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C09–A–103/C09–AA–103/C09–AEI–103/C09–BM–103/ C09–C–103/C09–CM–103/C09–CH–103/C09–CHPP–103/ C09–CHPC–103/C09–CHOT–103/C09–CHST–103/ C09–EC–103/C09–EE–103/C09–IT–103/C09–M–103/ C09–MET–103/C09–MNG–103/C09–PET–103/ FW-103/PKG-103 /C09–TT–103/

C09–RAC–103

3003

BOARD DIPLOMA EXAMINATION, (C–09)

APRIL/MAY—2015

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. Derive dimensional formula for *(a)* force and *(b)* power.

2. Define scalar and vector, and give examples.

3. Define projectile motion and give examples.

4. Mention the methods to minimize friction.

5. State the conditions of SHM.

6. State first law and second law of thermodynamics.

7. Explain phenomenon of beats.

8. Define three types of stress.

9. State and explain Ohm's law.

10. Write three applications of photoelectric effect.

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 the parallelogram law of vector addition and find the expression for resultant vector. 7

(b) Find the area of parallelogram formed by two vectors $A \quad 2i \quad 3j \quad k$ and $B \quad i \quad 2j \quad 2k$ as two adjacent sides. 3

12. *(a)* Show that oblique projection is parabola. 5

(b) Derive formulas for maximum height and time of ascent in case of vertical projection. 5

13. *(a)* State and prove the law of conservation of energy in case of freely falling body. 8

(b) A stone of mass 10 kg falling freely from a height of 10 m. Find the kinetic energy on reaching the ground. 2

14. *(a)* Define SHM and give two examples. 3

(b) Derive formula for time period in case of simple pendulum. 7

15. *(a)* State gas laws. 3

(b) Derive ideal gas equation $PV = RT$. 6

(c) Write gas equation in terms of density. 1

16. Define noise pollution. Explain the effects of noise pollution. Write the methods to minimize noise pollution. 10

17. *(a)* Explain surface tension on the basis of molecular theory. 4

(b) Explain experimental determination of viscosity. 6

18. *(a)* Derive formula for couple acting on bar magnet placed inside uniform magnetic field. 4

(b) Derive magnetic induction field strength at a point on axial line. 6

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