

D-1-X

12th RKDO18

20301-X

PHYSICS

(Long Answer Type Questions)

1. Explain, theory and working of a cyclotron. Give its limitations.

Or

Define magnetic dipole moment. Derive an expression for magnetic field intensity at a point on an axial line of a bar magnet.

2. Derive an expression for average power of an a.c. circuit containing L, C and R. Hence define power factor.

Or

What do you understand by self-induction? Derive an expression for coefficient of self-inductance of solenoid

3. Describe an Astronomical telescope and derive an expression for its magnifying power in normal adjustment.

Or

Using Young's double slit experiment derive an expression for fringe width.

4. Give the logic symbol, truth table and Boolean expression for AND gate. How is it realised in practice ? <https://www.jkboseonline.com>

Or

What is a Transistor ? How can we use it as an amplifier (Common Emitter configuration)?

(Short Answer Type Questions)

5. Two equal charges are separated by a distance of 2 m in free space. Calculate the magnitude of charges so that the force between them is equal to the weight of a 20 kg child.

6. Derive an expression for energy stored in a capacitor.

7. Give any six properties of e. m. waves.

8. What is total internal reflection ? Give the conditions for this phenomenon.
9. Discuss the effect of temperature on resistance of conductors.
10. State and explain Kirchhoff's loop law of electrical circuit.
11. What is nuclear fusion ? Give one representative reaction.
12. Explain sky wave propagation.

(Very Short Answer Type Questions)

13. What do you mean by conservation of electric charge ?
14. Why ammeters are connected in series in electric circuits.
15. A concave lens of focal length 30 cm and a convex lens of focal length 20 cm are placed in combination Calculate the focal length on combination. <https://www.jkboseonline.com>
16. State laws of photoelectric emission
17. Derive an expression for de-Broglie wavelength ' λ ' of an electron when accelerated through a potential difference of 'V' volts.
18. Define wave front and name its various types.
19. Give any four properties of β -particles,
20. What is Rectifier ? Draw circuit diagram of full-wave rectifier.

(Objective Type Questions)

21. Do as directed :

- (i) The resistance of a conductor depends upon its length and area of cross-section.(True/False)
- (ii) The dimensional formula for magnetic field strength is
- (iii) State Lenz's law.
- (iv) What is Radioactive Decay Constant ?
- (v) Define amplitude modulation.

Choose the correct/most appropriate answer :

(vi) Transformer works on principle of:

- (a) Conservation of charge (b) Mutual induction (c) Rectification (d) None of these

(vii) The phase difference between current and voltage in an a.c. circuit having capacitor only is :

- (a) 0° (b) 90° (c) 180° (d) 45°

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

- (a) Light is not a wave (b) Light is a longitudinal. Wave.
(c) Light is transverse wave (d) Light travels with a speed of $3 \times 10^8 \text{ ms}^{-1}$

(ix) A person standing in front of a mirror, finds his image larger than himself. This implies that the mirror is :

- (a) Convex (b) Parabolic (c) Plane (d) Concave

(x) UHF range can propagate by means of:

- (a) Ground wave (b) Sky wave (c) Surface waves (d) Space waves

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