

- 17) Charge to mass ratio of electron is ___ that of proton.
 Equal to Greater than
 Less than Zero compare to
- 18) According to Wien's displacement law, with rise in temperature of black body, the product $\lambda_{\max} T$ is ____.
 Increased Decreased Constant None of these

PR – XII (01) (23)

Physics

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

SECTION-B

Q2: Answer any TEN parts. Each part carries FOUR marks.

- 1) Voltages are always measured between two points. Why?
- 2) Why neutrons activated nuclides tend to decay by β^- rather than β^+ ?
- 3) Determine electric field intensity due to a point charge.
- 4) How much voltage is required to make 2A flows through an 8Ω resistance?
- 5) A beam of red light and beam of blue light have exactly same energy. Which light contains greater number of photons?
- 6) Explain AC power loss through capacitor and represent it graphically?
- 7) Discuss the superconductivity of a conductor with the help of a curve?
- 8) Can different equipotential lines cross each other?
- 9) Define Alpha and Beta factor. Deduce the relation between α and β of a transistor.
- 10) Differentiate between spontaneous emission and stimulated emission?
- 11) Give the formula for the flux linkages in terms of angular orientation?
- 12) What is an ammeter? How galvanometer is modified into ammeter?
- 13) Describe the principle of metal detector.

SECTION-C

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

- Q3: (a) State and explain Ampere's circuital law. Determine Magnetic flux density of current carrying solenoid.
(b) Determine the wavelength of electron that has been accelerated through a potential difference of 50 volt.
- Q4: (a) Explain PN junction as half wave and full wave rectifier.
(b) The full scale deflection for a galvanometer is 10mA. Its resistance is 100Ω . How can it be converted into an ammeter of range 100A?
- Q5: (a) State Photoelectric effect and explain it on the basis of photon theory of light?
(b) In common base circuit, the current gain is 0.96. If the collector current is $60\mu A$. Find the emitter current.
- Q6: Give a brief explanation of any TWO topics.
(a) What is Laser? Describe its principle and operation.
(b) Explain the principle, construction and working of mass spectrograph.
(c) State Gauss's law and show that $\phi = \frac{q}{\epsilon_0}$