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C16-EE/CHPP-103

6036

BOARD DIPLOMA EXAMINATION, (C-16)

OCT/NOV—2018

DEEE—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 principle of homogeneity of dimensions. Give one example.
2. Find the work done in moving an object through a displacement $(2i \ 3j \ 5k)$ when the applied force is $(5i \ 4j \ 2k)$.
3. A body is projected vertically upwards with an initial velocity 19.6 m/s. Find the maximum height reached by the body. The value of g is 9.8 m/s^2 .
4. A particle in SHM has a velocity 4 ms^{-1} at mean position. Its time period is 3.14 second. Find the amplitude of the particle.
5. What is universal gas constant? Why is it same for all gases?

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6. Write any three ^{*} sources of noise pollution.
7. Define surface tension. Write its SI units and dimensional formula.
8. Explain the term viscosity. What is the cause of viscosity of liquids and gases?
9. State Kirchhoff's laws of electricity.
10. State any three properties of superconducting materials.

PART—B

10×5=50

Instructions : (1) Answer *any five* questions.

(2) Each question carries **ten** marks.

(3) The 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. Obtain the expression for magnitude and direction of the resultant vector.
(b) Find the area of parallelogram formed by the vectors $i + 2j + 3k$ and $3i + 2j + k$.
12. (a) Show that the path of projectile is a parabola in oblique projection.
(b) A fighter plane flying horizontally with a speed of 360 kmph releases a bomb at a height of 490 m from the ground. When and where will be bomb strike the ground?
13. (a) Define coefficient of friction.
(b) Derive the expression for acceleration of a body sliding down on a rough inclined plane.
(c) A cubical block rests on a plane of $\frac{1}{\sqrt{3}}$. Find the angle through which the plane is inclined to the horizontal so that the block just slides down.

- 14.** (a) State the law of conservation of energy and verify it in the case of freely falling body.
- (b) If the kinetic energy of a body is increased by 4 times the initial value, how does the momentum change?
- 15.** (a) Define simple harmonic motion. Give two examples.
- (b) Derive the expression for velocity and acceleration of the particle executing SHM.
- 16.** (a) What is absolute zero. Write the relation between absolute scale and centigrade scale.
- (b) Define two molar specific heats of a gas.
- (c) Calculate the value of universal gas constant R for one gram mole of gas at NTP.
- 17.** (a) Define beats and write any two applications.
- (b) Write any four applications of Doppler effect.
- (c) Two tuning forks of frequencies 480 Hz and 484 Hz are sounded together. Find the number of beats produced per second.
- 18.** (a) State and explain Kirchhoff's laws of electricity.
- (b) Derive the equation for moment of couple acting on bar magnet placed in uniform magnetic field.
