



C16-EE-103

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BOARD DIPLOMA EXAMINATION, (C-16)
MARCH/APRIL—2018
DEEE—FIRST SEMESTER EXAMINATION
ENGINEERING PHYSICS—I

Time : 3 hours]

[Total Marks : 80

PART—A

2×15=30

- Instructions** : (1) Answer *any fifteen* questions.
(2) Each question carries **two** marks.
(3) Answers should be brief and straight to the point.

1. Define fundamental physical quantity. Give two examples.
- * 2. Write any two limitations of dimensional analysis.
3. State any two advantages of SI.
4. Define dimensionless physical quantities. Give two examples.
5. State photoelectric effect.
6. Define critical angle in refraction of light.
7. Write any two advantages of optical fiber.
8. Define superconductivity.

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9. State Boyle's law.
10. Define ideal gas.
11. State first law of thermodynamics.
12. Define absolute zero temperature.
13. Define scalar. Give any two examples.
14. State polygon law.
15. If $\vec{A} = 2\hat{i} + \hat{j} + \hat{k}$, then find unit vector of \vec{A} .
16. Define cross product of two vectors.
17. Write any two factors which influence acceleration due to gravity.
18. Define projectile.
19. A body projected vertically upwards with a velocity of 19.6 m/s. Find maximum height reached. ($g = 9.8 \text{ m/s}^2$)
20. Write the formulae for (a) time of ascent and (b) maximum height reached by a projectile projected with velocity u at an angle θ with horizontal.

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.

21. (a) Explain Einstein photoelectric equation. 6
 (b) Write any four applications of photocell. 4

- 22.** (a) ^{*} Define optical fiber. Explain different types of optical fiber. 6
 (b) List any four applications of superconductors. 4
- 23.** (a) Derive ideal gas equation. 7
 (b) One litre of air is heated from 27 °C to 177 °C at constant pressure. Find its volume. 3
- 24.** (a) Distinguish isothermal and adiabatic processes. 6
 (b) Find out the value of R. 4
- 25.** (a) Derive the equations for magnitude and direction of the resultant vector from parallelogram law of vectors. 7
 (b) Two forces 3 N and 5 N are acting at a point by making angle 60° to each other. Find the magnitude of the resultant vector. 3
- 26.** (a) Define scalar product and write any five properties of scalar product. 7
 (b) A force of $6\hat{i} + 12\hat{j} + 8\hat{k}$ products a displacement of $2\hat{i} + 8\hat{j} + 2\hat{k}$. Find the work done. 3
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27. (a) Derive the expression for height of a tower when a body projected upwards from top of the tower. 6
 (b) A body is projected up from the top of a tower with a velocity of 10 m/s. It reaches the ground after 5 seconds. Find the height of the tower. 4
- 28.** (a) Derive the formulae for projectile in oblique projection
 (a) time of flight and (b) range. 3+3
 (b) If the range of projectile is twice that of maximum height, find the angle of projection. 4
