Lactational amenorrhea   b.) Amniocentesis   c.) Artificial insemination d.) Parturition

2. Which type of immune response is responsible for the rejection of tissues/organs in the patient's body post transplantation?
 a.) Auto-immune response b.) umoral immune response c.) physiological immune response d.) cell-mediated immune response

OR

Rheumatoid arthritis is caused when . . .

i.) Lymphocytes become more active   ii.) Body attacks self cells

iii.) More antibodies are produced in the body   iv.) The ability to differentiate pathogens or foreign molecules from self-cells is lost.

Choose the correct answer from the options given below:

   a.) i and ii   b.) iii and iv   c.) i and iii   d.) ii and iv

3. Significance of 'heat shock' method in bacterial transformation is to facilitate

 a.) binding of DNA to the cell wall   b.) uptake of DNA through membrane transport proteins
 c.) uptake of DNA through transient pores in the bacterial cell wall   d.) expression of antibiotic resistance gene

4. A biotechnologist wanted to create a colony of E.coli possessing the plasmid pBR322, sensitive to Tetracycline. Which one of the following restriction sites would he use to ligate a foreign DNA?

 a.) Sal I b.) Pvu I c.) EcoRI d.) Hind III

5. The most important cause of biodiversity loss is:

 a.) Over exploitation of economic species b.) Habitat loss and fragmentation
 c.) Invasive species d.) Breakdown of plant-pollinator relationships

SECTION-B

6. A tomato plant produced 400 seeds. Answer the following:

   (a) How many megaspore mother cells and how many microspore mother cells, respectively are involved?

   (b) How many male gametes are needed? Why?

OR

Life style diseases are increasing alarmingly in India. We are also dealing with large scale malnutrition in the population. Suggest a process by which we can address both these problems. Give any three examples to support your answer.

7. Expand ELISA. State the principle, ELISA is based on.

8. State the Mendelian principle which can be derived from a dihybrid cross and not from monohybrid cross.

9.   (a)What does "competent" refer to in competent cells?
      (b) Name the natural sources of   (i) agarose and   (ii) Ti plasmid

10.How do automobiles fitted with catalytic converters reduce air pollution?   Suggest the best fuel for such vehicles.

11.Why does the Lac operon shut down some time after the addition of lactose in the medium where E.coli was growing? Why low level expression of lac operon is always required?

12. a) While cloning vectors, which of the two will be preferred by biotechnologists- bacteriophage or plasmids, Justify with reasons.
   b) Name the first transgenic cow developed and state the improvement in the quality of the product
        produced by it.

SECTION-C

13. Alien species are highly invasive and are a threat to indigenous species. Substantiate this statement with any three examples.

14.(a) Name the type of natural selection shown in Industrial melanism.
    (b) Evolution is not a direct process but a stochastic process based on chance event(s) in nature. Justify.

15.Compare and contrast the theories of evolution proposed by Darwin and Hugo De Vries.

16. Explain the different steps involved in the secondary treatment of sewage.

OR

Microbes can be used to decrease the use of chemical fertilizers. Explain how this can be accomplished.

17. (a) Why is MOET considered to be a successful programme in cattle breeding?

(b) What is meant by "superior" male and "superior" female cattle selected for this programme?

(c) Why is the cow administered FSH-like hormones? Explain.

18. (a) Ecological succession is faster in a fire devastated forest than on a bare rock. Justify the statement.

(b) How do the pioneer species on a bare rock pave way to the next stage?

19. A 17-year old boy is suffering from high fever with profuse sweating and chills. Choose the correct option from the following diseases which explain these symptoms and rule out the rest with adequate reasons.

     (a) Typhoid   (b) Viral Fever   (c) Malaria

20. What is a vaccine? How does immunity develop against a disease, when vaccine for that disease is introduced into the human body?

21. Explain the function of each of the following:

     (a) Promoter   (b) TRNA   (c) Exons.

SECTION-D

22. a) In a pond there were 200 frogs. 40 more were born in the year. Calculate the birth rate of the population.

b) Population in terms of number is not always a necessary parameter to measure population density. Justify with two examples.

23. Study the given pedigree chart and answer the questions that follow:

(a) Is the trait recessive or dominant?

(b) Is the trait sex-linked or autosomal?

(c) Give the genotypes of the parents shown in generation **I** and their third child shown in generation **II** and the first grandchild shown in generation **III**

OR

Haemophilia is a sex linked recessive disorder of humans. The pedigree chart given below shows the inheritance of Haemophilia in one family. Study the pattern of inheritance and answer the questions given.

(a) Give all the possible genotypes of the members 4, 5 and 6 in the pedigree chart.

(b) A blood test shows that the individual 14 is a carrier of haemophilia. The member numbered 15 has recently married the member numbered 14. What is the probability that their first child will be a haemophilia male?   Show with the help of Punnett square.

24. Name the three groups of insects along with an example for each that are killed by the crystal proteins produced by Bacillus thuringiensis.

SECTION-E

25. (a) How does Hardy-Weinberg equation explain genetic equilibrium?
    (b) Describe how this equilibrium is disturbed that may lead to founder effect.
    OR
     Who proposed that DNA replication is semiconservative? Who proved it experimentally? Describe the experiment.

26. Explain the different methods of diagnosing cancer.
    OR
    Enumerate the points that have to be considered for successful bee-keeping.

27. Aneuploidy of chromosomes in human beings results in certain disorders. Draw out the possibilities of the karyotype in common disorders of this kind in human beings and its consequences in individuals.
    OR
     In a dihybrid cross, white eyed, yellow bodied female Drosophila was crossed with red eyed, brown bodied male Drosophila.   The cross produced 1.3 percent recombinants and 98.7 progeny with parental type combinations in the F2 generation. Analyze the above observation and compare with the Mendelian dihybrid cross.

Pre Board Examination
(2019-2020)
SUBJECT: Chemistry
CLASS -XII

Time 3: Hours **Maximum Marks: 70**

General instructions:

(i) All questions are compulsory.
(ii) The question paper consist of 30 Questions divided in to four sections A, B, C & D.
(ii) All questions of section A are MCQ type each question carry 1 mark.
(iii) All questions of section B are short questions, each question carries 2 marks.
(iv) All questions of section C are short answer type, each question carries 3 marks.
(vi) All questions of section D are Long answer type, each question carries 5 marks.

Objective type questions (1 x 10 = 10)

Q.1. Which of the following alkyl halide will undergo SN1 reaction most readily

   a) $(CH_3)_3C$-F b) $(CH_3)_3C$-Cl c) $(CH_3)_3C$-F d) $(CH_3)_3C$-I

Q.2. Which of the following base is not present in DNA

   a) Adenine b) Uracil c) Thymine d) Cytosine

Q.3. Alkyl halides are prepared from alcohols by treating with.

   a) $HCl + ZnCl_2$ b) Red $P + Br_2$ c) H_2SO_4 d) All the above

Q.4. Which of the following is π- acid ligand?

   a) NH_3 b) CO c) F^- d) EDTA

Q.5. Identify the order of reaction from the following unit for its rate constant: $Lmol^{-1}s^{-1}$

Q.6. The electronic configuration of Gd(64) is

   a) $[Xe]4f^7 5d^1 6S^2$ b) $[Xe]4f^6 5d^2 6S^2$ c) $[Xe]4f^8 6S^2$ d) $[Xe]4f^9 6S^2$

Q.7. The value of henry's constant K_H is ………………………

   a). greater for gases with higher solubility b) greater for gases with lower solubility

   c) constant for all gases d) not related to the solubility of gases

Q.8. What is the effect of temperature on adsorption.

Q.9. What is the difference between emulsion and a true solution

Q.10. How much charge is required for the reduction of 1 mol of Zn2+ to Zn.

Section B   (10 x 2 = 20)

Q.1 State Henry"s law. What is the effect of temperature on solubility of gases in liquid?

Q.2. Define the following terms.

   i). Molar conductivity   ii) Secondary batteries

                OR

   What is Sandmeyer's reaction?

Q.3. Define order of a reaction? How does order of a reaction differ from molecularity.

 Q.4. Write two differences between Lyophobic sol and Lyophilic sol

                OR

   Name the reagents which are used in following conversions:

     (i) A primary alcohol to an aldehyde (ii) Butan-2-one to butan-2-ol

     (iii) Phenol to 2, 4, 6-tribromophenol.

Q.5. Give the difference between Leaching and Roasting

Q.6. Draw the Structure of the following

    i). XeF_2 ii) BrF_5

Q.7. Why transition metals and their compounds act as catalyst.

Q.8. State one reaction as an example of Rosenmund reduction

Q.9. Write the hybridization and magnetic character of $[Fe(CO)_5]$.

Q.10. Discuss linkage isomerism

Section C   (5 x 3= 15)

Q.1. Define Azeotropes. What type of azetorope is formed by negative deviation from

    Raoult's law

                OR

Explain Markownikoff's rule with example

Q.2. Account for the following

   i). Manganese shows maximum number of oxidation states in 3d series

   ii). Why Transition metals generally form colored compounds

   iii). What is the oxidation state of Ce(58)

Q.3. Explain the following

   i). Rate of a reaction

   ii). Activation energy of a reaction

Q.4. When Propanone is subjected to Wolff Kishner reduction, what product will be obtained? Give chemical equation.

Q.5. The Molar conductivity of a 1.5M solution of an electrolyte is found to be 138.9 Scm^2mol^{-1}. Calculate the conductivity of this solution.

<div align="center">OR</div>

Answer the following

   i). Haloalkanes easily dissolve in organic solvents, why?

   ii). Out of two bromo-derivatives, $C_6H_5CH(CH_3)Br$ and $C_6H_5CH(C_6H_5)Br$ which one is more reactive in S_N^1 substitution reaction and why?

   iii). Draw the structure of the compound: 4-Bromo-3-methylpent-2-ene

<div align="center">

Section D   **(5 x 5 = 25)**

</div>

Q.1. How would you obtain the following

   i. Benzoquinone from phenol

   ii. 2-methylpropan-2-ol from methyl magnesium bromide
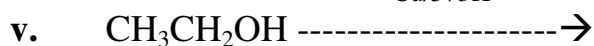
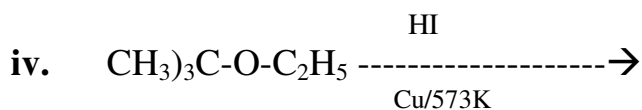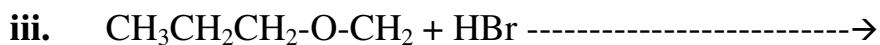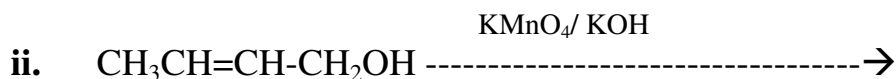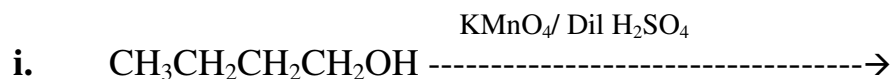   iii. Propan-2-ol from Propene

Q.2. Define Osmotic pressure. Describe how the molecular mass of a substance can be determined by a method based on measurement of osmotic pressure

<div align="center">OR</div>

Write reactions stating conditions for the following conversions:

(i) Benzene to Acetophenone   (ii) Ethanal to propanone

(iii) Ethanol into propanone   (iv) Phenol into benzaldehyde

Q.3. Name the product of the following reactions

i. $CH_3CH_2CH_2CH_2OH \xrightarrow{\text{KMnO}_4/\text{ Dil H}_2\text{SO}_4}$

ii. $CH_3CH=CH-CH_2OH \xrightarrow{\text{KMnO}_4/\text{ KOH}}$

iii. $CH_3CH_2CH_2-O-CH_2 + HBr \longrightarrow$

iv. $CH_3)_3C-O-C_2H_5 \xrightarrow{\text{HI}}$

v. $CH_3CH_2OH \xrightarrow{\text{Cu/573K}}$

OR

Explain

     a) Hoffmann-bromide degradation reaction and Carbylamine reaction

     b) Swartz reaction

Q.4. Explain

     a) Reimer Tiemann reaction

     b) Wolff-Kishner reduction reaction

Q.5. Describe the following with the help of suitable examples:

     (i) Rosenmund Reduction

     (ii) Cannizzaro's reaction.

PRE-BOARD EXAMINATION
2019-20
ECONOMICS
CLASS-XII

TIME: 3 Hours   **MM: 80 MARKS**

General Instructions:

   i.   Marks for questions are indicated against each question

   ii.   Question No.**1-10** and **18-27** are very objective type questions carrying **1** mark each.

   iii.   Question No.**11-12** and **28-29** are short answer questions carrying **3** marks each. Answers to them should not normally exceed **60** words each.

   iv.   Question No.**13-15** and **30-32** are also short answer questions carrying **4** marks each. Answers to them should not normally exceed **70** words each.

   v.   Question No.**16-17** and **33-34** are long answer questions carrying **6** marks each. Answers to them should not normally exceed **100** words each.

   vi.   Answers should be brief and to the point and the above word limit be adhered to as far as possible.

SECTION-A: INTRODUCTORY MACRO-ECONOMICS

1. Fill in the blank :

Deposits which are payable by the banks on the demand by the customer at any time are known as _____.(Time deposits/Demand deposits)

2. Fiscal deficit –Interest payment =_____

a)Revenue deficit   b)Primary deficit

c)Both a and b   d)Neither a and b.

3. State ,with reason, whether the given statement is true or false:

Autonomous transactions are also known as "Below the line items".

4.   Define involuntary unemployment.

5.   Aggregate demand can be increased by _____.

a)Increasing bank rate   b)Increasing CRR

c)Increasing consumption   d)None of the above .

6. In an economy ,investment increased from 1000 to 2000 cr but the income increases by 5000 cr .What is the value of investment multiplier?

a)2   b)3

c)4   d)5

7. Change in government spending is a part of :

a)Monetary policy   b)Fiscal policy

c)Either a and b   d)Neither a and b

8. Foreign exchange transaction which are independent of other transaction in the BOP are called ___.

a)Accommodating transaction   b)Autonomous transaction

c)Current transaction   d)Capital transaction

9. As a result of Double counting ,national income is _____estimated.(over /under)

10. _____ is a compulsory payment by the people to the government without expectation of any direct return or benefit to the payer.(Fine/Tax)

11. "GDP does not give us a clear indication of economic welfare of a country ".Defend or Refute the given statement with valid reason.

OR

What are non-monetary exchanges ?Discuss with suitable examples.

12. "Devaluation and depreciation of currency are one of the same thing ".Do you agree? How do they effect the export of a country?

If in an economy :

Change in initial Investment – 500 cr

MPS =0.2

Find the values of the following :

a)Investment multiplier

b) Change in final income

13. Distinguish between revenue receipts and capital receipts in a government budget. Give examples.

14. Elaborate any two instruments credit control as exercised by the Reserve Bank of India .

OR

What role does credit multiplier play in determining the credit creation power of the banking system ?Use a numerical illustration to explain.

15. If in an economy :

Change in initial Investment – 500 cr

MPS =0.2

Find the values of the following :

a)Investment multiplier

b) Change in final income

16. From the following data given below estimate a)NDP at FC   b)NNP at FC

Items	(Rupees in cr)
Gross domestic capital formation	250
Net exports	-50
Private final consumption expenditure	900
Value of output of	
a)Primary product	900
b)Secondary product	800
c)Tertiary product	400
Value of intermediate consumption by	
a)Primary product	400
b)Secondary product	300
c)Tertiary product	100
Depreciation	80
IT	100
Government final consumption expenditure	100
Subsidies	10
NFIA	-20

17. Outline the steps required to taken in deriving the consumption curve from the given Saving curve .Use diagram.

OR

Explain the meaning and impact of Deficient Demand .Explain two measures by which full employment equilibrium can be reached.

SECTION-B: INDIAN ECONOMIC DEVELOPMENT

18. One child policy was introduced in _____.

    a)Britain   b)China   c)USA   d)Japan

19. _____ is a system in which a central planning authority seeks to utilize country's resources for developmental activities.(Capitalism, Economic planning)

20. Which of the following is an example of economic infrastructure?

a)Housing   b)Communication

c)Education   d)Health

21. Which sector is the largest consumer of commercial energy?

a)Agricultural sector   b)Industrial sector

c)Transport sector   d)Household sector

22. Which of the following is not a feature of globalization?

a)Disinvestment   b)Liberalization

c)Rationalization of tariff   d)Reforms in foreign exchange management

23. In terms of the sectoral contribution to GDP, economies of India and Pakistan depends heavily on_____.

a)Primary sector   b)Secondary sector

c)Tertiary sector   d)Both primary and secondary sector

24. Fill in the blank:

_____ refers to the reduction in the amount of ozone in the atmosphere.(Global warming, Ozone deletion)

25. Fill in the blank:

Plant and animals are examples of _____ components of environment.(Biotic/abiotic)

26. Define outsourcing.

27. The great leap Forward campaign in china focused on :

a)Widespread industrialization   b)New agricultural strategy

c)Privatization   d) Economic reforms

28. The sole purpose of the British rule in India was to reduce the country to be feeder economy for the protection and promotion of its interest. However ,British policies had a positive impact on Indian economy .Discuss any 3 positive contributions made by British in India .

29. What are the three major causes of poverty in India ?

OR

Differentiate between Relative poverty and absolute poverty.

30 Explain the role of non-farm employment in promoting rural diversification?

31. What are the common successes shared by India and Pakistan?

32. What problem are being faced by the power sector in India?

OR

Discuss the main drawbacks of our healthcare system.

33. State the reforms included in the policy of liberalization under economic reforms.

34. How do the following factors contribute to the environmental crisis in India ?
a)Global warming
b)Urbanization
c)Increase in population .

OR

What is sustainable development ? What are the principal strategy to attain sustainable development

TIME: 3Hour   M. M. 80

General Instructions:

➢ All questions are compulsory.
➢ The question paper consist of 37 questions divided into four sections A, B, C & D.
➢ All questions in section A contain MCQ, VSA type and assertion reason type question carries 1 mark.
➢ All questions of section B are short questions, each question carries 2 marks.
➢ All questions of section C are short answer type question, each question carries 4 marks.
➢ Section D are long questions, each question carries 4 marks.

Choose and write the correct option in the following question:

Q1. If A is a square matrix of order 3 such that |A|=2, then the value of |adj (adjA)| is
    a. -16   b. 16   c. 0   d. 2

Q2. The value of k using determinant in a ΔABD where A(1,3),B(0,0) and D(k,0) are given and ar (ΔABD)=3sq
    units is
    a. 2   b. ±2   c. -2   d. 4

Q3. If $x^2+2xy+=42$ then $\frac{dy}{dx}$ is

    a.$\frac{2(x+y)}{x+y2}$ b.$\frac{-2(x+y)}{2x-3y2}$ c.$\frac{-2(x+y)}{2x+3y2}$ d. none of these

Q4. If the curve $ay+x^2=7$ and $x^3=y$, cut orthogonally at(1,1),then the value of a is

    a. 1   b. 0   c. -6   d.6

Q5. The value of integral $\int \frac{dx}{(x+1)\sqrt{2x-3}}$ dx is

    a. $\frac{12}{\sqrt{5}}\tan^{-1}\sqrt{\frac{2x-3}{5}}$ +c   b. $\frac{2}{\sqrt{5}}\tan^{-1}\sqrt{\frac{2x+3}{5}}$ +c   c. $\frac{2}{\sqrt{5}}\tan^{-1}\sqrt{\frac{2x-3}{5}}$ +c   d. $\frac{5}{2}\tan^{-1}\sqrt{\frac{2x-3}{5}}$ +c

Q6. Area of the region bounded by the curve y=sinx between the ordinates x=0,x=π/2 and x-axis is
    a. 2 sq units   b. 4 sq units   c. 3 sq units   d. 1sq units

Q7. The solution of the differential equation $2x\frac{dy}{dx} -y =3$ represents a family of
    a. straight line   b. circles   c. parabolas   d. ellipses

Q8. The family $y=Ax+A^3$ curves is represented by differential equation of degree
    a. 1   b. 2   c. 3   d. 4

Q9. The two vectors ĵ + k̂ and 3 î - ĵ +4k̂ represents the two sides AB and AC, respectively of Δ ABC. The length
    of the median through A is
    a. $\frac{\sqrt{34}}{2}$ b.$\frac{\sqrt{48}}{2}$ c. $\sqrt{18}$ d. none of these

Q10. If a line makes angles π/2, 3 π/4 and π/4 with x,y,z axes, respectively then the direction cosines are
    a. ± (1,1,1)   b. ±(0,$-\frac{1}{\sqrt{2}}$,$\frac{1}{\sqrt{2}}$)   c. ±($\frac{1}{3}$,$\frac{1}{3}$,-$\frac{1}{3}$)   d. ±($\frac{1}{\sqrt{3}}$,$\frac{1}{\sqrt{3}}$,-$\frac{1}{\sqrt{3}}$)

Q11. The maximum value of Ƶ=4x+3y subjected to the constraints 3x+2y≥160, x+2y≥80, 5x+2y≥200
    x,y≥0 is
    a. 320   b. 300   c. 230   d. none of these

The following questions consist of two statements Assertion (A) and Reason(R).Answer these questions selecting the appropriate option given below:

a. Both A and R are true and R is the correct explanation for A.
B. Both A and R are true and R is not the correct explanation for A.
c. a is true but R is false.
d. A is false but R is true.

Q12. Assertion (A): if f(x)= $\begin{cases} x+1 & \text{if } x\le 1 \\ 3-9x^2 & \text{if } x>1 \end{cases}$ is continues at x=1 then a=1

Reason: for a continuous function f(x) at x=0 $\text{llim}_{x\to a} f(x) = \lim_{x\to a} f(x) = f(a)$

Q13. Assertion (A): The equation of tangent to the curve x=cost, y=sin t at t=π/4 is x+y-$\sqrt{2}$ =0

Reason(R): Slope of the line parallel to y-axis is not defined.

Solve the following questions:

Q14. Consider the set A= {1, 2, 3 } write the smallest equivalence relation R on A

Q15. Find the principal value of $\sin^{-1} \sin(\frac{2\pi}{3})$

Q16. Differentiate w.r.t x:8^x

Q17. Write the slope of the normal to the curve y=2x^2+3sinx at x=0

Q18. Evaluate $\int \frac{x}{1+x^2} dx$.

Q19. Write the integrating factor of the linear differential equation $\frac{dx}{dy}$+tanyx=sec^{2}y

Q20.Compute P(A/B) if P(B)=0.5 and P(A∩B)=0.32

Section B (carry 2 marks each)

Q21. If f(x)= $\begin{cases} ax+1 & \text{if } x\ge 1 \\ X+2 & \text{if } x<1 \end{cases}$ is continues then find the value of a.

Or

Is the function defined by f(x)=x^2-sinx+5 continues at x=π

Q22. Find the points on the curve y=x^3 at which the slope of the tangent is equal to the y coordinate of the point.

Q23. Show that the solution of differential equation xdy-ydx=0 represents a straight line passing through origin.

Or

Find the general solution of $\frac{dy}{dx}$ +$\frac{\sqrt{1-y2}}{1-x2}$ =0

Q24.Find the vectors of magnitude 10$\sqrt{3}$ units that are perpendicular to the plane of vector
    $\hat{i}$ +2 $\hat{j}$ +$\hat{k}$ and - $\hat{i}$ +3 $\hat{j}$ +4$\hat{k}$?

Q25. A dice is tossed thrice. Find the probability of getting an odd number at least once.

Q26. Express $\sin^{-1} \frac{sinx+cosx}{\sqrt{2}}$, where –π/4<x<π/4 in the simplest form.

Section c(carry 4 marks each)

Q27.Let f:A→B be a function as f(x)=$\frac{2x+3}{x-3}$,where A=R-{3} and B=R-{2} .Is the function f one-one and on to ? Is f invertible? If yes then find its inverse?

Q28. Evaluate $\int e^x(\frac{2+\sin2x}{1+\cos2x})$ dx

Or

Evaluate $\int_1^3 |x^2$-2x| of x

Q29. Two numbers are selected at random (without replacement) from first 7 natural numbers. If x denotes the smaller of the two numbers obtained. Find the probability distribution of x. Also mean of the distribution?

Or

There are three coins, one is a two headed coin (having head on both the faces, another is biased coin that comes up 75%of the time and the third is an unbiased coin. One of the three coin is chosen at random and tossed. If it shows head what is the probability that it was two headed coin?

Q30. Maximise Ẕ = 3x+2y

Subject to the constraints are x+2y≤10
                                      3x+y≤15
                                      x,y≥0

Q31.If $\sqrt{1+x^2}$ +$\sqrt{1-y^2}$ =a(x-a) then prove that $\frac{dy}{dx}$ =$\frac{\sqrt{1-y^2}}{\sqrt{1-x^2}}$.

Or

Differentiate with respect to x: $\sin^{-1}(\frac{2^{x+1}3^x}{1+(36)^x})$

Q32. If a=î+ĵ+ k̂ and b=ĵ- k̂, then find a vector c such that a×c=b and a.c=3

Section D

Q33. If A=$\begin{vmatrix} 2 & 3 & 4 \\ 1 & -1 & 0 \\ 0 & 1 & 2 \end{vmatrix}$ Find A^{-1} hence solve the system of equations

x − y = 3
2x+3y+4z=17
Y+2z=7

Q34. Using integration, find the area of the region.
    {(x, y): x²+y²≤1, x+y≥1, x≥0, y≥0}

Or

Using integration, find the area bounded by the curves$y = \sqrt{4-x^2}$,$x^2 + y^2 - 4x = 0$ $and\ the\ x-axis$.

Or

Q35. Show that the rectangle of maximum area that can be inscribed in a given circle is a square.

Or

Show that the height of the cylinder of maximum volume that can inscribed in a cone of height h is $\frac{1}{3}$ h.

Q36.Find the vector and Cartesian equations of the plane passing through the intersection of the planes $\vec{r}.(2i+6j)+12 = 0\ and\ \vec{r}.(3i-j+4k) = 0$ which are at a unit distance from the origin.

Pre-Board Examination
2019-2020
XII
Physical Education

Time-3hrs   **MM- 70**

General instructions:
- This question paper contains three sections A, B and C. All sections are compulsory.
- In section A, there are 20 multiple choice questions. Each question carries 1 mark.
- In section B, there are 10 short answer type questions. Each question carries 3 marks.
- In section C, there are 4 long answer type questions. Each question carries 5 marks.

Section A

Q1. Which of the following is not a type of dynamic strength?

A. Maximum Strength   B. Static Strength   C. Explosive Strength   D. Strength Endurance

Q2. Through which method endurance can be developed?

A. Isotonic Exercise   B. Isometric Exercise   C. Interval Exercise   D. Pace Runs

Q3. Which is not an aspect of Big Five Personality Theory?

A. Openness   B. Hostile   C. Extroversion   D. Agreeableness

Q4. Which is not the Jung's classification of personality?

A. Introverts   B. Extroverts   C. Mesomorph   D. Ambiverts

Q5. _____ Muscle is not involved in running.

A. Glutes   B. Trapezius   C. Calves   D. Quads

Q6. In which type of fracture a bone is broken and damages the internal organs?

A. Simple fracture   B. Compound fracture   C. Complicated fracture   D. Greenstick fracture

Q7. What happens when a ligament over stretched?

A. Sprain   B. Strain   C. Contusion   D. Bruises

Q8. Which one of the following is not a gender difference in male and female based on anatomical parameters?

A. Centre of Gravity   B. Pelvic Region   C. Adiposity   D. Muscle Strength

Q9. _____ is not a long term effect of exercise on cardio-vascular system.

A. Increase in cardiac output   B. Increase in blood volume   C. Increase in blood pressure
D. Quicker recovery rate

Q10. Which test measures minimum muscular srength of a person?

A. Barrow's three item test   B. Kraus-Weber test   C. AAHPER test
D. Physical Best test

Q11. Which test is not a part of Rikli and Jones senior citizen fitness test?

A. Chair Stand Test   B. Arm Curl Test   C. Back Scratch Test   D. Harvard Step Test

Q12. Which is not a reason for less participation of women in sports?
A. Lack of Time   B. Lack of Self Confidence   C. Eating   D. Lack of Fitness Movements

Q13. In which type of deformity knees touches each other?
A. Bowlegs   B. Flat foot   C. Knock Knees   D. Scoliosis

Q14. _____ occurs when our spine bends laterally?
A. Scoliosis   B. Kyposis   C. Lordosis   D. Bow legs

Q15. What is the right age of middle childhood?
A. 11 to 12 years   B. 3 to 10 years   C. 3 to 6 years   D. 7 to 10 years

Q16. Which of the following factors does not affect motor development?
A. Biological factors   B. Nutrition   C. Opportunities   D. Weight training

Q17. _____ is related to our sensory processing.
A. ADHD   B. ASD   C. SPD   D. ODD

Q18. In which disorder an individual gets caught in a cycle of obsessions?
A. ODD   B. ADHD   C. OCD   D. SPD

Q19. What is the main function of Protein?
A. Energy source   B. Improves eyes vision   C. Body building   D. Improve bone density

Q20. There are _____ types of tournaments.
A. Six types   B. Two types   C. Eight types   D. Four types

Section B
Q21. Briefly explain any three objectives of extramural.
Q22. Discuss any three pitfalls of dieting.
Q23. Discuss the benefits and procedure of pawanmuktasan.
Q24. Briefly explain about sensory processing disorder SPD.
Q25. Mention the corrective measure related to knock knee and bow legs.
Q26. What do you mean by female athletic triad? Discuss its symptoms.
Q27. Explain three test of Kraus-Weber test.
Q28. Elaborate any three physiological factors determining flexibility.
Q29. What do you mean by laceration? How can you manage laceration?
Q30. Explain any three techniques of extrinsic motivation.

Section C

Q31. What do you mean by speed? Elucidate the methods of improving speed.
Q32. What are the various types of friction? How is friction advantageous or disadvantageous in the field of games and sports?
Q33. Explain oxygen – intake and oxygen uptake. Explain the effects of exercise on the respiratory system.
Q34. Elucidate the reasons of low participation of women in sports and games.

.   **CLASS -XII**
Time 3: Hours   **Maximum Marks70**

General instructions:
 (i) All questions are compulsory.
(ii) The question paper consist of 37 Questions divided in to four sections A,B,C &D.
(ii) All questions of section A are MCQ type and one word each question carries 1 mark.
(iii) All questions of section B are short questions, each question carries 2 marks.
(iv) All questions of section C are short answer type, each question carries 3 marks.
 (vi) All questions of section D are Long answer type, each question carries 5 marks.

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1 A capacitor of capacitance 2μF has been charged to 200 V. It is now discharged through a resistance, the heat produced in the wire is
 (a) 400 J   (b) 0.02J   (c) 0.04J   (d) 0.08J

2 A steady current flows in a metallic conductor of non-uniform cross-section. The quantity quantities constant along the length of the conductor is/are
(a) current, electric field and drift speed   (b) current, current density and drift speed
(d) current only   (c) drift speed only

3. A moving coil galvanometer can be converted into a voltmeter by connecting
(a) a high resistance in series   (b) a high resistance in parallel
(c) a low resistance in series   (d) a low resistance in parallel

4. Lenz's law applies to
(a) electrostatics   (b) lenses   (c) electromagnetic induction   (d) cinema slides

OR

When the current through a solenoid increases at a constant rate, the induced current
 (a) is a constant and is in the direction of the inducing current
 (b) is a constant and is opposite to the direction of the inducing current
 (c) increases with time and is opposite to the direction of the inducing current
(d) Zero

5. We combine two lenses, one is convex and other concave having focal lengths and f_1 and f_2 their combined focal length in F. combination of the lenses will behave like concave lens, if
    (a) $f_1 > f_2$ (b) $f_1 = f_2$ (c) $f_1 < f_2$ (d) $f_1 = 1$

6. The source of light are said to be coherent;
(a) they produce waves of same wavelength
(b) they produce waves of same amplitude
(c) they produce waves of same wavelength having a constant initial phase difference
(d) they produce waves of same amplitude and same frequency

7 The soft iron core is [laced within the coil of a moving coil galvanometer because it
(a) Keeps the coil vertical
(b) Provides supports to the coil
(c) makes the coil stable
(d) Increases the current sensitivity of the galvanometer

8. According to Einstein's photoelectric equation, the graph between the kinetic energy (E) of photoelectrons ejected and the frequency (v) of incident radiation is

(a)   (b)   (c)   (d)

9 A ray of light is incident on a plane mirror at an angle i. The reflected ray deviates by angle
(a) 2i
(b) i
(c) 180-2i
(d) 90-i

10. The energy band gap is maximum in.
(a) metals
(b) superconductors
(c) insulators
(d) semiconductors

In the following questions a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices
(a) Assertion and reason both are correct statements and reason is correct explanation for assertion.
(b) Assertion and reason both are correct statements but reason is not correct explanation for assertion.
(c) Assertion is correct statement but reason is wrong statement.
(d) Assertion is wrong statement but reason is correct statement.

11 Assertion. In a meter bridge experiment, null point for an unknown resistance is measured. Now, the unknown resistance is put inside an enclosure maintained at a higher temperature. The null point can be obtained at the same point as before by decreasing the value of the standard resistance

   Reason : Resistance of a metal increases with increase in temperature
.
12 Assertion: A total reflecting prism is used to erect the inverted image without deviation

   Reason: Rays of light incident parallel to base of prism emerge out as parallel rays.

13. Assertion: The ratio of time taken for light emission from an atom to that for release of nuclear energy in fission is l: 100

 Reason Time taken of the light emission from an atom is of the order of 10^{-8} second

Fill in the blanks

14 The minimum energy required to free the electron from the ground state of the hydrogen atom is --------------- It is called the -------------------------energy of the hydrogen atom.

15. The thickness of depletion region is of the order of----------------------of a micrometre.

Answer the following questions in one word or one sentence:

16. In the given figure, charge $+Q$ is placed at the centre of a dotted circle. Work done in taking another charge $+q$ from A to B is W_1, and from B to C is W_2.

Which one of the following is correct : **$W_1 > W_2$, $W_1 = W_2$ and $W_1 < W_2$**

17 Plot a graph showing the variation of current 'I' versus resistance 'R', connected to a cell of emf. E and internal resistance 'r'

18 Which part of the electromagnetic spectrum is used in RADAR? Give its frequency range

OR

How are electromagnetic waves produced by accelerating charges

19 State the condition under which a large magnification can be achieved in an astronomical

OR

How does the angle of minimum deviation of a glass prism vary if the incident violet light is replaced by red light?

20. Calculate the energy of photon of electromagnetic radiation of wavelength 1986 A$^\circ$.

SECTION-B

21 In the given figure when key K is open the potential difference across the terminals of the cell is 6 volt. But when key K is closed then the potential difference of the cell becomes 4 volts. Calculate the internal resistance of the cell if $R = 2\Omega$

OR

A cell of emf 1.1 V and internal resistance 0.5 Ω is connected to a wire of resistance 0.5 Ω .Another cell of the same emf is connected in series but the current in the wire remains the same. Find the internal resistance of the second cell.

22. A short bar magnet placed with its axis at 30° with a uniform external magnetic field is 0.25 T experiences a torque of magnitude equal to 4.5 x 10^{-2} N-m. What is the magnitude of magnetic moment of the magnet?

OR

A magnetic needle free to rotate in a vertical plane parallel to the magnetic meridian has its north tip down at 60° with the horizontal. The horizontal component of the earth's magnetic field at the place is known at to be 0.4 G. Determine the magnitude of the earth's magnetic field at the place.

23. An alternating voltage $E = E_o \sin wt$ is applied to a circuit containing a resistor R connected in series with a black box.
The current in the circuit is found to be $I = I_o \sin(wt + \pi/4)$.
(i) State whether the element in the black box is a capacitor
 or inductor.
(ii) Draw the corresponding Phasor diagram and find the

impedance in terms of R.

24. A radio can tune into any station in the 7.5 MHz to 12 MHz band. What is the corresponding wavelength band?

OR

Find the wavelength of electromagnetic waves of frequency 4×10^9 Hz in free space. Give its two applications.

25. There are two sources of light, each emitting with a power of 100W. One emits X-rays of wavelength 1 nm and the other visible light at 500 nm. Find the ratio of number of photons of X-rays to the photons of visible light of the given wavelength?

26. Binding energy per nucleon versus mass number curve is as shown. S W X and Y are four nuclei indicated on the curve.

Mass number of nuclei
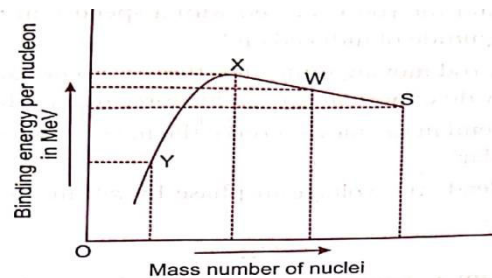
Based on the graph: (a) Arrange X, W and S in the increasing order of stability
 (b) Explain why binding energy for heavy nuclei is low.

27. Using the Rydberg formula for the spectrum of hydrogen atom, calculate the largest and shortest wavelengths of the emission lines of the Balmer series in the spectrum of hydrogen atom. (Use the value of Rydberg constant $R = 1.1 \times 10^7$ m^{-1})

SECTION-C

28 (i) How many electrons must be added to one plate and removed from the other so as to store 25.0J of energy in a 5.0 nF parallel plate capacitor?
 (ii) How would you modify this capacitor so that it can store 50.0 J of energy without changing the charge on its plates?

29. The following table gives the length of three copper wires, their diameters, and the applied potential difference across their ends. Arrange the wires in increasing order according to the following:(i) the magnitude of the electric field within them,
(ii) the drift speed of electrons through them, and
(iii) the current density within them.

Wire No.	Length	Diameter	Potential difference
1	L	3d	V
2	2L	d	V
3	3L	2d	2V

OR

Define resistivity of a conductor. Plot a graph showing the variation of resistivity with temperature for a metallic conductor. How does one explain such a behaviour, using the mathematical expression of the resistivity of a material?

30. A point charge +Q is placed at the centre O of an uncharged hollow spherical conductor

of inner radius 'a' and outer radius 'b'. Find the following:
(i) The magnitude and sign of the charge induced on the inner and outer surface of the conducting shell
(ii) The magnitude of electric field vector at a distance (a) r=a/2 and (b) r=2b, from the centre of the shell.

31. Figure shows a metal rod PQ of length l, resting on the smooth horizontal rails AB positioned between the poles of a permanent magnet. The rails, rod and the magnetic, field B are in three mutually perpendicular directions. A galvanometer G connects the rails through a key 'K. Assume the magnetic field to be uniform. Given the resistance of the closed loop containing the rod is R.
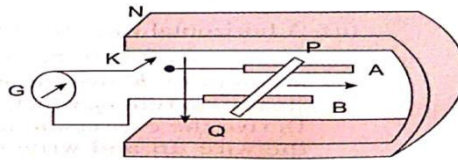
(i) Suppose K is open and the rod is moved with a speed v in the direction shown. Find the polarity and the magnitude of induced emf.
(ii) With K open and the rod moving uniformly, there is no net force on the electrons in the rod PQ even though they do experience magnetic force due to the motion of the rod. Explain.
(iii) What is the induced emf in the moving rod if the magnetic field is parallel to the rails instead of being perpendicular?

32. Show that the current leads the voltage in phase by t/2 in an ac circuit containing an ideal capacitor.

OR

With the help of a diagram, explain the principle of a device which changes a low voltage into high voltage but does not violate the law of conservation of energy. Give any one reason why the device may not be 100 % efficient.

33. In a double slit experiment, the distance between the slits is 3 mm and the slits are 2 m away from the screen. Iwo interference patterns can be seen on the screen one due to light with wavelength 480 nm, and the other due to light with wavelength 600 nm. What is the separation on the screen between the fifth order bright fringes of the two interference patterns?

OR

What do you understand by the statement 'Light from the sun is unpolarised. Explain how does sunlight gets polarized by the process of scattering?

34 A symmetric biconvex lens of radius of curvature R and made of glass of refractive index 1.5, is placed on a layer of liquid placed on top of a plane mirror as shown in the figure. An optical needle with its tip on the principal axis of the lens is moved along the axis until its real, inverted image coincides with the needle itself. The distance of the needle from the lens is measured to be x. On removing the liquid layer and repeating the experiment, the distance is found to be y. Obtain the expression for the refractive index of the liquid in terms of x and y.
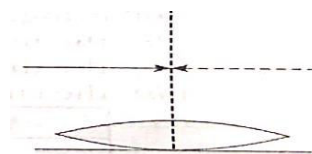
SECTION-D

35.(i) A particle of charge q is moving with velocity u in the presence of crossed Electric field E and Magnetic field B as shown. Write the condition under which the particle will continue moving along x-axis. How would the trajectory of the particle be affected if the electric field is switched off?

(i) A horizontal wire AB of length l and mass m' carries a steady current I_1 free to move in vertical plane is in equilibrium at a height of h' over another parallel long wire CD carrying a steady current I_2, which is fixed in a horizontal plane as shown. Derive the expression for the force acting per unit length on the wire AB and write the condition for which wire AB is in equilibrium.

OR

(i) An electron in the ground state of Hydrogen atom is revolving in a circular orbit of radius R obtain the expression for the orbital magnetic moment of the electron in terms of fundamental constants.
(ii) Draw the magnetic field lines for a current carrying solenoid When a rod made of (a) copper, (b) aluminium and (c) iron are Inserted within the solenoid as shown.
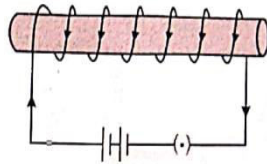
36 (i) Draw a ray diagram of compound microscope for the final image formed at least distance of distinct vision.
(ii) An angular magnification of 30X is desired using an objective of focal length 1.25 cm and an eye piece of focal length 5 cm. How will you set up the compound microscope for the final image formed at least distance of distinct vision?

OR

(i) Draw a ray diagram of an astronomical telescope for the final image formed at least distance of distinct vision.
(ii) An astronomical telescope has an angular magnification of magnitude 5 for distant objects. The separation between the objective and an eye piece is 36 cm and the final image is formed at infinity. Calculate the focal length of the objective and the focal length of the eye piece.

37. Why is a Zener diode considered as a special purpose semiconductor diode? Draw the I-V characteristic of a Zener diode and explain briefly how reverse current suddenly increases at the breakdown voltage. Describe briefly with the help of a circuit diagram how a Zener diode works to obtain a constant dc voltage from the unregulated de output of a rectifier.

OR

(i) Explain briefly, with the help of circuit diagram, the working of a full wave rectifier. Draw its input and output waveforms.

(ii) Explain, how the heavy doping of both p-and n-sides of a p-n junction diode results in the electric field of the junction being extremely high even with a reverse bias voltage of a few volts.

SECTION –A

10 Kinetic energy of a emitted photoelectrons depends upon:-
   (a) Frequency   (b) intensity   (c) wavelength   (d) None of the above

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11 Assertion : Electrons move from a region of higher potential to a region of lower potential
   Reason :- An electron has less potential energy at a point where potential is higher and vice-versa

12. Assertion:-The edges of the images of white object formed by a concave mirror on the Screen appear white
 Reason:- Concave mirror does not suffer from chromatic aberration

13 Assertion:- Faradays law are consequence of the conservation of energy
Reason : In a purely resistive a.c. circuit, the current lags behind the e.m.f in phase

Fill in the Blanks:
14 The SI units of electric flux is_____ and inductance is _____.

15. Optical fibre works on the principle of _____

16. State the SI unit of the electric polarization vector P

17. Define temperature coefficient of resistivity.

18. How will a capacitor behave in a very high frequency circuit?
<div align="center">**OR**</div>
 How does the magnetic susceptibility of a diamagnetic substance Varies with effect of temp.

19. Two particles have equal momenta. What is the ratio of their de Broglie wavelengths?
<div align="center">**OR**</div>
Monochromatic light of frequency 6.0 x 10 Hz is produced by a laser. What is the energy of a photon in the light beam?

20 Show variation of resistivity of copper as a function of temperature in a graph**.**

<div align="center">**SECTION- B**</div>

21 Using the gauss theorem find the electric field intensity due to a long infinite uniformly charged conductor

22 Four point charges Q, q, and q are placed at the corners of a square of side 'a' as shown in the figure:
Find :-(a) resultant electric force on a charge Q, and
(b) potential energy of this system
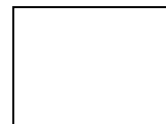
<div align="center">**OR**</div>

(a) Three point charges q,-4q and 2q are placed at the vertices of an equilateral triangle ABC of side as shown in the figure. Obtain the expression for the magnitude of the resultant electric force acting on the charge q
(b) Find out the amount of the work done
 to separate the charges at infinite distance
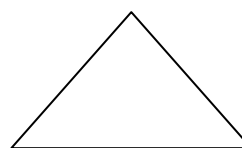
23 Derive an expression for the potential energy of a dipole when placed in external electric field. Also find the condition for stable and unstable equilibrium explain with figure.

24 Following circuit was set up in a meter bridge experiment to determine the value X of an unknown resistance. (a) Write the formula to be used for finding X from the observations. (b) If the resistance R is increased, what will happen to balancing length?

25 Explain how the magnetic field produced by a current carrying solenoid is equivalent to the bar magnet on the axial point.

OR

(i) Define the term magnetic susceptibility and write its relation in terms of relative magnetic
. permeability.
(ii) Two magnetic materials A and B have relative magnetic permeabilities of 0.96 and 500
Identify the magnetic materials A and B

26 Electric and magnetic fields are applied mutually perpendicular to each other. Show that a charged particle will follow a straight line path perpendicular to both of these fields, if its velocity is E / B in magnitude.

27. The figure shows two sinusoidal curves representing oscillating supply voltage and current in an ac circuit

Draw a phasor diagram to represent the current and supply voltage appropriately as phasors. State the phase difference between the two quantities.

28 Derive an expression for the mutual inductance of two long co-axial solenoid.

**29**. A ray of light PQ is incident on a face AB of a prism ABC as shown in the figure,
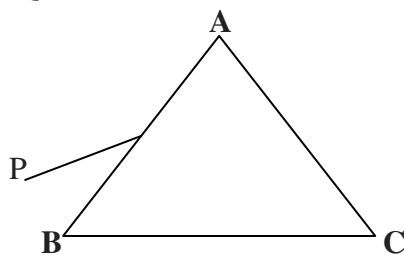
emerges from the face AC such that AQ=AR . draw the ray diagram showing the passage of the ray through the prism . If the angle of the prism is 60° and refractive index of the material of the prism is **3** determine the values of angle of incidence and angle of deviation

30 Find the frequency of light which ejects electrons from a metal surface, fully stopped by a retarding potential of 3.3 V. If photo electric emission begins in this metal at a frequency of 8×10^{14} Hz, calculate the work function (in eV) for this metal.

OR

Monochromatic light of frequency 6.0×10^{14} Hz is produced by a laser. The power emitted is 2.0×10^{-3} W Calculate the (i) energy of a photon in the light beam and (ii) number of photons emitted on an average by the source.

31 In a network, four capacitors C_1, C_2 ,C_3 and C_4, are connected as shown in the figure.
(a) Calculate the net capacitance in the circuit
(b) If the charge on the capacitor C is 6 uC (i) calculate the charge on the capacitors C_3, and C_4 and (ii) net energy stored in the capacitors C_3 and C_4 connected in series.
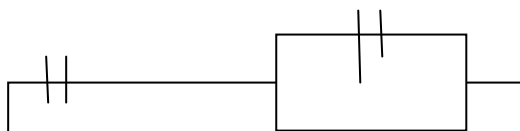
32 Four (4) identical cells o   ed in series. The
following graph shows the v   mbination with the
current output.
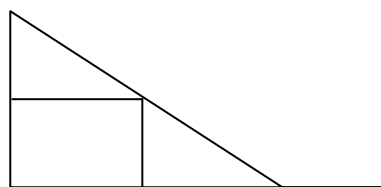
(a) What is the emf of each cell used?
(b) For what current from the cells does maximum power dissipation occurs in the circuit

33 In a part of the circuit shown in the figure ,the rate of heat dissipation in 4Ω resistor is 100j/s. Calculate the heat dissipated in the 3Ω resistor in 10 seconds.

34 Draw a labelled ray diagram to show the image formation in a refracting type astronomical telescope in the normal adjustment position. Write two drawbacks of refracting type telescopes.

OR

(a)Define resolving power of a telescope. Write the factors on which it depends
(b) A telescope resolves whereas a microscope magnifies. Justify the statement

33 Derive an expression for the lens maker formula for a convex lens . What will happen to the focal length when it is immersed in a liquid of refractive index equal to the refractive index of the lens material

35 Plot a graph showing the variation of stopping potential with the frequency of incident radiation for the different photosensitive materials having work functions W_1 and W_2 ($W_1 > W_2$). On what factors does the (i) slope, and (ii) intercept of the lines depend?

SECTION-D
35.(a) Write the expression for the equivalent magnetic moment of a planar current loop of area A, having N turns and carrying a current i. Use the expression to find the magnetic dipole moment of a revolving electron.

(b) A circular loop of radius r, having N turns and carrying current I is kept in the XY plane, It is then subjected to a uniform magnetic field $B=B_x i + B_y j + B_z k$ Obtain expression for the magnetic potential energy of the coil-magnetic field system.

OR

(a) A long solenoid with air core has n turns per unit length and carries a current I. Using Amperes circuital law, derive an expression for the magnetic field B at an interior point on its axis. Write an expression for magnetic intensity H in the interior of the solenoid.

(b) A (small) bar of material, having magnetic susceptibility X, is now put along the axis and near the centre, of the solenoid which is carrying a d.c. current through its coils. After some time, the bar is taken out and suspended freely with an unspun thread. Will the bar orient itself in magnetic meridian if (i) X<0 (ii) X> 1000? Justify your answer in each case.

36 (a) There are two sets of apparatus of Young's double slit experiment. In set A, the phase difference between the two waves emanating from the slits does not change with time, whereas in set B, the phase difference between the two waves from the slits changes rapidly with time. What difference will be observed in the pattern obtained on the screen in the two Set ups?
(b) Deduce the expression for the resultant intensity in both the above mentioned set ups (A and B), assuming that the waves emanating from the two slits have the same amplitude A and same wavelength λ.

OR

(a) The two polaroids in a given set up, are kept 'crossed' with respect to each other. A third polaroid, now put in between these two polaroids, can be rotated. Find an expression for the dependence of the intensity of light I transmitted by the system, on the angle between the pass axis of first and the third polaroid. Draw a graph showing the dependence of Ion 0.

(b) When an unpolarized light is incident on a plane glass surface, find the expression for the angle of incidence so that the reflected and refracted light rays are perpendicular to each other. What is the state of polarisation, of relflected and refracted light, under this condition?

37 (a) How is the mutual inductance of a pair of coils affected; when
(i) separation between the coils is increased;
(ii) a thin iron sheet is placed between the coils; other factors remaining the same. Explain your answer in all the three cases.

What is A.C generator ? Explain the principle constructing and working of an A.C generator .

OR
(a) What is the principle of transformer? Explain the construction and working also.
(b) Explain how laminating the core of a transformer helps to reduce eddy current losses in it
(c) Why the primary and secondary coils of a transformer are preferably wound on the same core.

34 Explain the principle construction and working of a moving coil galvanometer.

35 Figure shows a triangular loop PQR carrying current I. The triangle is equilateral with side equal to L. If a uniform magnetic field exits parallel to PQ, then find the forces acting on the three wires separately.

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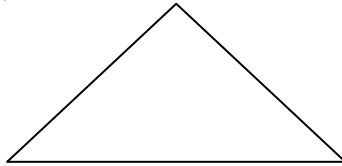
37 (a)

16 in Young's double slit experiment, using light of wavelength 400 nm, interference fringes of width 'X' are obtained. The wavelength of light is increased to 600 nm and the separation between the slits is halved. For observing the same fringe width in the two cases, find the ratio of the distance between the screen and plane of interfering sources with the two arrangements. 3

17 Draw a neat labelled ray diagram of an astronomical telescope How does the magnifying power get affected on increasing the aperture of the objective lens and why?
What are the drawbacks of this type of telescope? 3

18

19 Explain how radioactive nuclei can emit B-particles even though atomic nuclei do not contain these particles. Hence explain why the mass number of a radioactive nuclide does not change during B-decay?

24 (i) Find an expression for the capacitance of a parallel plate capacitor, when a dielectric slab of dielectric constant K and thickness (t) = d /2, but of the same area as of the plates, is inserted between the capacitor plates, where is the separation between the plates.

(ii) Derive an expression for the energy stored in parallel plate capacitor and also fin d the energy density

Find an expression for the electric field at a point situated (i) on the axis, and (ii) along the equatorial line of an electric dipole. What does this expression become when the dipole is infinitely small and the point is far away from the dipole, for these two cases?
5

26. What is the interference? .Derive an expression for the intensity in interference pattern. Write the necessary condition for the constructive and destructive interferenc (ii) What are Huygen's principle ?

(i)   Draw a labelled ray diagram for the formation of image by a compound microscope.

(ii)   Derive an expression for its magnifying power, when the final image is formed at the near point.

 Why must both the objective and the eyepiece of a compound microscope have short focal lengths?

1 When a capacitor is connected to a battery,
(a) a current flows in the circuit for some time, then decreases to zero.
(b) no current flows in the circuit at all.
(c) an alternating current flows in the circuit.
(d) none of the above

2 When 4 equal resistors are connected in series with a battery, they dissipate a power of 10 W. What will be the power dissipated through any of them if it is individually connected across the same battery
  (a) 40 w   (b) 10/3   (c) 90 W   (d) 10 W

3 A 30 V, 90 W lamp is to be operated on a 120 v DC line. For proper glow, a resistor of ......Ω should be connected in series with the lamp.
(a) 40 Ω (b) 10 Ω (c) 20 Ω (d) 30 Ω

4 . A galvanometer acting as a voltmeter will have.
(a) a high resistance in parallel with its coil (b) a high resistance in series with its coil
(c) a low resistance in parallel with its coil (d) a low resistance in series with its coil.

5. To convert a galvanometer into a voltmeter,
(a) a high resistance is connected in parallel   (b) a low resistance is connected in series
(c) a low resistance is connected in parallel   (d) a high resistance is connected in series

6. The phase difference between the alternating current and emf is $\pi/2$. Which of the following cannot be the constituent of the circuit?
(a) L alone.   (b) C alone   (c) R, L   (d) L, C

7 The dielectric between the conductors reduces the electric intensity
  (a) to zero   (b) between them   (c) with no change   (d) none of the above

8 Equipotential surfaces associated with an electric field, which is increasing in magnitude along the X-direction, are
(a) planes parallel to YZ-plane.   (b) planes parallel to XY-plane.
(c) planes parallel to XZ-plane.   (d) coaxial cylinders of increasing radii around the X-axis

9. A 40F capacitor in a defibrillator is charged to 3000 V. The energy stored in the capacitor is sent through the patient during a pulse of duration 2 m/s The power delivered to the patient is
(a) 90 kW   (b) 45 kW   (c) 360 kW   (d) 180 kW

10 Potentiometer wire of length 1 m is connected in series with 490 Ω resistance and 2 V battery. If 0.2 mV / cm is the potential gradient, then resistance of the potentiometer wire is

  (a) 7.9 Ω (b) 4.9 Ω (c) 6.9 Ω (d) 5.9 Ω

11 With a potentiometer null points were obtained at 140 cm and 180 cm with cells of emf 1-1V and one unknown X volts. Unknown emf is
  (a) 1.1 V   (b) 1.8 V   (c) 2.4 V   (d) 1.41 V

12 A current carrying coil is subjected to a uniform magnetic field. The coil will orient so that its

plane becomes
    (a) inclined to 45° to the magnetic field   (b) inclined at any arbitrary angle to the magnetic field
    (c) parallel to the magnetic field   (d) perpendicular to magnetic field.

13 Fleming's left and right hand rules are used in
(a) DC motor and AC generator   (b) DC generator and AC motor
(c) DC motor and DC generator   (d) both rules are same, anyone can be used.

14 Alternating current cannot be measured by d.c ammeter, because
(a) a.c. cannot pass through a.c, ammeter   (b) a.c. changes direction
(c) average value of current of complete cycle is zero   (d) a.c. ammeter will get damaged.

15 Lenz's law applies to.
(a) electrostatics   (b) lenses   (c) electromagnetic induction   (d) cinema slides

16 . A coil carrying electric current is placed in a uniform magnetic field.
(a) torque is produced   (b) emf is induced   (c) both (a) and (b) are correct   (d) none of these.

17 A Pont charge q is located at the centre of a cube of side L, then the electric flux emerging from the cube is
(a) q/c **(b)** $q/6L^2c$ **(c)** $6qL^2/c$ **(d)** Zero

18 Identify the material used for making coils of a resistance Box.
    (a)   Molybdenum   (b) Manganese   (c) Manganin   (d) Magnesium

19 The current sensitivity of a galvanometer increases by 20% . If the resistance also increases by 25% The voltage sensitivity will
(a) decreases by 4% (b) increases by 10% (c) increases by 5% (d) decreases by1%

20   A conducting rod of length L is rotated with a constant angular velocity w about its perpendicular bisector .A uniform magnetic field acts normal to its plane of rotation. The emf induced between its centre and one of its ends is

    (a)½ BwL^2 (b) $2BwL^2$ (c) 1/8 BwL^2 (d) Zero

SECTION- B

21 A constant voltage is applied between the two ends of a uniform metallic wire. Heat Q is developed in it. If another wire, double the radius and twice the length is used, how much heat will be developed in it?   **2**

22 A proton and a deuteron having equal momenta enter in a region of uniform magnetic field at right angle to the direction of the field. Depict their trajectories in the field.   **2**

23 (a) Find the ratio of the capacitances of a capacitor filled with two dielectrics of same dimensions but of dielectric constants K_1 and K_2, respectively. (b) A capacitor is filled with two dielectrics of the same dimensions but of dielectric constants $K_1=2$ and $K_2=3$. Find the ratio of capacities in two possible arrangements.   **2**

24. Derive an expression for the electric field at any point on the axial line of an electric dipole.   **2**

25With the help of a circuit diagram, explain how can a potentiometer be used to measure the internal resistance of a primary cell.   **2**

26 Apply Kirchhoff's rules to the loops ACBPA and ACBQA to write the expression for the currents l_1, I_2 and I_3 in the network as shown in the figure.   **2**
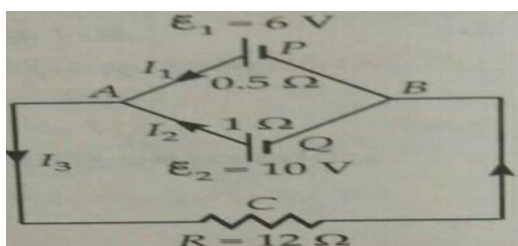
27 A 100-turns coil kept in a magnetic field $B = 0.05$ Wb m^{-2} carries a current of 1A, as shown in fig. Find the torque acting on the coil.
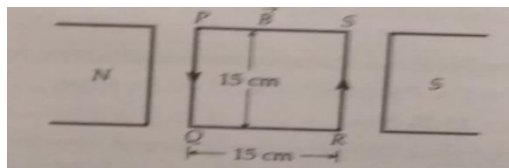
2

28 Electric and magnetic fields are applied mutually perpendicular to each other. Show that a charged particle will follow a straight line path perpendicular to both of these fields, if its velocity is E / B in magnitude.   **2**

29 A metallic rod of length L is rotated at an angular speed ω normal to a uniform magnetic field B Derive expressions for the (i) emf induced in the rod (ii) current induced and (ii) heat dissipation, if the resistance of the rod is R

30 Derive an expression for the self-inductance of a long solenoid. State the factors on which the self- inductance of a coil depends.   **2**
.
                    SECTION-C

31 Two parallel plate capacitors, X and Y, have the same area of plates and same separation between them. X has air between the plates while Y contains a dielectric medium of K=4.

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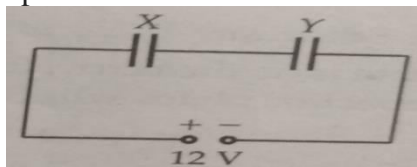
(i) Calculate capacitance of each capacitor if equivalent capacitance of the combination is 4uf (ii) Calculate the potential difference between the plates of X and Y (iii) What is the ratio of electrostatic energy stored in X and Y?   **3**

32 State the conditions under which Ohm's law is not obeyed in a conductor. What are Ohmic and non-Ohmic conductors? Give examples of each type   **3**

33 What is a cyclotron? Discuss the principle, construction, theory and working of a cyclotron. What is the maximum kinetic energy acquired by the accelerated charged particles? Give the limitations and uses of a cyclotron.   **3**

34 With the help of a labelled diagram, explain the principle, construction and working of an a.c. generator. Derive the expression for the induced emf and current. A.C Generator.   **3**

35 An aircraft with a wing span of 40 m flies with a speed of 1080 km/h Tin the eastward direction at a constant altitude in the northern hemisphere, where the vertical component of earth's magnetic field is 1.75 x 10-5 T. Find the e.m.f that develops between the tips of the wings.   **3**

SECTION –D

36 (a) Apply Gauss's theorem to show that for a spherical shell, the electric field inside the shell vanishes, whereas outside it, the field is as if all the charge had been concentrated at the centre.

(b) A hollow cylindrical box of length 1 m and area of cross-section 25 cm^2 is placed in a three dimensional coordinate system as shown in Fig. The electric field in the region is given by $E = 50x$ i, where E is in N/C and x is in metres.
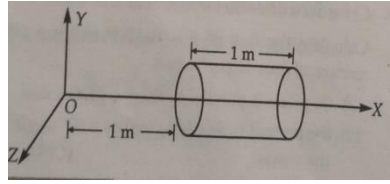
(3+2)

OR

(a)Two infinite parallel planes have uniform charge densities of σ_1 and σ_2 Determine the electric field at points (i) to the left of the sheets, (ii) between them and (iii) to the right of the sheets.

(b) Electric field in Fig. is directed along +X direction and given by $E_x = 5 Ax + 2 B$ where E is in N/C and x is in metre, A and B are constants with dimensions. Taking $A = 10$ N/C m^{-1} and $B = 5$N/C,
. calculate
(i) electric flux through the cube

(ii) Net charge enclosed through the cube   (3+2)

37 (a) Prove that the magnetic field produced by a current carrying solenoid is equal to the magnetic field on the axis of a bar magnet. i.e Bar magnet as an equivalent solenoid.

(b)Two insulating infinitely long conductors carrying currents I_1, and I_2 lie mutually perpendicular to each other in the same plane, as shown in fig. Find the locus of the point at which the net magnetic field is zero.   (3+2)

OR

(a) Show that the oscillations of a freely suspended magnet in a uniform magnetic field are simple harmonic. Hence deduce an expression for its time period.
(b) Using the relation for potential energy of a current carrying planar loop, in a uniform magnetic field, obtain the expression for the work done in moving the planar loop from its unstable (equilibrium) position   (3+2)

38 (a) Define power for an a.c. circuit. Derive an expression for the average of a series LCR-circuit connected to an a.c. source. Discuss the various special cases.
(b) A transformer has 500 turns in the primary and 1000 turns in its secondary winding. The primary voltage is 200 V and the load in the secondary is 100 Ω. Calculate the current in the primary, assuming it to be an ideal transformer   (3+2)

OR

(a) Define average value of a.c. over half a cycle. Establish the relationship between the average value and the 'peak value' of an alternating current

(b) In an ideal transformer, number of turns in the primary and secondary are 200 and 1000 respectively. If the power input to the primary is 10 kW at 200 V, calculate (i) output voltage and (ii) current in primary. **(3+2)**

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Time 3: Hours   **Maximum Marks70**

General instructions: **(i) All questions are compulsory.**
   (ii) Question No. 1 to 10 are MCQ type question carry 1 mark each
   (iii) Question No. 11to 15 are very short answer type questions and carry 1mark each
   (iv)Question No. 16to 23 are short answer type questions carry 2 marks each
   (v)Question No. 24 to 31 are short answer type questions carry 3marks each
   (vi)Question No. 32 to 35 are long answer type questions carry 5 marks each

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1 Equipotential surfaces associated with an electric field, which is increasing in magnitude along the X-direction, are
(a) planes parallel to YZ-plane.   (b) planes parallel to XY-plane.
(c) planes parallel to XZ-plane.   (d) coaxial cylinders of increasing radii around the X-axis

2 A 30 V, 90 W lamp is to be operated on a 120 v DC line. For proper glow, a resistor of ……Ω should be connected in series with the lamp.
(a) 40 Ω   (b) 10 Ω   (c) 20 Ω   (d) 30 Ω

3. To convert a galvanometer into a voltmeter,
(a) a high resistance is connected in parallel   (b) a low resistance is connected in series
(c) a low resistance is connected in parallel   (d) a high resistance is connected in
series

4 Alternating current cannot be measured by d.c ammeter, because
(a) a.c. cannot pass through a.c, ammeter   (b) a.c. changes direction
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5. A 40F capacitor in a defibrillator is charged to 3000 V. The energy stored in the capacitor is sent through the patient during a pulse of duration 2 m/s The power delivered to the patient is
 (a) 90 kW   (b) 45 kW   (c) 360 kW   (d) 180 kW

6 . With a potentiometer null points were obtained at 140 cm and 180 cm with cells of emf 1-1V and one unknown X volts. Unknown emf is
   (a) 1.1 V   (b) 1.8 V   (c) 2.4 V   (d) 1.41 V

7. A coil carrying electric current is placed in a uniform magnetic field.
(a) torque is produced   (b) emf is induced   (c) both (a) and (b) are correct   (d) none of these.

8. Lenz's law applies to.
(a) electrostatics   (b) lenses   (c) electromagnetic induction   (d) cinema slides

9 Which of the following quantities increase when wavelength be increased? Consider only the

magnitude.
(a) The focal length of a converging lens
(b) The focal length of a diverging lens
(c) The power of a converging lens
(d) The power of a diverging lens,
.

10. A narrow beam of white light goes through a slab having parallel faces
(a) The light inside the slab is white, (b) The light inside the slab is split into different colours
(c) The emergent beam is white,   (d) The light never splits in different colours.

11 Two charges of magnitudes -2Q and +Q are located at points (a,0) and (4a, 0) respectively. What is the electric flux due to these charges through a sphere of radius '3a' with its centre at the origin? **1**

12 Two wires A and B of the same material and having same length, have their cross-sectional areas in the ratio 1 : 4. What would be the ratio of heat produced in these wires when same voltage is applied across each?   1

13 A proton and an alpha particle enter at right angles into a uniform magnetic field of intensity B. Calculate the ratio of the radii of their paths, when they enter the field with the (i) same momentum,**1**

14. The motion of copper plates is damped. When it is allowed to oscillate between the two poles of a magnet. If slots are cut in the plate, how will the damping be affected?   **1**

**15** What will happen to the focal length of a lens of refractive index 1.4 if immersed in a liquid of refractive index 1.5   **1**

16 Two capacitors have capacitance of 5 µF when connected in parallel and   1.2 µF when connected in series. Calculate their capacitances   **2**

17 Derive an expression for the electric field at a point on the equatorial line of an electric dipole.
**2**

18 What is a Wheatstone bridge? When is the bridge said to be balanced ? Apply Kirchhoff's laws to derive the balance condition of the Wheatstone bridge.   **2**

19 Using Kirchhoff's rules, determine the value of unknown resistance R in the circuit shown in Fig. so that no current flows through 4 Ω resistance. Also find the e potential difference between A and D.
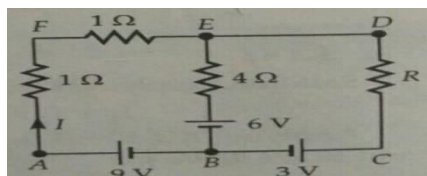
2

20 A parallelogram-shape coil PQRS of sides 0.7 m and 0.5 m carries a current of 1.5 A, as shown in Fig. It is placed in a magnetic field B -40 T parallel to PS. Find (i) forces on the sides of the coil and (ii) torque on the coil.
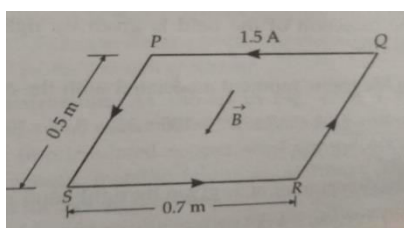
.   **2**

21 Discuss the motion of a charged particle in a uniform magnetic field with initial velocity (i) parallel to the field, (ii) perpendicular to the magnetic field and (ii) at an arbitrary angle with the field direction. **2**

22. An aircraft with a wing span of 40 m flies with a speed of 1080 km/h Tin the eastward direction at a constant altitude in the northern hemisphere, where the vertical component of earth's magnetic field is 1.75 x 10-5 T. Find the e.m.f that develops between the tips of the wings. **2**

23. Derive an expression for the mutual inductance of two long coaxial solenoids. State the factors on which mutual inductance depends. What is coefficient of coupling? **2**

24 (a) Find the ratio of the capacitances of a capacitor filled with two dielectrics of same dimensions but of dielectric constants κ_1 and K2, respectively. (b) A capacitor is filled with two dielectrics of the same dimensions but of dielectric constants $K_1=2$ and $K_2=3$. Find the ratio of capacities in two possible arrangements. **3**

25. Derive the condition for obtaining maximum current through an external resistance connected across a mixed grouping of cells . **3**

26. Describe the principle, construction and working of a pivoted-type moving coil galvanometer. Define its figure of merit. **3**

27 What is a transformer? Explain the principle, construction, working and theory of a transformer. How is current affected in a transformer? What are the various energy losses in a transfomer? How can they be reduced? **3**

28 Draw a labelled diagram of a an astronomical telescope. And also finds its magnification. Explain why the aperture of objective lens is larger than eye piece. **3**

29 A double convex lens made of glass of refractive index 1.56 has both radii of curvature of magnitude 20 cm. If an object is placed at a distance of 10 cm from this lens, find the position of image formed. **3**

30 Derive an expression for the power of a lens by using lens maker formula. **3**

31 Two lenses of powers + 15D and -5D are in contact with each other forming a combination lens. (a) What is the focal length of this combination (b) An object of size 3 cm is placed at 30 cm from this combination of lenses. Calculate the position and size of the image formed. **3**

32. (a)Two infinite parallel planes have uniform charge densities of σ_1 and σ_2 Determine the electric field at points (i) to the left of the sheets, (ii) between them and (iii) to the right of the sheets.

(b) Electric field in Fig. is directed along +X direction and given by $E_x= 5 Ax +2 B$ where E is in N/C and x is in metre, A and B are constants with dimensions. Taking A=10 N/C m^{-1} and B =5N/C,
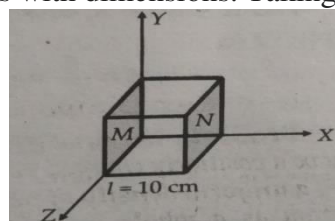
calculate
(iii)   electric flux through the cube
(iv) Net charge enclosed through the cube **(3+2)**

33 (a) Show that the oscillations of a freely suspended magnet in a uniform magnetic field are simple harmonic. Hence deduce an expression for its time period.

(b) Using the relation for potential energy of a current carrying planar loop, in a uniform magnetic field, obtain the expression for the work done in moving the planar loop from its unstable (equilibrium) position **(3+2)**

34 (a) Define average value of a.c. over half a cycle. Establish the relationship between the average value and the 'peak value' of an alternating current.

(b) In an ideal transformer, number of turns in the primary and secondary are 200 and 1000 respectively. If the power input to the primary is 10 kW at 200 V, calculate (i) output voltage and (ii) current in primary. **(3+2)**

MM: 80   **Time 3 hrs.**

The Question paper is divided into three sections:

Section A:	**Reading**	**20 Marks**
Section B:	**Writing**	**30 Marks**
Section C:	**Literature**	**30 Marks**

<u>**General Instructions**</u>

1. **All questions are compulsory.**
2. **You may attempt any section at a time.**
3. **All questions of that particular section must be attempted in the correct order.**

SECTION- A (READING :20 MARKS)

Q1. Read the following passage and answer the following questions (12 M)
Techs of Technology

1. Haptics is the process of simulating the sense of touch using computer and force-feed back hardware. Out research in sympathetic haptic is a method of transmitting the sense of touch to another person. In the 'master-slave' form of haptic, a user controls the motion and sense the touch of another person. In the collaborative technique, two users interact with each other to carry out a task concurrently, such as holding a box together or inserting a pin in a ring. Sympathetic differs from both of these techniques in that the goal is to capture the sensation of one user an repeat it in such a fashion the second user re-lives it in exactly the same way as the original user intended it to be.

2. This concept promises to improve training, collaboration and communication in such varied fields as medicine, engineering and art. We could use this technique to capture motions of a skilled artist for example, and allow a trainee to experience the motion and the pressure applied by the master, and follow the latter in the virtual reality interfere. This would be a tremendous improvement over such forms of teaching and communication as the video and audio technologies being used today.

3. The process of capturing and re-living can be performed over the internet and hence can be used in many novel applications such as distance learning and telemedicine. Since the sense of touch is so personal to most of us, it will improve the cognitive process of learning.

Another benefit of the technology is its ability to capture for future replay and continual instruction the sensation of an activity after it's been transmitted. Touch is the 'missing link' in today's multimedia tools. Just as video and audio made internet a more exciting place, haptic will make it an even more realistic medium for exchanging information.

4. This technology can be used in a number of healthcare – related professions, such as in training surgeon to apply precise levels of skill while making an incision. This can also be used to carry out an examination over the internet in a telemedicine setting, since procedures such as palpation of the abdomen cannot be performed today. While in principle these applications may be very attractive, the current state of technology may pose hurdles in its safe implementation. But just as in any new technology, once some of the current kinks are overcome, this technology may become as common as a stethoscope or instruments used to measure blood pressure.

5. The lack of internet bandwidth means that more research needs to be done before the vision can become reality. The present levels of available internet bandwidth, even with high-speed networks, are a problem, since the sense of touch requires high data transmission to simulate haptic sensation over the network. We've develop methods by sing software techniques to smoothen out the gaps caused by the lost data. These works in limited bandwidth applications that we've developed so far. The future generation of internet promises to facilitate applications with larger band-width requirements.

6. Temperature transmission is perhaps possible with today's technology, but I don't think emotion can ever be transmitted accurately over the Net. As human beings, I hope we don't give everything away to the machines.

7. As with any new technology, it is hard to predict how this will evolve over the year. I'm not sure were the abuse may come from. But as some observers and experts pointed out to me recently, we would need to keep adult and objectionable sites from laying their hands on this technology.

8. There is nothing to stop this technology from making inroads into India. Given today's technology – savvy society, I think it will also receive widespread acceptance. As you say, the main hurdle at this stage could be the price of the haptic and the force – capturing devices being used. The lack of widespread availability of cable and DSL type networks may also prove to be a hurdle in the immediate future. But I'm confident that these problems will cause to be major issues over the next few years.

A. Answer the following questions briefly:

a) How does 'Haptic' differ from, sympathetic haptic? [2]

b) How is the concept of 'Haptic' useful? [2]

c) Which sites should be kept from laying their hands on this technology? [1]

d) Give two uses to Haptic in health care. [2]

e) Is the infrastructure demands? [2]

B. Find the word from the passage which means same as (1X3=3)
a) Transfer (Para 1)

b) Cut (Para 4)

c) Partnership (Para 2)

Q2. Read the following passage and answer the following question that follows: (8 M)
1. "There is no need to define morality, let man be simply compassionate.' This sentence expresses the basic essence of morality, the extent to which it relies on compassion for its definition. For when we think about it, is not that truly human feeling of compassion the basis of all morality?

2. Morality rests for its very meaning on the concepts of 'good' and 'bad' where 'good' refers to all thoughts and deeds that do not aim at or accomplish any harm or injury or do not involve an attempt to inflict suffering on others. Thus morality is based on man's ability to understand, being able to sympathies, feel kindness and sorrow for and identify himself with the sufferings of his fellow men. So, only compassion can give rise to oral thoughts and feelings.

3. Depriving a person of what is his or what must belong to him – what is called stealing – for selfish ends, taunting or insulting others through words or actions for the purpose of self – gratification, violence – expressed verbally or as acts of torture,. Killing etc. – for the sake of

violence contradict morality as well as an inner feeling of kindness and compassion.

4. When we talk about social morality of any kind, what comes into play is our ability to feel for the well-being of our society. A certain moral code of conduct is ultimately necessary to ensure that the society does no fall prey to degeneration of values, which would lead to rampant suffering and ultimately chaos. It is a concern to help the society by safeguarding it form unwanted ills and malaises and ensuring its well – being. Society's concerns are our concerns; anything capable of causing a detrimental impact on it in the short term or in course of time is ultimately bound to affect us and our children.

5. There is the need to realize that man must continue to feel compassion for the sake of himself as well as the society. But like any other human trait, compassion ought of be continually exercised if it is to remain a dormant force. Unfortunately, in modern society what we witness is complete lack of kindness and sympathy between fellow beings. One can only shake one's head and say that just like other cherished values even compassion is getting eroded in the hustle and bustle of the mechanical existence of these times. What remains is material values that look only towards immediate personal gains and in the process rid man of whatever 'humanness' is left in him.

A. On the basis of your reading of the above passage, make notes on it using recognizable abbreviations wherever necessary (minimum four). Supply a suitable title. [4]

B. Write a summary of the above passage in about 80 words. [4]

SECTION-B (WRITING : 30 MARKS)

3. Your school is organizing a summer camp for training students in Cricket and Volleyball. Write a notice for the Scholl notice board of Summer field School, Chandigarh. You are Shamit, Sports Secretary of the Scholl. (50 words) [5]

OR

You are Aaksh/Varsha. You have been invited to attend the wedding of your friend's sister during summer vacation. Respond to the invitation, regretting our inability to attend it (Formal reply) 50 Words

4. In our society we do not give to our women the respect and status that they deserve. Women are stared at, stalked and even molested. We need to change the male's mindset about women. Write a letter in 120-150 words to the editor of a national newspaper giving your views on the problem. You are Omar/Amna, A114, Mall Road, Delhi. (6 Marks)

OR

Write a letter in 120-150 words to the Controller to Examinations, CBSE, New Delhi, suggesting some concrete step to check the use of unfair means during examinations. Sign yourself as Franz Khan, a class XII student of V.B. P school Lucknow.

5. Information technology has brought about a global revolution in all fields; computer-aided education is fast learning the order of day. The market is also flooded with educational CDs and on-line learning. Write an article in 150-200 words expressing your views about AI-aided learning. Can it replace teachers? You are Seema/Samir of K.V., Srinagar.

OR

Your school has been actively promoting anti- bullying campaign among its students. Write a speech in 150-200 words to be delivered in the morning assembly to motivate students to be a part of this campaign, outlining the code of conduct that the student need to observe. You are Shikha/Shikhar of DPS, Noida.

6. The Economics forum of your school is organizing a debate on the motion "The money that is spent on pace programme should instead be used in eliminating poverty from the country." Draft a debate in 150-200 words for or against the motion. Give
suitable arguments for your stand.

OR

Write a report in 150-200 words for your school magazine describing the prize distribution ceremony held to honour the academic achievers of class XII of the previous year.

SECTION-C (LITERATURE : 30 MARKS)

Q7. Read the extracts given below.

Reading the bulletin, called after me, "Don't go so fast, bub; you will get to your school in plenty of time!" I thought he was making fun of me and reached little garden all out of breath**.**

Answer the following question:
1. Bub here refers to, ……………. Who was going to school.
2. The speaker was nervous as he did not learn his lessons and was …………….
3. M. Hamel was Bub's teacher who taught him ………………
4. Find an expression from the extract which means 'mocking'.

OR

"Here far from the city we make our roadside stand
And ask for some city money to feel in hand
To try if it will not make our being expand
And give us the life of the moving-pictures' promises.
That the party in power is said to be keeping from us."

Answer the following questions:
1. The shed is built far from the city (True/ False)
2. They ask for some of the city's taxes to feel it in their hands. (True/False0
3. The kind of life promised to the poor shed owners is one seen in ………
4. By feeling the money in hand, the poor want to know if that would make their progress.

Q8. Answer any five of the following questions in 30-40 words each.
1. Where did Gandhi stay in Muzzafarpur? How does he comment about it?
2. Do you think Sophie had actually met Danny Casey? Why/ Why not.
3. Why are the young trees described as "sprinting" in "My Mother ar sixty six"?
4. What has man single-mindedly focused on and with what purpose?
5. What kind of life did the Crown Prince enjoy till he reached the age of twenty?
6. What precautions were taken for the smooth conduct of Evan's O-Level examination?

Q9. Answer the following question inn 120-150 words.
What made the peddler finally change his ways?

OR

Bring out the commonality of theme between thw two accounts that you read in the lesson "Memories of Childhood".

Q10. Answer the following question inn 120-150 words.

"I started writing novels by accident. I had nothing to do one day and so I started." Comment on Umberto Eco's view about the genesis of writing his novels with reference to The Name of the Rose.

OR

"To visit Antarctica now is to be a part of the history; to get a grasp of where we have come from and where we could possibly be heading." Comment on this statement.