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C20-EE-CHPP-103

7036

BOARD DIPLOMA EXAMINATION, (C-20)

JUNE/JULY—2022

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 applications of dimensional analysis.
2. Two forces of 40 N and 30 N are acting at right angles to each other. Find the magnitude and direction of their resultant.
3. Write the equations of motion for a freely falling body.
4. A body rests on the rough inclined plane of co-efficient of friction 0.5. Find the angle at which the body just tends to slide on the surface.
5. State the law of conservation of energy. Write any two examples of it.
6. Find length of seconds pendulum at a place where the acceleration due to gravity is 9.83m/s^2 .
7. State first and second laws of thermodynamics.
8. Distinguish between musical sound and noise.

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9. In a meter bridge experiment the resistances in the left and right gaps are in the ratio of 3 : 5. Find the balancing length.
10. Define magnetic induction field strength. Write its units.

PART—B

Instructions : (1) Answer **all** questions.
(2) Each question carries **eight** marks.
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. (a) State parallelogram law of forces. Derive the expressions for magnitude and direction of their resultant. 8

(OR)

- (b) Show that the path of a projectile in horizontal projection is a parabola. 8

12. (a) Find acceleration of a body moving down on the rough inclined plane that makes an angle of 30° with horizontal. Also find the time taken by it to reach the foot of the plane if length of the plane is 10 m and $\mu = 0.2$. 8

(OR)

- (b) State and prove work-energy theorem. 8

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13. (a) What is an ideal simple pendulum? Derive the expression for time period of simple pendulum. 2+6

(OR)

- (b) Derive ideal gas equation. Distinguish between specific gas constant and universal gas constant. 8

14. (a) Explain the phenomenon of beats with a neat diagram. Write any three applications of beats. 5+3

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(OR)

(b) Derive Newton's formula of viscosity. What is the effect of temperature on viscosity of liquids and gases? 4+4

15. (a) Define magnetic moment. Derive the expression for the moment of couple acting on a bar magnet when placed in a uniform magnetic field. 2+6

(OR)

(b) Write Einstein's equation for photoelectric effect and explain the terms involved in it and write the laws of photoelectric effect. 3+5

PART—C

Instructions : (1) Answer the following question.
(2) The question carries **ten** marks.
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

16. Derive the expressions for velocity and acceleration of foot of projection in the reference circle. Does the foot of projection in the reference circle execute simple harmonic motion? Explain your answer. 8+2

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