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C16–EC/CHPC/PET–**103**

6029

BOARD DIPLOMA EXAMINATION, (C–16)

MARCH/APRIL—2018

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) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. State the applications of dimensional analysis.

2. State triangle law and polygon law of vectors.

3. A body is thrown vertically upwards with a velocity of 19·6 m/s from the ground. How long the body remains in air?

4. Define the terms *(a)* amplitude, *(b)* time period and *(c)* frequency in SHM.

5. Define absolute zero and write the relation between absolute temperature and centigrade temperature.

6. Write any three differences between musical sound and noise.

7. Define capillarity and angle of contact.

8. Write any three examples of viscosity.

9. State the Kirchhoff's law of electricity.

10. Write three applications of superconductivity.

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)* Define cross product and write four properties of cross product. 2+4

(b) If $\vec{A} \quad \vec{i} \quad 2\vec{j} \quad 2\vec{k}$ and $\vec{B} \quad 2\vec{i} \quad n\vec{j} \quad 2\vec{k}$ are perpendicular vectors, then find the value of *n*. 4

12. *(a)* Show that the path of projectile is a parabola in oblique projection. 6

(b) A body is thrown up vertically with a velocity of 19·6 ms ^{1}. Find the maximum height reached and time of ascent. 4

13. *(a)* Derive an expression for acceleration of a body moving up on a rough inclined plane with necessary diagram. 6

(b) Write any four advantages of friction. 4

14. *(a)* Define work, power and energy. 3

(b) State and prove the law of conservation of energy in the case of a freely falling body. 7

15. *(a)* Derive expressions for time period and frequency of a particle in SHM. 6

(b) In a SHM, the maximum acceleration and maximum velocity are 62·8 ms ^{2} and 10 ms ^{1} respectively. Find the time period. 4

16. *(a)* Show that $C_p \quad C_v \quad R$. 6

(b) A gas occupies a volume of 10^{4} cm^3 at 30 °C and 4×10^5 N-m^2 pressure. Find its volume at NTP. 4

17. *(a)* Define noise pollution and write any five methods of controlling noise pollution. 1+5

(b) Write any four conditions of good auditorium. 4

18. *(a)* State and explain Ohm's law. 3

(b) Derive an expression for the magnetic induction field strength at a point on the axial line of a bar magnet. 7

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