3003

C09–A–103/C09–AA–103/C09–AEI–103/C09–C–103/
C09–CM–103/C09–CH–103/C09–CHST–103/
C09–EC–103/C09–EE–103/C09–FW–103/
C09–IT–103/C09–M–103/C09–MET–103/

C09–MNG–103/C09–PKG–103/C09–TT–**103**

3003

BOARD DIPLOMA EXAMINATION, (C–09)
MARCH/APRIL—2018
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) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Write the dimensional formulae for the following :

(a) Frequency

(b) Torque

(c) Pressure

2. State triangle law of vectors and draw the figure.

3. A body is projected vertically upwards with a velocity of 39·2 m/s from the ground. Find the maximum height reached.

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4. A body of mass 10 kg is moving on a rough horizontal surface. Find the force required by the body. (Coefficient of friction = 0·5)

5. Write the expression for acceleration due to gravity using simple pendulum and name the terms involved.

6. Define two specific heats of a gas.

7. What are reverberation and reverberation time?

8. What is surface tension? Give two examples.

9. Define magnetic induction field strength and state its SI units.

10. Write any three applications of photo cell.

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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)* Define vector product of two vectors.   3

     (b) Explain torque as an application of vector product.   3

     (c) If $\bar{A}$ $2\vec{i}$ $\vec{j}$ $2\vec{k}$ and $\bar{B}$ $\vec{I}$ $2\vec{j}$ $3\vec{k}$ form the two sides of a parallelogram, find the area formed by them.   4

12. *(a)* Write the equations for horizontal range and maximum height in case of oblique projectile.   2

     (b) Show that the path of a projectile is a parabola in case of an oblique projection.   5

     (c) A stone is projected with a velocity of 20 m/s at an angle of 30º to the horizontal. After 1·5 seconds, find the vertical height from its starting point.   3

13. *(a)* Define Kinetic energy. Write two examples. 3

  (b) Derive the expression for Kinetic energy of a body. 4

  (c) A body of mass 5 kg initially at rest is subjected to force of 20 N. What is the Kinetic energy acquired by the body at the end of 10 seconds. 3

14. *(a)* Define SHM. Write any three conditions of SHM. 4

  (b) Derive the expressions for velocity and acceleration of a particle, executing SHM. 6

15. *(a)* Explain why the value of universal gas constant is same for all the gases. 2

  (b) Derive the Ideal gas equation PV=RT. 5

  (c) Write any three differences between   and *R*. 3

16. *(a)* Write any five effects of noise pollution. 5

  (b) Write any five methods of controlling noise pollution. 5

17. *(a)* State Hook's law. 2

  (b) Derive Newton's formula for viscous force. 4

  (c) Write the effect of temperature on viscosity of liquids and gases. 4

18. *(a)* State and explain Kirchhoff's laws of electricity. 6

  (b) The resistance of copper wire of 200 metres long is 21 ohm. If the diameter is 0·04 cm, determine its specific resistance. 4

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