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C09-CHPC-103/C09-EC-103

3029

BOARD DIPLOMA EXAMINATION, (C-09)

OCT/NOV—2013

DECE—FIRST YEAR EXAMINATION

ENGINEERING PHYSICS

Time : 3 hours]

[Total Marks : 80

PART—A

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. State three limitations of dimensional analysis.
2. Define dot product and give one example.
3. A body is falling freely from a height 19.6m. Find its velocity on reaching the ground.
4. State the laws of kinetic friction.
5. Derive the equation for acceleration in case of SHM.
6. Write the differences between r and R .
7. Write Sabine's formula.

- 8. Write the effect of temperature on viscosity of liquids and gases.
- 9. State Coulomb's inverse-square law in case of magnetism.
- 10. Write three applications of superconductor.

PART—B

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 angle between the two vectors $P = 2i + 2j + k$ and $Q = i + 2j + k$. 3
- 12. (a) Define the oblique projection and show that the oblique projection is parabola. 6
(b) A body is projected into air with velocity of 20m/s and angle 30° with earth surface. Find the maximum height reached and time of ascent ($g=10\text{m/s}^2$). 4
- 13. (a) Define conventional and non-conventional energy sources and give two examples (one for each). 4
(b) Define PE and KE and give two examples (one for each). 3
(c) Show that $PE=mgh$. 3
- 14. (a) Define SHM and give two examples. 3
(b) Derive the formula for time period in case of simple pendulum. 7

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- 15.** (a) State gas laws. 3
(b) Derive the ideal gas equation $PV=RT$. 6
(c) Write the gas equation in terms of density. 1
- 16.** (a) Derive the formula for apparent frequency when source is in motion towards observer at rest. 7
(b) Write three applications of Doppler effect. 3
- 17.** (a) Define three types of modulus of elasticity. 6
(b) State Newton's formula for viscous force in a liquid. 4
- 18.** (a) Explain the working of Wheatstone's bridge and derive its principle. 8
(b) In case of Wheatstone's bridge, three resistors are 10 ohms, 12 ohms and 8 ohms. Find the value of fourth resistor. 2
