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PHYSICS

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Phone : 0462 - 233 8899 / 233 8484
Mobile : 94431 58484 / 95978 39822
Email : suryaguides@yahoo.com

Registered Office :

New No. 59, 4th Avenue,
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HIGHER SECONDARY SECOND YEAR

GOVT. MODEL QUESTION PAPER

XII - STANDARD

Physics

Time Allowed: 15 min + 2:30 hr Max. Marks: 70

Instructions:

1) Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.
2) Use Blue or Black ink to write and underline use pencil to draw diagrams.

PART – I

Note: (i) Answer all the questions. 15×1=15

(ii) Choose the most appropriate answer from the four given alternatives and write the option code with the corresponding answer.

1. When the current changes from +2A to –2A in 0.055, an emf of 8 V induced in a coil. The co-efficient of self-induction of the coil is:

a) 0.2 H b) 0.4 H c) 0.8 H d) 0.1 H

2. If λ_y, λ_x, λ_M represent the wavelengths of visible light, X-rays and microwaves respectively, then:

a) $\lambda_M > \lambda_x > \lambda_y$ b) $\lambda_y > \lambda_M > \lambda_x$

c) $\lambda_M > \lambda_y > \lambda_x$ d) $\lambda_y > \lambda_y > \lambda_M$

3. The materials used in Robotics are:

a) aluminium and silver b) silver and gold

c) copper and gold d) steel and aluminium

4. Two wires of A and B with circular cross-section are made up of the same material with equal lengths. If $R_A = 3R_B$, then what is the ratio of radius of wire A to that of B?

a) 3 b) $\sqrt{3}$ c) $\frac{1}{\sqrt{3}}$ d) $\frac{1}{3}$

5. The frequency range of 3 MHz to 30 MHz is used for:

a) Ground wave propagation

b) Space wave propagation

c) Sky wave propagation

d) Satellite communication

6. A ray of light strikes a glass plate at an angle 60°. If the reflected and refracted rays are perpendicular to each other, the refractive index of the glass is:

a) $\sqrt{3}$ b) $\frac{3}{2}$ c) $\frac{1}{\sqrt{3}}$ d) $\frac{1}{3}$

7. If voltage applied on a capacitor is increased from V to 2 V

a) Q remains the same, C is doubled

b) Q is doubled, C doubled

c) C remains the same, Q doubled

d) Both Q and C remain same

8. The nucleus is approximately spherical in shape. Then the surface area of the nucleus having mass number A varies as:

a) $A^{\frac{2}{3}}$ b) $A^{\frac{4}{3}}$ c) $A^{\frac{1}{3}}$ d) $A^{\frac{5}{3}}$

9. The given electrical network is equivalent to:

a) AND gate b) OR gate c) NOR gate d) NOT gate

10. A wire of length l carries a current l along the Y direction and the magnetic field is given by $\vec{B} = \frac{\beta}{\sqrt{3}}$ = (i–j+k)↑. The magnitude of Lorentz force acting on the wire is

a) $\sqrt{\frac{2}{3}}\,\pi$ b) $\sqrt{\frac{1}{\sqrt{3}}}$ c) βH $(\sqrt{2})$ d) βH $\sqrt{\frac{1}{2}}$

11. When a point charge of 6 μC is moved between two points in an electric field, the work done is 1.8×10^{-5}. The potential difference between the two points is:

a) 1.08 V b) 1.08 V c) 3 μV d) 30 V

12. The wavelength of an electron le and that of a photon λ_p of same energy E are related by

a) $\lambda_p \propto \lambda_e$ b) $\lambda_p \propto \sqrt{\lambda_e}$ c) $\lambda_p \propto \frac{1}{\sqrt{\lambda_e}}$ d) $\lambda_p \propto \lambda_e^2$

13. For a myopic eye, the defect is cured by using a:

a) convex lens b) concave lens
c) cylindrical lens d) plane glass

14. In a tangent galvanometer experiment, for two different values of current if the deflection of 45° and 30° respectively, then the ratio of the current is:

a) 2 : 3 b) 3 : 2 c) $\sqrt{3} : 1$ d) $1 : \sqrt{3}$

15. If the current gain α of a transistor is 0.98, what is the value of β of the transistor?

a) 0.49 b) 49 c) 4.9 d) 5

PART – II

Answer any six questions. Question number 24 is compulsory. **6×2=12**

16. What is meant by Fraunhofer lines?
17. Why steel is preferred in making robots?
18. State Lenz's law.
19. Why do clouds appear white?
20. Calculate the radius of $^{197}_{79}Au$.
21. What is the need for feedback circuit in transistor oscillator?
22. Show graphically the variation of electric field E (y-axis) due to a charged infinite plane sheet with distance r (x-axis) from the plate.
23. Give any two applications of internet.
24. Calculate the magnetic field inside a solenoid when the number of turns is halved and the length of the solenoid and the area remain the same.

PART – III

Answer any six questions. Question number 33 is compulsory. **6×3=18**

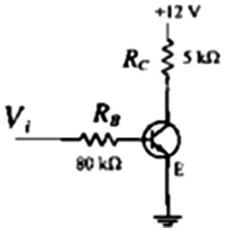
25. Two cells each of 5 V are connected in series across a 8 Ω resistor and three parallel resistors of 4 Ω, 6 Ω and 12 Ω. Draw the circuit diagram for the above arrangement and find the current through each resistor.
26. Explain the various energy losses in a transformer.
27. Discuss the alpha-decay process with example.
28. Obtain the expression for the energy stored in a parallel plate capacitor.
29. Explain any three recent advancements in medical technology.

30. Two light sources with amplitudes 5 units and 3 units respectively interfere with each other. Calculate the ratio of maximum and minimum intensities.

31. An electron moves in a circular orbit with a uniform speed v. It produces a magnetic field B a the centre of the circle. Prove that the radius of the circle is proportional to $\sqrt{\frac{v}{B}}$

32. Give the construction and working of photo-emissive cell.

33. In the circuit shown in the figure, the input voltage is V_i = +5 V, V_{BE} = +0.8 V and V_{CE} = +0.12 V. Find the value of i_B, i_C and β.



PART – IV

Answer all the questions: **5×5=25**

34. a) Obtain the expression for electric field due to a uniformly charged spherical shell a distance n from its centre.

(OR)

b) Write any five properties of electromagnetic waves.

35. a) What is modulation? Explain the types of modulation with necessary diagrams.

(OR)

b) Find the expression for the mutual inductance between a pair of coils and show that $M_C = M_Z$

36. a) Derive the expression for the radius of the orbit of the electron and its velocity using Bohr atom model.

(OR)

b) Discuss the working and theory of cyclotron in detail.

37. a) Obtain lens-makers' formula and mention its significance.

(OR)

b) Explain the construction and working of a full-wave rectifier.

38. a) i) Derive the expression for the de Broglie wavelength of an electron.

ii) An electron is accelerated through a potential difference of 81 V. What is the de Broglie wavelength associated with it? To which part of the electromagnetic spectrum does this wavelength correspond?

(OR)

b) i) How will you measure the internal resistance of a cell by potentiometer?

ii) A cell supplies a current of 0.9 A through a 1 resistor and a current of 0.3 A through a 2 resistor. Calculate the internal resistance of the cell.

✦✦✦

MODEL QUESTION PAPER - 1

XII - STANDARD

Physics

Time Allowed: 15 min + 2:30 hr Max. Marks: 70

Instructions:

1) Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.
2) Use Blue or Black ink to write and underline use pencil to draw diagrams.

PART – I

Note: (i) Answer all the questions. 15×1=15

(ii) Choose the most appropriate answer from the four given alternatives and write the option code with the corresponding answer.

1. Two point white dots are 1 mm apart on a black paper. They are viewed by eye of pupil diameter 3 mm approximately. The maximum distance at which these dots can be resolved by the eye is, [take wavelength of light, λ = 500 nm]

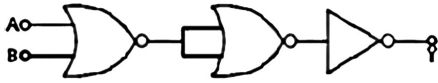
a) 1 m b) 5 m c) 3 m d) 6m

2. An electric bulb of 100W converts 3% of electrical energy into light energy. If the wavelength of light emitted is 6.625 $\mathring{A}$,the number of photons emitted is

a) 10^{17} b) 10^{20} c) 10^{19} d) 10^{30}

3. The nucleus is approximately spherical in shape. Then the surface area of the nucleus having mass number A varies as

a) $A^{2/3}$ b) $A^{4/3}$ c) $A^{1/3}$ d) $A^{5/3}$

4. 

quivalent to

a) AND gate b) OR gate c) NOR gate d) NOT gate

5. A mark at the bottom of the liquid appears to rise by 0.2 m. If the depth of the liquid is 2m then the refractive index of the liquid is:

a) 1.80 b) 1.60 c) 1.33 d) 1.11

6. Two capacitances 0.5 μF and 0.75 μF are connects in parallel, Calculate the effective capacitance of the capacitor:

a) 0.8 μF b) 0.7 μF c) 0.25 μF d) 1.25 μF

7. Common base current gain of a NPN transistor is 0.99. The input resistance is 1000 and load resistance is 10,000. The voltage gain in common emitter mode is:

a) 9900 b) 9900 c) 99 d) 990

8. T.V. tower has a height of 300 m. What is the maximum distance up to which the T.V transmission can be received

a) 62 Km b) 32 Km c) 42 Km d) 52 Km

9. Nano wires are used in

a) Transistors b) Resistors c) Capacitors d) Transducers

10. When a point charge of 6μC is moved between two points in an electric field, the work done is 1.8×10^{-5} J. The potential difference between the two points is:

a) 1.08 V b) 1.08 mV c) 3V d) 30 V

11. An electron is moving with a velocity of 3×10^{6} ms^{-1} perpendicular to a uniform magnetic field of induction 0.5 T. The force experienced by the electron is:

a) 2.4×10^{-13} N b) 13.6×10^{-21} N

c) 13.6×10^{-11} N d) zero

12. In LCR series AC circuit, the phase difference between current and voltage is 30°. The reactance of the circuit is 17.32 Ω. The value of resistance is:

a) 30 Ω b) 10 Ω c) 17.32 Ω d) 1.732 Ω

13. In an electromagnetic wave:

a) Power is equally transferred along the electric and magnetic fields

b) Power is transmitted in a direction perpendicular to both the fields

c) Power is transmitted along electric field

d) Power is transmitted along magnetic field

14. A step-down transformer reduces the supply voltage from 220 V to 11 V and increase the current from 6 A to 100 A. Then its efficiency is:

a) 1.2 b) 0.83 c) 0.12 d) 0.9

15. A graph is drawn taking potential difference across the ends of a conductor along x-axis and current through the conductor along the y-axis the slope of the straight line gives.

a) resistance b) conductance

c) resistivity d) conductivity

PART – II

Answer any six questions. Question number 24 is compulsory. 6×2=12

16. The electric field lines never intersect. Justify.
17. Repairing the electrical connection with the wet skin is always dangerous. Why?
18. State Maxwell's right hand cork screw rule.
19. How will you define Q-factor?

20. What is meant by Fraunhofer lines?
21. An electron and an alpha particle have same kinetic energy. How are the de Broglie wavelengths associated with them related?
22. In alpha decay, why the unstable nucleus emits nucleus? Why it does not emit four separate nucleons?
23. Distinguish between intrinsic and extrinsic semiconductors.
24. The thickness of a glass slab is 0.25 m. it has a refractive index of 1.5. A ray of light is incident on the surface of the slab at an angle of 60^{o}. Find the lateral displacement of the light when it emerges from the other side of the mirror.

PART – III

Answer any six questions. Question number 33 is compulsory. **6×3=18**

25. Derive an expression for the torque experienced by a dipole due to a uniform electric field.
26. Write the aim of artificial intelligence in robots.
27. Establish the fact that the relative motion between the coil and the magnet induces an emf in the coil of a closed circuit.
28. Two electric bulbs marked 20 W – 220 V and 100 W – 220 V are connected in series to 440 V supply. Which bulb will be fused?
29. Derive the equation for acceptance angle for optical fibre.
30 Discuss the spectral series of hydrogen atom.
31. Give the applications of ICT in mining and agriculture sectors.
32. State and prove De Morgan's First and Second theorems.
33. When a 6000Å light falls on the cathode of a photo cell and produced photoemission. If a stopping potential of 0.8 *V* is required to stop emission of electron, then determine the (i) frequency of the light (ii) energy of the incident photon (iii) work function of the cathode.

PART – IV

Answer all the questions. **5×5=25**

34. a) i) Derive the expression for resultant capacitance, when capacitors are connected in parallel.

ii) What are the factors on which the capacity of a parallel plate capacitor with dielectric depend?

(OR)

b) Explain the working of a single-phase AC generator with necessary diagram.

35. a) i) Explain the equivalent resistance of a series resistor network.

ii) How the resistivity of materials are related to number density (n) and τ?

(OR)

b) Obtain the equation for bandwidth in Young's double slit experiment.

36. a) i) Obtain an expression for potential energy of a bar magnet placed in an uniform magnetic field.

ii) Explain the applications of hysteresis loop.

(OR)

b) Describe briefly Davisson – Germer experiment which demonstrated the wave nature of electrons.

37. a) What is emission spectra? Give their types.

(OR)

b) Elaborate on the basic elements of communication system with the necessary block diagram. (any six)

38. a) Using Bohr postulate derive the expression for total energy of electron in stationary orbits of hydrogen atom. Hence show that total energy in the stationary orbit in the ratio 1 : 1/4 : 1/9 .....

(OR)

b) Explain the construction and working function of a full wave rectifier.

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MODEL QUESTION PAPER - 2

XII - STANDARD

Physics

Time Allowed: 15 min + 2:30 hr Max. Marks: 70

Instructions:

1) Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.
2) Use Blue or Black ink to write and underline use pencil to draw diagrams.

PART – I

Note: (i) Answer all the questions. 15×1=15

(ii) Choose the most appropriate answer from the four given alternatives and write the option code with the corresponding answer.

1. The particle which gives mass to protons and neutrons are:

a) Higgs particle b) Einstein particle
c) Nano particle d) Bulk particle

2. A current gain for a transistor working as CB amplifier is 0.90. If emitter current is 10 mA, then base current is:

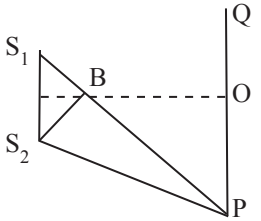
a) 1 mA b) 2mA c) 0.1 mA d) 0.2 mA

3. The variation of amplitude of carrier wave with respect to the amplitude of the modulating signal is called:

a) Amplitude modulation b) Frequency modulation
c) Phase modulation d) Pulse width modulation

4. In a given young's double slit experiment Q is the position of the first bright fringes on the right side of 0,

P is the 11th fringe on the other side as measured from Q. If λ = 6000 Å then S_1B will be:



a) 6.6×10^{-6} m

b) 3.3×10^{-6} m

c) 6×10^{-6} m

d) 6×10^{6} m

5. A nucleus with Z = 92 emits the following sequence. The Z of the resulting nucleus is:

a) 76 b) 78 c) 74 d) 82

6. Wavelength of an electron having energy 10 keV is:

a) 0.12 Å b) 1.2 Å c) 0.012 Å d) 120 Å

7. Light travelling through transparent oil enters in to glass of refractive index 1.5. If the refractive index of glass with respect to the oil is 1.25, what is the refractive index of the oil?

a) 1.2 b) 3.2 c) 4.2 d) 0.2

8. The conductivity of a semiconductor increases with increase in temperature because

a) number density of free current carriers increases.

b) relaxation time increases.

c) both number density of carriers and relaxation time increase.

d) number density of current carriers increases, relaxation time decreases but effect of decrease in relaxation time is much less than increase in number density.

9. The work done in moving 4 μC charge from one point to another in an electric field is 0.012 J. The potential difference between them is

a) 3000 V b) 6000 V

c) 30 V d) 48×10^{3} V

10. The temperature coefficient of resistance of a wire is 0.00125 per °C. At 300 K, its resistance is 1 Ω. The resistance of the wire will be 2 Ω at

a) 1154 K b) 1100 K c) 1400 K d) 1127 K

11. An electron moves straight inside a charged parallel plate capacitor of uniform charge density σ. The time taken by the electron to cross the parallel plate capacitor when the plates of the capacitor are kept under constant magnetic field of induction $\vec{E}$ is:

a) $\varepsilon_0 \frac{elB}{\sigma}$ b) $\varepsilon_0 \frac{lB}{\sigma l}$ c) $\varepsilon_0 \frac{lB}{\sigma e}$ d) $\varepsilon_0 \frac{lB}{\sigma}$

12. In a step – up transformer the input voltage is 220 V and the output voltage is 11 kV. The ratio of number of turns of primary to secondary is:

a) 50 : 1 b) 1 : 50 c) 25 :1 d) 1 : 25

13. The electric and the magnetic field, associated with an electromagnetic wave, propagating along x-axis can be represented by:

a) $\vec{E} = E_o\hat{j}$ and $\vec{B} = B_o\hat{k}$ b) $\vec{E} = E_o\hat{k}$ and $\vec{B} = B_o\hat{j}$

c) $\vec{E} = E_o\hat{\imath}$ and $\vec{B} = B_o\hat{j}$ d) $\vec{E} = E_o\hat{j}$ and $\vec{B} = B_o\hat{\imath}$

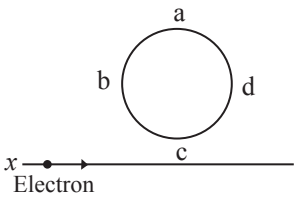
14. An electron moves on a straight line path XY as shown in the figure. The coil abcd is adjacent to the path of the electron. What will be the direction of current, if any, induced in the coil?

a) The current will reverse its direction as the electron goes past the coil

b) No current will be induced

c) abcd

d) adcb



15. The number of electric lines of force originating from a charge of 1 micro coulomb is

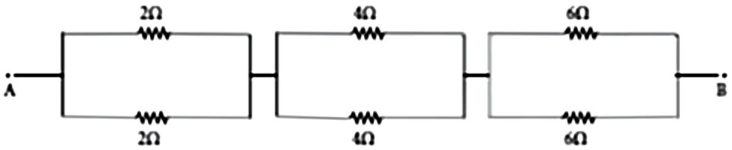
a) 1.129×10^{5} b) 1.6×10^{-19}

c) 6.25×10^{18} d) 8.85×10^{-12}

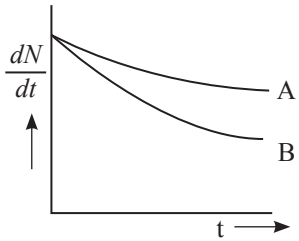
PART – II

Answer any six questions. Question number 24 is compulsory. **6×2=12**

16. Define dielectric breakdown.
17. Why declination is greater in poles & inclination is smaller in poles?
18. A capacitor blocks DC but it allows AC. Why?
19. What is called pointing vector?
20. Calculate the equivalent resistance between A and B in the given circuit.



21. How are rainbows formed?
22. Which sample, A or B shown in the below graph has shorter mean-life?



23. What do you mean by depletion region and potential barrier in junction diode?

24. An electron is accelerated through a potential difference of 81V. What is the de Broglie wavelength associated with it? To which part of electromagnetic spectrum does this wavelength correspond?

PART – III

Answer any six questions. Question number 33 is compulsory. **6x3=18**

25. List the properties of electric field lines.

26. Derive the relation between the drift velocity and the current.

27. Show that for an ideal toroid of closely wound turns, the magnetic field i) inside the toroid is constant ii) the open space inside an exterior to toroid is zero.

28. The solenoids S_1 and S_2 are wound on an iron-core of relative permeability 900. The area of their cross-section and their length are the same and are 4 cm2 and 0.04 m respectively. If the number of turns in S_1 is 200 and that in S_2 is 800, calculate the mutual inductance between the coils. The current in solenoid 1 is increased form 2A to 8A in 0.04 second. Calculate the induced emf in solenoid 2.

29. Derive the relation between f and R for a spherical mirror.

30. List out the laws of photoelectric effect.

31. What are the possible harmful effects of usage of Nano particles?

32. Elucidate the formation of a N-type semiconductors.

33. On your birthday, you measure the activity of the sample210Bi which has a half-life of 5.01 days. The initial activity that you measure is1μCi. (a) What is the approximate activity of the sample on your next birthday? Calculate (b) the decay constant (c) the mean life (d) initial number of atoms.

PART – IV

Answer all the questions. **5×5=25**

34. a) i) Obtain an expression for potential energy due to a collection of three point charges, which are separated by finite distances.

ii) Give the relation between electric field and electric potential.

(OR)

b) Derive the equation for effective focal length for lenses in out of contact.

35. a) Obtain the condition for bridge balance in Wheatstone's bridge.

(OR)

b) Derive an expression for phase angle between the applied voltage and current in a series RLC circuit.

36. a) Depict the magnetic field lines due to two straight, long parallel conductor carrying current I_1 & I_2 in the same direction. Hence deduce an expression for force per unit length acting on one of the conductors due to other. Is this force attractive or repulsive?

(OR)

b) Explain the J.J. Thomson experiment to determine the specific charge of electron.

37. a) Explain the Maxwell's modification of Ampere's circuital law.

(OR)

b) Briefly explain the principle and working of electron microscope.

38. a) Explain sky wave and space wave propagation of electromagnetic waves through space.

(OR)

b) Describe the function of a transistor as an amplifier with the neat circuit diagram. Sketch the input and output wave form.

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MODEL QUESTION PAPER - 3

XII - STANDARD

Physics

Time Allowed: 15 min + 2:30 hr | Max. Marks: 70

Instructions:

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2) Use Blue or Black ink to write and underline use pencil to draw diagrams.

PART – I

Note: (i) Answer all the questions. 15×1=15

(ii) Choose the most appropriate answer from the four given alternatives and write the option code with the corresponding answer.

1. The binding energy Per nucleon of deuteron $_1^1H$ and Helium nucleus ($_2^4He$ is 1.1 MeV and 7.0 MeV respectively). If two deuteron nucleus react to form a single helium nucleus, the energy released is:

a) 23.6 MeV b) 26.9 MeV c) 13.9 MeV d) 19.2 MeV

2. How many photons of red coloured light having wavelength 8000 $\mathring{A}$ will have same energy as one photon of violet coloured light of wavelength 4000 ?

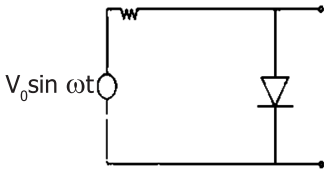
a) 2 b) 4 c) 6 d) 8

3. The electromagnetic waves of frequency 2 MHz to 30 MHz are:

a) in ground wave propagation b) in sky wave propagation

c) in micro wave propagation d) in satellite communication

4. The output of the given circuit



a) would be zero at all times.
b) would be like a half wave rectifier with positive cycles in output.
c) would be like a half wave rectifier with negative cycles in output.
d) would be like that of a full wave rectifier.

5. Which of the following uses radio frequency to produce nano-particles?

a) Plasma arching b) Chemical vapour deposition
c) Sol-gel technique d) Electro deposition

6. Two point charges +q and –q are placed at two points A and B respectively separated by a small distance. The electric field intensity at the mid point O of AB

a) is zero b) acts along AB
c) acts along BA d) acts perpendicular to AB

7. Peltier effect is the converse of

a) Joule effect b) Raman effect
c) Thomson effect d) Seebeck effect

8. An e.m.f of 12V is induced when the current in the coil changes at the rate of 40 As^{-1}. The Coefficient of self – induction of the coil is

a) 0.3 H b) 0.003 H c) 30 H d) 4.8 H

9. In a Young's double slit experiment, the source is white light. One of the holes is covered by a red filter and another by a blue filter. In this case

a) there shall be alternate interference patterns of red and blue.

b) there shall be an interference pattern for red distinct from that for blue.

c) there shall be no interference fringes.

d) there shall be an interference pattern for red mixing with one for blue.

10. In half-wave rectification, 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.

a) 150 Hz b) 130 Hz c) 160 HZ d) 100 Hz

11. If the magnetic monopole exists, then which of the Maxwell's equation to be modified?

a) $\oint \vec{E}.d\vec{A} = \frac{Q_{enclosed}}{\varepsilon_0}$

b) $\oint \vec{E}.d\vec{A} = 0$

c) $\oint \vec{E}.d\vec{A} = \mu_o I_{enclosed} + \mu_0 \varepsilon_0 \frac{d}{dt} \int \vec{E}.d\vec{A}$

d) $\oint \vec{E}.d\vec{A} = -\frac{d}{dt} \emptyset_B$

12. $\frac{20}{\pi^2}$ inductor is connected to a capacitor of capacitance C. The value of C in order to impart maximum power at 50 Hz is

a) 50 μF b) 0.5 μF c) 500 μF d) 5 μf

13. In a tangent galvanometer, for a constant Current, the deflection is 30^0. The place of the coil is rotated through 90^0. Now, for the same current, the deflection will be

a) 30^0 b) 60^0 c) 90^0 d) 0^0

14. What must be the distance between two equal and opposite point charges (say +q and –q) for the electrostatic force between them to have a magnitude of 16 N?

a) 4 $\sqrt{kq}$ metre b) q/4 $\sqrt{k}$ metre

c) 4 kq metre d) 4k / q metre

15. One concave and convex lens placed is contact with each other. If the ratio of their power is 2/3 and focal length of the combination is 30cm, the individual focal length

a) 15cm and –10cm b) 30 cm and –20 cm

c) –15 cm and 10 cm d) –30 cm and –30 cm

PART – II

Answer any six questions. Question number 24 is compulsory. **6×2=12**

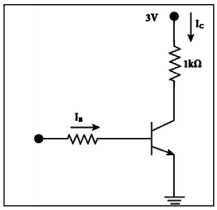
16. What is corona discharge?
17. What do you mean by internal resistance of a cell?
18. Draw the V-I characteristics of Zener diode.
19. State Lenz's law.
20. The wavelength of a light is 450 nm. How much phase it will differ for a path of 3 mm?
21. What are the two features was not explained by classical electromagnetic theory exhibited by x-ray spectra.
22. Define impact parameter.
23. Distinguish between Nanoscience and Nanotechnology.
24. The repulsive force between two magnetic poles in air is 9×10^{-3} N. If the two poles are having equal pole strength of 30 NT^{-1}. Find their distance of separation.

PART – III

Answer any six questions. Question number 33 is compulsory. **6×3=18**

25. Derive an expression for electrostatic potential due to a point charge.

26. Find the expression for magnetic dipole moment of revolving electron. What is Bohr magneton value?
27. Assuming that the length of the solenoid is large when compared to its diameter. Find the equation for its inductance.
28. A magnetron in a microwave oven emits electromagnetic waves (em waves) with frequency f = 2450 MHz. What magnetic field strength is required for electrons to move in circular paths with this frequency?
29. Obtain the equation for lateral displacement of light passing through a glass slab.
30. Explain about origin of Characteristic x – ray spectra.
31. Explain the idea of radio of carbon dating.
32. Explain about RADAR and its application.
33. Assuming V_{CEsat} = 0.2 V and β = 50, find the minimum base current (I_B) required to drive the transistor given in the figure to saturation.



PART – IV

Answer all the questions. **5×5=25**

34. a) i) Derive an expression for the energy density in parallel plate capacitor.
    ii) Write down the special features of Gauss law. (any five)

(OR)

    b) Obtain the law of radioactivity and derive the expression for half life.

35. a) i) How the emf of two cells are compared using potentiometer?
    ii) Derive the expression for power P=VI in electrical circuit.

(OR)

b) Explain hysteresis with neat diagram.

36. a) What is an LED? Give the principle of operation with a diagram.

(OR)

b) Prove that energy is conserved during electromagnetic induction.

37. a) What is absorption spectra? Give their types.

(OR)

b) Derive the equation for thin lens and obtain its magnification.

38. a) Explain briefly various methods of electron emission with neat diagram**.**

(OR)

b) What is modulation? Explain the frequency modulation with necessary diagram.

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MODEL QUESTION PAPER - 4

XII - STANDARD

Physics

Time Allowed: 15 min + 2:30 hr Max. Marks: 70

Instructions:

1) Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.
2) Use Blue or Black ink to write and underline use pencil to draw diagrams.

PART – I

Note: (i) Answer all the questions. 15×1=15

(ii) Choose the most appropriate answer from the four given alternatives and write the option code with the corresponding answer.

1. Particle A and B have electric charge +q and +4q . Both have mass m. If both are allowed to fall under the same potential difference , what will be the ratio of velocities

a) 2 : 1 b) 1 : 2 c) 1 : 4 d) 4 : 1

2. An object approaches a convergent lens from the left of the lens with a uniform speed 5 m/s and stops at the focus. The image

a) moves away from the lens with an uniform speed 5 m/s.
b) moves away from the lens with an uniform acceleration.
c) moves away from the lens with a non-uniform acceleration.
d) moves towards the lens with a non-uniform acceleration

3. Two point charges $+q_1$ and $+q_2$ are placed in air at a distance of 2m apart, one of the charges is moved towards the other through a distance of 1m. The work done is.

a) $q_1q_2 / 4\pi\varepsilon_0$ b) $q_1q_2 / \pi\varepsilon_0$

c) $q_1q_2 / 8\pi\varepsilon_0$ d) $q_1q_2 / 16\pi\varepsilon_0$

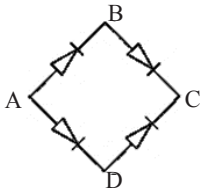
4. A and B are two radioactive substance whose half lives are 1 and 2 years respectively. Initially 10 g of A and 1 g of B is taken. The time after which they will have same quantity remaining is

a) 3.6 years b) 6.6 years c) 5 years d) 3 years

5. If the sum of the heights of transmitting and receiving antenna is line of sight communication is fixed at h, show that the range is maximum when the two antenna have a height each

a) h/4 b) h/6 c) h/8 d) h/2

6. In the figure, the input is across A and C and output is across B and D. The output is



a) same as input

b) Halfwave rectified

c) Fullwave rectified

d) zero

7. The fringe width for red is β_r (λ_r = 8000 $\mathring{A}$) and fringe width for violet is β_v (λ_v= 4000) then is $\frac{\beta_r}{\beta_V}$

a) $\frac{2}{1}$ b) $\frac{1}{2}$ c) $\frac{1}{1}$ d) $\frac{\sqrt{2}}{1}$

8. The method of making nanomaterial by assembling the atoms is called

a) Top down approach b) Bottom up approach

c) Cross down approach d) Diagonal approach

9. A capacitor of capacitance 6 μF is connected to a 100 V battery. The energy stored in the capacitor is

a) 30 J b) 3 J c) 0.03 J d) 0.06 J

10. In Joule's heating law, when *I* and *t* are constant, if the *H* is taken along the y axis and I^2 along the x axis, the graph is:

a) straight line b) parabola

c) circle d) ellipse

11. Electromagnetic waves are:

a) Transverse

b) longitudinal

c) may be longitudinal or transverse

d) neither longitudinal nor transverse

12. A rectangular coil is uniformly rotated in a uniform magnetic field such that the axis of rotation is perpendicular to the direction of the magnetic field. When the plans of the coil is perpendicular to the magnetic field:

a) (i) magnetic flux is zero (ii) induced e.m.f is zero

b) (i) magnetic flux ix maximum (ii) induced e.m.f is maximum

c) (i) magnetic flux is maximum (ii) induced e.m.f is zero

d) (i) magnetic flux is zero (ii) induced e.m.f is maximum

13. Phosphor – bronze wire is used for suspension in a moving coil galvanometer because it has:

a) high conductivity b) high resistivity

c) large couple per unit twist d) small couple per unit twist

14. In Ge sample, traces of gallium are added as impurity. The resultant sample would behave like:

a) a conductor b) a P-type semiconductor

c) an N-type semiconductor d) an insulator

15. The electric field intensity at a short distance r from uniformly charged infinite plane sheet of charge is:

a) proportional to r b) proportional to 1/r

c) proportional to $1/r^2$ d) independent of r

PART – II

Answer any six questions. Question number 24 is compulsory. **6×2=12**

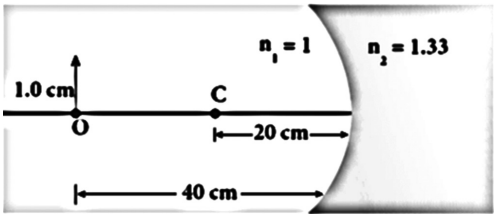
16. Why circuit breaker is advantageous over electric fuses?
17. What are the properties required to make permanent magnets & electro magnets?
18. A copper wire of 10^{-6} m^2 area of cross section, carries a current of 2 A. If the number of electrons per cubic meter is 8×10^{28}. Calculate the drift velocity.
19. Distinguish between step up and step down transformer.
20. What is Huygens' principle?
21. What is Bremsstrahlung or braking radiation?
22. Distinguish between wireline and wireless communication.
23. Show that nuclear density is almost constant for nuclei with $Z > 10$.
24. Simplify the Boolean expression $Y=(\bar{A}+B)\ (A+B)$ using Boolean laws.

PART – III

Answer any six questions. Question number 33 is compulsory. **6×3=18**

25. Explain Seebeck effect. Give its applications.
26. How is moving coil galvanometer is converted into a voltmeter? Explain with necessary circuit diagram and the required mathematical relation used.
27. Obtain the expression for average value of alternating current.
28. A parallel plate capacitor filled with mica having $\varepsilon_r = 5$ is connected to a 10 V battery. The area of the parallel plate is $6m^2$ and separation distance is 6 mm. Find the capacitance and stored charge and energy.

29. Obtain Einstein's photoelectric equation with necessary explanation.
30. Explain the working principle of a solar cell.
31. Discuss the functions of key components in Robots.
32. Derive expression for Radius of the n^{th} orbit of the electron.
33. Find the size of the image formed in the given figure.



PART – IV

Answer all the questions. **5×5=25**

34. a) Calculate the electric field due to a dipole on its axial line.

(OR)

b) i) Find out the phase relationship between voltage and current in a pure inductive circuit.

ii) What is inductive reactance? Write down its unit and relation between Frequency of A.C. with inductive reactance.

35. a) i) Explain the method of measurement of internal resistance of a cell using potentiometer.

ii) Why copper wire is not used in potentiometer?

(OR)

b) Discuss the Millikan's oil drop experiment to determine the charge of an electron.

36. a) i) A particle of mass m & charge q with a uniform speed v normal to magnetic field B describes a circular path of

radius r. Derive expression for I) Radius of the circular path II) Time period of revolution III) Kinetic energy of the particle.

ii) Mention the differences between Coulomb's law and Biot-Savart's law.

(OR)

b) Explain how PN junction is formed.

37. a) i) Explain how frequency of incident light varies with stopping potential.

ii) Why we do not see the wave properties of a football?

(OR)

b) Write down the properties of electromagnetic waves.

38. a) i) Obtain the equation for dispersive power of a medium.

ii) Explain about mirage and looming.

(OR)

b) Explain the amplitude and phase modulation with necessary diagrams.

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MODEL QUESTION PAPER - 5

XII - STANDARD

Physics

Time Allowed: 15 min + 2:30 hr Max. Marks: 70

Instructions:

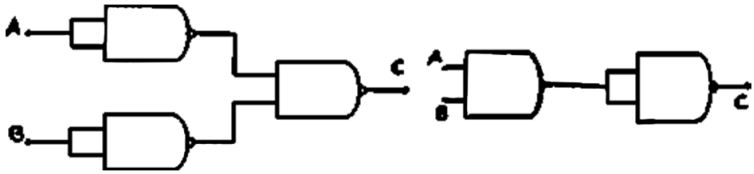
1) Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.
2) Use Blue or Black ink to write and underline use pencil to draw diagrams.

PART – I

Note: (i) Answer all the questions. 15×1=15

(ii) Choose the most appropriate answer from the four given alternatives and write the option code with the corresponding answer.

1. The combinations of NAND gates shown here under are equivalent to:



a) OR gate and NOT gate b) AND gate and OR gate
c) AND gate and NOT gate d) OR gate and AND gate

2. The energy released by the fission of one uranium atom is 200 MeV. The number of fission Per second required to Produce 3.2 w of Power is:

a) 10^{10} b) 10^{11} c) 10^{12} d) 10^{7}

3. Maximum kinetic energy of the free electron inside the metal is 0.5 eV and the energy need to overcome the

surface barrier of metal is 3 eV , then the work function of the metal is:

a) 2.2 eV b) 3.5 eV c) 2.0 eV d) 2.5 Ev

4. You are given four sources of light each one providing a light of a single colour – red, blue, green and yellow. Suppose the angle of refraction for a beam of yellow light corresponding to a particular angle of incidence at the interface of two media is 90°. Which of the following statements is correct if the source of yellow light is replaced with that of other lights without changing the angle of incidence?

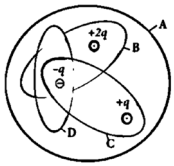
a) The beam of red light would undergo total internal reflection.

b) The beam of red light would bend towards normal while it gets refracted through the second medium.

c) The beam of blue light would undergo total internal reflection.

d) The beam of green light would bend away from the normal as it gets refracted through the second medium.

5. Four Gaussian surfaces are given below with charges inside each Gaussian surface. Rank the electric flux through each Gaussian surface in increasing order.



a) D < C < B < A

b) A < B = C < D

c) C < A = B < D

d) D > C > B > A

6. When NPN transistor is used as an amplifier then

a) electron moves from base to collector

b) hole travels from emitter to base

c) hole goes to emitter from base

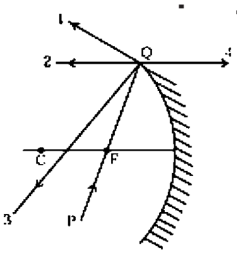
d) electron goes to base from collector

7. Which of the following is not a component of communication system?

a) Transmitter b) Transmission channel

c) Noise d) Receiver

8. The direction of ray of light incident on is shown by PQ while directions in which the ray would travel after reflection is shown by four rays marked 1, 2, 3 and 4.



Which of the four rays correctly shows the direction of reflected ray?

a) 1 b) 2 c) 3 d) 4

9. Point charges +q, +q, -q and –q are placed at the corners A,B,C and D respectively of a square is the point of intersection of the diagonals AC and BD. The resultant electric field intensity at the point O

a) acts in a direction parallel to AB

b) acts in a direction parallel to BC

c) acts in a direction parallel to CD

d) is zero

10. Which of the following the atoms do not move from each other?

a) Shape memory alloys b) Nano materials

c) Dielectrics d) Static materials

11. The instantaneous values of alternating current and voltage in a circuit are i = $\frac{1}{\sqrt{2}}$ sin (100πt) and v = $\frac{1}{\sqrt{2}}$ sin (100$\pi t + \frac{\pi}{3}$)v The average power in watts consumed in the circuit is

a) $\frac{1}{4}$ b) $\frac{\sqrt{3}}{4}$ c) $\frac{1}{2}$ d) $\frac{1}{8}$

12. The dimension of is $\frac{1}{\mu_0 \varepsilon_0}$

a) [L T^{-1}] b) [L^2 T^{-2}] c) [L^{-1} T] d) [L^{-2} T^2]

13. The resonant frequency of RLC circuit is The inductance is doubled. The capacitance is also doubled. Now the resonant frequency of the circuit is

a) $2\gamma_0$ b) $\frac{\gamma_0}{2}$ c) $\frac{\gamma_0}{4}$ d) $\frac{\gamma_0}{\sqrt{2}}$

14. When 'n' resistors of equal resistance (R) are connected in series and in parallel respectively, then the ratio of their effective resistance is :

a) 1 : n^2 b) n^2 : 1 c) n : 1 d) 1 : n

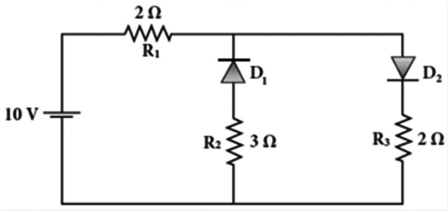
15. Which of the following has negative temperature coefficient of resistance?

a) copper b) tungsten c) carbon d) silver

PART – II

Answer any six questions. Question number 24 is compulsory. **6×2=12**

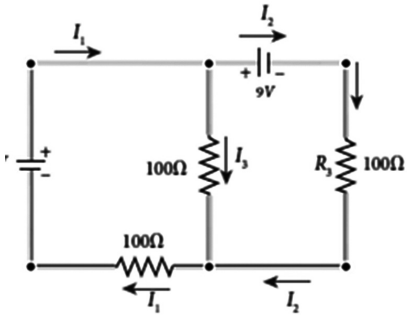
16. During lightning, it is safer to sit inside bus than in an open ground or under tree. Explain.
17. State Coulomb's inverse law.
18. Resonance will occur only in LC circuits. Why?
19. A copper wire of 10^{-6} m^2 area of cross section, carries a current of 2 A. If the number of electrons per cubic meter is 8×10^{28}. Calculate the current density and average drift velocity.
20. What is critical angle and total internal reflection?
21. Write the expression for the de Broglie wavelength associated with a charged particle of charge q and mass m, when it is accelerated through a potential *V*.
22. What are the Drawbacks of Rutherford model.
23. Explain centre frequency or resting frequency in frequency modulation.
24. The given circuit has two ideal diodes connected as shown in figure below. Calculate the current flowing through the resistance R_1



PART – III

Answer any six questions. Question number 33 is compulsory. **6×3=18**

25. Derive an expression for electrostatic potential energy of the dipole in a uniform electric field.
26. Write the difference between soft and hard ferromagnetic materials.
27. Calculate the currents in the following circuit.



28. Obtain an expression for motional emf from Lorentz force.
29. Discuss about Nicol prism.
30. Give the construction and working of photo emissive cell.
31. What are the disadvantages of Robotics?
32. Explain how diode act as voltage regulator.
33. Calculate the mass defect and the binding energy per nucleon of the $\frac{108}{47}$ Ag nucleus. [atomic mass of Ag = 107.905949]

PART – IV

Answer all the questions. **5×5=25**

34. a) i) Obtain the expression for electric field due to an infinitely long charged wire.

ii) What are various aspects of Coulomb's law. (any four)

(OR)

b) Discuss the process of nuclear fusion and how energy is generated in stars?

35. a) i) Explain the determination of the internal resistance of a cell using voltmeter.

ii) State Joule's law of heating.

(OR)

b) Show mathematically that the rotation of a coil in a magnetic field over one rotation induces an alternating emf of one cycle.

36. a) i) Explain about propagation of electromagnetic waves through ground wave propagation.

ii) Why attenuation is more in ground wave propagation? Explain briefly.

(OR)

b) Obtain a force between two long parallel current carrying conductors. Hence define ampere.

37. a) i) Write the key components of robot.

ii) Discuss the applications of Nanomaterials in various fields. (any four)

(OR)

b) Describe the Fizeau's method to determine speed of light.

38. a) i) Explain about Production of x-rays.

ii) Explain about Applications of x-rays. (any two uses)

(OR)

b) How does Transistor acts as an oscillator? Explain briefly.

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MODEL QUESTION PAPER - 6

XII - STANDARD

Physics

Time Allowed: 15 min + 2:30 hr Max. Marks: 70

Instructions:

1) Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.
2) Use Blue or Black ink to write and underline use pencil to draw diagrams.

PART – I

Note: (i) Answer all the questions. 15×1=15

(ii) Choose the most appropriate answer from the four given alternatives and write the option code with the corresponding answer.

1. A passenger in an aeroplane shall

a) never see a rainbow.

b) may see a primary and a secondary rainbow as concentric circles.

c) may see a primary and a secondary rainbow as concentric arcs.

d) shall never see a secondary rainbow.

2. In a large building, there are 15 bulbs of 40W, 5 bulbs of 100W, 5 fans of 80W and 1 heater of 1k Ware connected. The voltage of electric mains is 220V. The minimum capacity of the main fuse of the building will be

a) 14 A b) 8 A c) 10 A d) 12 A

3. The maximum speed of the emitted photoelectron when the stopping potential is 9 eV

a) 16 m/s b) 14 m/s c) 18 m/s d) 19 m/s

4. To obtain OR gate from NOR gate, you will need

a) one NOR gate b) one NOT gate
c) Two NOT gate d) one OR gate

5. The ratio of minimum to maximum wave length in Balmer series is

a) $\frac{4}{9}$ b) $\frac{5}{9}$ c) $\frac{7}{9}$ d) $\frac{8}{9}$

6. Refractive index of the ionosphere is

a) one b) more than one
c) less than one d) zero

7. A convex lens of glass (n = 1.5) has focal length 0.2 m. The lens is immersed in water of refractive index 1.33. The change in the power of convex lens is

a) 3.72 D b) 4.62 D c) 6.44 D d) 1.86 D

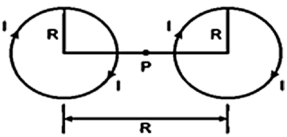
8. An electric dipole of moment P is placed in a uniform electric field of intensity E at an angle θ with respect to the field. The direction of the torque is

a) along the direction of P
b) opposite to the direction of P
c) along the direction of E
d) perpendicular to the plane containing P and E

9. In an A.C. circuit, the current $I = I_0$ sin $(\omega t - \pi/2)$ lags behind the e.m.f. $e = E_0$ sin $(\omega t + \pi/2)$ by

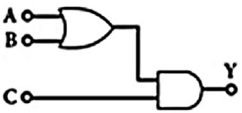
a) 0 b) $\pi/4$ c) $\pi/2$ d) π

10. Two identical coils, each with N turns and radius R are placed coaxially at a distance R as shown in the figure. If I is the current passing through the loops in the same direction, then the magnetic field at a point P which is at exactly R/2 at distance between two coils is



a) $\frac{8N\mu_o I}{\sqrt{5}R}$ b) $\frac{8N\mu_o I}{5^{3/2}R}$ c) $\frac{4N\mu_o I}{\sqrt{5}R}$ d) $\frac{8N\mu_o I}{5R}$

11. The output of the following circuit is 1 when the input ABC is



a) 101 b) 100
c) 110 d) 010

12. In an electromagnetic wave in free space the RMS value of the electric field is 3 Vm^{-1}. The peak value of the magnetic field is

a) 1.414×10^{-8} T b) 1.0×10^{-8} T
c) 2.828×10^{-8} T d) 2.0×10^{-8} T

13. The radius of a nucleus is 5.2 F. The number of nucleons in the nucleus is

a) 52 b) 64 c) 104 d) 128

14. An inductor 20 mH, a capacitor 50 μF and a resistor 40 Ω are connected in series across a source of emf v = 10 sin 340 t. The power loss in AC circuit is

a) 0.76 W b) 0.89 W c) 0.46 W d) 0.67 W

15. Two metallic spheres of radii 1 cm and 3 cm are given charges of -1×10^{-2} C and 5×10^{-2} C respectively. If these are connected by a conducting wire, the final charge on the bigger sphere is

a) 3×10^{-2} C b) 4×10^{-2} C c) 1×10^{-2} C d) 2×10^{-2} C

PART – II

Answer any six questions. Question number 24 is compulsory. 6×2=12

16. Define 'capacitance'. Give its unit.
17. For Chennai, the magnetic declination angle is – 1°8'. Why it is negative?
18. A cell supplies a current of 0.9 A through a 2 Ω resistor and a current of 0.3 A through a 7 Ω resistor. Calculate the internal resistance of the cell.
19. How will you define RMS value of an alternating current?
20. What is meant by Fraunhofer lines?

21. Why Dazzling colours are exhibited by thin films of oil spread on the surface of water and also by soap bubbles?
22. What is the difference between Nano material and Bulk materials?
23. Sn, C, and Si, Ge are all group XIV elements. Yet, Sn is a conductor, C is an insulator while Si and Ge are semiconductors. Why?
24. Half lives of two radioactive elements A and B are 20 minutes and 40 minutes respectively. Initially, the samples have equal number of nuclei. Calculate the ratio of decayed numbers of A and B nuclei after 80 minutes.

PART – III

Answer any six questions. Question number 33 is compulsory. **6×3=18**

25. Obtain the expression for capacitance for a parallel plate capacitor.
26. Explain Seebeck effect. Give its applications.
27. Find the magnetic induction due to a long straight conductor using Ampere's circuital law.
28. UV light of wavelength 1800 Å is incident on a lithium surface whose threshold wavelength 4965 Å. Determine the maximum energy of the electron emitted.
29. Discuss the beta decay process with examples.
30. Draw the circuit diagram of a half wave rectifier and explain its working of simple microscope.
31. Obtain the equations for magnification for near point focusing and normal focusing.
32. Fiber optic communication is gaining popularity among the various transmission media. Justify.
33. A solenoid of 500 turns is wound on an iron core of relative permeability 800. The length and radius of the solenoid are 40 cm and 3 cm respectively. Calculate the average emf induced in the solenoid if the current in it changes from 0 to 3 A in 0.4 second.

PART – IV

Answer all the questions. **5×5=25**

34. a) Derive an expression for electrostatic potential due to an electric dipole. Write down its special cases.

(OR)

b) Explain the use of Control rods, moderators & cooling system in Nuclear reactor.

35. a) Describe the microscopic model of current and obtain general form of Ohm's law.

(OR)

b) What are the advantage and disadvantage of amplitude modulation, frequency modulation?

36. a) i) Obtain an expression for the force on a current carrying conductor placed in a magnetic field.

ii) State Flemming's left hand rule.

(OR)

b) Explain the construction and working of transformer. Write down the efficiency of transformer.

37. a) What are the uses of (i) Microwaves (ii) Infrared radiation (iii) Ultraviolet radiation (iv) Gamma rays (v) Radio waves

(OR)

b) i) Explain the effect of potential difference on photoelectric current.

ii) An electron and an alpha particle have same kinetic energy. How are the de Broglie wavelengths associated with them related?

38. a) Obtain the equation for radius of illumination (or) Snell's window.

(OR)

b) Explain about how Transistor functions as a switch.

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MODEL QUESTION PAPER - 7

XII - STANDARD

Physics

Time Allowed: 15 min + 2:30 hr Max. Marks: 70

Instructions:

1) Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.
2) Use Blue or Black ink to write and underline use pencil to draw diagrams.

PART – I

Note: (i) Answer all the questions. 15×1=15

(ii) Choose the most appropriate answer from the four given alternatives and write the option code with the corresponding answer.

1. A radioactive substance decays to $\frac{1}{16}^{th}$ of its initial activity in 40 days, then the half life of the radioactive substance is expressed in day is:

a) 20 b)10 c) 30 d) 50

2. At the threshold frequency, the velocity of the electron is

a) unity b) minimum c) zero d) infinite

3. Reverse bias applied on a junction diode :

a) raises the potential barrier

b) increases majority charge carrier current

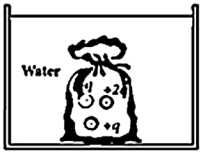
c) lowers the potential barrier

d) increases the temperature of junction

4. A plano-convex lens of focal length is 20 cm is silvered at plane surface. New focal length will be

a) 20 cm b) 40 cm c) 30 cm d) 60 cm

5. The total electric flux for the following closed surface which is kept inside water



a) $\frac{80q}{\varepsilon_o}$ b) $\frac{q}{40\varepsilon_o}$

c) $\frac{q}{80\varepsilon_o}$ d) $\frac{q}{160\varepsilon_o}$

6. A receiving station on the ground is receiving a signal of frequency 10 MHz, then the mode of transmission is

a) ground wave propagation

b) sky wave propagation

c) both ground wave and sky wave propagation

d) neither ground wave nor sky wave propagation

7. When the number of turns (n) in a galvanometer is doubled, current sensitivity

a) remains constant b) decreases twice

c) increases twice d) increases four times

8. A short pulse of white light is incident from air to a glass slab at normal incidence. After travelling through the slab, the first colour to emerge is

a) blue b) green c) violet d) red

9. The flux linked with a coil at any instant t is given by $\emptyset_B = 10t^2 - 50t + 250$ The induced emf at t = 3s is

a) $-190\ V$ b) $-10V$ c) $10\ V$ d) $190\ V$

10. The electric field outside the two oppositely charged place sheets each of charge density σ is

a) $\frac{\sigma}{2\varepsilon_0}$ b) $-\frac{\sigma}{\varepsilon_0}$ c) $\frac{\sigma}{\varepsilon_0}$ d) zero

11. A cell of emf 2.2V sends a current of 0.2 A through a resistance of 10 Ω. The internal resistance of the cell is

a) 0.1 Ω b) 1 Ω c) 2 Ω d) 1.33 Ω

12. If N_0 is the original mass of the substance of half life 5 years, the amount of substance left after 15 years is

a) $\frac{N_o}{15}$ b) $\frac{N_o}{8}$ c) $\frac{N_o}{16}$ d) $\frac{N_o}{10}$

13. Let $E = E_0 \sin [10^6 \times -\omega t]$ be the electric field of plane electromagnetic wave, the value of ω is

a) 0.3×10^{-14} rad s^{-1} b) 3×10^{-14} rad s^{-1}

c) 0.3×10^{14} rad s^{-1} d) 3×10^{14} rad s^{-1}

14. At 0 K temp, a N - type semi-conductor :

a) does not have any charge carriers

b) has few holes but no free electrons

c) few holes and few electrons

d) has equal number of holes and electrons

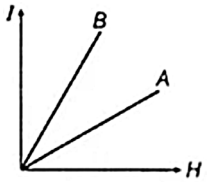
15. The RMS value of an A.C. voltage with a peak value of 311 V is

a) 110 V b) 220 V c) 50 V d) 70.7 V

PART – II

Answer any six questions. Question number 24 is compulsory. **6×2=12**

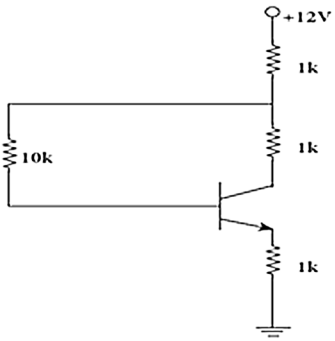
16. What are the properties of an equipotential surface?
17. Define temperature coefficient of resistance.
18. Sky has no limit but sky wave propagation has its limit. Explain why?
19. A rectangular coil of area 70 cm^2 having 600 turns rotates about an axis perpendicular to a magnetic field of 0.4 Wb m^{-2}. If the coil completes 500 revolutions in a minute, calculate the instantaneous emf when the plane of the coil is inclined at 60° with the field.
20. What is presbyopia?
21. What are the application of Zener diode?
22. How does photocurrent vary with the intensity of incident light?
23. What is meant by activity or decay rate? Give its unit.
24. Identify materials A & B. Why does a material B have larger susceptibility than A for given field at constant temperature.



PART – III

Answer any six questions. Question number 33 is compulsory. **6×3=18**

25. Define 'Electric field' and discuss its various aspects (any four).
26. Compare dia, para and ferro-magnetism. (any three)
27. How will you induce an emf by changing the area enclosed by the coil?
28. Calculate the de Broglie wavelength of a proton whose kinetic energy is equal to 81.9×10^{-15} J. (Given: mass of proton is 1836 times that of electron).
29. Discuss about pile of plates.
30. Explain about satellite communication and its application.
31. Discuss the alpha decay process with example.
32. A transistor having $\alpha = 0.99$ and $V_{BE} = 0.7$ V, is given in the circuit. Find the value of the collector current.



33. A transmitter consists of LC circuit with an inductance of 1 μH and a capacitance of 1 μF. What is the wavelength of the electromagnetic waves it emits?

PART – IV

Answer all the questions. **5×5=25**

34. a) i) Obtain the expression for electric field due to an charged infinite plane sheet.

ii) Write the differences between polar and non polar molecules.

(OR)

b) Sketch the static characteristics of a common emitter transistor and bring out the essence of output characteristics.

35. a) Calculate the magnetic field inside and outside of the long solenoid using Ampere's circuital law.

(OR)

b) i) Comparison between FM and PM.

ii) Explain about fibre optic communication and its demerits.

36. a) i) Derive the relation between internal resistance and emf of the cell.

ii) A potentiometer wire has a length of 4 m and resistance of 20 Ω. It is connected in series with resistance of 2980 Ω and a cell of emf 4 V. Calculate the potential along the wire.

(OR)

b) How are the three different emfs generated in a three-phase AC generator? Show the graphical representation of these three emfs. Mention its advantages over single phase AC generator.

37. a) Obtain the equations for constructive and destructive interference for transmitted and reflected waves in thin films.

(OR)

b) i) What are the characteristics of photons?

ii) Write the applications of photo cells.

38. a) i) Discuss briefly the experiment conducted by Hertz to produce and detect electromagnetic spectrum.

ii) If the relative permeability and relative permittivity of the medium is 1.0 and 2.25, respectively. Find the speed of the electromagnetic wave in this medium.

(OR)

b) Discuss the process of nuclear fission and its properties. Explain about controlled and uncontrolled chain reaction.

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MODEL QUESTION PAPER - 8

XII - STANDARD

Physics

Time Allowed: 15 min + 2:30 hr Max. Marks: 70

Instructions:

1) Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.
2) Use Blue or Black ink to write and underline use pencil to draw diagrams.

PART – I

Note: (i) Answer all the questions. 15×1=15

(ii) Choose the most appropriate answer from the four given alternatives and write the option code with the corresponding answer.

1. In a series resonant RLC circuit, the voltage across 100 Ω resistor is 40 V. The resonant frequency ω is 250 rad/s. If the value of C is 4 μF, then the voltage across L is

a) 600 V b) 4000 V c) 400V d) 1 V

2. If the amplitude of the magnetic field is 3×10^{-6} T, then amplitude of the electric field for a electromagnetic waves is

a) 100 V m^{-1} b) 300 V m^{-1}

c) 600 V m^{-1} d) 900 V m^{-1}

3. An electron of mass m and charge e accelerated from rest through a potential of V volt, then its final velocity

a) $v = \sqrt{\frac{2e}{mV}}$ b) $v = \sqrt{\frac{4e}{mV}}$ c) $v = \sqrt{\frac{2eV}{m}}$ d) $v = \sqrt{\frac{eV}{m}}$

4. The width of a single slit , if the first minimum is observed at an angle of 2° with a wavelength of the light 6980 $\mathring{A}$ is

a) 0.2 mm b) 2×10^{-5} m

c) 2×10^{-5} m d) 0.02

5. Which charge configuration produces a uniform electric field?

a) point Charge

b) infinite uniform line charge

c) uniformly charged infinite plane

d) uniformly charged spherical shell

6. The area to be covered for T.V telecast is doubled. Then the height to transmitting antenna will have to be

a) doubled b) halved

c) quadrupled d) kept unchanged

7. A light of wavelength 320 nm enters in a medium of refractive index 1.6 from the air of refractive index 1.0 The new wavelength of light in the medium will be

a) 520 nm b) 400 nm c) 320 nm d) 220 nm

8. In a N-P-N transistor circuit, the collector current is 10 mA. If 95 per cent of the electrons emitted reach the collector, which of the following statements are true?

a) The emitter current will be 8 mA.

b) The emitter current will be 10.53 mA.

c) The base current will be 0.53 mA.

d) The base current will be 2 mA.

9. A coil of area of cross – section 0.5 m^2 with 10 turns is in a plane which is perpendicular to a uniform magnetic field of 0.2 Wb/m^2. The magnetic flux through the coil is

a) 100 Wb b) 10 Wb c) 1 Wb d) zero

10. If the input to the NOT gate is A = 1011, its output is

a) 0100 b) 1000 c) 1100 d) 0011

11. The total flux over a closed surface enclosing a charge q (in $Nm^2 C^{-1}$)

a) $8 \pi q$ b) $9 \times 10^9 q$

c) $36\pi \times 10^9 q$ d) $8.854 \times 10^{-12} q$

12. The carbon resistor of (47 ± 4.7) k Ω to be marked with rings of different colours for its identification. The colour code sequence will be

a) Yellow – Green – Violet – Gold

b) Yellow – Violet – Orange – Silver

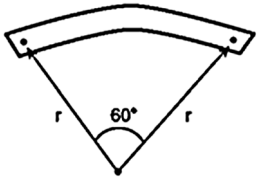
c) Violet – Yellow – Orange – Silver

d) Green – Orange – Violet – Gold

13. The ionisation Potential of hydrogen atom is 13.6 eV. An electron in the ground state absorbs Photon of energy 12.75 eV. How many different spectral lines can one expect when electron make a down ward transition

a) 1 b) 2 c) 6 d) 4

14. A bar magnet of length *l* and magnetic moment M is bent in the form of an arc as shown in figure. The new magnetic dipole moment will be



a) M b) $\frac{3}{\pi}$ M

c) $\frac{2}{\pi}$ M d) $\frac{1}{2}$ M

15. The energy equivalent of 1 amu is

a) 9.31×10^8 eV b) 9.31×10^6 eV

c) 931 MeV d) 93.1×10^6 eV

PART – II

Answer any six questions. Question number 24 is compulsory. **6×2=12**

16. State Gauss law.
17. The horizontal component of the earths magnetic field at a place is times its vertical component. Find the value of angle OD dip at that place. What is the ratio of horizontal component to the total magnetic field of the earth at that place?
18. State Faraday's laws of electromagnetic induction.
19. Write down the various forms of expression for power in electrical circuit.
20. What are the two conditions for total internal reflection?
21. Give circuit symbol, logical operation, truth table, and Boolean expression of AND.
22. Two waves A and B of frequencies 2 MHz and 3 MHz, respectively are beamed in the same direction for communication via sky wave. Which one of these is likely to travel longer distance in the ionosphere before suffering total internal reflection?
23. What is mean life of nucleus? Give the expression and relate with half life period.
24. The ratio between the de Broglie wavelengths associated with protons, accelerated through a potential of 512 V and that of alpha particles accelerated through a potential of X volts is found to be one. Find the value of X.

PART – III

Answer any six questions. Question number 33 is compulsory. **6×3=18**

25. Using Gauss law find out the electric field due to two parallel charged infinite sheets.
26. State and explain Biot – Savart's law.

27. The 300 turn primary of a transformer has resistance 0.82 Ω and the resistance of its secondary of 1200 turns is 6.2 Ω. Find the voltage across the primary if the power output from the secondary at 1600V is 32 kW. Calculate the power losses in both coils when the transformer efficiency is 80%.
28. Discuss briefly the experiment conducted by Hertz to produce and detect electromagnetic spectrum.
29. Derive the equation for angle of deviation produced by a prism.
30. What should be the velocity of the electron so that its momentum equals that of 4000 Å wavelength photon.
31. Elucidate the formation of a P-type semiconductors.
32. Write down properties of cathode rays.
33. A transmitting antenna has a height of 40 m and the height of the receiving antenna is 30 m. What is the maximum distance between them for line-of-sight communication? The radius of the earth is 6.4×10^6 m.

PART – IV

Answer all the questions. **55=25**

34. a) i) Derive the expression for resultant capacitance. When capacitors are connected in Series?
    ii) Obtain the expression for energy stored in the parallel plate capacitor.

(OR)

    b) Explain the V–I characteristics of PN junction diode in forward bias condition.

35. a) i) State and explain Kirchhoff's rules.
    ii) Explain the equivalent resistance of a parallel resistor network.

(OR)

b) Explain about scattering of alpha particles experiment by Rutherford.

36. a) Obtain the magnetic induction at a point on the equatorial line of a bar magnet.

(OR)

b) Obtain the equation for resolving power of optical instrument.

37. a) Compare the electromagnetic oscillations of LC circuit with the mechanical oscillations of block-spring system to find the expression for angular frequency of LC oscillators mathematically.

(OR)

b) i) Modulation helps to reduce the antenna size in wireless communication – Explain.

ii) Explain about phase modulation with necessary diagram.

38. a) i) Briefly discuss the observations of Hertz, Hallwachs observation.

ii) What is a photo cell? Mention the different types of photocells.

(OR)

b) Elaborate any two types of Robots with relevant examples.

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MODEL QUESTION PAPER - 9

XII - STANDARD

Physics

Time Allowed: 15 min + 2:30 hr Max. Marks: 70

Instructions:

1) Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.
2) Use Blue or Black ink to write and underline use pencil to draw diagrams.

PART – I

Note: (i) Answer all the questions. 15×1=15

(ii) Choose the most appropriate answer from the four given alternatives and write the option code with the corresponding answer.

1. Electrical resistivity of a thin copper wire and a thick copper rod are respectively ρ_1 Ω m and ρ_2 Ω m. Then:

a) $\rho_1 > \rho_2$ b) $\rho_2 > \rho_1$ c) $\rho_1 = \rho_2$ d) $\rho_2/\rho_1 = \infty$

2. In an A.C. circuit average power consumed is 200 W and the apparent power is 300 W. The power factor is:

a) 1.5 b) 0.66 c) 0.33 d) 1

3. During the propagation of electromagnetic waves in a medium:

a) electric energy density is double of the magnetic energy density.

b) electric energy density is half of the magnetic energy density.

c) electric energy density is equal to the magnetic energy density.

d) both electric and magnetic energy densities are zero.

4. A forward biased diode is treated as

a) An open switch with infinite resistance.

b) A closed switch with a voltage drop of 0 V.

c) A closed switch in series with a battery voltage of 0.7 V.

d) A closed switch in series with a small resistance and a battery.

5. We can not make P-N junction diode by making P-type semi-condutor join with N-type semi-conductor, because

a) Inter-atomic spacing becomes less than 1AO

b) P - type will repel N - type

c) There will be discontinuity for the flowing charge carriers

d) None of these

6. A ray of light passes from the glass (n = 1.5) to medium (n = 1.60). The value of the critical angle of glass is

a) $\sin^{-1}\left(\frac{16}{15}\right)$ b) $\sin^{-1}\left(\sqrt{\frac{16}{15}}\right)$

c) $\sin^{-1}\left(\frac{1}{2}\right)$ d) $\sin^{-1}\left(\frac{15}{16}\right)$

7. If voltage applied on a capacitor is increased from V to 2V, choose the correct conclusion.

a) Q remains the same, C is doubled

b) Q is doubled, C doubled

c) C remains same, Q doubled

d) Both Q and C remain same

8. Frequencies in the UHF range normally propagate by means of:

a) Ground waves b) Sky waves

c) Surface waves d) Space waves

9. A light of wavelength 500 *nm* is incident on a sensitive plate of photoelectric work function 1.235 *eV*. The kinetic energy of the photo electrons emitted is be

(Take $h = 6.6 \times 10^{-34}$ *Js*)

a) 0.58 *eV* b) 2.48 *eV* c) 1.24 *eV* d) 1.16 *eV*

10. A flat dielectric disc of radius R carries an excess charge on its surface. The surface charge density is σ. The disc rotates about an axis perpendicular to its plane passing through the center with angular velocity ω. Find the magnitude of the torque on the disc if it is placed in a uniform magnetic field whose strength is B which is directed perpendicular to the axis of rotation

a) $\frac{1}{4}\sigma\omega\pi BR$ b) $\frac{1}{4}\sigma\omega\pi BR^2$

c) $\frac{1}{4}\sigma\omega\pi BR^3$ d) $\frac{1}{4}\sigma\omega\pi BR^4$

11. The half-life period of a radioactive element A is same as the mean life time of another radioactive element B. Initially both have the same number of atoms. Then

a) A and B have the same decay rate initially

b) A and B decay at the same rate always

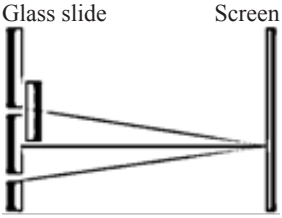
c) B will decay at faster rate than A

d) A will decay at faster rate than B

12. In an electrical circuit, *R, L, C* and AC voltage source are all connected in series. When *L* is removed from the circuit, the phase difference between the voltage and current in the circuit is π/3. Instead, if C is removed from the circuit, the phase difference is again π/3. The power factor of the circuit is

a) 1/2 b) $1/\sqrt{2}$ c) 1 d) 2

13. One of the of Young's double slits is covered with a glass plate as shown in figure. The position of central maximum will,



a) get shifted downwards
b) get shifted upwards
c) will remain the same
d) data insufficient to conclude

14. The ascending order of specific charge of electron, proton, neutron, alpha particle will be

a) electron, proton, neutron, alpha particle
b) alpha particle, neutron, electron, proton
c) proton, electron, alphaparticle, neutron
d) neutron, alphaparticle, proton, electron

15. Potential energy of two equal negative point charges of magnitude 2 μC placed 1 m apart in air is

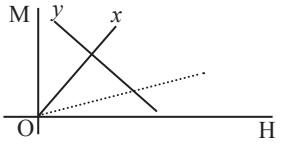
a) 2 J b) 0.36 J c) 4 J d) 0.036 J

PART – II

Answer any six questions. Question number 24 is compulsory. **6×2=12**

16. State Coulomb's law in electrostatics.

17. Draw the variation of susceptibility with temperature for Material Z.



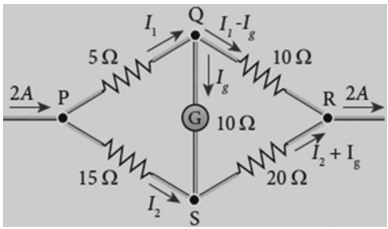
18. What is distance of closest approach?
19. Write down the integral form of modified Ampere's circuital law.
20. State Brewster's law.
21. What are the Barkhausen conditions for sustained oscillations?

22. Why electrons in the metals do not leave the surface of metal even though they move freely inside the metal ?
23. What is the purpose of modulating a signal in transmission?
24. A sinusoidal voltage V = 200 sin 314t is applied to a resistor of 10 Ω resistance. Find RMS value of current and voltage.

PART – III

Answer any six questions. Question number 33 is compulsory. **6×3=18**

25. Obtain the expression for electric field due to an infinitely long charged wire.
26. List the properties of ferromagnetic materials.
27. Find out the phase relationship between voltage and current in a pure capacitive circuit.
28. Show that the mass of radium $^{226}_{88}Ra$ with an activity of 1 curie is almost a gram. Given $T_{1/2}$ = 1600 years
29. Mention the differences between interference and diffraction.
30. Give circuit symbol, logical operation, truth table, and Boolean expression of OR and NAND gate.
31. List out the laws of photoelectric effect.
32. Fiber optic communication is gaining popularity among the various transmission media. Justify.
33. Determine the current flowing through the galvanometer (G) as shown in the figure.



PART – IV

Answer all the questions. **5×5=25**

34. a) Calculate the electric field due to a dipole on its equatorial plane.

(OR)

b) i) A photon 3310 Å liberates an electron from a material with energy 3×10^{-19} J while another photon 5000 Å ejects an electron with energy 0.972×10^{-19} J from the same material. Determine the value of Planck's constant

ii) Derive an expression for de Broglie wavelength of electrons.

35. a) i) State Joule's law of heating.

ii) Write down any three use of Joules's heating effect.

(OR)

b) Explain V – I characteristic of PN junction diode in reverse bias.

36. a) Obtain a relation for the magnetic induction at a point along the axis of a circular coil carrying current.

(OR)

b) Discuss the gamma decay process with example.

37. a) i) How is Eddy current produced? How do they flow in a conductor?

ii) Give any three uses of Foucault current.

(OR)

b) Explain the amplitude and phase modulation with neat diagrams.

38. a) i) Differentiate between polarised and unpolarised light.

ii) State and obtain Malus' law.

(OR)

b) What is absorption spectra? Give their types.

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MODEL QUESTION PAPER - 10

XII - STANDARD

Physics

Time Allowed: 15 min + 2:30 hr Max. Marks: 70

Instructions:

1) Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.
2) Use Blue or Black ink to write and underline use pencil to draw diagrams.

PART – I

Note: (i) Answer all the questions. 15×1=15

(ii) Choose the most appropriate answer from the four given alternatives and write the option code with the corresponding answer.

1. A piece of copper and another of germanium are cooled from room temperature to 80 K. The resistance of

a) each of them increases
b) each of them decreases
c) copper increases and germanium decreases
d) copper decreases and germanium increases

2. In an A.C. circuit, the voltage leads the current by a phase of $\frac{\pi}{2}$, then the circuit has

a) only an inductor (L)
b) only a capacitor (C)
c) only a resistor (R)
d) L, C and R in series

3. Two radiations with photon energies 0.9 eV and 3.3 eV respectively are falling on a metallic surface successively. If the work function of the metal is 0.6 eV, then the ratio of maximum speeds of emitted electrons will be

a) 1 : 4 b) 1 : 3 c) 1 : 1 d) 1 : 9

4. Digital signals

(i) Do not provide a continuous set of values,

(ii) Represent values as discrete steps,

(iii) Can utilize binary system, and

(iv) Can utilize decimal as well as binary systems.

Which of the above statements are true?

a) (i) and (ii) only b) (ii) and (iii) only

c) (i), (ii) and (iii) but not (iv) d) All of (i), (ii), (iii) and (iv).

5. A concave lens forms the image of an object such that the distance between the object and the image is 10 cm and the magnification produced is ¼, then the focal length will be

a) –6.2 cm b) –12.4 cm c) –4.4 cm d) –8.8 cm

6. The equivalent capacitance of two capacitors in series is 1.5 μF. The capacitance of one of them is 4 μF. The value of capacitance of the other is

a) 2.4 μF b) 0.24 μF c) 0.417 μF d) 4.17 μF

7. Which of the following statement is correct for transistor LC oscillator circuit ?

a) It works with negative feed back.

b) The phase difference between output and input signal is π radian.

c) To start oscillation external signal is required.

d) The frequency of output signal is independent of the components used in feed back circuit.

8. A simple pendulum with charged bob is oscillating with time period T and let θ be the angular displacement. If the uniform magnetic field is switched ON in a direction perpendicular to the plane of oscillation then

a) time period will decrease but θ will remain constant

b) time period remain constant but θ will decrease

c) both T and θ will remain the same

d) both T and θ will decrease

9. A circular coil with a cross-sectional area of 4 cm^2 has 10 turns. It is placed at the centre of a long solenoid that has 15 turns/cm and a cross-sectional area of 10 cm^2. The axis of the coil coincides with the axis of the solenoid. What is their mutual inductance?

a) 7.54 μH b) 8.54 μH

c) 9.54 μH d) 10.54 μH

10. The half life on N^{13} is 10.1 minute. Its life time is

a) 5.05 minutes b) 20.2 minutes

c) 10.1 / 0.6931 d) infinity

11. n^{th} bright fringe of red light (λ_1 = 7500 $\mathring{A}$) coincides with $(n+1)^{th}$ bright fringe of green light (λ_2 = 6000 $\mathring{A}$). The value of n is

a) 8 b) 4

c) 2 d) 1

12. A parallel plate capacitor stores a charge Q at a voltage V. Suppose the area of the parallel plate capacitor and the distance between the plates are each doubled then which is the quantity that will change?

a) Capacitance b) Charge

c) Voltage d) Energy density

13. Which of the following is NOT true for electromagnetic waves?

a) it transport energy

b) it transport momentum

c) it transport angular momentum

d) in vacuum, it travels with different speeds which depend on their frequency

14. A zener diode used as voltage regulator is connected.

(i) in forward bias (ii) in reverse bias

(iii) in parallel with load (iv) in series with load

a) (i) and (ii) are correct b) (ii) and (iii) are correct

c) only (i) is correct d) only (iv) is correct

15. An electron change its Position from orbit n=4 to the orbit n=2 of an atom the wave length of emitted radiation in the form of R (where R is Rydberg constant)

a) $\frac{16}{7R}$ b) $\frac{16}{R}$ c) $\frac{16}{3R}$ d) $\frac{16}{5R}$

PART – II

Answer any six questions. Question number 24 is compulsory.

6×2=12

16. Define electrostatic induction. How it is used in Van de Graaff generator?
17. Define current density and write down the relation between current density and drift velocity.
18. State Ampere's circuital law.
19. What is displacement current?
20. Why do clouds appear white?
21. Define the ionization energy and ionization potential.
22. What do you mean by Internet of Things?

23. The base of a transistor is lightly doped. Explain why?

24. A 150 *W* lamp emits light of mean wavelength of 5500 Å. If the efficiency is 12%, find out the number of photons emitted by the lamp in one second.

PART – III

Answer any six questions. Question number 33 is compulsory. **6×3=18**

25. Discuss the various properties of conductors in electrostatic equilibrium.

26. Calculate the torque acting on a bar magnet in uniform magnetic field.

27. State any three Boolean laws. Elucidate how they are used to simplify Boolean expressions with suitable example.

28. Write short notes on (a) microwave (b) X-ray.

29. How is polarisation of light obtained by scattering of light?

30. Charcoal pieces of tree is found from an archeological site. The carbon-14 content of this charcoal is only 17.5% that of equivalent sample of carbon from a living tree. What is the age of tree?

31. Explain the equivalent resistance of a parallel resistor network.

32. What are advantage and disadvantage of amplitude and phase modulation?

33. A rectangular coil of area 6 cm^2 having 3500 turns is kept in a uniform magnetic field of 0.4 T. Initially, the plane of the coil is perpendicular to the field and is then rotated through an angle of 180^o. If the resistance of the coil is 35 Ω, find the amount of charge flowing through the coil.

PART – IV

Answer all the questions. **5×5=25**

34. a) Explain in detail the construction and working of a Van de Graaff generator.

(OR)

b) Sketch the static characteristics of a common emitter transistor and bring out the essence of input characteristic.

35. a) i) Explain the determination of unknown resistance using meter bridge.

ii) Distinguish between positive and negative J.J. Thomson effect.

(OR)

b) Elaborate on the basic elements of communication system with the necessary block diagram. (any five)

36. a) Discuss the working principle of cyclotron in detail.

(OR)

b) i) Obtain Einstein's photoelectric equation with necessary explanation.

ii) Explain experimentally observed facts of photoelectric effect with the help of Einstein's explanation.

37. a) i) Give the advantage of AC in long distance power transmission with an example.

ii) Tabulate energy in two oscillatory systems (I) LC oscillator (II) spring-mass system.

(OR)

b) Write down Maxwell equations in integral form.

38. a) Derive the equation for refraction at single spherical surface.

(OR)

b) i) Explain about discovery of neutrons and its properties.

ii) Discuss role of the neutrino particle in beta decay process with example.

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Key Answers for Objective Questions

Govt Model Question Paper														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
d	c	d	c	c	a	c	a	c	a	c	d	b	c	b

Model Question Paper - 1														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
b	c	a	c	d	d	d	a	a	c	a	a	b	b	d

Model Question Paper - 2														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a	a	a	c	b	a	a	d	a	d	d	b	b	a	a

Model Question Paper - 3														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a	a	b	c	a	c	d	a	c	d	b	d	d	b	c

Model Question Paper - 4														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
b	c	c	b	d	d	a	b	c	a	a	a	d	c	d

Model Question Paper - 5														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
d	b	d	c	a	c	c	b	d	a	d	b	b	b	c

Model Question Paper - 6														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
b	d	c	a	b	a	a	d	d	b	a	a	b	c	a

Model Question Paper - 7														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
b	c	a	c	b	c	c	d	b	d	b	b	d	d	b

Model Question Paper - 8														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
c	b	c	d	c	a	b	b,c	c	a	c	b	d	b	a

Model Question Paper - 9														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
c	b	c	d	c	d	c	d	c	d	c	c	b	d	d

Model Question Paper - 10														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
d	a	b	c	c	a	b	c	a	d	b	d	d	b	c

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