C14–A–103/C14–AA–103/C14–BM–103/
C14–CH–103/C14–CHST–103/C14–AEI–103/
C14–MET–103/C14–MNG–103/C14–IT–103/
C14–TT–103/C14–PCT–**103**

4003

BOARD DIPLOMA EXAMINATION, (C–14)
MARCH/APRIL—2017
FIRST YEAR (COMMON) 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. Define fundamental physical quantity and derive physical quantity. Give one example for each.

2. Calculate the value of *n*, if the vectors $\vec{A}$ $4\vec{i}$ $6\vec{j}$ $8\vec{k}$ and $\vec{B}$ $7\vec{i}$ $n\vec{j}$ $10\vec{k}$ are perpendicular.

3. Define acceleration due to gravity. Also write its units and dimensional formula.

4. Calculate the length of the seconds pendulum at a place where the value of *g* is $9 \cdot 8 \text{ m/s}^2$.

5. State the laws of thermodynamics.

6. Write any three applications of Doppler effect.

7. Define elasticity. Name any two elastic substances.

8. Write the effects of temperature on viscosity of liquids and gases.

9. State Kirchhoff's laws.

10. Write any three applications of superconductor.

<center>**PART—B**   10×5=50</center>

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 and explain triangle law and polygon law of vectors.   6

      (b) Write any four properties of scalar product.   4

12. *(a)* Show that time of ascent is equal to time of descent in case of vertically projected body.   6

      (b) A stone is thrown vertically up with an initial velocity of 14 m/s. Find *(i)* the maximum height reached and *(ii)* the time of descent.   4

13. *(a)* Derive the equation for displacement of a body moving on rough horizontal surface.   6

      (b) Write two advantages and two disadvantages of friction.   4

14. *(a)* Define KE. Show that $KE \ \dfrac{1}{2}mv^2$.   7

      (b) A person weighing 60 kg lifts a mass of 40 kg to the top of a building of 10 m in 50 seconds. Find power of the person.   3

15. *(a)* Prove that the projection of a particle on any one of the diameter of circular path is SHM.   6

(b) Write the conditions of SHM.   4

16. *(a)* Derive the ideal gas equation.   6

(b) Calculate the value of *R* for one gram mole of a gas.   4

17. *(a)* Define noise pollution and state any four effects of noise pollution.   2+4=6

(b) Define beats and write two applications of beats.   2+2=4

18. *(a)* Describe meter bridge with neat sketch. Write the formula in meter bridge to determine the specific resistance.   5+2=7

(b) The resistances in the left and right gaps of a meter bridge are 3 and 2 . Find the balancing length.   3

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