



C16-EE/CHPP/-103

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BOARD DIPLOMA EXAMINATION, (C-16)

OCTOBER—2020

DEEE—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. State any three advantages of SI units.

2. A force of $3\hat{i} + 2\hat{j} + 4\hat{k}$ N acts on a body and produces a displacement of $\hat{i} + 2\hat{j} + 3\hat{k}$ m. Calculate the work done.

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3. A body is thrown up vertically with a velocity of 39.2 m/s. Find the maximum height reached by the body ($g = 9.8$ m/s²).

4. The values of maximum velocity and maximum acceleration of a particle in SHM are 2 cm/s and 8 cm/s² respectively. Calculate the frequency of the particle.

5. State first law of thermodynamics and mention its expression.

6. Write Sabine's formula and name the parameters, involved in it.

7. Define capillarity and angle of contact.

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8. Define coefficient of viscosity and write its dimensional formula.
 9. State Columb's law of magnetism and mention its formula.
 10. State photoelectric emission and write photoelectric equation.

PART—B

10×5=50

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

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

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

11. (a) State parallelogram law of vectors and derive an expression for the magnitude of the resultant vector, using parallelogram law of vectors. 7
 (b) Define cross product and mention one example. 3
12. (a) Derive expressions for maximum height and time of flight of a projectile in oblique projection. 6
 (b) A stone is projected vertically upwards from the top of a tower with a velocity of 4.9 m/s. It reaches the ground in 6 seconds ($g = 9.8 \text{ m/s}^2$). Calculate the height of the tower. 4
13. (a) Define three types of friction and show that $\mu = \tan \theta$ where μ is coefficient of friction and θ is the angle of friction w.r.t. a rough horizontal surface. 6
 (b) Write four methods of reducing friction. 4
14. (a) Define kinetic energy and derive an expression for kinetic energy of a body of mass m and moving with a velocity v , moving along a straight line. 6
 (b) A body of mass 4 kg falls from a height of 120 m. Find the potential and kinetic energies of the body after 5 seconds of its motion. 4

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- 15.** (a) Derive expression for (i) velocity and (ii) acceleration of a particle, executing simple harmonic motion. 6
- (b) The ratios of accelerations due to gravity at two different places is 4:9. Calculate the ratio of time periods of a simple pendulum at these two places. 4
- 16.** (a) Derive the relationship between molar specific heats of a gas. 7
- (b) 2 litres of gas is heated from 127 °C to 427 °C at constant pressure. Find its final volume. 3
- 17.** (a) State any three shortcomings of a noise pollution and write any four measures to be taken to minimize the noise pollution. 7
- (b) Write any three differences between musical sound and noise. 3
- 18.** (a) Define magnetic moment and magnetic induction field strength. 4
- (b) Derive a formula for the balancing condition of Wheatstone's bridge. 6

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