

## HOLIDAYS HOMEWORK

### CLASS XI COMMERCE

Subject: Economics

1. Consumer Equilibrium ie Utility analysis and indifference curve
2. Concept of Production and Cost
3. Concept of Revenue
4. Price Elasticity of Demand
5. Perfect Competition with price Determination.
6. Central tendency ( Mean, Median, Mode)
7. Correlation
8. Index Number

Sub.-Accountancy

1 Complete your project file

2 Practice daily 10 (1mark question) .

3 Practice topic wise illustrations of each chapter.

4 Solve sample papers uploaded on CBSE website

If any doubt occurs,share your problem to my WhatsApp

1 Prepare for PT 2 (syllabus given)

2 Daily write 10 HOTS questions (chapter wise)

3 Practice chapter of GST and Accounting principles in fair register.

- \* Read all chapters thoroughly from NCERT to enable yourself to attempt case studies
  - \* Practice daily 10 HOTS (chapter wise)
  - \* Solve sample paper uploaded on CBSE website
  - \* Complete your project file with photos and survey questionnaire
- While preparing for PB II ,if any doubt occurs feel free to what's app me

- 1 Prepare for PT 2 SYLLABUS given
- 2 Write daily 10 HOTS questions chapter wise
- 3 Write
  - \* Principles of Insurance( all with example)
  - \* Forms of business organisation (comparative table)
  - \* Forms of public enterprises (comparative table)
  - \* Business services

**CLASS: XIID**

Solve the Pre Board -1 question paper SET 1 and SET 2 in your political science fair notebook.

Solve all the cartoon, map, picture based question from all the mention chapters.

- \* Do it in a separate notebook

**BOOK 2**

The end of bipolarity

New center of power

South Asia and the contemporary world

United Nation and its Organization

Security in the contemporary world

Environment and natural resources.

Globalization

**BOOK 1**

Challenges of nation building

Planning and development

India's foreign policy

Parties and party system

Democratic resurgence

Regional aspiration

Indian politics: trends and development

- Complete the CBSE PROJECT FILE.

- Solve 4 sample papers shared with u

### History

1. Each student have to complete three sample papers of history.
2. Practice map points as given by cbse norms and provided to u earlier.
3. Solve source based questions from the study materials provided to u.
4. Complete the project file if anything still incomplete.

Class: XII  
Subject: PHYSICS

Max Marks:70  
Time: 3 hrs

#### General Instructions:

- (1) There are 33 questions in all. All questions are compulsory.
- (2) This question paper has five sections: Section A, Section B, Section C, Section D and Section E.
- (3) All the sections are compulsory.
- (4) Section A contains sixteen questions, twelve MCQ and four Assertion Reasoning based of 1 mark each, Section B contains five questions of two marks each, Section C contains seven questions of three marks each, Section D contains two case study based questions of four marks each and Section E contains three long answer questions of five marks each.
- (5) There is no overall choice. However, an internal choice has been provided in one question in Section B, two question in Section C and all three questions in Section E. You have to attempt only one of the choices in such questions.
- (6) Use of calculators is not allowed.
- (7) You may use the following values of physical constants where ever necessary
  - i.  $c = 3 \times 10^8$  m/s
  - ii.  $m_e = 9.1 \times 10^{-31}$  kg
  - iii.  $e = 1.6 \times 10^{-19}$  C
  - iv.  $\mu_0 = 4\pi \times 10^{-7}$  TmA<sup>-1</sup>
  - v.  $h = 6.63 \times 10^{-34}$  Js
  - vi.  $\epsilon_0 = 8.854 \times 10^{-12}$  C<sup>2</sup>N<sup>-1</sup>m<sup>-2</sup>
  - vii. Avogadro's number =  $6.023 \times 10^{23}$  per gram mole

## SECTION-A

- An electric dipole of moment  $P$  is placed parallel to the uniform electric field. The amount of work done in rotating the dipole by  $180^\circ$  is-
  - $2PE$
  - $-2PE$
  - $PE$
  - Zero
- An electric dipole having charges of  $+2.0 \mu\text{C}$  &  $-2.0 \mu\text{C}$  is placed at the centre of a cubic Gaussian surface  $9.0 \text{ cm}$  on edge. What is the net electric flux through the surface?
  - Zero
  - $2 \times 10^6 \text{ Nm}^2/\text{C}$
  - $2.26 \times 10^6 \text{ Nm}^2/\text{C}$
  - $5 \times 10^6 \text{ Nm}^2/\text{C}$
- If the intensity of the incident radiation on a photosensitive surface is doubled, how does the kinetic energy of emitted electrons get affected?
  - K.E. is doubled
  - K.E. becomes four times
  - K.E. remains same
  - K.E. reduced to half
- The ground state energy of hydrogen atom is  $-13.6 \text{ eV}$ . What are the kinetic and potential energies of electron in this state ?
  - K.E. =  $-13.6 \text{ eV}$  & P.E. =  $-27.2 \text{ eV}$
  - K.E. =  $13.6 \text{ eV}$  & P.E. =  $-27.2 \text{ eV}$
  - K.E. =  $-13.6 \text{ eV}$  & P.E. =  $27.2 \text{ eV}$
  - K.E. =  $13.6 \text{ eV}$  & P.E. =  $27.2 \text{ eV}$
- A proton and an electron move perpendicular to a magnetic field. Find the ratio of radii of the circular paths described by them when both have equal momenta.
  - 1:2
  - 1:1
  - 1:4
  - 2:1
- S.I. unit of magnetic dipole moment of a current loop is
  - $\text{A/m}^2$
  - $\text{A}\cdot\text{m}^2$
  - $\text{A}\cdot\text{m}$
  - $\text{A/m}$
- The relative magnetic permeability of a substance is slightly  $0.93$ . The substance is ..... and its magnetic susceptibility is always.....
  - paramagnetic , Positive
  - diamagnetic , Positive
  - paramagnetic , negative

(d) diamagnetic , negative

8. A galvanometer with a coil of resistance 12 ohm shows full scale deflection for a current 2.5A. What will be the value of shunt required to convert the galvanometer in to an ammeter of range 7.5 A?
- 6 ohm
  - 12 ohm
  - 10 ohm
  - 1 ohm
9. A lamp is connected in series with an inductor and an a.c. source. What happens to the brightness of the lamp when the key is plugged in and an iron rod is inserted inside the inductor ?
- Brightness of the lamp will increase
  - Brightness of the lamp will decrease
  - Brightness of the lamp will not change
  - Brightness of the lamp will first increase then decrease.
10. The charging current for a capacitor is 0.5 A. What is the displacement current across its plates?
- 0.25A
  - 0.1A
  - 0.5A
  - Zero
11. The magnetic flux linked with the coil (in Weber) is given by the equation  $\Phi = 5t^2 + 3t + 16$ . The induced EMF in the coil at time,  $t=2$  sec will be-
- 25 V
  - 45 V
  - 60 V
  - 40 V
12. A nucleus with mass number  $A = 240$  and 7.6 MeV breaks in to two fragments each of  $A = 120$  with 8.5 MeV/A. The energy released is;
- 200 MeV
  - 210 MeV
  - 216 MeV
  - 240 MeV

For Questions 13 to 16, two statements are given –one labelled Assertion (A) and other labelled Reason (R). Select the correct answer to these questions from the options as given below.

a) If both Assertion and Reason are true and Reason is correct explanation of Assertion.

- b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- c) If Assertion is true but Reason is false.
- d) If both Assertion and Reason are false.
13. **Assertion:** Three equal charges are situated on a circle of radius  $r$  such that they form an equilateral triangle, then the electric field intensity at the centre is zero.  
**Reason:** The force on unit positive charge at the centre, due to the three equal charges are represented by the three sides of a triangle taken in the same order. Therefore, electric field intensity at centre is zero.
14. **Assertion:** Interference pattern is made by using yellow light instead of red light, the fringes become narrower.  
**Reason:** In Young's double slit experiment, fringe width is given by  $\beta = \lambda D/d$
15. **Assertion :** The kinetic energy of photoelectrons emitted from metal surface does not depend on the intensity of incident photon.  
**Reason :** The ejection of electrons from metallic surface is not possible with frequency of incident photons below the threshold frequency.
16. **Assertion :** In semiconductors, thermal collisions are responsible for taking a valence electron to the conduction band.  
**Reason :** The number of conduction electrons go on increasing with time as thermal collisions continuously take place.

### SECTION -B

17. Explain briefly, with the help of suitable diagram, how a p-n junction is formed.
18. Calculate the de-Broglie wavelength of the electron orbiting in the  $n=2$  state of hydrogen atom.
19. A prism is made of glass of unknown refractive index. A parallel beam of light is incident on a face of the prism. The angle of minimum deviation is measured to be  $40^\circ$ . What is the refractive index of the material of the prism? The refracting angle of the prism is  $60^\circ$ .
20. The resistance of the platinum wire of a platinum resistance thermometer at the ice point is  $5 \Omega$  and at steam point is  $5.23 \Omega$ . When the thermometer is inserted in a hot bath, the resistance of the platinum wire is  $5.795 \Omega$ . Calculate the temperature of the bath.
21. Light waves from two coherent sources arrive at two points on a screen with path differences of  $0$  and  $\lambda/2$ . Find the ratio of intensities at these points.

OR

Derive Snell's law on the basis of Huygen's wave theory when light is travelling from a rarer to a denser medium/Denser to rarer medium.

## SECTION – C

22. Draw a plot of potential energy of a pair of nucleons as a function of their separations.

- (i) Write two important conclusions that can be drawn from the graph.
- (ii) (What is the significance of negative potential energy in the graph drawn?)

OR

Draw a plot of binding energy per nucleon (B.E./A) as a function of mass number A.

- (a) Write two important conclusions that can be drawn regarding the nature of nuclear force.
- (b) Use this graph to explain the release of energy in both the processes of nuclear fission and fusion.

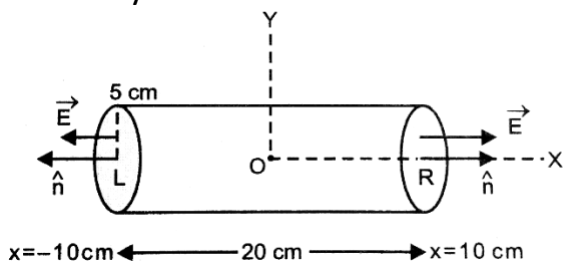
23.a. What is the ratio of radii of the orbits corresponding to first excited state and ground state in a hydrogen atom?

b. The value of ground state energy of hydrogen atom is  $-13.6$  eV.

- (i) what does the negative sign signify?
- (ii) How much energy is required to take an electron in this atom from the ground state to the first excited state?

24. An electric field is uniform, and in the positive x direction for positive x, and uniform with the same magnitude but in the negative x direction for negative x. It is given that  $E = 200 \hat{i}$  N/C for  $x > 0$  and  $E = -200 \hat{i}$  N/C for  $x < 0$ . A right circular cylinder of length 20 cm and radius 5 cm has its centre at the origin and its axis along the x-axis so that one face is at  $x = +10$  cm and the other is at  $x = -10$  cm.

- (a) What is the net outward flux through each flat face?
- (b) What is the flux through the side of the cylinder?
- (c) What is the net outward flux through the cylinder?
- (d) What is the net charge inside the cylinder?



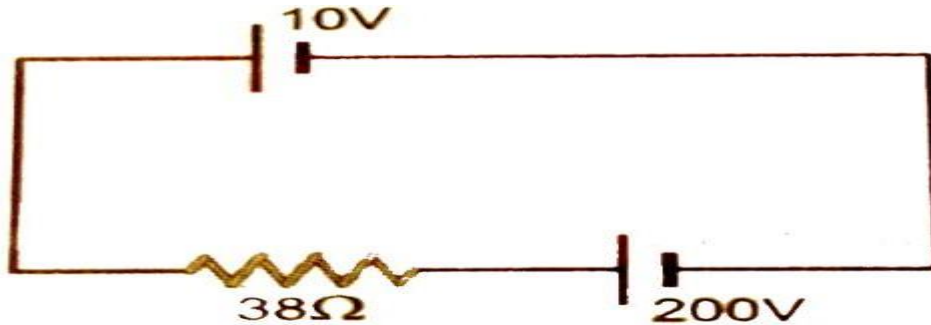
25. a. What is motional electromotive force (motional emf) ?

b. A metallic rod of 1 m 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?

OR

- a. Derive the expression for the self-inductance of a long solenoid of cross sectional area , length , and having turns per unit length.
  - b. Why the self-induced emf is also called the back emf?
- 26.a. A 10 V battery of negligible internal resistance is connected across a 200 V battery and a resistance of 38 ohm as shown. Find the value of the current in the circuit.



- b. How electrical resistivity of nichrome changes with increase in temperature?
  - c. What happens to drift velocity of an electron in a conductor when temperature of the conductor increases?
27. Derive an expression for torque experienced by a rectangular current carrying coil placed in an uniform magnetic field.
28. Identify the name and part of electromagnetic spectrum to which the following radiations belong -
- (i) used in Radar
  - (ii) used by a F.M. radio station for broadcasting
  - (iii) used for taking photographs of sky, during night and fog conditions.
  - (iv) absorbed by ozone layer of the atmosphere.
  - (v) Arrange these wavelengths in order of increasing wavelength.

## SECTION – D

### Case Study Based Questions

29. Read the following paragraph and answer the questions that follow.
- As we know that, when light ray travels from one medium to another changes its direction of path due to the change in optical density of the medium. When light ray travels from optically denser medium to the optically rarer medium then some of the light get reflected back in the same medium and remaining light get refracted in the second medium and such a phenomenon of light is called as internal reflector light. We know that, when a ray of light travels from denser medium to rarer medium then it get bended away from the normal. If we increase the angle of incidence slowly then angle of refraction also get increased and at one stage the



angle of refraction is  $90^\circ$  for some angle of incidence. And further if we increase the angle of incidence then there will be no refraction of light and the ray will be totally internally get reflected. Such phenomenon of reflection of light is called as total internal reflection of light. And the angle of incidence in denser medium for which the angle of refraction in rarer medium is  $90^\circ$ , that angle of incidence is called as critical angle. So we define total internal reflection as, if the angle of incidence exceeds the critical angle then the total light get internally reflected. Mirage is the best real life example of total internal reflection of light. The highly brilliance of diamonds is only due to the total internal reflection of light through them which is get total internally reflected many times and causes brilliance of diamonds. Prisms are also made by using total internal reflection of light. We all know that, optics is the vast branch of physics which has vast application in our daily life such as optical fibre. Optical fibre are used for long distance transmission of audio and video signal also. And they are mainly constructed on the basis of total internal reflection of light to reduce the decrease in amplitude of the sending signal.

**Q 1.)** As the refractive index of the medium increases the corresponding value of critical angle for that medium \_\_\_\_\_

a) decreases

b) increases

c) remains same

d) independent of refractive index of the medium

**Q 2.)** Velocity of light in glass is  $2 \times 10^8$  m/s . If the ray of light passes from glass to air, calculate the value of critical angle.

**Q 3.)** How total internal reflection of light would be possible in case of optical fibres?

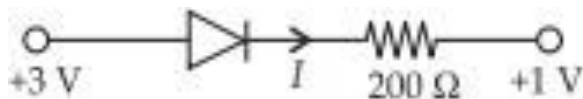
30. Read the following paragraph and answer the questions that follow.

When the diode is forward biased, it is found that beyond knee voltage, the conductivity is very high. At this value of battery biasing for p-n junction, the potential barrier is overcome and the current increases rapidly with an increase in forwarding voltage. When the diode is reverse biased, the reverse bias voltage produces a very small current about a few microamperes which almost remains constant with bias. This small current is reverse saturation current.

- Q1. What happens to width of depletion layer and magnitude of barrier potential, when the p-n diode is forward biased?
- Both increases
  - Both decreases
  - width of depletion layer increases and magnitude of barrier potential decreases
  - width of depletion layer decreases and magnitude of barrier potential increases

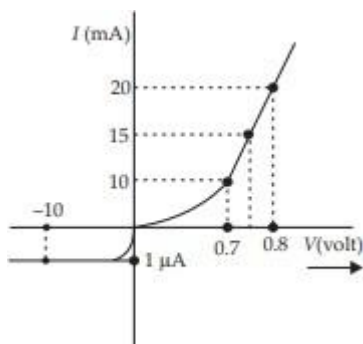
- Q2. Based on the V-I characteristics of the diode, we can classify diode as
- ohmic device
  - non-ohmic device
  - both a and b
  - none of the above

Q3. If an ideal junction diode is connected as shown, then the value of the resistance of the diode is



- (a) ZERO                      (b) 0.02 ohm                      (c) 0.01 ohm                      (d) 0.1 ohm

Q4. The V-I characteristic of a diode is shown in the figure. The ratio of forward to reverse bias resistance is



- (a) 100                      (b)  $10^6$                       (c) 10                      (d)  $10^{-6}$

### SECTION – E

- 31.a. Using Gauss's law, deduce the expression for the electric field due to uniformly charged spherical conducting shell of radius  $R$  at a point (i) outside and (ii) inside the shell.
- Plot a graph showing variation of electric field as a function of  $r > R$  and  $r < R$ .
  - A uniformly charged conducting spherical shell of 2.4 m diameter has a surface charge density of  $80.0 \mu\text{C}/\text{m}^2$ . (i) Find the charge on the sphere. (ii) What is the total electric flux leaving the surface of the shell?

OR

- a. Find an expression for Potential energy of a system of two charges in an external field.
- b. (i) Determine the electrostatic potential energy of a system consisting of two charges  $7 \mu\text{C}$  and  $-2 \mu\text{C}$  (and with no external field) placed at  $(-9 \text{ cm}, 0, 0)$  and  $(9 \text{ cm}, 0, 0)$  respectively.  
(ii) Suppose that the same system of charges is now placed in an external electric field  $E = A (1/r^2)$ ;  $A = 9 \times 10^5 \text{ NC}^{-1} \text{ m}^2$ . What would the electrostatic energy of the configuration be?

32.a. Derive the expression for average power dissipated over a cycle in an ac LCR Series circuit.

b. Under what condition is –

(i) no power is dissipated even though the current flows through the circuit, (ii) maximum power dissipated in the circuit.

c. In a series circuit  $X_L = R$  and power factor of the circuit is  $P_1$ . When capacitor with capacitance  $C$  such that  $X_L = X_C$  is put in series, the power factor becomes  $P_2$ . Calculate  $P_1/P_2$ .

OR

- a. A series LCR circuit is connected to an a.c. source. Using phasor diagram, derive expressions for impedance, instantaneous current and its phase relationship to the applied voltage.
- b. A resistor of  $200 \Omega$  and a capacitor of  $50/\pi \mu\text{F}$  are connected in series to a  $200 \text{ V}$ ,  $50 \text{ Hz}$  ac source.
  - (i) Calculate the current in the circuit,
  - (ii) Calculate the voltage (rms) across the resistor and the capacitor.
  - (iii) Is the algebraic sum of these voltages more than the source voltage? If yes, resolve the paradox.

33. a. (i) Draw a labelled ray diagram to show the image formation by an astronomical telescope in normal adjustment.

(ii) Define magnifying power of an astronomical telescope in normal adjustment (i.e, when the final image is formed at infinity).

(iii) Derive the expression for its magnifying power in normal adjustment.

b. (i) A giant refracting telescope has an objective lens of focal length  $15 \text{ m}$ . If an eye piece of focal length  $1.0 \text{ cm}$  is used, what is the angular magnification of the telescope?

(ii) If this telescope is used to view the moon, what is the diameter of the image of the moon formed by the objective lens? The diameter of the moon is  $3.48 \times 10^6 \text{ m}$  and the radius of lunar orbit is  $3.8 \times 10^8 \text{ m}$ .

OR

- a. Derive expression for the lens maker's formula using necessary ray diagrams. Also state the assumptions in deriving the above relation and the sign conventions used.
- b. A beam of light converges at a point P. Now a lens is placed in the path of the convergent beam 12 cm from P. At what point does the beam converge if the lens is  
(i) a convex lens of focal length 20 cm, (ii) a concave lens of focal length 16 cm ?

**KENDRIYA VIDYALAYA CHENNAI REGION**  
**PREBOARD EXAMINATION: 2023-2024**

**Class: XII**

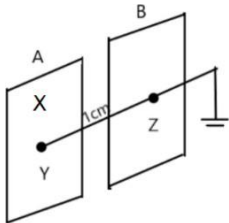
**Time: 3 hours**

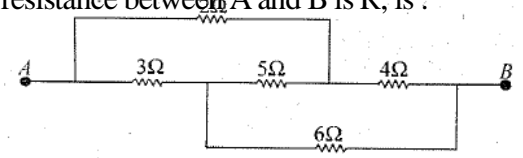
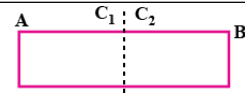
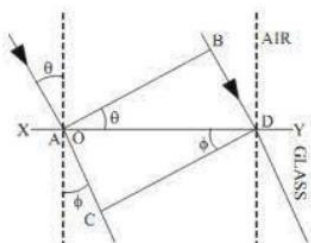
**Max Marks: 70**

**PHYSICS (THEORY)**

**General Instructions:**

- (1) There are 33 questions in all. All questions are compulsory.
- (2) This question paper has five sections: Section A, Section B, Section C, Section D and Section E.
- (3) All the sections are compulsory.
- (4) **Section A** contains sixteen questions, twelve MCQ and four Assertion Reasoning based of 1 mark each, **Section B** contains five questions of two marks each, **Section C** contains seven questions of three marks each, **Section D** contains two case study-based questions of four marks each and **Section E** contains three long answer questions of five marks each.
- (5) There is no overall choice. However, an internal choice has been provided in one question in Section B, one question in Section C, one question in each CBQ in Section D and all three questions in Section E. You have to attempt only one of the choices in such questions.
- (6) Use of calculators is not allowed.
- (7) You may use the following values of physical constants where ever necessary
  - i.  $c = 3 \times 10^8 \text{ m/s}$
  - ii.  $m_e = 9.1 \times 10^{-31} \text{ kg}$
  - iii.  $e = 1.6 \times 10^{-19} \text{ C}$
  - iv.  $\mu_0 = 4\pi \times 10^{-7} \text{ TmA}^{-1}$
  - v.  $h = 6.63 \times 10^{-34} \text{ Js}$
  - vi.  $\epsilon_0 = 8.854 \times 10^{-12} \text{ C}^2\text{N}^{-1}\text{m}^{-2}$
  - vii. Avogadro's number =  $6.023 \times 10^{23}$  per gram mole

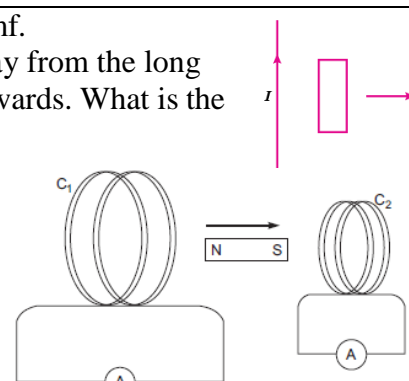
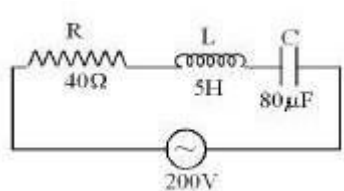
QUESTIONS			
SECTION A			
1	<p>A point charge +q is placed at a distance d from an isolated conducting plane. The field at a point P on the other side of the plane is:</p> <p><b>A</b> directed perpendicular to the plane and away from the plane.</p> <p><b>B</b> directed perpendicular to the plane but towards the plane.</p> <p><b>C</b> directed radially away from the point charge.</p> <p><b>D</b> directed radially towards the point charge</p>	■	
2	<p>Two identical plane metallic surfaces A and B are kept parallel to each other in air separated by a distance of 1.0cm as shown in figure.</p> <p>Surface A is given a positive potential of 10V and the outer surface of B is earthed. What is the work done in moving a charge of <math>20\mu\text{C}</math> from point X to Y?</p> <p><b>A</b> zero</p>		■

	<b>B</b>	$+200\mu\text{J}$	
	<b>C</b>	$-200\mu\text{J}$	
<b>3</b>	<b>D</b>	10 J	
		In this circuit some potential difference is applied between A and B. The equivalent resistance between A and B is R, is :	<b>1</b>
			
	<b>A</b>	$14\Omega$	
	<b>B</b>	$12.5\Omega$	
	<b>C</b>	$3.6\Omega$	
<b>4</b>	<b>D</b>	2.1Ω	
		A hypothetical bar magnet (AB) is cut into two equal parts. One part is now kept over the other, so that the pole C2 is above C1. If M is the magnetic moment of the original magnet, what would be the magnetic moment of the combination, so formed?	<b>1</b>
			
	<b>A</b>	Zero	
	<b>B</b>	$M/2$	
	<b>C</b>	$2M$	
<b>5</b>	<b>D</b>	M	
		A strong magnetic field is applied on a stationary electron. Then the electron	<b>1</b>
	<b>A</b>	moves in the direction of the field	
	<b>B</b>	remained stationary.	
	<b>C</b>	moves perpendicular to the direction of the field	
	<b>D</b>	moves opposite to the direction of the field.	
<b>6</b>		In the expression $e = -d\phi/dt$ , the negative sign signifies:	<b>1</b>
	<b>A</b>	The induced emf is produced only when magnetic flux decreases	
	<b>B</b>	The induced emf opposes the change in the magnetic flux	
	<b>C</b>	The induced emf is opposite to the direction of the flux	
	<b>D</b>	None of these	
<b>7</b>		For purely capacitive circuits, power factor is:	<b>1</b>
	<b>A</b>	Zero	
	<b>B</b>	$\pi/2$	
	<b>C</b>	+1	
	<b>D</b>	-1	
<b>8</b>		In the adjoining figure, a wavefront AB moving in air is incident on a plane glass surface XY. Its position CD, after refraction through a glass slab, is as shown also along with the normal drawn at A and D. The refractive index of glass with respect to air will be equal to	<b>1</b>
			

**A** BD/AC  
**B** AB/CD  
**C** BD/AD

	<b>D</b>	AC/AD	
<b>9</b>		If the frequency of incident light falling on a photosensitive metal is doubled, the kinetic energy of the emitted photoelectron is	<b>1</b>
	<b>A</b>	Unchanged	
	<b>B</b>	halved	
	<b>C</b>	doubled	
	<b>D</b>	more than twice its initial value	
<b>10</b>		The de Broglie wavelength of an electron with kinetic energy 120 eV is (Given $h = 6.63 \times 10^{-34} \text{ J s}$ , $m_e = 9 \times 10^{-31} \text{ kg}$ , $1 \text{ eV} = 1.6 \times 10^{-19} \text{ J}$ )	<b>1</b>
	<b>A</b>	2.13 Å	
	<b>B</b>	1.13 Å	
	<b>C</b>	4.15 Å	
	<b>D</b>	3.14 Å	
<b>11</b>		In the Geiger-Marsden scattering experiment the number of scattered particles detected are maximum and minimum at the scattering angles respectively at	<b>1</b>
	<b>A</b>	0° and 180°	
	<b>B</b>	180° and 0°	
	<b>C</b>	90° and 180°	
	<b>D</b>	45° and 90°	
<b>12</b>		In Bohr model of the hydrogen atom, the lowest orbit corresponds to	<b>1</b>
	<b>A</b>	infinite energy	
	<b>B</b>	maximum energy	
	<b>C</b>	minimum energy	
	<b>D</b>	zero energy.	
<b>13</b>		<p><b>For Questions 13 to 16, two statements are given –one labelled Assertion (A) and other labelled Reason (R). Select the correct answer to these questions from the options as given below.</b></p> <p><b>a) If both Assertion and Reason are true and Reason is correct explanation of Assertion.</b></p> <p><b>b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.</b></p> <p><b>c) If Assertion is true but Reason is false.</b></p> <p><b>d) If both Assertion and Reason are false.</b></p> <p>-----</p> <p><b>Assertion(A):</b>(A): If electric flux over a closed surface is negative then the surface encloses net negative charge.</p> <p><b>Reason (R):</b>Electric flux is independent of the charge distribution inside the surface.</p>	<b>1</b>
<b>14</b>		<p><b>Assertion(A):</b> A charged particle is moving in a circular path under the action of a uniform magnetic field. During the motion, kinetic energy of the charged particle is constant.</p> <p><b>Reason (R):</b> During the motion, magnetic force acting on the particle is perpendicular to instantaneous velocity.</p>	<b>1</b>
<b>15</b>		<p><b>Assertion(A):</b> When two coils are wound on each other, the mutual induction between coil is maximum</p> <p><b>Reason (R):</b> Mutual induction doesn't depend on the orientation of the coils</p>	<b>1</b>
<b>16</b>		<p><b>Assertion (A):</b> Diffraction takes place for all types of waves mechanical or non-mechanical, transverse or longitudinal.</p> <p><b>Reason(R)</b> Diffraction's effect is perceptible only if wavelength of wave is</p>	<b>1</b>



	comparable to dimensions of diffracting device.	
<b>SECTION B</b>		
17	State Coulomb's law. Plot a graph showing the variation of coulomb force $F$ versus, where $r$ is the distance between the two charges of each pair of charges: (A) -- $(1 \mu\text{C}, 2 \mu\text{C})$ and (B) -- $(1 \mu\text{C}, -3 \mu\text{C})$ . Interpret the graphs obtained.	2
18	The susceptibility of a magnetic material is $-2.6 \times 10^{-5}$ . Identify the type of magnetic material. How does the susceptibility of this material depend upon the temperature? State its two properties.	2
19	State Huygens' postulates of wave theory. Sketch the wavefront emerging from a (i) point source of light and (ii) linear source of light like a slit.	2
20	State the necessary conditions for producing total internal reflection of light. Calculate the speed of light in a medium whose critical angle is $45^\circ$ . Does critical angle for a given pair of media depend on wave length of incident light? Give reason <b>[OR]</b> A ray of light incident on an equilateral prism shows minimum deviation of $30^\circ$ . Determine the speed of light through the glass prism	2
21	A neutron is absorbed by a ${}_3\text{Li}^6$ nucleus with the subsequent emission of an alpha particle. Calculate the energy released, in MeV, in this reaction. [Given: mass of ${}_3\text{Li}^6 = 6.015126 \text{ u}$ ; mass (neutron) = $1.0086654 \text{ u}$ ; mass (alpha particle) = $4.0026044 \text{ u}$ ; and mass (triton) = $3.016049 \text{ u}$ ]	2
<b>SECTION C</b>		
22	Two long straight parallel conductors carry steady current $I_1$ and $I_2$ separated by a distance $d$ . If the currents are flowing in the same direction, show how the magnetic field set up in one produces an attractive force on the other. Obtain the expression for this force. Hence define one ampere.	3
23	(i) State the law that gives the polarity of the induced emf. (ii) A rectangular loop of wire is pulled to the right, away from the long straight wire through which a steady current $I$ flows upwards. What is the direction of induced current in the loop? (iii) A magnet is quickly moved in the direction indicated by an arrow between two coils $C_1$ and $C_2$ as shown in the figure. What will be the direction of induced current in each coil as seen from the magnet? 	3
24	State the condition for resonance to occur in series LCR ac circuit. The figure shows a series LCR circuit connected to a variable frequency $230 \text{ V}$ source. (a) Determine the source frequency which drives the circuit in resonance. (b) Calculate the amplitude of current at resonance of the circuit <b>[OR]</b> State the principle of working of a transformer. Can a transformer be used to step up or 	3

	step down a dc voltage? Justify your answer. The primary coil of an ideal step up transformer has 100 turns and transformation ratio is also 100. The input voltage and power are 220 V and 1100 W respectively. Calculate (a) the number of turns in the secondary coil. (b) the current in the primary coil. (c) the power in the secondary coil.	
25	Identify the part of the electromagnetic spectrum which: a) produces heating effect, b) is absorbed by the ozone layer in the atmosphere, c) is used for studying crystal structure. Write any one method of the production of each of the above radiations.	3
26	Name the phenomenon which shows the quantum nature of electromagnetic radiation. Figure shows a plot of stopping potential ( $V_0$ ) with frequency ( $\nu$ ) of incident radiation for two photosensitive material $M_1$ and $M_2$ . Explain (i) why the slope of both lines is same? (ii) for which material emitted electrons greater kinetic energy for the same frequency of incident radiation?	3
		of the have
27	a) State Bohr's quantization condition of angular momentum. b) The electron in a given Bohr orbit has a total energy of $-1.5$ eV. Calculate its (i) kinetic energy. (ii) potential energy. (iii) wavelength of radiation emitted, when this electron makes a transition to the ground state.	3
28	(i) Name the device which utilizes unilateral action of a pn diode to convert ac into dc. (ii) Draw the circuit diagram of full wave rectifier. (iii) What is the role of filter in a Rectifier? (iv) Write any 2 uses of a wave Rectifier in your daily life.	3
	<b>SECTION D</b>	
	<b>Case Study Based Questions</b>	
29	<b>Read the following paragraph and answer the questions.</b> Interference is the phenomenon of superimposition of two or more waves having same frequency emitted by coherent sources such that amplitude of resultant wave is equal to the sum of the amplitude of the individual waves. The amplitude of resultant wave can either be larger or smaller than of individual waves depending on whether the interference is constructive or destructive. It is important to note that the source should emit continuous waves of the same wavelength for the same period of time. Also, both sources should be close to each other. If the waves are coherent, then the observed interference pattern is stable. The most commonly used coherent sources are Laser. Because of its simulated emission property, which helps them to generate highly coherent light waves. Through this experiment, Young found that even the small source of lights is also least partially coherent. That's why observers can notice the interference patterns on the soap bubbles and the wings of butterflies showing different colours. If the waves are incoherent, then the observed interference pattern is not stable and invisible. <b>Answer the following questions</b>	4

(i) What happens to the interference pattern the two slits  $S_1$  and  $S_2$  in Young's double experiment are illuminated by two independent but identical sources?

- (a) The intensity of the bright fringes doubled
- (b) The intensity of the bright fringes becomes four times
- (c) Two sets of interference fringes overlap
- (d) No interference pattern is observed

(ii) Two sources of light are said to be coherent when both give out light waves of the same:

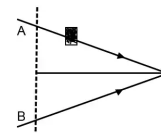
- (a) amplitude and phase
- (b) intensity and wavelength
- (c) speed
- (d) wavelength and a constant phase difference

(iii) In Young's double slit experiment, if the separation between coherent sources is halved and the distance of the screen from the coherent sources is doubled, then the fringe width becomes

- (a) doubled
- (b) remains the same
- (c) one fourth
- (d) 4 times

(OR)

(iii) In Young's experiment, monochromatic light is used to illuminate the slits A and B. Interference fringes are observed on a screen placed in front of the slits. Now if a thin glass plate is placed in the path of the beam coming from A, then



- (a) the fringes will disappear
- (b) the fringe width will increase
- (c) the fringe width will decrease
- (d) there will be no change in the fringe width

(iv) In a Young's double-slit experiment the fringe width is found to be 0.4 mm. If the whole apparatus is dipped in water of refractive index  $4/3$ , without disturbing the arrangement, the new fringe width will be

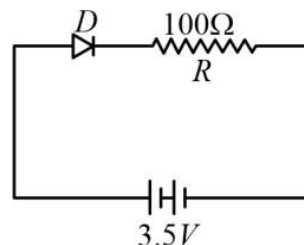
- (a) 0.30 mm
- (b) 0.40 mm
- (c) 0.53 mm
- (d) 0.2 mm

**30** **Read the following paragraph and answer the questions:** A semiconductor is a substance whose resistivity lies between the conductors and insulators. The property of resistivity is not the only one that decides a material as a semiconductor, but it has few properties. Semiconductors have the resistivity which is less than insulators and more than conductors. Without Semiconductors, the electronic devices that we see today would have been very complex and unreliable to use. A P-N junction diode is a piece of silicon that has two terminals. One of the terminals is doped with P-type material and the other with N-type material. The P-N junction is the basic element for semiconductor diodes. It is a

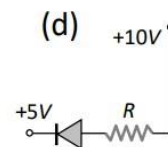
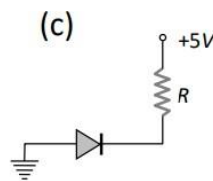
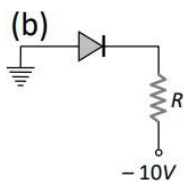
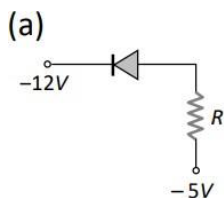
**4**

two-terminal device. When an external voltage is applied across a semiconductor diode such that p-side is connected to the positive terminal of the battery and n-side to the negative terminal, it is said to be forward biased. When an external voltage is applied across the diode such that n-side is positive and p-side is negative, it is said to be reverse biased. An ideal diode is one whose resistance in forward biasing is zero and the resistance is infinite in reverse biasing.

(i) In the given figure, a diode  $D$  is connected to an external resistance  $R = 100 \Omega$  and an emf of  $3.5 \text{ V}$ . If the barrier potential developed across the diode is  $0.5 \text{ V}$ , Calculate the current in the circuit.



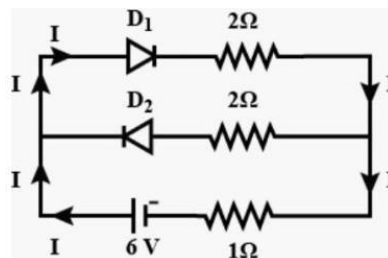
(ii) In which of the following figures, the pn diode is reverse biased?



(iii). Draw the V- I characteristics of non ohmic conductor.

(OR)

(iii) Assuming that the two diodes  $D_1$  and  $D_2$  used in the electric circuit shown in the figure are ideal, find out. Calculate value of the current flowing through  $1 \Omega$  resistor.



SECTION-E

31

A parallel plate capacitor is charged by a battery, which is then disconnected. A dielectric slab is then inserted in the space between the plates. Explain what changes, if any, occur in the values of  
 (i) capacitance.  
 (ii) potential difference between the plates.  
 (iii) the energy stored in the capacitor.

In the figure given below, Find

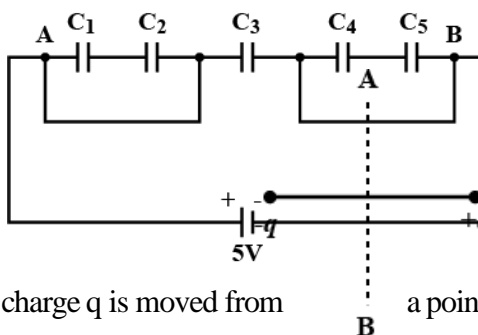
- (i) the equivalent capacitance of the network between points A and B
- (ii) total energy stored in the network.

Given:  $C_1=C_5=4\mu\text{F}$ ,  $C_2=C_3=C_4=2\mu\text{F}$

[OR]

(i) Derive an expression for electric potential at a

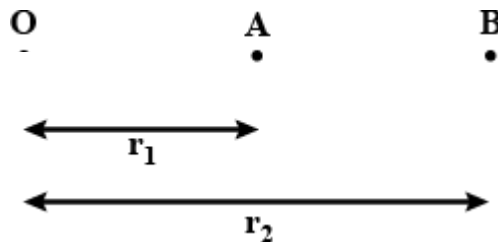
point on the equatorial line of an electric dipole. (ii) A charge  $q$  is moved from B a point A



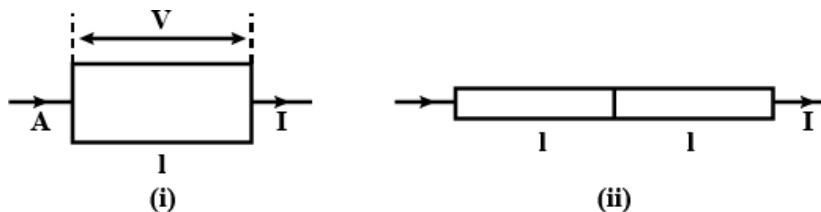
5

above a dipole of dipole moment  $p$  to a point B  
below the dipole in an equatorial plane without acceleration. find the work done in this process.

(iii) A point charge  $Q$  is placed at point 'O' as shown in figure. Is the potential at point A, i.e.,  $V_A$ , greater, smaller or equal to potential,  $V_B$ , at point B, when  $Q$  is (i) positive, and (ii) negative charge



**32** Define Ohm's law.  
Two materials Si and Cu, are cooled from 300 K to 60 K. Graphically represent the effect on their resistivity?  
A metal rod of square cross-sectional area  $A$  having length  $l$  has current  $I$  flowing through it when a potential difference of  $V$  volt is applied across its ends (figure (i)). Now the rod is cut parallel to its length into two identical pieces and joined as shown in figure (ii). What potential difference must be maintained across the length  $2l$  so that the current in the rod is still  $I$ ?



[OR]

Define the term drift velocity of charge carriers in a conductor. Write its relationship with current flowing through it.  
How does drift velocity of electrons in a metallic conductor vary with increase in temperature? Explain.  
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	$3L$	$2d$	$2V$

**33** Draw a schematic arrangement of a reflecting telescope (Cassegrain) showing how rays coming from a distant object are received at the eyepiece. Write its two important advantages over a refracting telescope.  
A small telescope has an objective lens of focal length 140 cm and an eyepiece of focal length 5.0 cm. Find the magnifying power of the telescope for viewing distant objects when (i) the telescope is in normal adjustment, (ii) the final image is formed at the least

distance of distinct vision.

**[OR]**

Using the necessary ray diagram, derive the lens formula when a lens forms a real image. The refractive index of a material of a concave lens is  $n_1$ . It is immersed in a medium of refractive index  $n_2$ . A parallel beam of light is incident on the lens. Trace the path of emergent rays when (i)  $n_1 > n_2$  (ii)  $n_1 < n_2$ .

**KENDRIYA VIDYALAYA SANGATHAN, BHUBANESWAR REGION**  
**PRE-BOARD EXAMINATION 2023-24**

**SUBJECT: PHYSICS (THEORY)**  
**TIME: 03 Hours**

**CLASS: XII**  
**MAX. MARKS: 70**

**General Instructions:**

- (1) There are 33 questions in all. All questions are compulsory.
- (2) This question paper has five sections: Section A, Section B, Section C, Section D and Section E. All the sections are compulsory.
- (3) Section A contains sixteen questions, twelve MCQ and four Assertion Reasoning based of 1 mark each, Section B contains five questions of two marks each, Section C contains seven questions of three marks each, Section D contains two case study based questions of four marks each and Section E contains three long answer questions of five marks each.
- (4) There is no overall choice. However, an internal choice has been provided in one question in Section B, one question in Section C, one question in each CBQ in Section D and all three questions in Section E. You have to attempt only one of the choices in such questions.
- (5) Use of calculators is not allowed.
- (6) You may use the following values of physical constants where ever necessary.

$$c = 3 \times 10^8 \text{ms}^{-1}$$

$$h = 6.6 \times 10^{-34} \text{Js}$$

$$e = 1.6 \times 10^{-19}$$

$$\frac{1}{4\pi\epsilon_0} = 9 \times 10^9 \text{N m}^2$$

$$\text{C}^{-2}$$

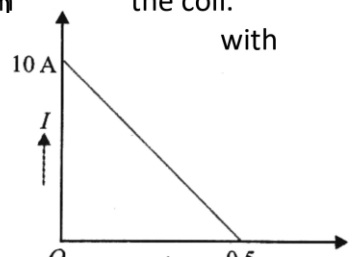
$$\text{C}^{-2}$$

$$\mu_0 = 4\pi \times 10^{-7} \text{T m A}^{-1}$$

$$\text{Mass of proton } m_p = 1.6 \times 10^{-27} \text{ kg, Mass of electron } M_e = 9.1 \times 10^{-31} \text{ kg}$$

**SECTION-A**

1. If a charge  $q$  is placed at the center of the line joining two equal charges  $Q$  such that the system is in equilibrium, then the value of  $q$  is  
(a)  $Q/2$                       (b)  $-Q/2$                       (c)  $Q/4$                       (d)  $-Q/4$
2. Which of the following is not the property of an equipotential surface?  
(a) They do not cross each other.  
(b) The work done in carrying a charge from one point to another on an equipotential surface is zero.  
(c) For a uniform electric field, they are concentric spheres.  
(d) They can be imaginary spheres
3. If percentage change in current through a resistor is 1%, then the change in power through it would be  
(a) 1%                      (b) 2%                      (c) 0.5%                      (d) 0.1%
4. A galvanometer coil has a resistance of  $10 \Omega$  and the meter shows full scale deflection for a current of 2 mA. A student can convert this galvanometer into an ammeter of range 0 to 5 A by connecting a resistance of  
(a)  $0.004 \Omega$  in parallel with the coil.                      (b)  $4 \Omega$  in series with the coil.



the coil.

5. In a coil of resistance  $100 \Omega$  a current is induced by changing the magnetic flux through it. The variation of current with time is as shown in the figure. The magnitude of change in flux



through coil is

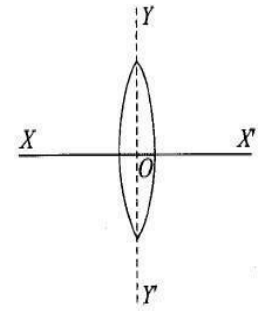
- (a) 200 Wb (b) 275 Wb  
(c) 225 Wb (d) 250 Wb

6. If  $E$  and  $B$  represent electric and magnetic field vectors of the electromagnetic wave, the direction of propagation of electromagnetic wave is along

- (a)  $E$  (b)  $B$  (c)  $E \times B$  (d)  $B \times E$

7. An equiconvex lens of focal length 15 cm is cut into two halves as shown in figure. Find the focal length of each part?

- (a) -30cm (b) -20cm  
(c) 30cm (d) -15cm



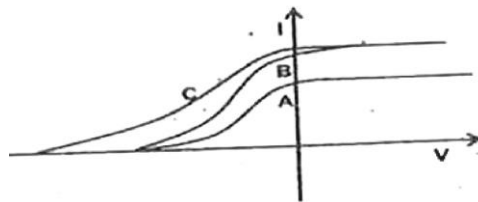
8. The wave-front due to source situated at the infinity is

- (a) Spherical (b) Cylindrical (c) Plane  
(d) Rectangular

9. The energy of an electron in  $n$ th orbit of hydrogen atom is  $E_n = \frac{-13.6}{n^2} eV$ . The negative sign of energy indicates that

- (a) electron is free to move.  
(b) electron is bound to the nucleus.  
(c) kinetic energy of electron is equal to potential energy of electron.  
(d) atom is radiating energy

10. In a photoelectric experiment, anode or plate potential is plotted against plate current



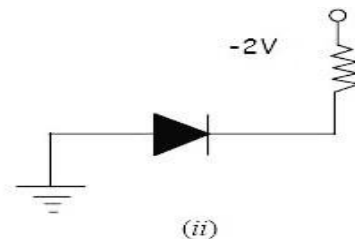
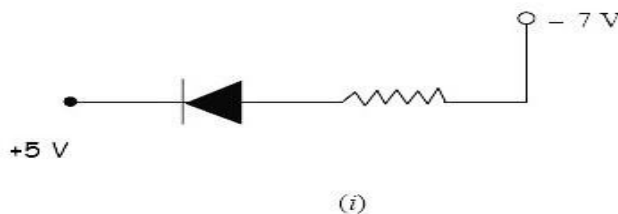
- (a) A and B will have same intensities while B and C will have different frequencies  
(b) B and C will have different intensities while A and B will have different frequencies  
(c) A and B will have different intensities while B and C will have equal frequencies  
(d) B and C will have equal intensities while A and B will have same frequencies

11. What is the ratio of nuclear radii if the mass numbers of two nuclei are 4 and 32?

- (a) 1:2 (b) 1:3 (c) 1:4 (d) 1:5

12. Choose the correct option.

- (a) Both of the diodes are forward biased.  
(b) Both of the diodes are reverse biased  
(c) in (i), diode is forward biased and in (ii), diode is reverse biased.  
(d) in (i), diode is reverse biased and in (ii), diode is forward biased.



$n^2$

For Questions 13 to 16, two statements are given –one labelled Assertion (A) and other labelled

Reason (R). Select the correct answer to these questions from the options as given below.

(a) If both Assertion and Reason are true and Reason is correct explanation of Assertion.

(b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.

(c) If Assertion is true but Reason is false.

(d) If both Assertion and Reason are false

13. Assertion (A): In a p-n junction under equilibrium there is no net current.

Reason (R): In equilibrium, the drift current is equal and opposite to the diffusion current.

14. Assertion: Energy is released when heavy nuclei undergo fission or light nuclei undergo fusion.

Reason: For heavy nuclei, binding energy per nucleon increases with increasing  $Z$  while for light nuclei it decreases with increasing  $Z$ .

15. Assertion (A): Endoscopy involves use of optical fibres to study internal organs

Reason (R): Optical fibres are based on the phenomena of total internal reflection

16. Assertion: Torque on the coil is the maximum, when coil is suspended in a radial magnetic field.

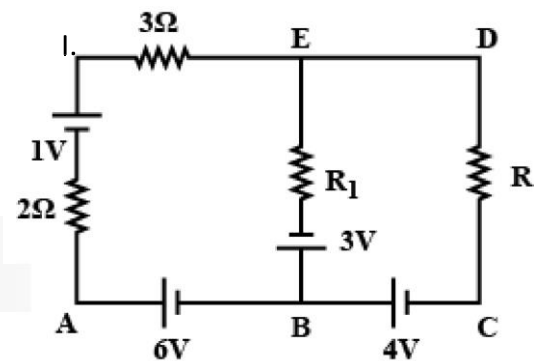
Reason: The torque tends to rotate the coil on its own axis.

### SECTION-B

17. The susceptibility of a magnetic material is  $-2.6 \times 10^{-5}$ . Identify the type of magnetic material and state its two properties.

18. A cell of emf 'E' and internal resistance 'r' is connected across a variable load resistor R. Draw the plots of the terminal voltage V versus (i) R and (ii) the current

OR  
Use Kirchhoff's rules to determine the potential difference between the points A and D when no current flows in the arm BE of the electric network shown in the figure



The maximum kinetic energy of the photoelectrons gets

19. doubled when the wavelength of light incident on the surface changes from  $\lambda_1$  to  $\lambda_2$ . Derive the expressions for the threshold wavelength  $\lambda_0$  and work function for the metal surface.

20. What are intrinsic semiconductors? What is the effect of doping on the conductivity of semiconductors? Draw the energy band diagram for p-type semiconductor.

21. Draw the ray diagram for image formation by a refracting telescope under normal adjustment. Why is the aperture of objective in an astronomical telescope kept large?

### SECTION-C

22. Sup

pose that the electric field part of an electromagnetic wave in vacuum is

$$\mathbf{E} = \{[3.1 \text{ N/C}] \cos \{(1.8 \text{ rad/m}) y + (5.4 \times 10^6 \text{ rad/s}) t\}\} \mathbf{i}$$

a) What is the direction of propagation of the Wave? 1/2

b) What is the Wave length? 1/2

c) What is the amplitude of the magnetic field part of the wave? 1/2



23. Explain, with the help of suitable diagram, the two important processes that occur during the formation of p-n junction. Hence define the terms: depletion region and barrier potential.

OR

With a suitable circuit diagram explain the principle and working of a full wave rectifier. Draw its input and output wave form.

24. Plot a graph showing the variation of binding energy per nucleon as a function of mass number. Explain Nuclear fusion and fission on the basis of this graph.

25. Given the value of the ground state energy of hydrogen atom as  $-13.6 \text{ eV}$ , find out its

kinetic and potential energy in the ground and second excited states. Calculate the wavelength of the radiation emitted when it jumps to ground state from this state?

26. Using phasor diagram, derive the expression for the current flowing in an ideal inductor connected to an a.c. source of voltage,  $V = V_0 \sin \omega t$ . Hence plot graphs showing variation of (i) applied voltage and (ii) the current as a function of  $\omega t$ .

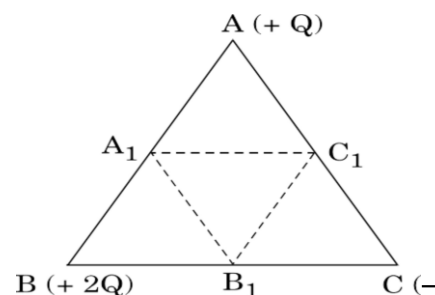
27. The resistance of a tungsten filament at  $150^\circ\text{C}$  is  $133 \Omega$ . What will be its resistance at  $500^\circ\text{C}$ ?

Given the temperature coefficient of tungsten is  $0.0045/^\circ\text{C}$ .

28. Define electrostatic potential at a point. Write its S.I. unit.

Three point charges,  $+Q$ ,  $+2Q$  and  $-3Q$  are placed at the

vertices of an equilateral triangle ABC of side  $l$ . If these charges are displaced to the mid-points  $A_1$ ,  $B_1$  and  $C_1$  respectively, find the amount of the work done in shifting the charges to the new locations.



3Q)

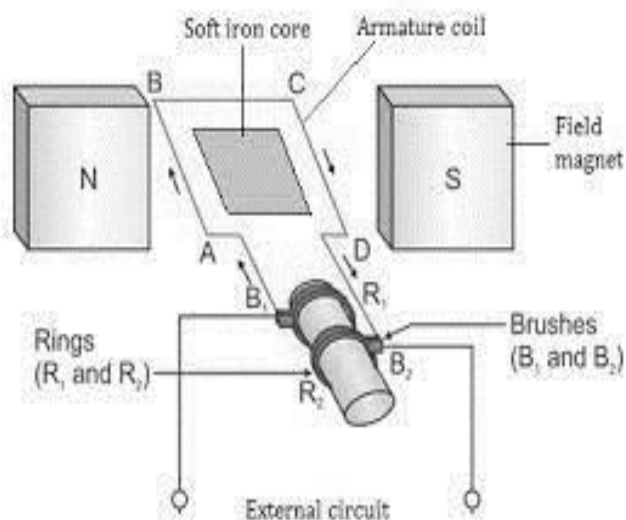
### SECTION-D

the questions that follow.

AC generator is a machine that converts mechanical energy into electrical energy. The AC Generator's

input supply is mechanical energy supplied by steam turbines, gas turbines and combustion engines. The output is alternating electrical power in the form of alternating voltage and current.

AC generators work on the principle of Faraday's law



of electromagnetic induction, which states that electromotive force – EMF or voltage – is generated in a current-carrying conductor that cuts a uniform magnetic field. This can either be achieved by rotating a conducting coil in a static magnetic

field or rotating the magnetic field containing the stationary conductor.

i) AC generator works on the principle of

- a. Mutual Induction
- b. Electromagnetic induction
- c. Self Induction
- d. None of these

ii) In AC generator, current in the circuit will maximum, when

- a. Flux linked with the coil maximum
- b. Flux linked with the coil zero
- c. Angle between magnetic field and area vector is zero
- d. None of these

iii) In an AC generator, the rate of change of magnetic flux through the coil is maximum when the angle between the plane of the coil and the lines of force is

- a.  $0^\circ$
- b.  $90^\circ$
- c.  $60^\circ$
- d.  $30^\circ$

iv) An A.C. generator consists of a coil of 100 turns and cross-sectional area of  $3 \text{ m}^2$ , rotating at a constant angular speed of 60 radian/sec in a uniform magnetic field of 0.4 T. The resistance of the coil is 400 ohm. What is the maximum power dissipation in the coil?

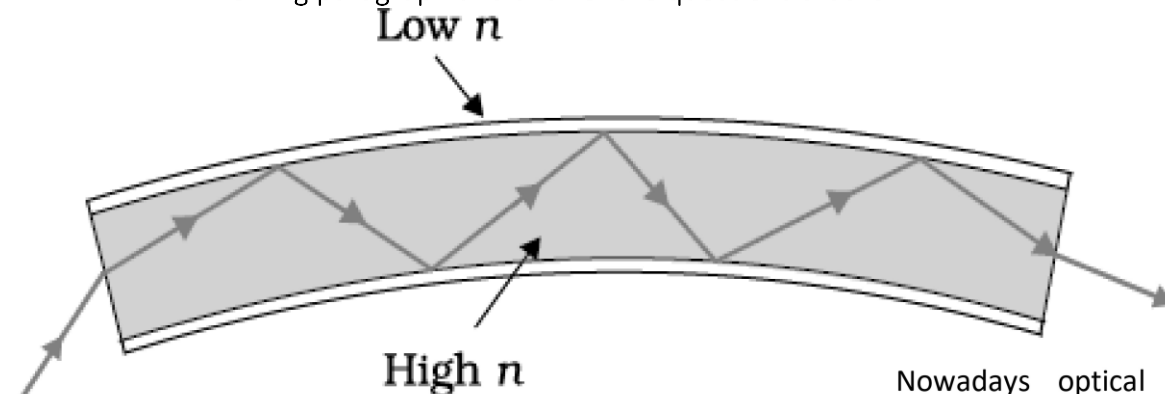
- a. 548 Watt
- b. 1296 Watts
- c. 100 watts
- d. 0

OR

An AC generator consists of 500 turns of area  $100 \text{ cm}^2$  each rotating with angular speed 75 rpm in a magnetic field of  $3 \times 10^{-3} \text{ T}$ . Find the peak value of emf.

- a. 1.17 V
- b. 3.4 V
- c. 4.4 V
- d. 5.0 V

30. Read the following paragraph and answer the questions that follow.



Nowadays optical fibres are extensively used for transmitting audio and video signals through long distances. Optical fibres too make use of the phenomenon of total internal reflection. Optical fibres are fabricated with high quality composite glass/quartz fibres. Each fibre consists of a core (Inner) and cladding(outer). When a signal in the form of light is directed at one end of the fibre at a suitable angle, it undergoes repeated total internal reflections along the length of the fibre and finally comes out at the other end. Since light undergoes total internal reflection at each stage, there is no appreciable loss in the intensity of the light signal. Optical fibres are fabricated such that light reflected at one side of inner surface strikes the other at an angle larger than the critical angle. Even if the fibre is bent, light can easily travel along its length.

Thus, an optical fibre can be used to act as an optical pipe.

i) Light cannot escape an optical fibre due to refraction. This is because:

- a) Critical angle for core with reference to cladding is too large
- b) Its critical angle for core with reference to cladding is too small
- c) The core is transparent
- d) Rays always enter at angle greater than critical angle.

ii) For total internal reflection to take place

- (a) the ray must go from rarer to denser medium.

(b) angle of incidence should be less than critical angle.

(c) the ray must go from denser to rarer medium.

(d) angle of incidence should be zero.

iii) In optical fibre

(a) refractive index of core is kept less than that of cladding

(b) refractive index of core is kept more than that of cladding

(c) refractive index of core is equal to that of cladding

(d) refractive index of core is 1

iv) Find the refractive index of the core of an optical fiber if the critical angle is  $60^\circ$  and the refractive index of the cladding is  $\sqrt{3}$ ?

(a)  $\sqrt{2}$

(b) 2

(c) 3

(d)  $\sqrt{3}$

OR

A diver at a depth 12 m inside water ( $n=4/3$ ) sees the sky in a cone of semi vertical angle

(a)  $\sin^{-1}\left(\frac{4}{3}\right)$

(b)  $\tan^{-1}\left(\frac{4}{3}\right)$

(c)  $\sin^{-1}\left(\frac{3}{4}\right)$

(d)  $90^\circ$

31.

### SECTION-E

(a) State Huygen's principle for wave theory.

(b) Name the type of wave front that corresponds to a beam of light emerging out of

(i) A convex lens when a point source is placed at its focus.

(ii) A distant source

(iii) A point source

(c) On the basis of Huygen's principle verify law of reflection of light.

OR

32.

(a) With the help of a suitable ray diagram, derive an expression for the lens maker's formula in case of a double convex lens.

(b) A compound microscope consists of an objective lens of focal length 2.0cm and an eyepiece of focal length 6.25cm separated by a distance of 15cm. How far from the objective should an object be placed in order to obtain the final image at least distance of distinct vision. Write, using Biot – Savart law, the expression for the magnetic field 'B' due to an element 'dl'

carrying current I at a distance r from it in a vector form. Schematically represent the direction of the magnetic field lines through a coil carrying current

A long wire with a small current element of 6mm is placed at the origin and carries a current of 2A along the X-axis. Find the magnitude and direction of the magnetic field due to the element on the Y axis at a distance 0.2m from it.

OR

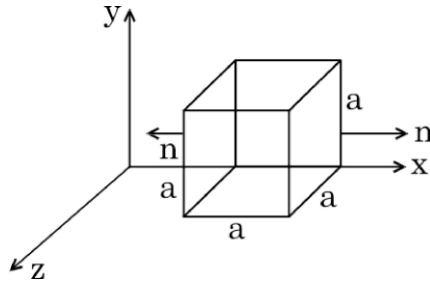
With the help of a neat and labeled diagram, explain the working principle and theory of moving coil galvanometer.



“Increasing the current sensitivity may not necessarily increase the voltage sensitivity of a galvanometer. Justify this statement.

33. Define the term ‘electric flux’. Write its S.I. unit.

Given the components of an electric field as  $E_x = \beta x$ ,  $E_y = 0$  and  $E_z = 0$ , where  $\beta$  is a dimensional constant. Calculate the flux through each face of the cube of side 'a', as shown in the figure, and the effective charge inside the cube.



Prove that for a infinite long charged straight wire of linear charge density  $\lambda$ , the electric field is inversely proportional to radial distance.

OR

Show, using Gauss's law, that for a parallel plate capacitor consisting of two large plane parallel conductors having surface charge densities  $+\sigma$  and  $-\sigma$ , separated by a small distance in vacuum, the electric field

- (i) in the outer regions of both the plates is zero,
- (ii) is  $\sigma / \epsilon_0$  in the region between the charged plates.

Hence obtain the expression for the capacitance of a parallel plate capacitor.

\*\*\*\*\*

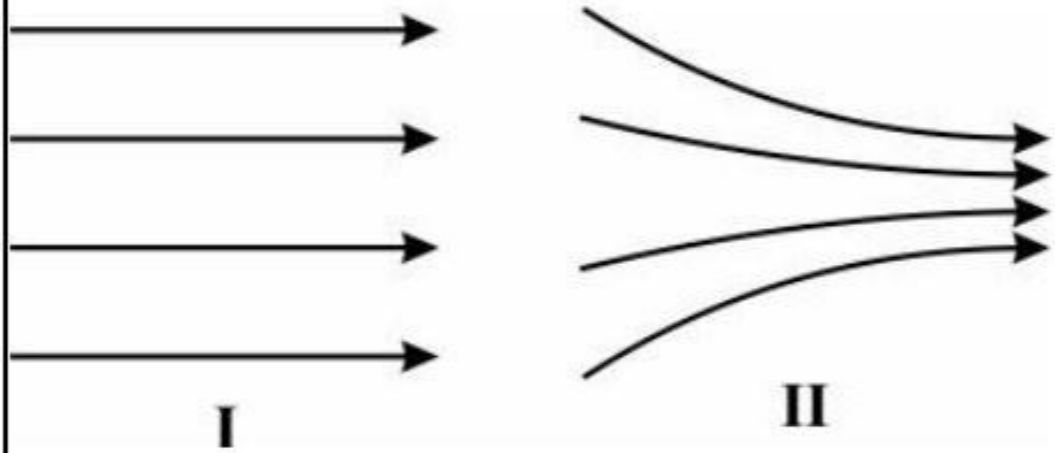
PREBOARD (QP)(2023-24)  
 SUBJECT: PHYSICS(THEORY) CLASS : XII

TIME :3 HOURS

MM : 70

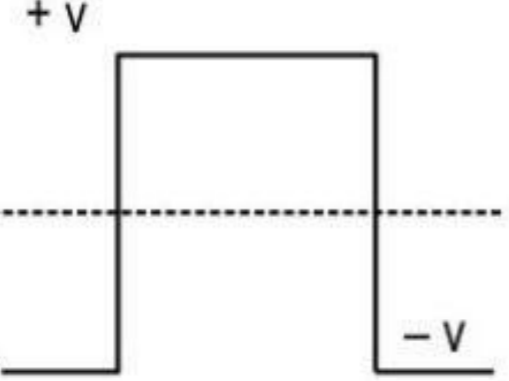
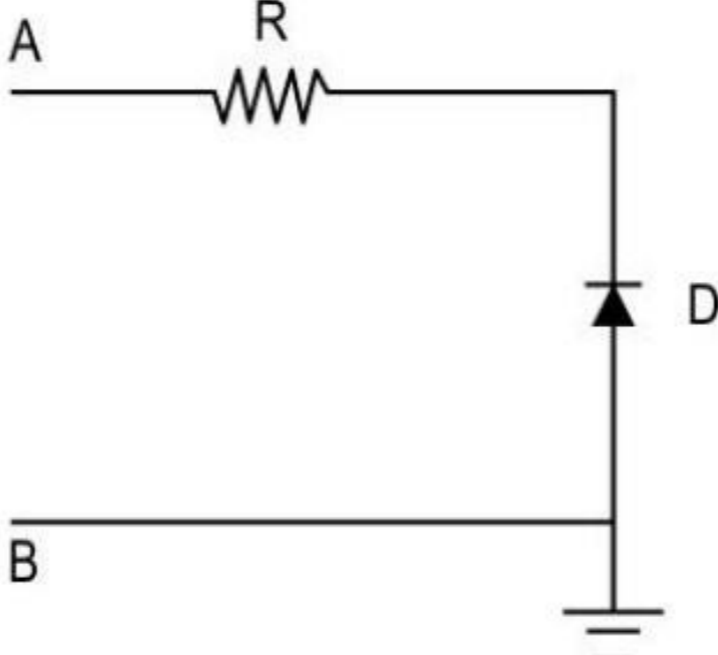
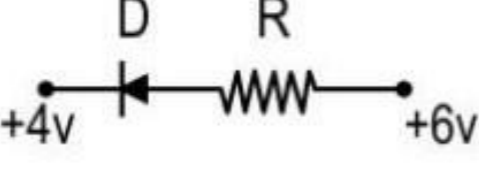
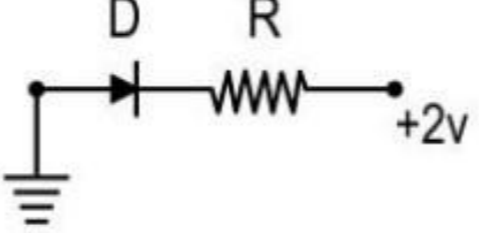
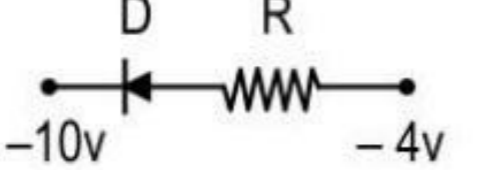
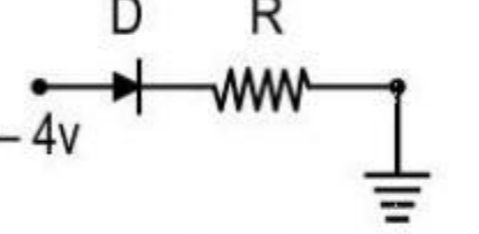
**GENERAL INSTRUCTION:**

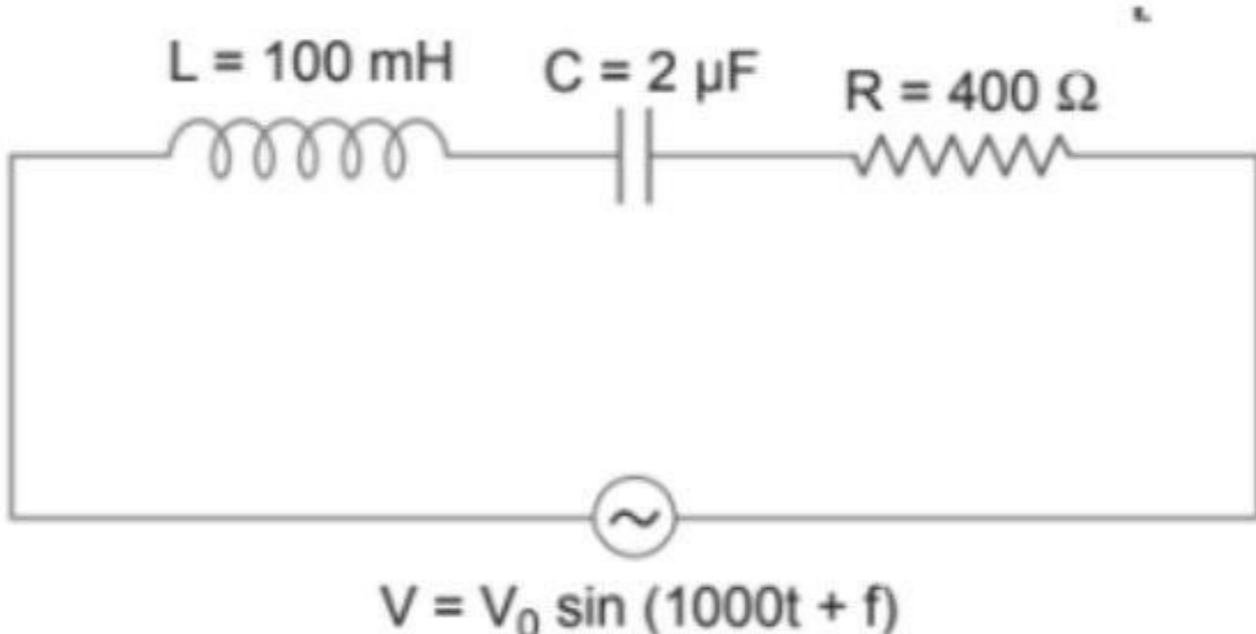
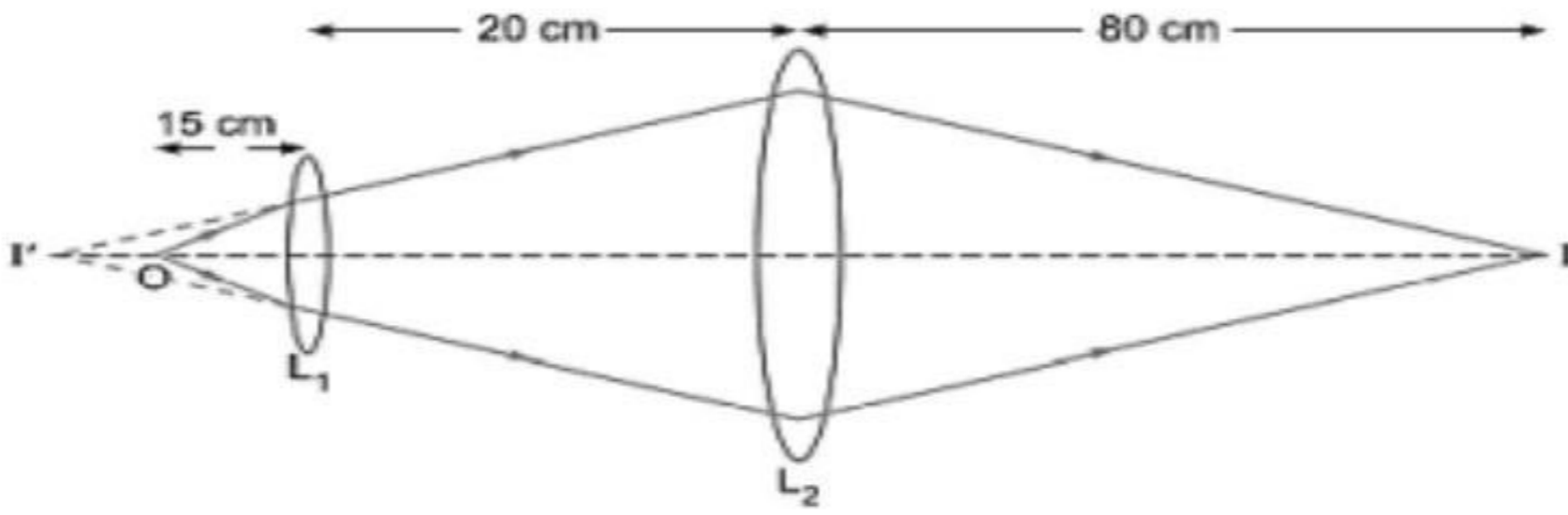
- (1) There are 33 questions in all. All questions are compulsory.
- (2) This question paper has five sections: Section A, Section B, Section C, Section D and Section E.
- (3) All the sections are compulsory.
- (4) **Section A** contains sixteen questions, twelve MCQ and four Assertion Reasoning based of 1 mark each, **Section B** contains five questions of two marks each, **Section C** contains seven questions of three marks each, **Section D** contains two case study-based questions of four marks each and **Section E** contains three long answer questions of five marks each.
- (5) There is no overall choice. However, an internal choice has been provided in one question in Section B, one question in Section C, one question in each CBQ in Section D and all three questions in Section E. You have to attempt only one of the choices in such questions.
- (6) Use of calculators is not allowed.
- (7) You may use the following values of physical constants wherever necessary
  - i.  $c = 3 \times 10^8 \text{ m/s}$
  - ii.  $m_e = 9.1 \times 10^{-31} \text{ kg}$
  - iii.  $e = 1.6 \times 10^{-19} \text{ C}$
  - iv.  $\mu_0 = 4\pi \times 10^{-7} \text{ TmA}^{-1}$
  - v.  $h = 6.63 \times 10^{-34} \text{ Js}$
  - vi.  $\epsilon_0 = 8.854 \times 10^{-12} \text{ C}^2\text{N}^{-1}\text{m}^{-2}$
  - vii. Avogadro's number =  $6.023 \times 10^{23}$  per gram mole

Q.No	Question	Marks
<b>SECTION A</b>		
<b>Q.1</b>	<p>The image below shows two examples of electric field lines.</p>  <p style="text-align: center;"><b>I</b>                      <b>II</b></p> <p>Which of the following statements is true?</p> <ol style="list-style-type: none"> <li>A. The electric fields in both I and II arise due to a single positive pointcharge located somewhere on the left.</li> <li>B. The electric fields in both I and II can be created by negative charges located somewhere on the left and positive charges somewhere on the right.</li> <li>C. The electric field in I is the same everywhere but the electric field in II becomes stronger as we move from left to right.</li> <li>D. As you move from left to right, the electric fields in both I and II become stronger.</li> </ol>	1

<b>Q.2</b>	A test charge of $1.6 \times 10^{-19}$ C is moving with a velocity $\vec{v} = (4\hat{i} + 3\hat{k}) \text{ ms}^{-1}$ in a magnetic field $B = (3\hat{k} + 4\hat{i})$ T. The force on this test charge is: (a) $24 \hat{j}$ N      (b) $-24 \hat{j}$ N      (c) $24 \hat{k}$ N      (d) Zero	1
<b>Q3</b>	A parallel plate air capacitor is charged to a potential difference of V volts. After disconnecting the charging battery the distance between the plates of the capacitor is increased using an insulating handle. As a result the potential difference between the plates (a) increases      (b) decreases (c) does not change      (d) becomes zero	1
<b>Q.4</b>	In Faraday's experiment on electromagnetic induction, more deflection will be shown by galvanometer, when a) Magnet is in uniform motion towards the coil b) Magnet is in uniform motion away from the coil c) Magnet is in accelerated motion towards the coil d) Magnet is at rest near the coil	1
<b>Q.5</b>	The electric mains supply in our homes and offices is a voltage that varies like a sine function with time such a voltage is called (A)..... and the current driven by it in a circuit is called the (B)..... Here, A and B refer to (a) DC voltage , AC current (b) AC voltage, DC current (c) AC voltage, DC voltage (d) AC voltage, AC current	1
<b>Q.6</b>	If, $\lambda_x$ , $\lambda_m$ , $\lambda_v$ represents wavelength of X-Rays, microwaves & visible rays then (a) $\lambda_m > \lambda_x > \lambda_v$ (b) $\lambda_m > \lambda_v > \lambda_x$ (c) $\lambda_v > \lambda_x > \lambda_m$ (d) $\lambda_v > \lambda_m > \lambda_x$	1
<b>Q.7</b>	Which of the following is/are deduced from the Rutherford's scattering experiment? (1) There are neutrons inside the nucleus. (2) The sign of the charge of the nuclei is the same as the sign of alpha particles. (3) Electrons are embedded in the nucleus. (a) (1) only      (b) (2) only      (c) (3) only      (d) (1), (2) and (3)	1
<b>Q.8</b>	Consider the diffraction pattern for a small pinhole. As the size of the hole is increased (a) the size remains constant.      (b) the intensity increases. (c) the size increases.      (d) the intensity decreases.	1
<b>Q.9</b>	In photoelectric effect, the KE of electrons emitted from the metal surface depends upon (a) Intensity of light (b) Frequency of incident light (c) Velocity of incident light (d) Both intensity and velocity of light	1

Q.10	<p>Which of the ac circuits with the following input voltage and current dissipates maximum power P?</p> <p>A. Input voltage <math>V_o = 2</math> volt, <math>I_o = 4</math> ampere and phase angle <math>\Phi = \pi/4</math>.          B. Input voltage <math>V = V_o \sin\omega t</math> volt and the current <math>I = I_o \sin(\omega t - \pi/2)</math> ampere          C. Input voltage <math>V = 2 \cos\omega t</math> volt and the current <math>I = 4 \sin\omega t</math> ampere          D. Input voltage <math>V = 100 \sin 100t</math> volt and the current <math>I = 100 \sin(100t + \pi/3)</math> Milliampere</p>	1
Q.11	<p>The ionization potential of hydrogen is 13.6 V. The energy of the atom in <math>n = 2</math> state will be          (a) -10.2 eV      (b) -6.4 eV      (c) - 3.4 eV      (d) - 4.4 eV</p>	1
Q.12	<p>Ratio of the radii of the nuclei with mass numbers 8 and 27 would be          (a) <math>\frac{27}{8}</math>      (b) <math>\frac{8}{27}</math>          (c) <math>\frac{2}{3}</math>      (d) <math>\frac{3}{2}</math></p>	1
	<p><b>For question numbers 13 to 16, two statements are given-one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.</b>  <b>a) Both A and R are true, and R is the correct explanation of A</b>  <b>b) Both A and R are true, but R is NOT the correct explanation of A</b>  <b>c) A is true but R is false</b>  <b>d) A is false and R is true</b></p>	4*1
Q.13	<p>Assertion(A): The 200 W bulbs glow with more brightness than 100 W bulbs.          Reason(R): A 100 W bulb has more resistance than a 200 W bulb.</p>	
Q.14	<p>Assertion(A) : In Young's double slit experiment if wavelength of incident monochromatic light is just doubled, number of bright fringe on the screen will increase.          Reason (R): Maximum number of bright fringe on the screen is directly proportional to the wavelength of light used.</p>	
Q.15	<p>Assertion(A): A photon has no rest mass , yet it carries definite momentum.          Reason(R): Momentum of photon is due to its energy and hence its equivalent mass.</p>	
Q.16	<p>Assertion (A): When radius of a circular loop carrying current is do Half, its magnetic moment becomes four times          Reason (R): Magnetic moment depends on the area of the loop.</p>	
SECTION B		
Q.17	<p>(i) Name the constituent radiation of electromagnetic spectrum which is          (a) Is used in satellite communication.          (b) Is used for studying crystal structure          (c) Is similar to the radiations emitted during decay of radioactive nuclei          (d) Has its wavelength range between 390 nm &amp; 770 nm          (ii) Arrange the above electromagnetic waves in increasing order of their frequencies.</p>	2

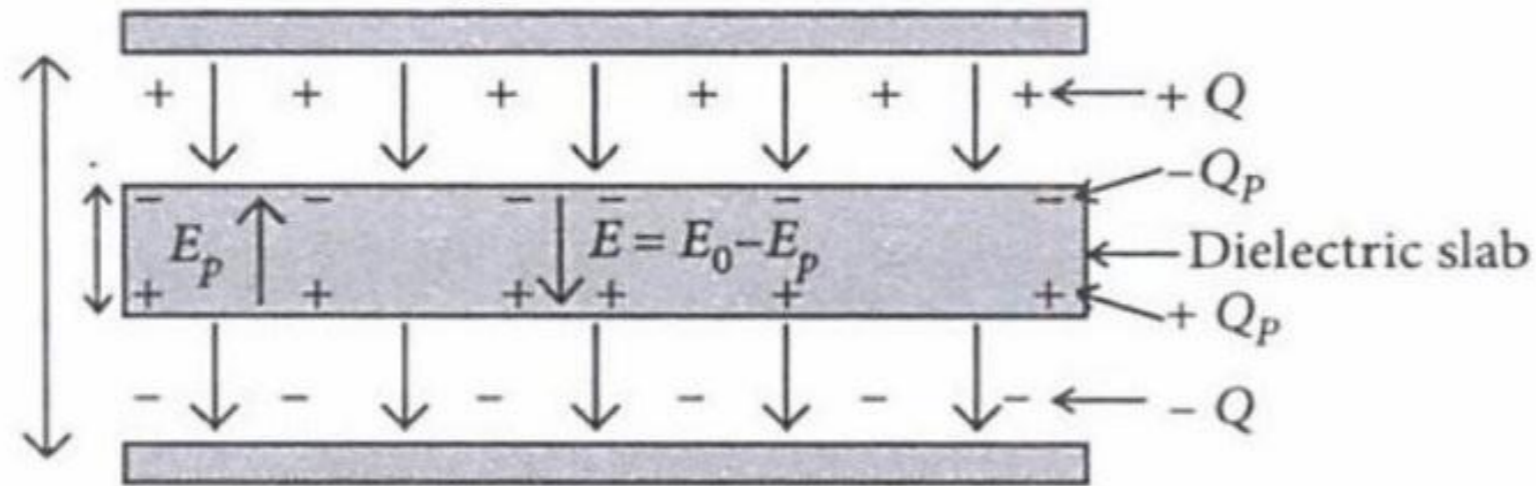
Q.18	<p>Yellow light (<math>\lambda = 6000\text{\AA}</math>) illuminates a single slit of width <math>1 \times 10^{-4}</math> m. Calculate</p> <p>(i) the distance between the two dark lines on either side of the central maximum, when the diffraction pattern is viewed on a screen kept 1.5 m away from the slit</p> <p>(ii) the angular spread of the first diffraction minimum.</p>	2
Q.19	<p>An <math>\alpha</math>-particle and a proton are accelerated from rest by the same potential. Find the ratio of their de- Broglie wavelengths.</p>	2
Q.20	<p>Calculate the de-Broglie wavelength of the electron orbiting in the <math>n=2</math> state of hydrogen atom.</p>	2
Q.21	<p>In the circuit containing an ideal p-n junction diode D and a resistor R is given an input square wave as shown.</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p>(a) What is the shape of the output waveform across diode D?</p> <p>(b) Give an explanation for your answer in (a)</p> <p style="text-align: center;"><b>OR</b></p> <p>Categorize each of the following junction diodes as either forward biased or reverse biased. Give reason for each answer.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>(a)</p> </div> <div style="text-align: center;">  <p>(b)</p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 20px;"> <div style="text-align: center;">  <p>(c)</p> </div> <div style="text-align: center;">  <p>(d)</p> </div> </div>	2
Section C		
Q.22	<p>Three-point charges <math>q</math>, <math>-4q</math> and <math>2q</math> are placed at the vertices of an equilateral triangle ABC of side 'l'. Obtain the expression for the magnitude of the resultant electric force acting on the charge <math>q</math></p>	3
Q.23	<p>(a) Briefly explain how a galvanometer is converted into an ammeter.</p> <p>(b) A galvanometer coil has a resistance of <math>15 \Omega</math> and it shows full scale deflection for a current of 4 mA. Convert it into an ammeter of range 0 to 6 A.</p>	3

<p><b>Q.24</b></p>	<p>(i) Find the value of the phase difference between the current and the voltage in the series LCR circuit shown below. Which one leads in phase: current or voltage?</p> <p>(ii) Without making any other change, find the value of the additional capacitor, <math>C_1</math>, to be connected in parallel with the capacitor <math>C</math>, in order to make the power factor of the circuit unity.</p>  <p style="text-align: center;"><math>V = V_0 \sin(1000t + \phi)</math></p>	3
<p><b>Q.25</b></p>	<p>Write three points of differences between para-, dia- and ferro- magnetic materials on the basis of susceptibility and permeability, giving one example for each.</p>	3
<p><b>Q.26</b></p>	<p>In the following diagram, an object 'O' is placed 15 cm in front of a convex lens <math>L_1</math> of focal length 20 cm and the final image is formed at 'I' at a distance of 80 cm from the second lens <math>L_2</math>. Find the focal length of the <math>L_2</math>.</p> 	3
<p><b>Q.27</b></p>	<p>(a) Write the conditions under which light sources can be said to be coherent.</p> <p>(b) Why is it necessary to have coherent sources in order to produce an interference pattern?</p> <p>(c) What type of wavefront will emerge from a            (i) point source, and (ii) distant light source?</p>	3
<p><b>Q.28</b></p>	<p>Draw a curve between mass number and binding energy per nucleon. Hence explain nuclear fission and fusion on the basis of binding energy curve.</p> <p style="text-align: center;"><b>OR</b></p> <p>How long can an electric lamp of 100W be kept glowing by fusion of 2.0 kg of deuterium? Take the fusion reaction as</p> ${}^2_1\text{H} + {}^2_1\text{H} \longrightarrow {}^3_1\text{He} + n + 3.27 \text{ MeV}$	3
Section D		

**Q.29**

A dielectric slab is a substance that does not allow the flow of charges through it but permits them to exert electrostatic forces on one another. When a dielectric slab is placed between the plates, the field  $E_0$  polarises the dielectric. This induces charge  $-Q_p$  on the upper surface and  $+Q_p$  on the lower surface of the dielectric. These induced charges set up a field  $E_p$  inside the dielectric in the opposite direction of external field  $E$ .

4\*1



(i) In a parallel plate capacitor, the capacitance increases from  $4\mu\text{F}$  to  $80\mu\text{F}$  on introducing a dielectric medium between the plates. What is the dielectric constant of the medium?

- (a) 10                                      (b) 20                                      (c) 50                                      (d) 80

(ii) A parallel plate capacitor with air between the plates has a capacitance of  $8\text{pF}$ . The separation between the plates is now reduced by half and the space between them is filled with a medium of dielectric constant 5.

Calculate the value of capacitance of the capacitor in the second case.

- (a) 20 pF                                      (b) 40 pF                                      (c) 60 pF                                      (d) 80 pF

(iii) A dielectric introduced between the plates of a parallel plate capacitor with battery remain connected

- (a) decreases potential difference between the plates  
 (b) decreases the electric field between the plates  
 (c) increases the charge on the plates  
 (d) all the above

(iv) A parallel plate capacitor of capacitance  $1\text{ pF}$  has separation between the plates  $d$ . When the distance of separation becomes  $2d$  and wax of dielectric constant  $x$  is inserted in it the capacitance becomes  $2\text{ pF}$ . What is the value of  $x$ ?

- (a) 2                                      (b) 8                                      (c) 4                                      (d) 1

**OR**

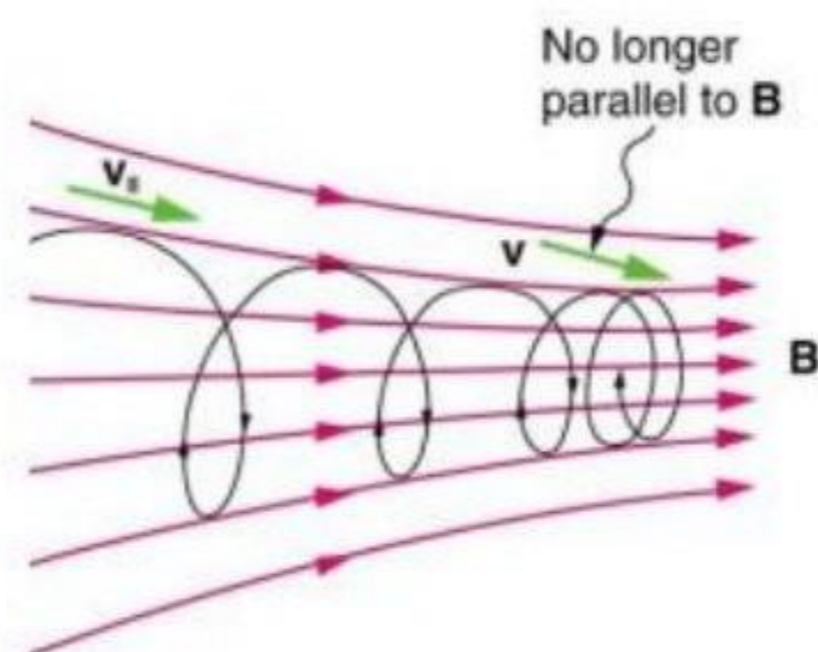
1. A  $4\mu\text{f}$  capacitor is charged  $400\text{V}$  and then its plates are joined through a resistance  $1\text{k}\Omega$ . The heat produced in the resistance is

- (a) 0.16                                      (b) 0.64J                                      (c) 0.32J                                      (d) 1.28



**Q.30 Case study: FORCE ON A CHARGE IN ELECTRIC AND MAGNETIC FIELD**

4\*1



A point charge  $q$  (moving with a velocity  $v$  and located at  $r$  at a given time  $t$ ) in the presence of both the electric field  $E$  and magnetic field  $B$ . The force on an electric charge  $q$  due to both of them can be written as  $F = q [ E + v \times B ] = F_{el} + F_{mag}$  It is called the 'Lorentz force'.

1. If the charge  $q$  is moving under a field, the force acting on the charge depends on the magnitude of field as well as the velocity of the charge particle, what kind of field is the charge moving in?

- (a) Electric field
- (b) Magnetic field
- (c) Both electric and magnetic field perpendicular to each other
- (d) None of these

2. The magnetic force acting on the charge ' $q$ ' placed in a magnetic field will vanish if

- (a) if  $v$  is small
- (b) If  $v$  is perpendicular to  $B$
- (c) If  $v$  is parallel to  $B$
- (d) None of these

3. If an electron of charge  $-e$  is moving along  $+X$  direction and magnetic field is along  $+Z$  direction, then the magnetic force acting on the electron will be along

- (a)  $+X$  axis
- (b)  $-X$  axis
- (c)  $-Y$  axis
- (d)  $+Y$  axis

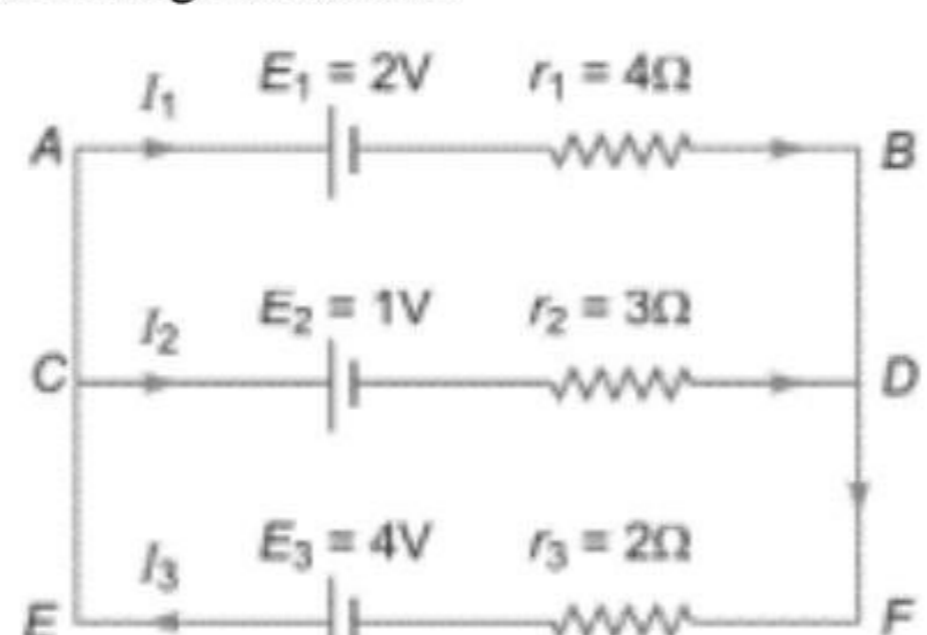
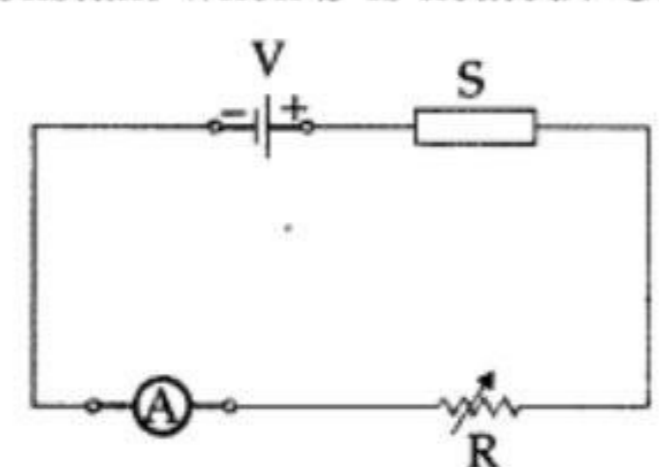
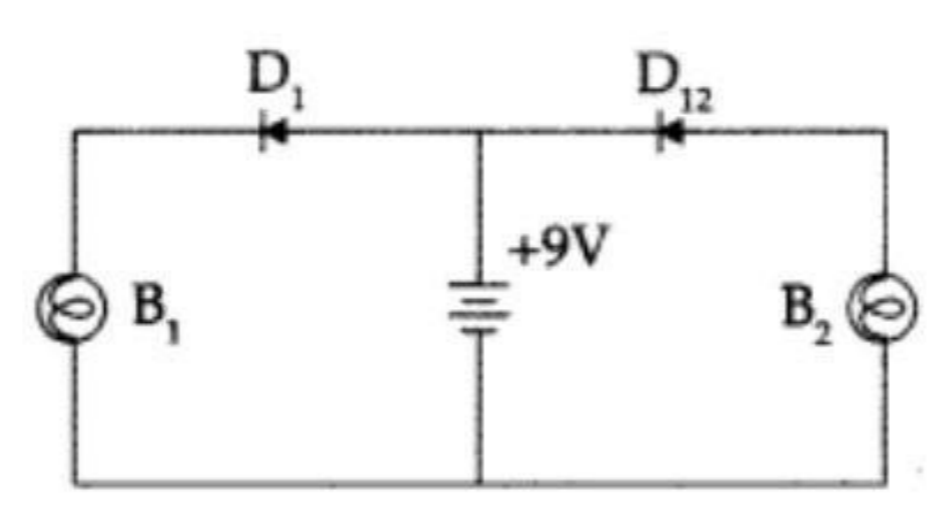
4. The vectors which are perpendicular to each other in the relation for magnetic force acting on a charge particle are

- (a)  $F$  and  $v$
- (b)  $F$  and  $B$
- (c)  $v$  and  $B$
- (d) Both (a) and (b)

**OR**

4. A particle moves in a region having a uniform magnetic field and a parallel, uniform electric field. At some instant, the velocity of the particle is perpendicular to the field direction. The path of the particle will be

- (a) A straight line
- (b) A circle
- (c) A helix with uniform pitch
- (d) A helix with non-uniform pitch

<p><b>Q.31</b></p>	<p>a) State Kirchoff's rules.  b) Use these rules to write the expressions for the currents <math>I_1</math>, <math>I_2</math> and <math>I_3</math> in the circuit diagram shown</p>  <p style="text-align: center;"><b>OR</b></p> <p>a) Define the terms  (i) drift velocity,  (ii) relaxation time.  b) Two conducting wires X and Y of same diameter but different materials are joined in series across a battery. If the number density of electrons in X is twice that in Y, find the ratio of drift velocity of electrons in the two wires.</p>	<p>5</p>
<p><b>Q.32</b></p>	<p>You are given two p-n junction diodes.</p> <p>a) Mention the name of an electric circuit which make use of these diodes to convert A.C current to continuous D.C current. Gives its underlying principle.  b) Draw the circuit diagram of an AC to DC converter using two diodes  c) (i) In the given following diagram 'S' is a semiconductor. Would you increase or decrease the value of R to keep the reading of the ammeter A constant when S is heated? Give reason for your answer.</p>  <p>(ii) In the given diagram, which bulb out of <math>B_1</math> and <math>B_2</math> will glow and why ?</p>  <p style="text-align: center;"><b>OR</b></p> <p>a) Distinguish between 'intrinsic' and 'extrinsic' semiconductors.  b) In a half wave rectifier, what is the output frequency if the input frequency is 50 Hz. What is the output frequency of a full wave rectifier for the same input frequency is used.  c) Can we take one slab of p-type semiconductor and physically join It to another n-type semiconductor to get p-n junction justify.</p>	<p>5</p>
<p><b>Q.33</b></p>	<p>a) Draw a ray diagram to show the image formation by a combination of two thin convex lenses in contact. Obtain the expression for the power of this</p>	<p>5</p>

combination in terms of focal lengths of the lenses.  
(b) A ray of light passing from air through an equilateral prism suffers minimum deviation when the angle of incidence is  $30^\circ$ . Calculate the speed of light in the prism.

**OR**

a) Draw a labelled ray diagram showing the image formation by a refracting telescope. Deduce the expression for magnification when the final image is formed at infinity.  
(b) The sum of focal lengths of the two lenses of a refracting telescope is 100 cm. The focal length of one lens is 20 times that of the other. Calculate the total magnification of the telescope when the final image is formed at infinity.

BIOLOGY:-

1. Do the sample paper provided

class 12 sample paper:

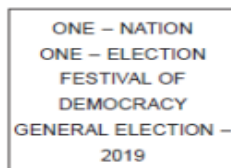
<https://drive.google.com/file/d/1ZMQtHe3lZnZ4ZEuve26b1L2i6fPBbnSB/view?usp=sharing>

[https://drive.google.com/file/d/12LudQE\\_ZOxAUtpvJsCVBdGTxM0paJPIS/view?usp=sharing](https://drive.google.com/file/d/12LudQE_ZOxAUtpvJsCVBdGTxM0paJPIS/view?usp=sharing)

2. Revise all the chapters for 2<sup>nd</sup> pre board exam.

Mathematics

1. A general election of Lok Sabha is a gigantic exercise. About 911 million people were eligible to vote and voter turnout was about 67%, the highest ever 4



Let  $I$  be the set of all citizens of India who were eligible to exercise their voting right in general election held in 2019. A relation 'R' is defined on  $I$  as follows:

$R = \{(V_1, V_2) : V_1, V_2 \in I \text{ and both use their voting right in general election - 2019}\}$   
[CBSE Question Bank]

(i) Two neighbours  $X$  and  $Y \in I$ .  $X$  exercised his voting right while  $Y$  did not cast her vote in general election-2019. Check whether  $X$  is related to  $Y$  or not.

(ii) Mr. ' $X$ ' and his wife ' $W$ ' both exercised their voting right in general election-2019. Show that  $(X, W) \in R$  and  $(W, X) \in R$ .

(iii) Three friends  $F_1, F_2$  and  $F_3$  exercised their voting right in general election-2019. Show that

$$(F_1, F_2) \in R, (F_2, F_3) \in R \text{ and } (F_1, F_3) \in R.$$

**OR**

Show that the relation  $R$  defined on set  $I$  is an equivalence relation.

2. A class teacher wants to make different groups of students so that they can be given different tasks of enlightening other about the effect's of COVID-19. Students are making groups with friends but the teacher said not like this, we will make a group of students with roll number in such a way that the difference of roll number is divisible by 3. 4



(i) Name the properties which whole group should satisfy to get divided into different groups (equivalence classes).

(ii) Provide the relation for the roll number of students in the group of student with roll number 5.

(iii) Which roll number students will be in the group of students with roll number 5 if there are 30 students in the class?

**OR**

Which roll number students will be in the group of student with roll number 2, if there are 20 students in the class?

3. Three schools DPS, CVC and KVS decided to organize a fair for collecting money for helping the flood victims. They sold handmade fans, mats and plates from recycled material at a cost of ₹ 25, ₹ 100 and ₹ 50 each respectively. The numbers of articles sold are given as 4



School /Article	DPS	CVC	KVS
Handmade fans	40	25	35
Mats	50	40	50
Plates	20	30	40

Based on the information given above, answer the following questions:

- (a) What is the total money (in Rupees) collected by the school DPS?  
 (b) What is the total amount of money (in ₹) collected by schools CVC and KVS?  
 (c) What is the total amount of money collected by all three schools DPS, CVC and KVS?  
 (d) If the number of handmade fans and plates are interchanged for all the schools, then what is the total money collected by all schools?  
 (e) How many articles (in total) are sold by three schools?

4. A man is watching an aeroplane which is at the coordinate point A(4, -1, 3) assuming that the man is at O(0, 0, 0). At the sametime he saw a bird at the coordinate point B(2, 0, 4). 4

Based on the above information answer the following:

- (a) The representation of position vector  $\overrightarrow{AB}$  is

(i)  $2\hat{i} + \hat{j} + \hat{k}$  (ii)  $-2\hat{i} + \hat{j} + \hat{k}$   
 (iii)  $\hat{i} + 2\hat{j} + 3\hat{k}$  (iv)  $4\hat{i} + \hat{j} + 4\hat{k}$

- (b) The distance between aeroplane and bird is

(i) 6 units (ii)  $\sqrt{8}$  units  
 (iii)  $\sqrt{6}$  units (iv)  $2\sqrt{6}$  units

- (c) The unit vector along  $\overrightarrow{AB}$  is

(i)  $\frac{2}{6}\hat{i} + \frac{1}{6}\hat{j} + \frac{1}{6}\hat{k}$

Page 3 / 9

(ii)  $\frac{-2}{\sqrt{6}}\hat{i} + \frac{1}{\sqrt{6}}\hat{j} + \frac{1}{\sqrt{6}}\hat{k}$

(iii)  $\frac{-2}{\sqrt{6}}\hat{i} + \frac{1}{\sqrt{6}}\hat{j} + \frac{1}{\sqrt{6}}\hat{k}$

(iv)  $\frac{4}{\sqrt{6}}\hat{i} + \frac{2}{\sqrt{6}}\hat{j} + \frac{3}{\sqrt{6}}\hat{k}$

- (d) The direction cosines of  $\overrightarrow{AB}$  are

(i)  $\langle \frac{-2}{\sqrt{6}}, \frac{1}{\sqrt{6}}, \frac{1}{\sqrt{6}} \rangle$  (ii)  $\langle \frac{-2}{\sqrt{6}}, \frac{1}{6}, \frac{1}{6} \rangle$

(iii)  $\langle \frac{4}{\sqrt{6}}, \frac{2}{\sqrt{6}}, \frac{3}{\sqrt{6}} \rangle$  (iv)  $\langle -2, 1, 1 \rangle$

- (e) The angles which  $\overrightarrow{AB}$  makes with x, y and z axes are

(i)  $\cos^{-1}\left(\frac{2}{\sqrt{6}}\right), \cos^{-1}\left(\frac{1}{\sqrt{6}}\right), \cos^{-1}\left(\frac{1}{\sqrt{6}}\right)$

(ii)  $\cos^{-1}\left(\frac{-2}{\sqrt{6}}\right), \cos^{-1}\left(\frac{1}{\sqrt{6}}\right), \cos^{-1}\left(\frac{1}{\sqrt{6}}\right)$

(iii)  $\cos^{-1}\left(\frac{4}{\sqrt{6}}\right), \cos^{-1}\left(\frac{2}{\sqrt{6}}\right), \cos^{-1}\left(\frac{3}{\sqrt{6}}\right)$

(iv)  $\cos^{-1}(-2), \cos^{-1}(1), \cos^{-1}(1)$

5. Employee in a office are following social distance and during lunch they are sitting at places marked by points A, B and C. Each one is representing position as A  $(\hat{i} - 2\hat{j} + 4\hat{k})$ , B  $(5\hat{i} + 2\hat{k})$  and C  $(3\hat{i} + 2\hat{j} + 4\hat{k})$ . 4

Based on the above information answer the following:

- (a) The distance between A and B is

- (a) The distance between A and B is

(i)  $4\sqrt{6}$  (ii)  $2\sqrt{6}$   
 (iii)  $3\sqrt{6}$  (iv)  $6\sqrt{2}$

- (b) The distance between B and C is

(i)  $4\sqrt{6}$  (ii)  $2\sqrt{3}$   
 (iii)  $4\sqrt{3}$  (iv)  $3\sqrt{3}$

- (c) The position vector  $\overrightarrow{AB}$  is

(i)  $4\hat{i} + 2\hat{k}$  (ii)  $4\hat{i} + 3\hat{k} + 2\hat{j}$   
 (iii)  $4\hat{i} + 2\hat{j} - 2\hat{k}$  (iv)  $3\hat{i} + 2\hat{j} - 2\hat{k}$

(d) The unit vector along  $\vec{AB}$  is

(i)  $\frac{2}{\sqrt{6}}\hat{i} + \frac{1}{\sqrt{6}}\hat{j} + \frac{1}{\sqrt{6}}\hat{k}$

(ii)  $\frac{2}{\sqrt{6}}\hat{i} + \frac{1}{\sqrt{6}}\hat{j} - \frac{1}{\sqrt{6}}\hat{k}$

(iii)  $\frac{-2}{\sqrt{6}}\hat{i} + \frac{1}{\sqrt{6}}\hat{j} + \frac{1}{\sqrt{6}}\hat{k}$

(iv)  $\frac{2}{\sqrt{6}}\hat{i} - \frac{1}{\sqrt{6}}\hat{j} + \frac{1}{\sqrt{6}}\hat{k}$

(e) The area enclosed by  $A$ ,  $B$  and  $C$  is

(i)  $2\sqrt{41}$  sq units      (ii)  $2\sqrt{14}$  sq units

(iii)  $2\sqrt{8}$  sq units      (iv)  $3\sqrt{6}$  sq units

6. A cricket match is organized between two Clubs A and B for which a team from each club is chosen. Remaining players of Club A and Club B are respectively sitting on the plane represented by the equation  $\vec{r} \cdot (2\vec{i} - \vec{j} + \vec{k}) = 3$  and  $\vec{r} \cdot (\vec{i} + 3\vec{j} + 2\vec{k}) = 8$ , to cheer the team of their own clubs.

[CBSE Question Bank]



Page 4 / 9

Based on the above answer the following:

(a) The Cartesian equation of the plane on which players of Club A are seated is

(i)  $2x - y + z = 3$       (ii)  $2x - y + 2z = 3$

(iii)  $2x - y + z = -3$       (iv)  $x - y + z = 3$

(b) The magnitude of the normal to the plane on which players of club B are seated, is

(i)  $\sqrt{15}$   
(iii)  $\sqrt{17}$

(ii)  $\sqrt{14}$   
(iv)  $\sqrt{20}$

(c) The intercept form of the equation of the plane on which players of Club B are seated is

(i)  $\frac{x}{8} + \frac{y}{8} + \frac{z}{2} = 1$       (ii)  $\frac{x}{5} + \frac{y}{8} + \frac{z}{3} = 1$

(iii)  $\frac{x}{8} + \frac{y}{8} + \frac{z}{4} = 1$       (iv)  $\frac{x}{8} + \frac{y}{7} + \frac{z}{2} = 1$

(d) Which of the following is a player of Club B?

(i) Player sitting at (1, 2, 1)

(ii) Player sitting at (0, 1, 2)

(iv) Player sitting at (1, 1, 2)

(e) The distance of the plane, on which players of Club B are seated, from the origin is

- (i)  $\frac{8}{\sqrt{14}}$  units      (ii)  $\frac{6}{\sqrt{14}}$  units  
(iii)  $\frac{7}{\sqrt{14}}$  units      (iv)  $\frac{9}{\sqrt{14}}$  units

7. Suppose the floor of a hotel is made up of mirror polished Salvatore stone. There is a large crystal chandelier attached to the ceiling of the hotel room. Consider the floor of the hotel room as a plane having the equation  $x - y + z = 4$  and the crystal chandelier is suspended at the point (1, 0, 1). [CBSE Question Bank]



Based on the above answer the following:

- (a) Find the direction ratios of the perpendicular from the point (1, 0, 1) to the plane  $x - y + z = 4$ .  
(b) Find the length of the perpendicular from the point (1, 0, 1) to the plane  $x - y + z = 4$ .  
(c) Write the equation of the perpendicular from the point (1, 0, 1) to the plane  $x - y + z = 4$ .  
(d) Write the equation of the plane parallel to the plane  $x - y + z = 4$ , which is at a unit distance from the point (1, 0, 1).

<https://gowebrachnasagar.com/tg/print-englishfont.php?username=amlesh2021&bn=Mathematics&qv=>

5/9

12/22/23, 7:58 PM

Test Generator

- (e) Find the direction cosine of the normal to the plane  $x - y + z = 4$ .

8. Using principal value evaluate the following:

$$\cos^{-1}\left(\cos\frac{2\pi}{3}\right) + \sin^{-1}\left(\sin\frac{2\pi}{3}\right)$$

2

9. Write the following function in the simplest form  $\tan^{-1}\sqrt{\frac{1-\cos 3x}{1+\cos 3x}}$ ,  $x < \pi$

2

10. Write the value of  $\cos^{-1}\left(-\frac{1}{2}\right) + 2\sin^{-1}\left(\frac{1}{2}\right)$ .

2

11. Find the principal value of  $\tan^{-1}\left(\tan\frac{5\pi}{6}\right)$

2

12. Show that  $\sin^{-1}\left(\sqrt{\frac{a-x}{2a}}\right) = \frac{1}{2}\cos^{-1}\frac{x}{a}$ .

2

13. Evaluate  $\sin^{-1}\left\{\cos\left(\sin^{-1}\frac{3}{2}\right)\right\}$

2

14. For which values of  $x$ , the function  $y = x^4 - \frac{4}{3}x^3$  is increasing?

2

15. Find the value of  $m$  and  $n$ , where  $m$  and  $n$  are order and degree of differential equation

2

$$\frac{4\left(\frac{d^2y}{dx^2}\right)^3}{\frac{d^3y}{dx^3}} + \frac{d^3y}{dx^3} = x^2 - 1$$

16. Find the sum of the degree and the order for the following differential equation:  $\frac{d}{dx}\left[\left(\frac{d^2y}{dx^2}\right)^4\right] = 0$

2

17. Prove that  $\sin^{-1}\left(\frac{4}{5}\right) + \sin^{-1}\left(\frac{5}{13}\right) + \sin^{-1}\left(\frac{16}{65}\right) = \frac{\pi}{2}$

4

18. If  $A = \begin{bmatrix} 1 & -1 \\ 2 & -1 \end{bmatrix}$ ,  $B = \begin{bmatrix} a & 1 \\ b & -1 \end{bmatrix}$  and  $(A + B)^2 = A^2 + B^2$ , then find the values of  $a$  and  $b$ .

4

19. If  $A$  is a square matrix such that  $A^2 = A$ , show that  $(I + A)^3 = 7A + I$ .

4

20. Find the matrix  $X$  such that  $X \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} = \begin{bmatrix} -7 & -8 & -9 \\ 2 & 4 & 6 \end{bmatrix}$ .

4

22/23, 7:58 PM

Test Generator

21. Determine the values of  $a$ ,  $b$  and  $c$  for which the function

4

$$f(x) = \begin{cases} \frac{\sin(a+1)x + \sin x}{x}, & \text{if } x < 0 \\ c, & \text{if } x = 0 \\ \frac{\sqrt{x+bx^2} - \sqrt{x}}{b\sqrt{x^3}}, & \text{if } x > 0 \end{cases}$$

may be continuous at  $x = 0$ .

22. Show that the function  $f$  defined as follows, is continuous at  $x = 2$ , but not differentiable thereat

4

$$f(x) = \begin{cases} 3x - 2, & 0 < x \leq 1 \\ 2x^2 - x, & 1 < x \leq 2 \\ 5x - 4, & x > 2 \end{cases}$$

Page 7 / 9

23. Find  $\frac{dy}{dx}$ , if  $y = \sin^{-1} \left( \frac{2^{x+1} \cdot 3^x}{1 + (36)^x} \right)$ .

4

24. Find  $\frac{dy}{dx}$ , if  $y = (\cos x)^x + (\sin x)^{\frac{1}{x}}$ .

4

25. Find  $\frac{dy}{dx}$ , if  $y = x^{\sin x} - \cos x + \frac{x^2 - 1}{x^2 + 1}$ .

4

26. If  $x = a(\cos t + t \sin t)$  and  $y = a(\sin t - t \cos t)$ ,  $0 < t < \frac{\pi}{2}$ , find  $\frac{d^2x}{dt^2}$ ,  $\frac{d^2y}{dt^2}$ , and  $\frac{d^2y}{dx^2}$ .

4

27. Differentiate following with respect to  $x$ :  $\tan^{-1} \left( \frac{a \cos x - b \sin x}{b \cos x + a \sin x} \right)$

4

28. Find the intervals in which the function  $f(x) = \frac{3}{2}x^4 - 4x^3 - 45x^2 + 51$  is (i) strictly increasing (ii) strictly decreasing

4

29. Find  $\int \tan^{-1} \sqrt{\frac{1 - \sin x}{1 + \sin x}} dx$ .

4

Page 7 / 9

30. Find  $\int \frac{\cos 2x - \cos 2\alpha}{\cos x - \cos \alpha} dx$

4

31. Evaluate  $\int \frac{x^3}{x^4 + 3x^2 + 2} dx$

4

32. Integrate  $\frac{x^2}{1 - x^6}$

4

12/22/23, 7:58 PM

Test Generator

33. Find the following integral  $\int \frac{x^{1/2}}{x^{1/3} + x^{1/2}} dx$

4

34. Find the particular solution of the differential equation  $(1 + e^{2x}) dy + (1 + y^2) ex dx = 0$ , given that when  $x = 0$ ,  $y = 1$ .

4

35. Solve the following differential equation  $(1 + e^{xy}) dx + e^{xy} \left(1 - \frac{x}{y}\right) dy = 0$ .

4

36. For the differential equation  $\frac{dy}{dx} + \frac{1}{x}y = \frac{\cos 2y}{\cos 2x}$ .

4

Page 8 / 9



37. Find the particular solution of the differential equations  $\frac{dy}{dx} - \frac{y}{x} + \operatorname{cosec}\left(\frac{y}{x}\right) = 0$ ;  $y = 0$  when  $x = 1$ . 4
38. If  $A$  and  $B$  are two independent events such that  $P(\bar{A} \cap B) = \frac{2}{15}$  and  $P(A \cap \bar{B}) = \frac{1}{6}$ , then find  $P(A)$  and  $P(B)$ . 4
39. A random variable  $X$  has the following probability distribution: 4
- |        |   |     |      |      |      |       |        |            |
|--------|---|-----|------|------|------|-------|--------|------------|
| $X$    | 0 | 1   | 2    | 3    | 4    | 5     | 6      | 7          |
| $P(X)$ | 0 | $k$ | $2k$ | $2k$ | $3k$ | $k^2$ | $2k^2$ | $7k^2 + k$ |
- find (i)  $k$  (ii)  $P(X < 3)$  (iii)  $P(X > 6)$  (iv)  $P(0 < X < 3)$ .
40. The probability that a bulb produced by a factory will fuse after 150 days of use is 0.05. Find the probability that out of 5 such bulbs: 4
- (i) none (ii) not more than one  
(iii) more than one (iv) at least one  
will fuse after 150 days of use.
41. Probabilities of solving a specific problem independently by  $A$  and  $B$  are  $\frac{1}{2}$  and  $\frac{1}{3}$  respectively. If both try to solve the problem independently, find the probability that (i) the problem is solved (ii) exactly one of them solves the problem. 4
42. The probability of a student  $A$  passing an examination is  $\frac{3}{5}$  and of student  $B$  is  $\frac{4}{5}$ . Assuming that the two events " $A$  passes", " $B$  passes" as independent. Find the probability of (i) both the students passing the examination (ii) only  $A$  passing the examination (iii) only one of them passing the examination (iv) none of them passing the examination. 4
43. A bag  $A$  contains 4 black and 6 red balls and bag  $B$  contains 7 black and 3 red balls. A die is thrown, if 1 or 2 appears on it, then bag  $A$  is chosen, otherwise bag  $B$ . If two balls are drawn at random (without replacement) from the selected bag, find the probability of one of them being red and another black. 4
44. A random variable  $X$  has a probability distribution  $P(X)$  of the following form where  $k$  is some number : 4

$$P(X) = \begin{cases} k, & \text{if } x = 0 \\ 2k, & \text{if } x = 1 \\ 3k, & \text{if } x = 2 \\ 0, & \text{otherwise} \end{cases}$$

Determine (i)  $k$  (ii)  $P(X < 2)$  (iii)  $P(X \leq 2)$  (iv)  $P(X \geq 2)$ .

45. If  $A = \begin{bmatrix} 2 & -3 & 5 \\ 3 & 2 & -4 \\ 1 & 1 & -2 \end{bmatrix}$ , find  $A^{-1}$ . Using  $A^{-1}$  solve the following system of equations: 6
- $$2x - 3y + 5z = 16; 3x + 2y - 4z = -4; x + y - 2z = -3$$

46. Solve the system of the following equations: 5
- $$\frac{2}{x} + \frac{3}{y} + \frac{10}{z} = 4; \frac{4}{x} - \frac{6}{y} + \frac{5}{z} = 1; \frac{6}{x} + \frac{9}{y} - \frac{20}{z} = 2.$$

47. Given  $A = \begin{bmatrix} 1 & -1 & 0 \\ 2 & 3 & 4 \\ 0 & 1 & 2 \end{bmatrix}$  and  $B = \begin{bmatrix} 2 & 2 & -4 \\ -4 & 2 & -4 \\ 2 & -1 & 5 \end{bmatrix}$  verify that  $BA = 6I$ , use the result to solve the system  $x - y = 3$ ,  $2x + 3y + 4z = 17$ ,  $y + 2z = 7$ . 5
48. Prove that the volume of the largest cone that can be inscribed in a sphere of radius  $R$  is  $\frac{8}{27}$  of the volume of the sphere. 5
49. Show that volume of greatest cylinder which can be inscribed in a cone of height  $h$  and semivertical angle  $\alpha$  is  $\frac{4}{27} \pi h^3 \tan^2 \alpha$ . 5
50. Sketch the graph  $y = |x - 1|$ . Evaluate  $\int_{-2}^4 |x - 1| dx$ . What does the value of this integral represent on the graph? 5
51. Find the area of the region bounded by the ellipse  $\frac{x^2}{9} + \frac{y^2}{4} = 1$  5
52. Find the area of smaller region bounded by the ellipse  $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$  and the straight line  $\frac{x}{a} + \frac{y}{b} = 1$ . (or  $bx + ay = ab$ ) 5
53. Find the area bounded by the curve  $y^2 = 4ax$  and the line  $y = 2a$  and the  $y$ -axis. 5
54. Find the area enclosed by the curve  $x = 3 \cos t$ ,  $y = 2 \sin t$ . 5
55. Sketch the graph of  $y = |x + 3|$  and evaluate  $\int_{-6}^0 |x + 3| dx$ . What does this integral represent? 5

### CLASS XII- ENGLISH

- Revise and practice all the topics of writing skills. Do atleast 10 questions each of writing skills.
- Revise the literature topics with poetic devices.
- Learn the names of the authors and the poets.
- Read all the lessons of Flamingo and Vistas thoroughly to enable yourself to give all the answers of extract based questions.
- Solve the sample papers of English uploaded on CBSE website.
- **NOTE: While revising the subject if any doubt occurs ,feel free to send a message on my personal window.**

## CLASS 11

CLASS :XI C

HISTORY

1. Learn and define the Meaning of these terms

'native', 'Settler' names were given by Europeans to the countries of the New World, aborigine, aboriginal, First Nations peoples, 'Join the mainstream' imply, 'dream time' in context to Australia, Torres Strait Islanders, the Cherokees, Terra nullius

Read the following passages and answer the questions that follow: (Write answer in your notebook)

Passage 1.

It is interesting to note that another writer, Washington Irving, much younger than Wordsworth and who had actually met native people, described them quite differently. 'The Indians I have had an opportunity of seeing in real life are quite different from those described in poetry... Taciturn they are, it is true, when in company with white men, whose goodwill they distrust and whose language they do not understand; but the white man is equally taciturn under like circumstances. When the Indians are among themselves, they are great mimics, and entertain themselves excessively at the expense of the whites... who have supposed them impressed with profound respect for their grandeur and dignity... The white men (as I have witnessed) are prone to treat the poor Indians as little better than animals.'

Questions:

- (i) Who is the author of this passage? How did he describe a native?
- (ii) How did William Wordsworth and French philosopher Rousseau view the natives differently?
- (iii) What are the different names used in English to describe native peoples of New World?

Answers:

(i) This passage is written by Washington Irving. According to him, the native might be impressed by the grandeur and dignity of 'whites' but he saw through distrust and goodwill of the whites. He regarded them as great mimics who entertain themselves excessively at the expense of the whites.

(ii) Rousseau viewed the natives as 'the noble savages'. The poet William Wordsworth depicted them as living amid wilds with limited powers of emotions and imagination.

(iii) Different names/terms that are used in English to describe the native peoples of New World are Aborigines, Aboriginal, American Indians, Amerind, Red Indians, Native Americans, etc.

Passage 2.

Thomas Jefferson, third President of the USA, and a contemporary of Wordsworth, spoke of the natives in words that would lead to a public outcry today:

This unfortunate race which we have been taking so much pains to civilize... have justified extermination.

Questions:

- (i) Who was Thomas Jefferson?
- (ii) Why was Thomas Jefferson known for?
- (iii) What were his views about native Americans?

Answers:

(i) Thomas Jefferson was the third President of the USA.

(ii) Thomas Jefferson was a renowned author. He wrote the book "Declaration of Independence."

(iii) Thomas Jefferson was always in favor of the native Americans. He was of the opinion that this unfortunate race has suffered a lot to civilize the others.

Passage 1.

Niccolo Machiavelli wrote about human nature in the fifteenth chapter of his book, The Prince (1513). So, leaving aside imaginary things, and referring only to those which truly exist, I say that whenever men are discussed (and especially princes, who are more exposed to view), they are noted for various qualities which earn them either praise or condemnation. Some, for example, are held to be generous, and others miserly. Some are held to be benefactors, others are called grasping; some cruel, some compassionate; one man faithless, another faithful; one man effeminate and cowardly, another fierce and courageous; one man courteous, another proud; one man lascivious, another pure; one guileless, another crafty; one stubborn, another flexible; one grave, another frivolous; one religious, another sceptical; and so forth. Machiavelli believed that 'all men are bad and ever ready to display their vicious nature partly because of the fact that human desires are insatiable'. The most powerful motive Machiavelli saw as the incentive for every human action is self-interest.

Questions

- (i) Who was Niccolo Machiavelli?
- (ii) Why was he famous for?
- (iii) What did Niccolo Machiavelli believe in?

(iii) "Multiculturalism" was adopted as the official policy in Australia. Under this policy, equal respect was given to native cultures and to the different cultures of the immigrants from Europe and Asia.

Question

On the map of Australia mark and locate the following:

- (i) Perth
- (ii) Sydney
- (iii) Adelaide
- (iv) Darwin
- (v) Melbourne
- (vi) Canberra

On the map, mark and locate the following Italian States. Rome, Venice, Padua, Genoa, Mantua and Florence.

Important questions Learn and write :

Discuss the features of the lifestyle of the native peoples of North America.

Do you think that the Renaissance started a new age?

Discuss the different scientific aspects reflected in the works of sixteenth century Italian artists.

Describe the changes brought by the Renaissance in the contemporary life of the people.

What were the main characteristics of Renaissance?

Revise and learn for PT 2 Exam

Syllabus

Chapter : 5- Changing Cultural traditions

Chapter: 6- Displacing The Indigenous People

PROJECT WORK MUST BE COMPLETED .

## **BIOLOGY**

1. Revise all the chapters for PT2 and 10(3 marks+ diagrams) questions from each chapter in your notebook.  
Chapter are: ch 10-cell cycle and cell division  
Ch11: photosynthesis in higher plants  
Ch12 respiration in plants  
Ch 13 plant growth and development  
Ch14: breathing and exchange of gases
2. Do the sample paper in your notebook

Class 11 Sample Paper:

[https://drive.google.com/file/d/1kLixhYLg-Fc1U\\_FC-DQVtTJO\\_x-MG8hL/view?usp=sharing](https://drive.google.com/file/d/1kLixhYLg-Fc1U_FC-DQVtTJO_x-MG8hL/view?usp=sharing)

Subject : Political Science  
CLASS XII

.....  
SECTION:1

Solve the given assignment in your political science fair notebook.

Complete your notebook work till

Chapter 8 : local government

chapter 8 : secularsim

SECTION: 2

Complete your project file .

• Special Points

The project work should be of 20 to 22 pages.

Index and acknowledgment letter should be attached to the project work.

Pictures, maps and figures should be used to make the project work attractive.

All the students will make their own separate projects.

### MATHEMATICS

1. Solve : .  $\frac{5-2x}{3} \leq \frac{x}{6} - 5$

2. Draw the graphical solution of the following system of inequation

:  $\frac{1}{2} \left( \frac{3}{5}x + 4 \right) \geq \frac{1}{3}(x - 6)$

3. 2 Draw the graphical solution of the following system of inequation :  $\frac{4-3x}{5} < \frac{2x-5}{4}$

4. 2 If and are in the ratio 2 : 1, find the value of  $n$ .  $\frac{n!}{4!(n-4)!} \frac{n!}{2!(n-2)!}$

5. 2 If , find  $x$ .  $\frac{1}{8!} + \frac{1}{9!} = \frac{x}{10!}$

6. 2

How many 4 digit numbers can be formed using the digits 0, 1, 2, 3, 4, 5 no digit being repeated ?

7. 2

In a class of 25 boys and 15 girls, the teacher wants to select one boy and one girl. In how many ways this can be done ?

8. 2  $33!$  is divisible by  $2^{15}$ .

9. 2 Find the number of terms in the expansion of  $(a + 2b - 3c)^n$ .

10. 2 Which is larger  $(1.01)^{1000000}$  or 10,000 ?

11. 2 Prove that .  $\sum_{r=0}^n 3^r {}^n C_r = 4^n$

12. 2 Find a positive value of  $m$  for which the coefficient of  $x^2$  in the expansion  $(1 + x)^m$  is 6.

$$\left(\frac{x^3}{2} - \frac{2}{x^2}\right)^9$$

13. 2 Find the 4<sup>th</sup> term from the end in the expansion of .

14. 2 Which term of the sequence  $20, 19, 18, 17, \dots$ , is the first negative term ?  $\frac{1}{2}$   $\frac{1}{4}$   $\frac{3}{4}$

<https://gowebrachnasagar.com/tg/print-englishfonts.php?username=amlesh2021&bn=Mathematics&qv=1/3>  
12/22/23, 7:38 PM Test Generator

15. 2 If  $a, b, c$  are in A.P., prove that the following is also in A.P. :  $b + c - a, c + a - b, a + b - c$

16. 2 Find the values of  $p$ , if sum to infinity for the G.P.  $p, 1, \frac{1}{p}, \dots$  is  $\frac{25}{4}$

17. 2 Write the first five terms whose  $n$ th term is :  $a_n = (-1)^{n-1} 5^{n+1}$

18. 2 Find the value of  $k$ , if the straight line  $2x + 3y + 4 + k(6x - y + 12) = 0$  is perpendicular to the line  $7x + 5y - 4 = 0$ .

19. 2 Line through the points  $(-2, 6)$  and  $(4, 8)$  is perpendicular to the line through the points  $(8, 12)$  and  $(x, 24)$ , find the value of  $x$ .

20. 2 Find the distance between the parallel lines  $2x - 3y + 9 = 0$  and  $4x - 6y + 1 = 0$ .

21. 2 What is the eccentricity of the curve  $4x^2 + y^2 = 100$  ?

22. 2 What is the eccentricity of the hyperbola  $9y^2 - 4x^2 = 36$  ?

23. 2 Find the focus, vertex and directrix of the following parabola :  $x^2 = -16y$

24. 2 Find the equation of the circle with centre  $(-a, -b)$  and radius  $\sqrt{a^2 - b^2}$ .

25. 2 Find the equation of the parabola that satisfies the given conditions Focus  $(0, -3)$ ; directrix  $y = 3$ .

26. 2 Three consecutive vertices of a parallelogram ABCD are A  $(3, -1, 2)$ , B  $(1, 2, -4)$  and C  $(-1, 1, 2)$ . Find the fourth vertex.

27. 2 Find the point on z-axis which is equidistant from  $(1, 5, 7)$  and  $(5, 1, -4)$ .

Centroid of a triangle with vertices  $(a, 1, 3)$ ,  $(-2, b, -5)$  and  $(4, 7, c)$ , is origin. Find the values of  $a, b, c$ .

29. 2 Find the distance of the point  $(1, -2, 4)$  from  $x, y$  and  $z$ -axis respectively.

30. 2 Find the point on  $y$ -axis which is at a distance from the point  $(1, 2, 3)$   $\sqrt{10}$

CHEMISTRY

**SUBJECT :CHEMISTRY**

**SYLLABUS FOR PT2**

**CHEMICAL EQUILIBRIUM**

**REDOX REACTIONS**

**SOME BASIC CONCEPTS OF ORGANIC CHEMISTRY**

**REVISE LESSON CHEMICAL EQUILIBRIUM AND REDOX REACTIONS**

**DO THE FOLLOWING ASSIGNMENT IN YOUR CHEMISTRY NOTE BOOK**

**SOME BASIC CONCEPTS OF ORGANIC CHEMISTRY**

**ASSIGNMENT-1**

1. How many  $\sigma$  and  $\pi$  bonds are present in each of the following molecules?  
(a)  $\text{HC}\equiv\text{CC}\equiv\text{CCH}_3$  (b)  $\text{CH}_2=\text{C}=\text{CHCH}_3$ .
2. Why are electrons easily available to the attacking reagents in  $\pi$  -bonds?
3. How are organic compounds classified?
4. Define homologous series?
5. Write an example of non - benzenoid compound.
6. What is the cause of geometrical isomerism in alkenes?
7. Name the chain isomers of  $\text{C}_5\text{H}_{12}$  which has a tertiary hydrogen atom.
8. Define heterolytic cleavage.
9. Define carbocation.
10. What are the nucleophiles?
11. How can the mixture of kerosene oil and water be separated?
12. Lassaigne's test is not shown by diazonium salts. Why?
13. In which C - C bond of  $\text{CH}_3\text{CH}_2\text{CH}_2\text{Br}$ , the inductive effect is expected to be the least?
14. Can you use potassium in place of sodium for fusing an organic compound in Lassaigne's test?
15. Give the reason for the fusion of an organic compound with sodium metal for testing nitrogen, sulphur



and halogens.

16. Write the chemical composition of the compound formed when ferric chloride is added containing both N and S.

### ASSIGNMENT 2

1. Write the expanded form of the following condensed formulas into their complete structural formulas.

(a)  $\text{CH}_3\text{CH}_2\text{COCH}_2\text{CH}_3$ .

(b)  $\text{CH}_3\text{CH}=\text{CH}(\text{CH}_2)_3\text{CH}_3$ .

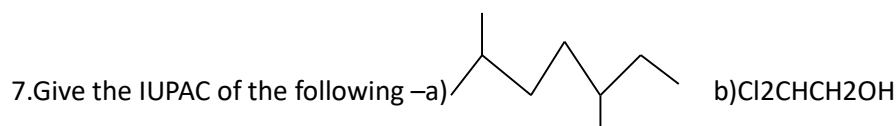
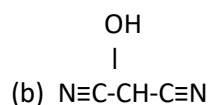
2. How does hybridization affect the electronegativity?

3. Why is sp hybrid orbital more electronegative than sp<sup>2</sup> or sp<sup>3</sup> hybridized orbitals?

4. Give two examples of aliphatic compounds.

5. Write an example of alicyclic compound.

6. For each of the following compounds write a condensed formula and also their bondline formula. (a)  $\text{HOCH}_2\text{CH}_2\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}(\text{CH}_3)\text{CH}_3$



Draw the two geometrical isomers of, but – 2 – en – 1, 4 dioic acid. Which of the will have higher dipole movement?

8. How many structural isomers and geometrical isomers are possible for a cyclohexane derivative having the molecular formula  $\text{C}_9\text{H}_{16}$ ?

9. Alkynes does not exhibit geometrical isomers. Give reason.

10. Which of the following shows geometrical isomerism?

(a)  $\text{CHCl}=\text{CHCl}$  (b)  $\text{CH}_2=\text{CCl}_2$  (c)  $\text{CCl}_2=\text{CHCl}$ .

11. What is a functional group?

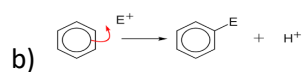
12. How many isomers are possible for monosubstituted and disubstituted benzene?

13. Identify electrophilic centre in the following:  $\text{CH}_3\text{CH}=\text{O}$ ,  $\text{CH}_3\text{C}^+\text{CH}_3$

14. For the following bond cleavages, use curved arrows to the electron flow and classify each as photolysis

or heterolysis. Identify the reaction intermediates products as free radical carbocation or carban ion.

(a)  $\text{CH}_3\text{O}-\text{OCH}_3 \rightarrow \text{CH}_3\text{O}\cdot + \cdot\text{OCH}_3$



Write the resonance structures of

(a)  $\text{CH}_3\text{NO}_2$

(b)  $\text{CH}_3\text{COO}^-$

15. Explain why is  $(\text{CH}_3)_3\text{C}^+$  more stable than  $\text{CH}_3\text{CH}_2^+$  and  $\text{CH}_3^+$  is the least stable cation.

16. Name the common techniques used for purification of organic compounds.

17. Will  $\text{CCl}_4$  give white precipitate of  $\text{AgCl}$  on heating it with  $\text{AgNO}_3$ ?

18. Without using column chromatography, how will you separate a mixture of camphor and benzoic

acid?

19. A liquid (1.0g) has three components. Which technique will you employ to separate them?

20. Name two methods which can be safely used to purify aniline.

### ASSIGNMENT 3

1. What is the shape of the following molecules:

(a)  $\text{H}_2\text{C}=\text{O}$  (b)  $\text{CH}_3\text{F}$  (c)  $\text{HC}\equiv\text{N}$ .

2. Giving justification, categories the following molecules or ions as nucleophile or electrophile:

$\text{HS}^-$ ,  $\text{BF}_3$ ,  $\text{C}_2\text{H}_5\text{O}^-$ ,  $(\text{CH}_3)_3\text{N}:$ ,  $\text{Cl}^-$ ,  $\text{CH}_3\text{C}^+=\text{O}$ ,  $\text{H}_2\text{N}:$ ,  $\text{NO}_2^+$

3. Benzyl carbonation is more stable than ethyl carbonation. Justify.

4. Write resonance structures of (a)  $\text{CH}_3\text{COO}^-$

(b)  $\text{C}_6\text{H}_5\text{NH}_2$ .

5. a. 40g of an organic compound gave 0.3g of Ag Br by Carious method. Find the percentage of bromine in the compound.

6. 0.12g of organic compound containing phosphorus gave 0.22g of  $\text{Mg}_2\text{P}_2\text{O}_7$  by the usual analysis. Calculate the percentage of phosphorus in the compound.

## CLASS 10

### ENGLISH

- Revise and practice all the topics of writing skills. Do atleast 5 questions each of writing skills.
- Revise the literature topics with poetic devices.
- Learn the names of the authors and the poets.
- Read all the lessons of FIRST FLIGHT & FOOTPRINTS WITHOUT FEET thoroughly to enable yourself to give all the answers of extract based questions.
- Solve the sample papers of English uploaded on CBSE website.
- **NOTE: While revising the subject if any doubt occurs ,feel free to send a message on my personal window.**

### **SCIENCE :**

**DO SAMPLE PAPERS ALREADY SHARED IN WATSAPP GROUP .**

AI Holiday Homework

CLASS 10

1. Write a program to perform all operations like addition, subtraction, multiplication, division, floor division and modulus.
2. Find average of three numbers in python.
3. Find area of rectangle in python
4. Find area of circle in python
5. WAP to find whether a person can vote or not
6. WAP to find a string is palindrome or not
7. Loops : for and while

Note : Prepare for Pre-board 2 .

Do all the programs in practical file.( Do one program on one page with output)

### ART

1. Create a Folk Art painting of your choice. E.g. Warli painting, etc.

### **SOCIAL SCIENCE**

Write five Sample Paper in your test notebook with answers. Sample Paper link:

<https://drive.google.com/drive/folders/12ZfML5xcZUMMuxZxH5IVAvx4JG64jb4h>

Prepare sample paper as per CBSE Pattern 2023-24. (Assignment has given to individual)

## WORK EXPERIENCE

Q1-Describe the types of renewable source of energy and nonrenewable source of energy.

Q2-Write down the importance of reduce, reuse and recycle with examples of each.

Q3-Make a quiz buzzer come light switch board in your notebook.

---

### कक्षा:- दसवीं

- निम्नलिखित तीन विषयों में से किसी दो विषय पर लगभग 120 शब्दों में अनुच्छेद लिखिए-  
(क) जीवन में खेल-कूद का स्थान  
भूमिका, विभिन्न प्रकार के खेल, खेलों का महत्व, विद्यार्थी जीवन में खेल-कूद का महत्व, उपसंहार  
(ख) रंग-बिरंगी अद्भुत प्यारी, विज्ञापन की दुनिया न्यारी -  
वर्तमान युग, विज्ञापन का युग, विज्ञापन के ढंग तथा महत्त्व, हानियाँ, उपसंहार  
(ग) युवावर्ग पर सोशल मीडिया का प्रभाव  
भूमिका, सोशल मीडिया की उपयोगिता, दुष्प्रभाव, उपसंहार
  - यातायात के नियमों का उल्लंघन करने वालों के विरुद्ध कड़ी कार्रवाई करने का सुझाव देते हुए यातायात पुलिस आयुक्त को पत्र लिखिए।
  - किसी मार्केटिंग कंपनी में मैनेजर के पद पर नियुक्ति हेतु अपना स्ववृत्त तैयार कर आवेदन कीजिए।
  - एस.बी.आई. बैंक के प्रबंधक को नई चेकबुक मंगवाने के लिए 80 शब्दों में ई-मेल लिखिए।
  - किसी पुस्तक भंडार के पुस्तक की बिक्री बढ़ाने हेतु विज्ञापन तैयार कीजिए।
  - आपके मित्र ने दसवीं की परीक्षा में जिला में प्रथम स्थान प्राप्त किया है। उस बधाई देते हुए एक बधाई संदेश लगभग 40 शब्दों में लिखिए।
-

## CLASS 9

### SOCIAL SCIENCE

Prepare interdisciplinary project on given topic. –“ FOREST SOCIETY AND COLONIALISM”.

THINGS TO BE KEPT IN MIND WHILE DOING THE PROJECT.

1. DESIGN TWO COVER PAGES-
  - School name, your name, roll. No. on the first cover page.
  - Design second cover page in such a way that it reflect your topic.
2. Acknowledgement
3. Index
4. Introduction
5. Main project points/ material on –“ FOREST SOCIETY AND COLONIALISM”.( Natural vegetation in India., Why deforestation and reason for deforestation, commercial farming, plantation farming, scientific forestry, forest act 1972)
6. Bibliography
7. Conclusion
8. Use A-4 size papers.
9. You can paste or draw images related to the topic for making your project wonderful.
10. Prepare your syllabus for PT-3 EXAM with map practice.

AI Holiday Homework

CLASS 9

1. Write a program to perform all operations like addition, subtraction, multiplication, division, floor division and modulus.
2. Find average of three numbers in python.
3. Find area of rectangle in python
4. Find area of circle in python
5. WAP to find whether a person can vote or not
6. WAP to find a string is palindrome or not
7. Loops : for and while

Note :

Do all the programs in practical file.( Do one program on one page with output)

### Physics

**Make a working model and prepare write-up for it.**

#### **Sound Worksheet**

1. True or False: Sound is a form of energy.
2. What are the vibrations in the air around an object called?

3. True or False: Sound travels through vibrating air particles.
4. Why is there no sound in space?
5. What are some ways people absorb sound?
6. What is an echo?
7. What types of animals use echo to navigate and hunt?
8. What is amplitude?
9. Fill in the blanks:  
Loud sounds have \_\_\_\_\_ amplitude. Soft sounds have \_\_\_\_\_ amplitude.
10. What makes sound high or low?
11. Fill in the blanks:  
The \_\_\_\_\_ an object vibrates, the \_\_\_\_\_ its frequency.  
High pitched sounds have a \_\_\_\_\_ frequency than low pitched sounds.

## Biology

- **Revise syllabus for PT 3.**
- **Complete your portfolio.**

**Do the following questions in your notebook:-**

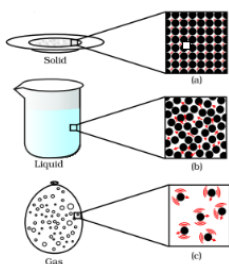
1. Can increasing grain production alone solve the problem of malnutrition and hunger?
2. In agricultural practices, higher input gives higher yield. Discuss how?
3. How is culture of Pomphret and Mackerel different from that of Catla and Rohu?
4. How is the use of manure beneficial for our environment?
5. What is a GM crop? Name any one such crop which is grown in India.
6. An Italian bee variety *A. mellifera* has been introduced in India for honey production. Write about its merits over other varieties.
7. Name the indigenous fowls of India. Which among them is the most popular?
8. Name two infectious diseases each of cows, poultry and fishes.
9. What are the main elements of animal husbandry?
10. Enumerate the advantages of mixed farming.

## Chemistry

1. **Is it possible for the atom of an element to have one electron, one proton and no neutron? If so, name the element**
  11. **Electron attributes negative charge, protons attribute positive charge. An atom has both but why there is no charge?**
  12. **Write the electronic configuration of an element whose atomic number is 12.**
  13. **What is the maximum number of electrons which can be accommodated in 'N' shell?**
  14. **How do you know that nucleus is very small as compared to the size of atom?**

15. The electronic configuration of phosphorus atom is 2, 8, 5. Give the electronic configuration of P<sup>3-</sup> ion.
16. Why do helium, neon and argon have a zero valency?
17. Class 9 science case study question 1
18. Read the passage and answer any four questions:

Gases are highly compressible as compared to Solids and liquids. The liquefied petroleum gas (LPG) cylinder that we get in our home for cooking or the oxygen supplied to hospitals in cylinders is compressed gas. Compressed natural gas (CNG) is used as fuel These days in vehicles. The liquid takes up the shape of the container in which they are kept. Liquids flow and change shape, so they are not rigid but can be called fluid. Solids and liquids can diffuse into liquids. The aquatic animals can breathe underwater. The rate of diffusion of liquids is greater than solid.



1. Why Compressed natural gas (CNG) is used as fuel these days in vehicles?

a. Due to its high compressibility

b. Large volumes of a gas can be compressed into a small cylinder

c. Transported easily

**d.All of these**

**2.Liquids have no fixed \_\_\_\_\_ but have a fixed\_\_\_\_\_ .**

**a.Shape, volume**

**b.Volume, shape**

**c.Shape, size**

**d.Size, shape**

**3.The aquatic animals can breathe underwater due to**

**a.The presence of dissolved carbon dioxide in water**

**b.The presence of dissolved oxygen in the water**

**C.The presence of dissolved Nitrogen in the water**

**d.All of these**

**4.The rate of diffusion of liquids is greater than solid due to**

**a.Liquid particles move freely**

**b.Liquid have greater space between each other**

**c.Both (a) and (b)**

**d.None of these**

**5.The property of flow is unique to fluids. Which one of the following statements is correct?**

**a.Only gases behave like fluids**

**b.Gases and solids behave like fluids**

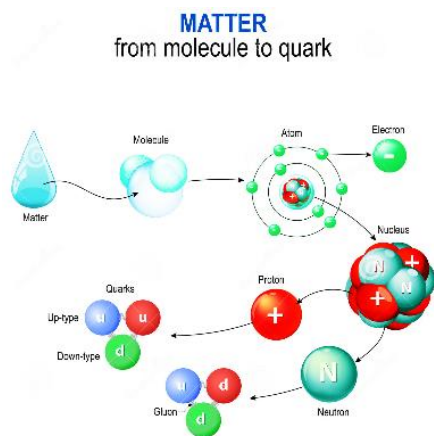
**C.Gases and liquids behave like fluids**

**d.Only liquids are fluids**

**10.Read the passage and answer any four questions:**



Atom can be described as in building houses the building blocks of all matter are atoms. A molecule is in general a group of two or more atoms that are chemically bonded together, that is, tightly held together by attractive forces. A molecule can be defined as the smallest particle of an element or a compound that is capable of independent existence and shows all the properties of that substance. Atoms of the same element or of different elements can join together to form a molecule. The number of atoms constituting a molecule is known as its atomicity. Metals and some other elements, such as carbon, do not have a simple structure but consist of a very large and indefinite number of atoms bonded together.



1. How many times an atom of sulphur is heavier than an atom of carbon?

a. 32 times

**b.12 times**

**c.8/3 times**

**d.12/32 times**

**2.Which of the following has a maximum number of the atom?**

**a.18 g H<sub>2</sub>O**

**b.18 g of O<sub>2</sub>**

**c.18 g of CO<sub>2</sub>**

**d.18 g of CH<sub>4</sub>**

**3.Which has the maximum number of molecules?**

**a.1 g of CO<sub>2</sub>**

**b.1 g of N<sub>2</sub>**

**c.1 g of H<sub>2</sub>**

**d.1 g of CH<sub>4</sub>**

**4.Which of the following correctly represents 360 g of water?**

**I.2 moles of H<sub>2</sub>O**

**II .20 moles of water**

**III.6.022 × 10<sup>23</sup> molecules of water**

**IV.1.2044 × 10<sup>25</sup> molecules of water**

**(I) only**

**(I) and (IV)**

**(II) and (III)**

**(II) and (IV)**

**5.The molecule having atomicity of 4 is:**

**a.Sulphate molecule**

**b.Ozone molecule**

**c.Phosphorus molecule**

**d.Methane molecule**

**11.A mole of an atom is a collection of atoms whose total mass is the number of grams equal to the**

**Atomic mass. Since equal number of moles of different elements contain an equal number of atoms it becomes convenient to express the amounts of the elements in terms of moles. A mole represents a definite number of particles viz, atoms, molecules, ions or electrons. This definite number is called Avogadro number or Avogadro constant which is equal to  $6.022 \times 10^{23}$ . Hence a mole represents  $6.022 \times 10^{23}$  particles of the substance. One mole of substance represents one gram-formula of the substance. One mole of a gas at standard temperature and pressure occupies 22.4 litres.**

**(i) How many grams of sodium must be taken to get 1 mole of the element ?**

**(a) 23 g (b) 35.5 g**

**© 63.5 g (d) 46 g**

**(ii) What is the mass in grams of a single atom of chlorine? (Atomic mass of chlorine = 35.5)**

**(a)  $6.54 \times 10^{23}$  g (b)  $5.9 \times 10^{-23}$  g**

**© 0.0025 g (d) 35.5 g**

**(iii) How many number of moles are there in 5.75 g of sodium ? (Atomic mass of sodium = 23)**

**(a) 0.25 (b) 0.5**

**© 1 (d) 2.5**

**(iv) What is the mass in grams of 2.42 mol of zinc? (Atomic mass of Zn = 65.41)**

**(a) 200 g (b) 25 g**

**© 85 g (d) 158 g**

**ART**

1. Create a Folk Art painting of your choice. E.g. Warli painting, etc.

**MATHEMATICS**

**PART-1**

**COMPLETE PORT FOLIO TO GIVEN FORMET**

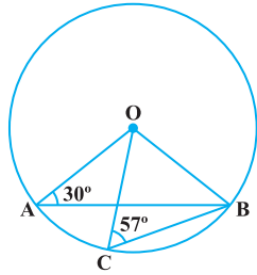
**PART-2**

1. Prove that the diagonal of a parallelogram divides it into two congruent triangles.
2. A school provides milk to the students daily in a cylindrical glasses of diameter 7 cm. If the glass is filled with milk upto an height of 12 cm, find how many litres of milk is needed to serve 1600 students.
3. Prove that the angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of the circle.
4. Prove that if a line segment joining two points subtends equal angles at two other points lying on the same side of the line containing the line segment, then the four points are concyclic.

**AND**

If A, B, C and D are four points such that  $\angle BAC = 45^\circ$  and  $\angle BDC = 45^\circ$ , then A, B, C, D are concyclic.

5. In the given figure,  $\angle OAB = 30^\circ$  and  $\angle OCB = 57^\circ$ . Find  $\angle BOC$  and  $\angle AOC$ .

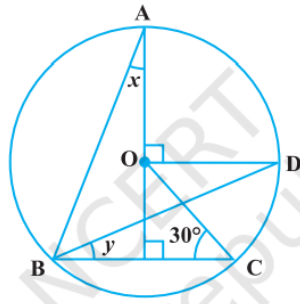


6. Two equal chords AB and CD of a circle when produced intersect at a point P. Prove that  $PB = PD$ .

7. The perimeter of a triangle is 50 cm. One side of a triangle is 4 cm longer than the smaller side and the third side is 6 cm less than twice the smaller side. Find the area of the triangle.

8. A cylindrical roller 2.5 m in length, 1.75 m in radius when rolled on a road was found to cover the area of  $5500 \text{ m}^2$ . How many revolutions did it make?

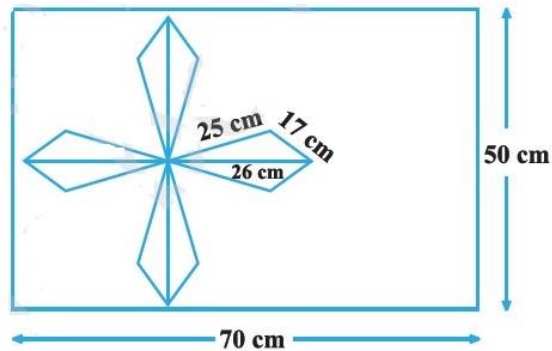
9. In the given figure, O is the centre of the circle,  $\angle BCO = 30^\circ$ . Find x and y.



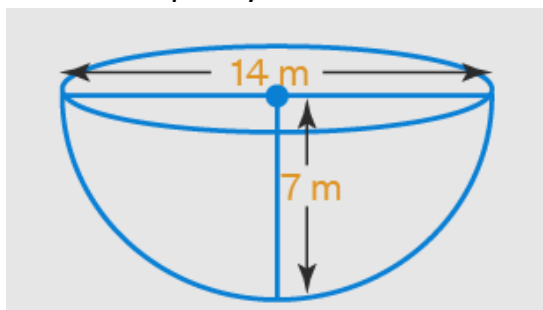
10. The perimeter of an isosceles triangle is 32 cm. The ratio of the equal side to its base is 3 : 2. Find the area of the triangle

11. A design is made on a rectangular tile of dimensions  $50 \text{ cm} \times 70 \text{ cm}$  as shown in the figure. The design shows 8 triangles, each of sides 26 cm, 17 cm and 25 cm.

Find the total area of the design and the remaining area of the tile.



12. The sides of a quadrilateral ABCD are 6 cm, 8 cm, 12 cm and 14 cm (taken in order) respectively, and the angle between the first two sides is a right angle. Find its area.
13. The area of a trapezium is  $475 \text{ cm}^2$  and the height is 19 cm. Find the lengths of its two parallel sides if one side is 4 cm greater than the other.
14. The water for a factory is stored in a hemispherical tank whose internal diameter is 14 m. The tank contains 50 kilolitres of water. Water is pumped into the tank to fill to its capacity. Calculate the volume of water pumped into the tank.



#### Work experience

Q1 - Make Diagram of soldering iron and write down its working. Q2- Working of motor and generator with diagram.

Q3- Make a switch board with two switch two socket 1 LED and a fuse.

## HINDI

### कक्षा- नवमी

1. सांवले सपनों की याद तथा बच्चे काम पर जा रहे हैं पाठों का संक्षिप्त सारांश लिखिए।
2. सफाई अभियान हेतु अपनी कक्षा के छात्रों के लिए एक सूचना तैयार कीजिए।
3. विद्यार्थी जीवन अथवा समय का महत्त्व में से कोई एक अनुच्छेद 120 शब्दों में लिखिए।
4. आपके द्वारा की गई कोई अविस्मरणीय यात्रा वृत्तांत (हो सके तो चित्र का प्रयोग भी करें) लिखिए।
5. पढ़ाए गए प्रत्येक पाठ से कोई दो दो प्रश्नोत्तर लिखिए।
6. पढ़ाए गए सभी प्रमुख चारों अलंकारों के परिचय सहित प्रत्येक के पांच-पांच उदाहरण लिखिए।
7. पढ़ाए गए सभी समासों के परिचय तथा पांच-पांच उदाहरण लिखिए।
8. अपनी पाठ्यपुस्तक में आये हुए किसी एक कवि और एक लेखक का जीवन परिचय लिखिए।

## CLASS 8

### CLASS- VIII- MATHEMATICS

1. Complete the MDP of term 2 (only remaining question)
2. Complete your learner diary in your Math Notebook

Do the following question in your notebook:

1. Coefficient of  $x^2$  in this algebraic expression  $4x^3 + x^2 + 5$
2. Adding  $ab - bc$ ,  $bc - ca$ ,  $ca - ab$ , we get-
3. find the product of
4. Simplify  $3x(4x - 5) + 3$  and find its values for  $x = 3$
5. Find the value of  $(x - y)(x + y) + (y - z)(y + z) + (z - x)(z + x)$ .
6. Using  $(x + a)(x + b) = x^2 + (a + b)x + ab$ , find  $101 \times 103$
7. Find the height of a cuboid whose base area is  $180 \text{ cm}^2$  and volume is  $900 \text{ cm}^3$  ?
8. The area of a rhombus whose diagonals are of lengths 10 cm and 8 cm is:
9. A closed cylindrical tank of radius 7 m and height 3 m is made from a sheet of metal. How much sheet of metal is required.
10. The area of a trapezium is  $34 \text{ cm}^2$  and the length of one of the parallel sides is 10 cm and its height is 4 cm. Find the length of the other parallel side.
11. find the value of  $(3 - 1 + 4 - 1 + 5 - 1) \div 0$
12. Evaluate. Find the value of m for which  $5m \div 5 - 3 = 55$  .
13. Find m so that  $( ) \times ( ) = ( )$
14. Simplify :- i)  $(t \neq 0)$  ii)
15. Express in usual form: The distance between Sun and Earth is  $1.496 \times 10^{11} \text{ m}$
16. Express the following number in usual form :  $3.02 \times 10^{-6}$
17. Three persons could fit new windows in a house in 4 days.(i) One of the persons fell ill before the work started. How long would the job



take now?(ii) How many persons would be needed to fit the windows

in one day?

18. A loaded truck travels 14 km in 25 minutes. If the speed

### **ENGLISH**

Question 1: You are Rohit/Rekha, monitor of class VIII B in Easta convent School, Dehradun. Write a letter to your Principal asking him to arrange for special coaching in Science. Give reasons why you need this.

Question 2: Sum up the main ideas of the author's Monsoon Diary from the chapter "A Short Monsoon Diary " in about 100 words.

Instructions :

use an A4 size sheet.

Writing should be neat and clean.

Holiday homework for all subjects should be done in a same file which students have used earlier for term 1.

### **SCIENCE**

1. Do the MDP for the second term
- 2.Revise all the chapter for PT2 exam

### **SUBJECT – ART**

1. Make a beautiful painting on one of the following topic-
  - a) Christmas
  - b) Makar Sankranti
  - c) Republic Day
2. Pick any object and draw it in your notebook using a single light source to practice shading.  
(Objects can be anything like any fruit, a glass, Jug, etc.)

### **SOCIAL SCIENCE**

1. Prepare MDP TERM-2 & Learner's Diary.
2. Complete your notebook work.

### **Work experience**

Q1-Describe power saving bulbs.

Q2- Draw circuit of a line tester and describe the line tester.

Q3-Methods to segregate non biodegradable and biodegradable waste in your home.

### SANSKRIT

- 1 सप्तभगिन्यः
- 2 नीतिनवनीतम्
- 3 सावित्री बाई फुले
- 4 कः रक्षति कः रक्षितः

ऊपर लिखे हुए पाठों के अभ्यास के प्रतिदिन दो प्रश्न याद करने हैं एवं उनको संस्कृत कॉपी में लिखना है।

बहु विषयक प्रोजेक्ट भाग 2 संस्कृत को पूरा करना है।

### HINDI

- 
1. मान लीजिए आप एक संवाददाता हैं। आपको 8 मार्च 1992 के दिन पुदुकोट्टई में हुई घटना का समाचार तैयार करना है। " जहां पहिया है" पाठ में दी गई सूचना और अपनी कल्पना के आधार पर समाचार तैयार कीजिए।
  2. उपसर्ग और प्रत्यय में क्या अंतर है? प्रत्येक के दो-दो उदाहरण देकर स्पष्ट कीजिए।
  3. सुदामा चरित कविता का केंद्रीय भाव अपने शब्दों में लिखिए।
  4. वसंत पुस्तक से दस मुहावरे खोज कर अपने वाक्यों में प्रयोग कीजिए।
  5. अपनी हिंदी की व्याकरण पुस्तक से कोई एक अपठित गद्यांश और एक काव्यांश पढ़कर उस पर दिए गए प्रश्नों के उत्तर लिखिए।
  6. अपने छोटे भाई को प्रातः भ्रमण के लाभ बताते हुए एक पत्र लिखिए।
  7. नैतिक शिक्षा पर आधारित एक लघु कथा लिखिए।
  8. निम्नलिखित शीर्षकों पर लगभग 150 शब्दों में अपने विचार लिखिए-  
(क) जीवन में अनुशासन का महत्व  
(ख) समय नियोजन के लाभ
-

## CLASS 7

### ENGLISH

Q1. With the help of the given outlines, develop readable stories:

Old peasant all his sons lazy..... peasant dying .....called all his sons .....told them of a treasure..... hidden in the fields..... to find it they must dig for it.....then died..... sons dug every bit of the land no treasure showed the .....corn a very fine crop..... sons learnt the lesson..... what?

Q2. Draft a notice for the school notice board informing the students that you have lost your school jacket. Offer a small reward to the one who returns it.

Instructions :

Use an A4 size sheet.

Writing should be neat and clean.

Holiday homework for all subjects should be done in a same file which students have used earlier for term 1.

a. Write the differences between :

a Draw the labeled diagram of the following: Human respiratory system.

a Human excretory system

a Soil profile

a Flower , stamen and pistil

a Human respiratory system

a Human heart

a

a Define the following terms Excretion

a Respiration

a Fertilization

a Pollination

a Double circulation of blood

a

a Why is excretion necessary?

a What is transpiration ? why is it a necessary evil?

a Describe the various ways by which the seeds are dispersed.

a The odometer of a car reads 57321 km when the clock shows the time 8:30 am. What is the distance moved by the car if at 8:50 am , the odometer reading has changed to 57336 km? calculate the speed of car in km/min, m/s, km/h.

a Draw the distance time graph when (A) a car is moving with constant speed.(b) a car is parked on a side road

a Find the various causes of soil pollution in your surrounding. How will you contribute to reducing the soil pollution?

a

SUB- SCIENCE

I Aerobic and anaerobic respiration.

II CROSS POLLINATION AND SELF POLLINATION

III Xylem and phloem

IV UNIFORM AND NON UNIFORM MOTION.

V Sexual and asexual reproduction

Describe the various types of blood cells.

Read chapter reproduction and 11. Frame 5 question from each (except exercise) and write their answers.

### **WORK EXPERIENCE**

Q1-Make an electromagnet circuit and write about the circuit. Q2-Describe different type of effects of electric current.

Q3- Why is recycling important and what do you mean by waste management.

### **SUBJECT – ART**

1. Make a beautiful painting on one of the following topic-

a) Christmas

b) Makar Sankranti

c) Republic Day

2. Pick any object and draw it in your notebook using a single light source to practice shading.

(Objects can be anything like any fruit, a glass, Jug, etc.)

### **SOCIAL SCIENCE**

1. Prepare MDP TERM-2 & Learner's Diary.

2. Complete your notebook work.

### **SANSKRIT**

सातवीं संस्कृत

1 पाठ संख्या 9 - अहमपि विद्यालयम् गमिष्यामि

10 - विश्वबंधुत्वम्

11- समवायो हि दुर्जय

12 - विद्याधनम्

उपरोक्त पाठों के अभ्यास याद करके रोजाना दो प्रश्न संस्कृत कॉपी में लिखें।

2 बहु विषयक प्रोजेक्ट भाग 2 पूरा करें।

कक्षा सातवीं हिंदी

1. पाठ 9 एक तिनका

10 खानपान की बदलती तस्वीर

11. नीलकंठ

12. भोर और बरखा

उपरोक्त चारों पाठों के अभ्यास के प्रश्न एवं भाषा की बात के प्रश्नों को याद करें एवं कॉपी में लिखें।

2. बहु विषयक प्रोजेक्ट भाग 2 पूरा करें।

3. किसी भ्रमण का विवरण अपने शब्दों में लिखिए।

4. नव वर्ष समारोह में शामिल होने के लिए अपने मित्र को पत्र लिखिए।

## CLASS 6

कक्षा छठी , विषय संस्कृत

शरदकालीन अवकाश हेतु गृह कार्य

1 क्रीडास्पर्धा

2 कृषिका: कर्मवीरा:

3 सूक्तइस्तबक:

4 दशमः त्वम् असि

इन पाठों के अभ्यास से ही रोजाना एक प्रश्न याद करना है एवं संस्कृत कॉपी में लिखना है।

2 MDP term 2 पूरा करके लाना है

SUBJECT-ENGLISH

CLASS-6

1) Write a paragraph on – What keeps me healthy. (you can take the help of the picture given below)

2) Write a poem or Slogan on – Swatchhta (personal hygiene)- important for good health

Instructions :

☑ Use an A4 size sheet.

☑ Writing should be neat and clean.

☑ Holiday homework for all subjects should be done in a same file which students have used earlier for term 1.

## **SUBJECT – ART**

1. Make a beautiful painting on one of the following topic-

a) Christmas

b) Makar Sankranti

c) Republic Day

2. Pick any object and draw it in your notebook using a single light source to practice shading.

(Objects can be anything like any fruit, a glass, Jug, etc.)

## SOCIAL SCIENCE

1. Prepare MDP TERM-2 & Learner's Diary.
2. Complete your notebook work.

### WORK EDUCATION

Class 6

Q1-Define conductor and insulator with examples.

Q2- Different ways to save food or define sensitization on food wastage

Q3- Write down components of first aid kit.

### विषय हिंदी

नोट:- सभी प्रश्नों के उत्तर अपने गृहकार्य अभ्यास पुस्तिका में लिखिए।

### कक्षा- छठीं

1. बाल राम कथा से 20 (MCQ) बहुविकल्पीय प्रश्न तैयार कीजिए।
2. निबंध में लोक गीतों के किन पक्षों की चर्चा की गई है? बिंदुओं के रूप में उन्हें लिखो।
3. मैं सबसे छोटी होऊँ कविता को (चित्र सहित) लिखिए और याद करें।
4. छात्र और शिक्षक के बीच एक संवाद लेखन लिखिए।
5. प्रातः काल की सैर एवं पुस्तकालय से लाभ विषय पर लगभग 100 शब्दों में अनुच्छेद लिखिए।
6. दो दिन के अवकाश के लिए अपने विद्यालय के प्राचार्य महोदय के नाम एक प्रार्थना पत्र लिखिए।
7. नदी, पानी, हवा, पृथ्वी, आकाश के तीन-तीन पर्यायवाची शब्द लिखिए।
8. अपने मित्र को वार्षिक परीक्षा में प्रथम स्थान पर उत्तीर्ण होने के उपलक्ष्य में बधाई पत्र लिखिए।

### SUBJECT-SCIENCE

#### COMPLETE YOUR MDP WORK

- . What is a habitat? Mark true or false against each of the following :- The evaporation of water takes place only in sunlight.( )
- . Water vapour condenses to form tiny droplets of water in the upper layers of air where it is cooler.( )
- . Artificial magnets were discovered in Greece. .( )
- . Similar poles of a magnet repel each other.( )
- .
- . Draw an electric circuit which consists of an electric cell, bulb and a switch.
- . Differentiate between transparent, translucent and opaque substance. Give examples of each.
- . How would you measure the length of a curved line?
- . When does a flood occur?
- . Draw pie chart showing composition of air.
- . What would you prefer compost over fertilizer?
- . How a fish is adapted to an aquatic habitat.

- . The height of a person is 1.65 m. Express it into cm and mm.
- . Where are poles of a bar magnet located?
- . Where do you get water from?
- . Fill in the blanks :- The process of changing water vapour into water is called
- . No rainfall for a year or more may lead to in that region.
- . The layer of air around the earth is known as .
- . The component of air used by green plants to make their food, is--

Why all the oxygen of atmosphere does not get used up though a large number of organisms are consuming it? Who is refilling the oxygen in the atmosphere?

By which process plants lose water? Write two advantages of this process.

Can the two poles of a magnet be separated? If not why?

How would you test whether a substance is a good conductor or not?

What can we do to minimize over use of plastic and deal with garbage?

(a) Draw well labeled diagram of water cycle.

The plants and animals that live on land are said to live in

(b) Write any two techniques of rain water harvesting.  
aquatic habitat

terrestrial habitat

both of these

none of these In sea plants and animals are surrounded by

saline water

fresh water

mineral water

dirty water SI unit of length is

Motion of a pendulum is an example of a

a. m b. cm c. km d. mm

circular motion

periodic motion

rectilinear motion



none of these A torch bulb is a

dim object