7036

C20-EE-CHPP–**103**

7036

BOARD DIPLOMA EXAMINATION, (C-20)

SEPTEMBER/OCTOBER—2021

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 the following :

(a) Velocity

(b) Energy

(c) Time period

2. Define scalar quantity and vector quantity.

3. Write the equations of motion of a body moving with uniform acceleration.

4. Write any three advantages of friction.

5. Find the work done in lifting a body of mass 10 kg against gravity to a height of 5 m from the ground.

6. Write any three conditions for simple harmonic motion.

7. The volume of a gas at 27 °C is 200 cc. Find its volume when it is heated to 127 °C at constant pressure.

8. Write any three applications of beats.

9. State and explain Ohm's law.

10. A bar magnet of pole strength 50 A-m has magnetic length of 10 cm. Find the magnetic moment.

PART—B

8×5=40

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)* Define scalar product of two vectors. Write any six properties of scalar product. 2+6

OR

(b) Show that the path of a projectile in oblique projection is a parabola.

12. *(a)* Derive the expression for acceleration of a body projected up on a rough inclined plane.

OR

(b) A body of mass 10 kg starts falling freely from a height of 10 m. Find the potential and kinetic energies when it is at a height of 7 m above the ground.

13. *(a)* Derive the expressions for the displacement and velocity of foot of projection in the reference circle.

OR

(b) Calculate the value of universal gas constant 'R' for one gram mole gas at NTP. Also write the units and dimensional formula of 'R'.

14. *(a)* Define echo and reverberation. Write any four applications of echoes. 4+4

OR

(b) Define surface tension and write its SI units and dimensional formula. List any four examples of surface tension. 4+4

15. *(a)* State Kirchhoff's laws. Derive the principle of Wheatstone bridge using Kirchhoff's laws. 2+6

OR

(b) Explain the working of a photocell. Write any four applications of photocell. 4+4

PART—C

10×1=10

Instructions : (1) Answer the following question.

(2) It carries **ten** marks.

(3) Answer should be comprehensive and criterion for valuation is the content but not the length of the answer.

16. Derive the expressions for maximum height and time of flight of a body projected obliquely. Can we extend the above equations for vertical motion? Justify your answer. 8+2

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