

SECTION 'A' (Multiple Choice Questions)(33)

1. Select the correct answer for each from the given options:

(i) The value of absolute zero on the Fahrenheit scale is:

- \*491.4°F      \* -459.4°F ✓      \* -523.4°F      \*459.4°F

(ii) The resistivity of a material is  $\rho$ . If area of cross-section of material is doubled and length is halved then the resistivity of conductor:

- \*remains constant      \*increases 4 times  
\* increases 2 times      \* is one fourth ✓

(iii) A voltmeter is an ideal one if its internal resistance is:

- \*very large      \*large      \*small      \*infinite ✓

(iv) Pentavalent impurities are also known as:

- \*Acceptor Impurities      \* Donor Impurities ✓  
\* Hole      \* Electron

(v) The relativistic mass of 5kg ball observed by observer moving with a speed equal to speed of light is:

- \*5kg      \*10 kg      \*infinite ✓      \*20 kg

(vi) An intense, monochromatic, narrow and coherent beam of light is called:

- \* X-rays      \*  $\beta$ -rays      \* LASER ✓      \*MASER

(vii) The force that holds nucleons together in nucleus is:

- \* nuclear force ✓      \*coulombs force  
\*gravitational force      \* weak force

(viii) This is the most penetrating:

- \*  $\alpha$ -particle      \*  $\beta$ -particle      \*  $\gamma$ -rays ✓      \* positron

(ix) Four bulbs of 10W, 20W, 30W and 40W are connected in series. The bulb that will shine the most is:

- \*10W ✓      \*20 W      \* 30 W      \*40W

(x) Photoelectric effect proves this nature of light:

- \*Wave      \*Particle ✓      \*Polarization      \*Diffraction

(xi) If the number of electrons in excited state exceeds than the number of electrons in the ground state, then this will occur:

- \*Excitation Potential      \*Population-Inversion ✓  
\*Excitation Energy      \* Ionization Energy

(xii) A current of 9 amp flows in a circuit of three resistors connected parallel. If each resistor has magnitude  $5 \Omega$ , then current in the 3<sup>rd</sup> resistor is:

- \*9 amp ✓      \*3 amp      \*1.5 amp      \*0.5 amp

(xiii) If the forbidden energy gap is very small, then material is:

- \*Insulator      \*Conductor      \*Semi-Insulator      \*Semi-Conductor ✓

(xiv) In this process, matter is converted into energy:

- \*Pair production      \*Compton effect  
\* Photo electric effect      \*Annihilation of matter ✓

(xv) LASER produces three dimensional image called:

- \*monogram      \*spectrogram      \*hologram ✓      \*photogram

(xvi) The number of neutrons in  ${}_{92}\text{U}^{235}$  is:

- \*132      \*146      \*143 ✓      \*140

(xvii) A transformer step down:

- \*Energy      \*AC only ✓      \*DC only      \*both AC & DC

(xviii) The section of transistor that supplies charge carriers (electrons or holes) is called:

- \*collector      \*base      \*emitter ✓      \*junction

(xix) In pair production the electron and positron move in opposite direction to conserve:

- \*Momentum ✓      \*Charge      \*Energy      \*Mass

(xx) If distance between the plates of capacitor of capacitance C is doubled and area is halved, the capacitance will become:

- \*C/4 ✓      \*C      \*4C      \*2C

(xxi) Induced emf cannot be produced by:

- \* movement of a coil      \* AC source      \* DC source ✓  
\* change of flux

(xxii) A thermodynamic process, such as compression or expansion done very quickly, will nearly be:

- \*Isothermal      \*Adiabatic ✓      \* Isocharic      \*Isobaric

(xxiii) An electron of mass 'm' and charge 'e' is accelerated by a difference of potential V, its speed will be:

- \*  $v = \sqrt{\frac{2Ve}{m}}$  ✓      \*  $v = \frac{2Vm}{e}$       \*  $v = \sqrt{2Vme}$       \*  $v = \sqrt{\frac{m}{2Ve}}$

(xxiv) Electric field intensity at a point inside a uniformly charged hollow sphere is given by:

- \*  $\frac{\sigma}{2\epsilon_0}$       \*  $\frac{\sigma}{\epsilon_0}$       \*  $\frac{2\epsilon_0}{\sigma}$       \* zero ✓

(xxv) If work done in moving positive point charge along a surface is zero then this surface must be:

- \* Hypothetical      \*Irregular      \*Equipotential ✓      \*Rough

(xxvi) A particle of mass and charge is to be held motionless by an electric field E, the electric intensity will be:

- \*  $E = \frac{mq}{g}$       \*  $E = \frac{mg}{q}$  ✓      \*  $E = mgq$       \*  $E = \frac{q}{mg}$

(xxvii) A 12 volt, battery with internal resistance  $0.1 \Omega$  is to be charged at 10 Amp, the charger must be of this volt:

- \*11      \*9      \*13 ✓      \*12

(xxviii) A 2.2kW electric iron operates at 220 volt, the current it draws:

- \*20 Ampere      \*22 Ampere      \*10 Ampere ✓      \*5 Ampere

(xxix) Lenz's law is direct consequence of this:

- \*Ohm's law      \*Coulomb's law  
\*Faraday's law      \*Law of conservation of energy ✓

(xxx) When a charged particle enters in a magnetic field  $\vec{B}$  with velocity  $\vec{v}$  making angle  $\theta$ , the trajectory of particle will be:

- \*circular ✓      \*elliptical      \*helix      \*straight line

(xxxi) The minimum energy required for pair production is:

- \*2.01 MeV      \* 1.02 MeV ✓      \* 0.21 MeV      \*1.20 MeV

(xxxvii) In 'L' shell of hydrogen atom, angular momentum of an electron is:

- \*  $\frac{h}{2\pi}$  ✓      \*  $\frac{2h}{\pi}$       \*  $\frac{h}{\pi}$       \*  $2\pi h$

(xxxviii) Isotope  ${}_{6}\text{C}^{14}$  is mostly used in:

- \* Industry      \*Archeology      \*Medical Science ✓  
\* Agriculture