C14–EC/CHPC/PET–**103**

4035

BOARD DIPLOMA EXAMINATION, (C–14)
MARCH/APRIL—2017
DECE—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) Answer should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Write any three limitations of dimensional analysis.

2. State and explain the triangle law of vectors.

3. Define projectile and give two examples.

4. A body is executing SHM with an acceleration of $0·4 \text{ m/s}^2$ at a displacement of $0·6$ m. Find its acceleration at a displacement of $0·4$ m.

5. Define absolute zero and absolute scale of temperature.

6. Define echoes and write two applications.

7. Define capillarity and write two applications.

8. What is the effect of temperature on surface tension of a liquid viscosity of liquids and gases?

9. Explain Coulomb's inverse square law of magnetism.

10. Write any three applications of superconductor.

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PART—B   10×5=50

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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)* Write any three properties of *(i)* scalar product and *(ii)* vector product.   6

    (b) Find the unit vector in the direction of $3\vec{i}$ $6\vec{j}$ $2\vec{k}$.   4

12. *(a)* Derive equations for *(i)* maximum height and *(ii)* time of ascent in case of oblique projection.   6

    (b) A stone is thrown up vertically with a velocity of 98 m/s. Find the total distant travelled before it reaches the ground.   4

13. *(a)* Define angle of friction and angle of repose.   4

    (b) Derive an equation for acceleration of a body sliding down a rough horizontal surface with a neat diagram.   6

14. *(a)* Derive $KE = \dfrac{1}{2}mv^2$.   6

(b) The mass of a body is reduced to half and the velocity is doubled. What is the kinetic energy of the body?   4

15. *(a)* Show that the path followed by the tip of projection of a body in circular path along the diameter of the circle is SHM.   6

(b) The length of a simple pendulum is 50 cm. Find the time period and frequency of oscillation.   4

16. *(a)* Explain isothermal process and adiabatic process.   6

(b) A cylinder contains 90·3 cc of a gas at 17 °C and 735 mm of Hg pressure. Find its volume at NTP.   4

17. *(a)* Define 'beats' and write any three applications.   5

(b) Write any five conditions of good auditorium.   5

18. *(a)* Derive an equation for magnetic induction field strength at a point on the axial line of a bar magnet.   6

(b) State Kirchhoff's 1st law and 2nd law.   4

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