PHYSICS

Time Allowed : 3 Hrs. Max. Marks 60

* Candidates are required to give their answers in their own words as far as practicable.
* Marks allotted to each question are indicated against it.

Special Instructions :-

1. You must write "Question Paper Series" in the circle at top left side of title page of your Answer-book.
2. While answering your questions, you must indicate on your answer book the same question no. as appeared in your question paper.
3. Do not leave blank page / pages in your answer-book.
4. All questions are compulsory.
5. Internal choice is given in some questions.
6. Use log tables, if necessary.
7. Answers should be brief and to the point.
8. Question Nos 1-8 are MCQ (Multiple Choice Questions) carrying "1" mark each, Question Nos. 9-16 are short answer type carrying "2" marks each, Question Nos. 17-24 are short answer type carrying "3" marks each and Question Nos. 25-27 are long answer type carrying "4" marks each.

Q1. The S.I. unit of Electric charge is :
(a) Coulomb (b) Ampere (c) Weber (d) Volt 1

Q2. The best conductor among following is :
(a) Iron (b) Copper (c) Silver (d) Alluminium 1

Q3. The torque experienced by magnetic dipole having dipole moment " $\vec{M}$ " placed in uniform magnetic field ($\vec{B}$) is :
(a) $\vec{B} \times \vec{M}$ (b) $\vec{M} \times \vec{B}$ (c) Zero (d) None of these 1

Q4. The Lenz's law is in direct consequence of
(a) Conservation of momentum (b) Conservation of charge
(c) Conservation of energy (d) None of these 1

Q5. The image formed by concave lens is :
(a) Real (b) Virtual
(c) Real as well as virtual (d) None of these 1

Q6. Optical fibre works on the principle of
(a) Refraction of light (b) Diffraction of light
(c) Polarization of light (d) Total Internal Reflection 1

Q7. The energy equivalent of 1 gm of substance is :
(a) 9×10^{13} J (b) 9×10^{14} J (c) 9×10^{16} J (d) 9×10^{15} J 1

Q8. A.C. is converted into D.C. by
(a) Transistor (b) Amplifier (c) Rectifier (d) Oscillator 1

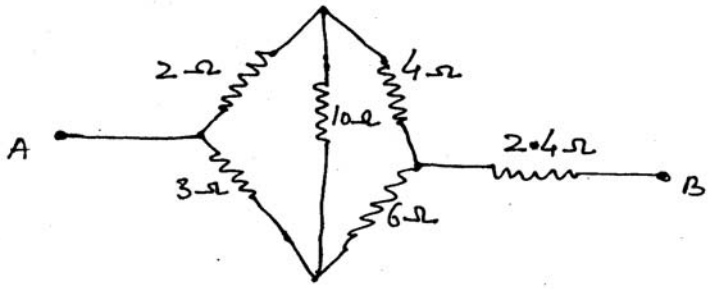
Q9. What do you mean by conservation of charge, give two examples.
OR
Calculate the electrical capacitance of parallel plate capacitor. 2

Q10. Calculate the equivalent resistance between A and B in following network. 2

Q11. Calculate the magnetic field due to current carrying straight solenoid. 2

Q12. State and explain the Faradays' laws of electro-magnetic Induction. 2

Q13. Draw a labelled ray diagram of compound Microscope. 2
OR
A 4.5 cm needle is placed 12 cm away
Give the location of image and magnif



Q14. Define and explain Brewster's law.

Q15. Differentiate Conductor, Insulator and S

Q16. Explain principle of reflection on the basis of Hygen's Principle. 2

Q17. On the basis of Einstein's photoelectric equation, explain the laws of photoelectric effect. 3
OR
The work function of Cesium metal is 2.14 ev. when light of frequency 6×10^{14}Hz is incident on the metal surface then find
(a) Maximum kinetic energy of the emitted electrons
(b) Stopping potential

Q18. State and explain laws of radioactive decay and find expression for half life of radioactive substance. 3

Q19. Define Mean Value & R.M.S. value of AC and find expression for Mean Value of AC. 3

Q20. Explain the working of transistor of Common-Emitter amplifier. 3

OR

What is "AND" Gate, write its logic symbol, Boolean expression and truth table.

Q21. What is modulation, why it is needed and how amplitude modulated wave is detected ? 3

Q22. Show that EM waves are transverse in nature. 3

Q23. Define Drift velocity of electron in a conductor and establish relation between drift velocity and electric current. 3

Q24. (a) Decode the following carbon-resistor having colour codes as, Black-Yellow - Green & Silver.

(b) Define Eddy currents.

(c) What is function of transducer in Communication System. 3

Q25. Establish the Len's Maker's formula for convex lens stating the new Cartisian Sign Conventions used.

OR

Define Diffraction of light and explain diffraction of light at single slit. 4

Q26. Calculate electric field due to electric dipole at a point lying on its equitorial line. 4

Q27. Define diamagnetism, give properties of paramagnetism and explain the domain theory of ferromagnetism. 4