Model Question paper for online examination

F.Y.B.Sc. CS PHYSICS PAPER-II

Q1. The time constant of a circuit consisting of a 15 mH inductor and a 470 KΩ resistor is

(a) **32 Ns
(b) 7 Ns
(c) 31.9 Ns
(d) 70 Ns

Q2. The capacitance C is charged through a resistor R. The time constant of the charging circuit is given by

(a) C/R
(b) 1/RC
(c) **RC
(d) R/C

Q.3 In AC circuit, peak value of sine wave is 220 V. Its average value will be

(a) 120.1 V
(b) **140.1 V
(c) 180.5 V
(d) 200 V

Q4. The net impedance in series LCR circuit connected with AC source at resonance will be ,

(a) **Z = R
(b) Z = ωC
(c) Z = ωL
(d) Z = ωL – 1/ ωC

Q5. The kinetic energy of electron in an orbit of radius r in hydrogen atom is proportional to

(a) $\frac{e^2}{r}$
(b) $\mathbf{**\frac{e^2}{2r}}$
(c) $\frac{e^2}{r^2}$
(d) $\frac{e^2}{2r^2}$

Q6. The ratio of minimum to maximum wavelength in Balmer series is

(a) **5 : 9
(b) 5 : 36
(c) 1 : 4

(d) 3 : 4

Q7. The wavelength of de-Broglie wave is 3 μm, then its momentum (h = 6.63 x 10^{-34} Js) is

(a) **2.21 x 10^{-28} Js
(b) 3.31 x 10^{-28} Js
(c) 4.45 x 10^{-28} Js
(d) 1.65 x 10^{-28} Js

Q8. The potential difference applied to an X-ray tube increased . As a result in the emitted radiation

(a) the Intensity increases
(b) the minimum wavelength increases
(c) the intensity remains unchanged
(d) **the minimum wavelength decreases

Q9. Moseley's law for characteristics of X-rays is v = b (Z-a)^2. In this formula

(a) **both a and b are independent on the material.
(b) a is independent but b depends on the material.
(c) b is independent but a depends on the material.
(d) both a and b depend on the material.

Q10. The minimum inter planer space required for Bragg's diffraction

(a) $\lambda/4$
(b) **$\lambda/2$
(c) λ
(d) 2λ

Q11. Average value of full wave rectified voltage with peak voltage of 60 volt is equal to

(a) 23 V
(b) 32.14 V
(c) **38.16 V
(d) 12.45 V

Q12. A voltage regulator has no load output of 20 V and full load output of 19.3 V. The percentage load regulation is

(a) 0.7%
(b) **3.5 %
(c) 21.4%
(d) 67.9 %

Q13. The phase difference between the output and input voltages of a CE amplifier is

(a) 0^0

(b) 90^0
(c) **180^0
(d) 270^0

Q14. A transistor has $\alpha_{d.c.}$ = 0.995, then $\beta_{d.c.}$ will be

(a) 19.9
(b) **199
(c) 0.99
(d) 99

Q15. In PNP transistor working as a common – base amplifier, the current gain is 0.95 and emitter current is 8.3 mA. The base current is

(a) **0.41 mA
(b) 0.34 mA
(c) 0.29 mA
(d) 0.20 mA

Note: Option marked with asterisk (**) is correct option.