B–1–Y

Total No. of Questions : 21] [Total No. of Printed Pages : 4

XIIBASZNJD20
1801-Y
PHYSICS

Time : 3 Hours] [Maximum Marks : 70

(Long Answer Type Questions) 5 each

1. Describe the principle, construction and working of a moving coil galvanometer

Or

What are dia, para and ferromagnetic substances ? Give *four* properties of each of them

2. Describe the principle, construction and working of a transformer.

Or

What is meant by root mean square value of alternating current ? Derive an expression for root mean square value of alternating current.

3. State Huygen's principle. Prove Snell's laws of refraction on the basis of Huygen's principle.

Or

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

4. Give the logic symbol, truth table and Boolean expression for OR gate. How is it realised in practice ?

Or

What is an oscillator ? With the help of a circuit diagram, explain the working of transistor as an oscillator in common-emitter configuration.

(Short Answer Type Questions) 3 each

5. A capacitor of capacitance 20 μf is charged to a potential 500 V. Calculate the charge and energy stored in a capacitor.
6. Derive an expression for electrostatic energy stored in a charged capacitor.
7. Write characteristics of electromagnetic waves.
8. State and explain Brewster's law of polarization.
9. Explain how will you compare the e.m.fs of two cells by a potentiometer.
10. A 220 V–100 watt bulb is connected to 110 V source. Calculate the power consumed by the bulb.
11. Distinguish between Nuclear fission and Nuclear fusion.
12. Explain briefly why modulation is needed at all.

(Very Short Answer Type Questions) 2 each

13. Give *four* properties of electric lines of force.
14. Calculate the speed of light in a medium whose critical angle is 45°.
15. What are diamagnetic substances ? Write its *two* properties.

16. Define work function and give its S.I. units.

17. State laws of photoelectric emission.

18. Why does sky look blue ? Explain.

19. Define Binding Energy. Sketch the graph between binding energy per nuclear and mass number.

20. What do you understand by logic gate ? Why is it so called ?

(Objective Type Questions) 1 each

21. Do as directed :

(i) Kirchhoff's second law is based on ..... .

(ii) What is radial magnetic field ?

(iii) Define Magnetic flux.

(iv) Atomic nuclei of different elements have same size.

(True/False)

(v) What is de-modulation ?

Choose the correct/most appropriate answer :

(vi) The average power dissipation in pure capacitor in A.C. circuit is :

(A) $\frac{1}{2}CV^2$ (B) CV^2

(C) $2\ CV^2$ (D) Zero

(vii) Which of the following quantities remain constant in a step-down transformer ?

(A) Current
(B) Voltage
(C) Power
(D) None of these

(viii) The phenomenon of polarisation of light indicates that :

(A) Light is not a wave
(B) Light is a transverse wave
(C) Light is a longitudinal wave
(D) Light travels with a speed of 3×10^8 ms^{-1}

(ix) The phase difference between any *two* points situated on the same wavefront is :

(A) 2π
(B) π
(C) 0
(D) $\pi/2$

(x) The radio waves which are received after reflection in ionosphere are called :

(A) Ground waves
(B) Sky waves
(C) Space waves
(D) Surface waves