



C16-EE/CHPP-103

6036

BOARD DIPLOMA EXAMINATION, (C-16)

MARCH/APRIL—2018

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 three applications of dimensional analysis.
2. If $\vec{A} = 2\vec{i} + 5\vec{j} + 5\vec{k}$ and $\vec{B} = 2\vec{i} + 4\vec{j} + 6\vec{k}$, find $\vec{A} \cdot \vec{B}$.
3. A stone is allowed to fall from the top of a tower reaches the ground in 8 s. Find the height of the tower.
4. Define amplitude and time period of a particle executing simple harmonic motion.
5. State and explain Boyle's law.
6. Define transverse and longitudinal waves.
7. Define angle of contact and capillarity.

/6036

1

[Contd...

WWW.MANARESULTS.CO.IN

8. Define coefficient of viscosity. Write Poiseuille's equation for coefficient of viscosity and name the symbols.
9. State Kirchoff's 1st and 2nd laws.
10. List three applications of superconductors.

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 law and polygon law of vectors. 3+3
 (b) Find the area of the parallelogram formed by vectors $\vec{A} = 2\vec{i} + 3\vec{j} + \vec{k}$ and $\vec{B} = \vec{i} + 2\vec{j} + 2\vec{k}$ as adjacent sides. 4
12. (a) Derive the expressions for (i) maximum height and (ii) horizontal range for a projectile in oblique projection. 3+3
 (b) A football is projected into air with velocity of 10 m/s at an angle 60° to the horizontal. Find the (i) maximum height and (ii) horizontal range. 4
- * 13. (a) Define limiting friction. 2
 (b) Derive an expression for acceleration of a body on a rough inclined plane sliding down the plane. 5
 (c) Brief any three methods of reducing friction. 3
14. (a) State and prove work-energy theorem. 6
 (b) A machine gun fires 360 bullets per minute and each bullet travels with a velocity of 600 m/s. If the mass of each bullet is 5 gram, find the power of the gun. 4

15. (a) State the conditions of simple harmonic motion. 4
(b) Derive the expression for the velocity and the acceleration of a particle executing simple harmonic motion. 6
16. (a) Derive the relation, $C_p - C_v = R$. 6
(b) The ratio of two specific heats of a gas is 1.4. Its molar specific heat at constant volume C_v is 4.96 J/mol/K. Find the value of universal gas constant. 4
17. (a) Distinguish between musical sound and noise. 4
(b) Define Doppler effect. List four applications of Doppler effect. 2+4
18. (a) Write four properties of magnetic lines of force. 4
(b) Derive magnetic induction field strength at a point on the axial line of a bar magnet. 6

*