



Name

Roll No

1- ہر سوال کے سامنے چار دائرے دیئے گئے ہیں، صرف صحیح جواب والا دائرہ بھر دیں۔

2- دائروں کو شیڈ (بھرنے) کے لئے نیلے یا کالے رنگ کا کارڈ استعمال کریں۔

3- جواب میں ایک سے زائد دائرے بھرنے سے جواب غلط تصور ہوگا۔

Marks : 18

Time Allowed: 20 Minutes

SECTION – A

- 1 Inductive reactance $X_L = \dots\dots\dots$ ☒ $2\pi fL$ ☐ $2\pi fC$ ☐ $\frac{1}{2} \pi fL$ ☐ $\frac{1}{2} \pi fC$
- 2 The phase difference between the current and voltage at resonance is: ☒ 0 ☐ π ☐ $-\pi$ ☐ $\pi/2$
- 3 The stress due to which shape of the body changes is called.....stress. ☐ Tensile ☒ Shear ☐ Bulk ☐ Volume
- 4 The general ability of a material to withstand an applied force is called: ☐ Hardness ☐ Plasticity ☒ Strength ☐ Stiffness
- 5 The barrier potential of silicon diode at room temperature is: ☐ 0.3 V ☒ 0.7 V ☐ 0.9 V ☐ 1.0 V
- 6 In electron microscope, light source is replaced by a beam of very fast moving: ☐ Photon ☐ Proton ☐ Neutron ☒ Electron.
- 7 Planck's Constant $h = \dots\dots\dots$ ☐ 6.626×10^{-14} Js ☐ 6.626×10^{-24} Js ☒ 6.626×10^{-34} Js ☐ 6.350×10^{-44} Js
- 8 The duration of meta-stable state is approximately: ☐ 10^{-3} s ☐ 10^{-6} s ☒ 10^{-8} s ☐ 10^{-10} s
- 9 The quantity of U^{235} in naturally occurring uranium is about: ☒ 0.7% ☐ 30% ☐ 70% ☐ 99.3%
- 10 The SI unit of capacitance is called: ☐ Pascal ☐ Coulomb ☐ Newton ☒ Farad
- 11 $1 \text{ eV} = \dots\dots\dots$ ☐ $1.602 \times 10^{-9} \text{ J}$ ☐ $1.6 \times 10^{-19} \text{ F}$ ☒ $1.602 \times 10^{-19} \text{ J}$ ☐ $1.6 \times 10^{-9} \text{ F}$
- 12 The resistance of NTC thermistor with increasing temperature. ☒ Decreases ☐ Increases ☐ Remains constant ☐ None of these
- 13 $1 \text{ joule/coulomb} = \dots\dots\dots$ ☐ Pascal ☒ Volt ☐ Ampere ☐ Newton
- How much voltage is required to make
- 14 2 A current flow through a resistance of 8Ω ? ☒ $16 \text{ A}\Omega$ ☐ $16 \text{ A}/\Omega$ ☐ $16 \Omega/\text{A}$ ☐ $16/\text{A}\Omega$
- 15 $F_B = \dots\dots\dots$ ☒ $BIL \sin\theta$ ☐ $BIL \cos\theta$ ☐ $BIL \tan\theta$ ☐ $BIL \cot\theta$
- 16 Ampere's law is applied over any: ☐ Surface ☐ Path ☐ Closed surface ☒ Closed path
- 17 The resistance of ideal voltmeter is: ☐ Zero ☐ Small ☐ Large ☒ Infinite
- 18 remain constant in step-up transformer. ☐ Current ☐ Voltage ☒ Power ☐ Heat

PHYSICS (New)**Inter Part - II****(Fresh/Reappear)**

Note: Time allowed for Section - B and Section - C is 2 Hours and 40 minutes.

Section - B

Marks: 40

Attempt any TEN parts. Each part carries FOUR marks.

- Q.1 Define: Permittivity, Electric Flux, Electric Potential and Dielectric.
- Q.2 Show that $E = -\frac{\Delta V}{\Delta r}$
- Q.3 Differentiate between Ohmic and non-ohmic substances.
- Q.4 Define electric power. Show that $P = V^2/R$.
- Q.5 How can neutrons be accelerated in a cyclotron?
- Q.6 Show that $\epsilon = -N \frac{\Delta \phi}{\Delta t}$
- Q.7 How eddy currents can be minimized in transformer?
- Q.8 If the peak value of sine wave is 1000 volts, what is the effective value?
- Q.9 Differentiate between soft and hard substances.
- Q.10 For Common Emitter configuration, Show that $\beta = \frac{\alpha}{1-\alpha}$
- Q.11 Define: Simultaneity, Time Dilation, Stopping Potential and Pair Annihilation
- Q.12 Why do solids give rise to continuous spectrum while hot gases give rise to line spectrum?
- Q.13 Why are large nuclei unstable?

Section - C

Marks: 40

Note: Attempt any THREE questions. All questions carry equal marks.

- Q.14 (a) State Gauss's law. Using Gauss's law, find an expression for electric field intensity between two oppositely charged parallel plates.
- (b) Calculate electric field at a distance 20 cm from a $3\mu\text{C}$ point charge.
- Q.15 (a) Define electric resistance show that $R = \rho \frac{L}{A}$
- (b) How a 5 mA, $100\ \Omega$ galvanometer is converted into 20 V voltmeter?
- Q.16 (a) Define elastic moduli. Draw and explain stress-strain curve.
- (b) Determine the wavelength of electron that has been accelerated through a potential difference of 100 V.
- Q.17 Give a brief explanation of any two of the following topics:
- (a) State and explain Coulomb's Law of Electrostatics.
- (b) Define Compton Effect show that $\Delta\lambda = \frac{h}{m_0c}(1-\cos\theta)$
- (c) Define Radioactivity. Discuss half life and rate of decay.