4042

BOARD DIPLOMA EXAMINATION, (C–14)
OCT/NOV—2016
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 the applications of dimensional analysis.

2. A force of 40 N is inclined at an angle of 60° to the vertical. Find its horizontal and vertical components of force.

3. When a stone is dropped into a well, the splash of sound is heard after 3·91 s. If the depth of the well is 67·6 m, find the velocity of sound.

4. Write the laws of simple pendulum.

5. Calculate the value of universal gas constant, *R*.

6. Write any three differences between musical sound and noise.

7. Define stress, strain and Hooke's law.

8. Write about Poiseuille's formula of coefficient of viscosity.

9. Define specific resistance and write equation for it.

10. Explain the working of optical fiber.

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PART—B   10×5=50

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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 parallelogram law of addition of vectors, and derive equation for magnitude of resultant of two vectors.   6

(b) Two vectors $2\hat{i}$ $a\hat{j}$ $\hat{k}$ and $3\hat{i}$ $\hat{j}$ $\hat{k}$ are perpendicular to each other. Calculate the value of a.   4

12. *(a)* Derive equations for *(i)* range and *(ii)* time of flight of projectile in oblique projection.   6

(b) In oblique projections for what angle of projection, the maximum height is equal to range?   4

13. *(a)* Define static friction, kinetic friction and rolling friction.   6

(b) Write any four laws of friction.   4

14. *(a)* State and prove law of conservation of energy.   6

(b) A stone of mass 10 kg is allowed to fall freely from a height of 10 m. Find the kinetic energy on reaching the ground.   4

15. *(a)* Derive equations for *(i)* velocity and *(ii)* acceleration of a particle in SHM. 6

(b) The acceleration of a particle in SHM is 4 units, when its displacement is 1 unit. Find its frequency of oscillation. 4

16. *(a)* Define specific heats of a gas at constant volume and at constant pressure. 4

(b) Show that C_p C_v R. 6

17. *(a)* Define Doppler effect and write any three applications. 5

(b) Write any five methods of reducing noise pollution. 5

18. *(a)* Derive equation for magnetic induction field strength at a point on the equitorial line of a bar magnet. 6

(b) Define magnetic field strength and magnetic moment. 4

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