



c09-c-103

3013

BOARD DIPLOMA EXAMINATION, (C-09)

OCT/NOV—2014

DCE—FIRST YEAR EXAMINATION

ENGINEERING PHYSICS

Time : 3 hours]

[Total Marks : 80

PART—A

3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Write the dimensional formulae of the following :

(a) Density

(b) Surface tension

(c) Acceleration due to gravity

2. Define scalar and vector. Give one example for each.

3. Derive the expression for the range of a projectile in oblique projection.

4. Define friction. Write any two advantages of friction.

5. If $y = 2 \sin 2t - \frac{3}{3}$ is the expression for displacement of a particle in SHM, then find the amplitude, time period and initial phase in SI units.

6. A gas at 10^5 Pa pressure expands isothermally until its volume is doubled. Find its final pressure.

- * 7. Explain the phenomenon of beats.
- 8. State different types of stress.
- 9. State and explain Kirchhoff's laws.
- 10. State and explain the phenomenon of superconductivity.

PART—B

10×5=50

Instructions : (1) Answer *any five* questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

- 11. (a) State and explain triangle and polygon law of vectors. 6
- (b) If the resultant of two equal and perpendicular forces is 1414 N, find the magnitude of each force. 4
- 12. (a) Derive the expression for maximum height, time of ascent and time of flight of a body, projected vertically upwards. 6
- (b) A body is projected at an angle of 60° with horizontal with a velocity of 19.6 m/s. Calculate the maximum height reached and the range of a projectile. 4
- 13. (a) State law of conservation of energy and give two examples. 3
- (b) Derive an expression for potential energy. 4
- (c) A body of mass 2 kg is allowed to fall freely from the height of 10 m. Find its kinetic and potential energies at a height of 3 m from the ground. 3
- 14. (a) What is ideal simple pendulum? Derive the expression for the time period of a simple pendulum. 7
- (b) The time period of a simple pendulum is 3 sec if the length is doubled then what will be its new time period? 3
- * 15. (a) State gas laws. 3
- (b) Derive ideal gas equation. 7
- 16. (a) Distinguish between musical sound and noise. 4
- (b) What is Doppler effect? Write any four applications of Doppler effect. 6

- * **17.** (a) State Hooke's law and write different types of elastic modulus. 4
(b) Write the experimental method of determining surface tension of liquid. 6
- 18.** (a) Define specific resistance and write its SI unit. 3
(b) Derive the expression for magnetic induction field strength at a point on the axis of a bar magnet. 7

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