B–1–Z

Roll No.....................................

Total No. of Questions : 21]

[Total No. of Printed Pages : 4

XIIKDRO/N19
24801–Z
PHYSICS

Time : 3 Hours]

[Maximum Marks : 70

(Long Answer Type Questions)

1. Derive an expression for the torque experienced h an electric dipole placed in a uniform electric field. What is the net force acting an this electric dipole ?

OR

Describe briefly the principle, construction and working of Van-de-Graaff electrostatic generator.

2. What are dia, para and ferromagnetic substances ? Discuss their important properties

OR

Derive an expression for the force acting an a current carrying conductor placed in a uniform magnetic field. When the force is :

(i) Maximum

(ii) Minimum

3. Derive an expression for the average power in LCR series circuit connected to A.C. supply: Hence define power factor.

OR

Describe the principle, construction and working of a transformer.

4. State Huygen's principle and prove the laws of reflection on its basis. OR

What is diffraction of light ? Describe diffraction of light at a single slit.

(Short Answer Type Questions)

5. A capacitor of capacitance 20 μF is charged to a potential of 500V. Calculate the charge and energy stored in a capacitor.

6. Establish the relation between drift velocity of electrons and electric.

7. What are magnetic lines of force ? Why two such lines do not cross each other?

8. Distinguish between self-inductance and mutual inductance.

9. Calculate the speed of light in a medium whose critical angle is 45°.

10. What are Polaroids ? Write four uses of polaroids.

11. Explain with the help of a circuit diagram how a zener diode can be used as voltage regulator ?

12. Explain briefly why modulation is needed at all.

(Very Short Answer Type Questions)

13. How many electrons pass through a wire in 2 minutes if current passing through the wire is 300 mA? https://www.jkboseonline.com

14. Write four characteristics of electromagnetic waves.

15. The sum looks reddish at the time of sunrise and sunset. Why?

16. Write Einstein's photoelectric equation What is threshold frequency?

17. Explain mass defect.

18. What is nuclear fission ? Give its one can example.
19. Differentiate between P-type and N-type semiconductors.

20 What is modulation and de-modulation?

(Objective Type Questions)

21. (i) What do electromagnetic waves consist of ?

(ii) Define e.m.f. of a cell.

(iii) Potentiometer is so named because it measures ………… (iv)

The deviation through a glass prism is minimum when …………..

(v) What is a logic gate ?

Choose the correct/most appropriate answer :

(vi) The photoelectric threshold frequency of a metal is υ. When of frequency 4υ is incident on the metal, the maximum K.E. of the emitted photoelectrons is :

(A) 5/2 hυ

(B) 3hυ

(C) 4hυ

(D) 5hυ

(vii) The rest mass of photon is :

(A) 1.76×10^{-35}kg

(B) 9×10^{-31} kg

(C) Zero

(D) 1 a.m.u.

(viii) An atom bomb works on the principle of :

(A) Nuclear fission

(B) Nuclear fusion
(C) α-decay

(D) β-decay

(ix) Nucleon is a common name for :

(A) Proton and electron

(B) Electron and neutron

(C) Neutron only

(D) Neutron and Proton

(x) Semiconductor material having sever free electrons than Pure Germanium is :

(A) n-type

(B) p-type

(C) both n-type and p-type

(D) None of these