



c09-CM-103

3023

BOARD DIPLOMA EXAMINATION, (C-09)

OCT/NOV—2013

DCME—FIRST YEAR EXAMINATION

ENGINEERING PHYSICS

Time : 3 hours]

[Total Marks : 80

PART—A

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 physical quantities :

(a) Torque

(b) Electrical resistance

(c) Magnetic moment

2. The magnitude of resultant of two equal forces is 1000N. Find the magnitude of each force if they are perpendicular.

3. Derive the expression for height of the tower when the body is projected up from its top.

4. Explain why it is easier to pull the roller than to push it.

*

C09-CM-103

5. Define the terms amplitude, time period and frequency.
6. State gas laws.
7. Explain the phenomenon of beats.
8. The modulus of elasticity of a body is $4 \times 10^5 \text{ N/m}^2$, stress produced in it is $3 \times 10^3 \text{ N/m}^2$. What is the value of strain?
9. State and explain Ohm's law.
10. Write any three applications of photoelectric effect.

PART—B

- 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 the triangle and polygon law of forces. 6
(b) Write any four properties of scalar product. 4

*

*

12. (a) Derive the expressions for maximum height reached and horizontal range in oblique projection. 6

(b) A body is projected at an angle of 30° with a velocity of 50 m/s. Find the height reached and also the horizontal distance travelled in 3 s. 4

13. (a) Define kinetic energy and derive the expression for kinetic energy. 6

(b) An engine is used to lift water from a well 60 m deep to fill a tank of dimensions 5 m \times 5 m \times 10 m in 40 minutes. Find the power of the engine if 30% of energy is wasted. 4

14. (a) What is an ideal simple pendulum? Obtain an expression for time period of a simple pendulum. 7

(b) A body is in simple harmonic motion with amplitude 7 cm and time period is $\pi/4$ second. Find its maximum velocity. 3

15. (a) Derive ideal gas equation. 6

(b) A gas of volume 2m^3 having pressure $4 \times 10^5 \text{N/m}^2$ is compressed adiabatically so that the volume becomes 0.5m^3 . Find the new pressure, where $\gamma = 1.4$. 4

*

16. (a) Distinguish between musical sound and noise. 4

(b) What are the effects of noise pollution? Mention different methods of minimizing noise pollution. 6

*

- 17.** (a) Define stress and its different types. 5
(b) Explain the experimental method of determining surface tension of a liquid. 5
- 18.** (a) State and explain Kirchhoff's laws. 4
(b) Derive the principle of Wheatstone's bridge using Kirchhoff's laws. 6
