C16–M/CHOT/RAC–103

6053

BOARD DIPLOMA EXAMINATION, (C–16)
SEPTEMBER/OCTOBER - 2020
DME—FIRST YEAR EXAMINATION

C-103, 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 formula of the following physical quantities :

(a) Power

(b) Strain

(c) Pressure

2. State the polygon law of addition of vectors.

3. Define projectile and give an example.

4. The length of the simple pendulum is 0·98 m. Calculate the time period, if g 9 8 m/s^2.

5. State first and second laws of thermodynamics.

6. What are the acoustic conditions of a good auditorium?

7. Explain surface tension with reference to molecular theory briefly.

8. Explain the effect of temperature on viscosity of liquids and gasses.

9. State and explain Kirchhoff's voltage law.

10. Write any three properties of superconductors.

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)* State any six properties of dot product.   6

    (b) What is the value of m, if vector $\vec{A} \quad \hat{i} \quad 2\hat{j} \quad 3\hat{k}$ is parallel to the vector $\vec{B} \quad 3\hat{i} \quad m\hat{j} \quad 9\hat{k}$?   4

12. *(a)* Derive the expression for height of a tower, when a body is projected vertically upwards from top of the tower.   6

    (b) An aeroplane flying horizontally with a velocity of 100 m/s and drops a bomb when it was at a height of 490 m from the ground. Find when and where the bomb will strike the ground.   4

13. *(a)* Derive the expression for acceleration of a body sliding downwards on a rough inclined plane.   6

    (b) Write any four methods of reducing friction.   4

14. *(a)* State and prove work-energy theorem.   6

    (b) A pump can lift 7200 kg of coal per hour from a mine of 90 m depth. Find the power of the pump if its efficiency is 75%.   4

15. *(a)* Show that the oscillations of simple pendulum are simple harmonic.   6

     (b) State the laws of simple pendulum.   4

16. *(a)* What is an ideal gas? Derive ideal gas equation.   6

     (b) Distinguish between isothermal and adiabatic process.   4

17. *(a)* Define the phenomenon of beats and write any four applications of beats.   6

     (b) Write any four methods of minimizing noise pollution.   4

18. *(a)* Derive the expression for balancing condition of Wheatstone's bridge.   6

     (b) Write any four properties of magnetic lines of force.   4

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