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C14–EE/CHPP–103

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BOARD DIPLOMA EXAMINATION, (C–14)
MARCH/APRIL—2017
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. Write the dimensional formulae of *(a)* work done, *(b)* momentum and *(c)* specific heat.

2. Find the dot product of two vectors $\vec{A} \ 2\vec{i} \ 3\vec{j} \ 4\vec{k}$ and $\vec{B} \ \vec{i} \ 2j \ \vec{k}$.

3. If a body is thrown up with a velocity of 100 m/sec, find the time of ascent and time of descent ($g \ 10\,\text{m/s}^2$).

4. Calculate the length of a seconds pendulum at the equator where the value of g is 9·78 ms ^{2}.

5. Why $C_p \ C_v$? Answer briefly.

6. Write three applications of beats.

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7. Define elasticity. Name any two elastic substance.

8. Write the Newton's formula for a viscous force and name the symbols in the equation.

9. Define specific resistance and write its SI unit.

10. Write any three applications of optical fiber.

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)* Define vector product and write any four properties of vector product.   6

(b) A force of 200 N is acting on a body at an angle of 60° to the horizontal. Find the horizontal and vertical components of force.   4

12. *(a)* Define projectile, give three examples.   5

(b) A stone is projected vertically upwards from the top of a tower with a velocity of 4·9 ms ^{1}. If it reaches the ground after 5 seconds, find the height of the tower.   5

13. *(a)* Write the advantages of friction.   5

(b) Define and derive the angle of friction, tan $_s$.   5

14. *(a)* Define potential energy. Give two examples. 4

(b) If F is the force and S is the displacement then find the work done when $\theta = 0°$, $\theta = 90°$ and $\theta = 180°$. 6

15. *(a)* Show that the motion of the projection of a point in circular motion is simple harmonic in nature.

(b) The displacement of a particle in SHM is given by $y = 6\sin(2t + \pi/3)$ m. Find—
 (i) amplitude;
 (ii) initial phase;
 (iii) angular velocity;
 (iv) initial displacement.

16. *(a)* Define absolute zero temperature. 2

(b) Calculate the value of universal gas constant and write its units and dimensional formulae. 4

(c) State the first and second laws of thermodynamics. 4

17. Define noise pollution. Write the *(a)* 3 causes of noise pollution, *(b)* 3 effects of noise pollution and *(c)* 4 methods to reduce noise pollution. 10

18. *(a)* Derive an expression for balancing of Wheatstone Bridge by using Kirchhoff's laws and show $P/Q = R/S$. 6

(b) Derive the equation for moment of couple on a bar magnet placed in a uniform magnetic field. 4

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