C20-C/CM–103

7018

BOARD DIPLOMA EXAMINATION, (C-20)

JUNE/JULY—2022

DCE - 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 dimensional formulae of the following quantities :

(a) Stress

(b) Power

(c) Torque

2. If $A = 2i + 3j - 2k$ and $B = ni - 2j - 6k$ are perpendicular, then find the value of n.

3. A stone is projected upwards with an initial velocity 78·4 m/s. Find the velocity after 4 second.

4. State any three disadvantages of friction.

5. A person, weighing 50 kg lifts a mass of 30 kg to the top of the building of 20 m height in 50 second. Calculate power of the person.

6. Define time period, frequency and amplitude of a particle in SHM.

7. A cylinder contains 90·3 cc of gas at 17 °C temperature and 735 mm of Hg pressure. Find its volume at NTP.

8. Define reverberation and reverberation time.

9. State Kirchhoff's laws of electricity.

10. Define magnetic induction and write its SI unit.

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 vector product and mention any six properties of vector product.

(OR)

(b) Derive the expressions for maximum height and horizontal range in the case of oblique projection of a body.

12. *(a)* Derive expressions for displacement and time taken by a moving body over a rough horizontal surface before coming to rest.

(OR)

(b) Define KE and derive an expression for KE of a moving body.

13. *(a)* Explain SHM graphically.

(OR)

(b) State the differences between isothermal and adiabatic processes.

14. *(a)* Define and explain beats. State any three applications beats.

(OR)

(b) Define viscosity and derive Newton's formula for coefficient of viscosity.

15. *(a)* Derive an expression for magnetic induction on the equatorial line of a bar magnet at a point at a given distance.

(OR)

(b) Write Einstein's photo electric equation and name the parameters involved in the equation, and state laws of photo electric effect.

PART—C

10×1=10

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. Define two specific heats of gas and prove that $C_p - C_v = R$.

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