6036

BOARD DIPLOMA EXAMINATION

MARCH/APRIL - 2019

DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

ENGINEERING PHYSICS

FIRST YEAR EXAMINATION

Time: 3 Hours **Total Marks: 80**

PART - A (3m x 10 = 30m)

Note 1:Answer all questions and each question carries 3 marks

2:Answers should be brief and straight to the point and shall not exceed 5 simple sentences

1. Define dimensionless quantities? Give two examples
2. A body is thrown with some velocity at an angle of 30° with the horizontal.

   If its horizontal component is 100 m/s what is the actual velocity and its vertical component
3. A stone is projected upwards with a velocity of 9.8 m/s from the top of a tower and reaches the ground in 4s. Find height of the tower
4. The maximum acceleration and maximum velocity of a particle in SHM are 8 units and 4 units respectively. Find its frequency of oscillatior
5. Give reasons on why $C_p > C_v$
6. Write any three effects of noise pollution
7. Write any three examples of viscosity
8. Write the formula for surface tension based on capillarity and name the physical quantities involved in the formula
9. A bar magnet of pole strength 60 Am has magnetic length 0.1 m. Find the magnetic moment
10. Write any three applications of optical fibers

PART - B (10m x 5 = 50m)

Note 1:Answer any five questions and each carries 10 marks

2:The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer

11. a. Define vector product and write any two examples of vector product. 4M

b. Write any six properties of vector product 6M

12. a) Define acceleration due to gravity and write the equations of motion a freely for falling body. 5M

b) Two similar stones are projected from the same point with same velocities at angles 60° and 45°. Which stone has more horizontal range? Explain 5M

13. a) Define friction. 2M

b) Derive the expression for the acceleration of a body sliding down a smooth inclined plane. 4M

c) A body of mass 10 kg rests on a horizontal plane. If coefficient of friction is 0.3, calculate the work done in dragging the body through a distance of 20 m 4M

14. a) Define kinetic energy. Derive expression for kinetic energy. 7M

b) If the mass of a body is doubled and velocity is reduced to half, how does its kinetic energy changes? 3M

15. a) Derive an expression for the acceleration of a particle executing SHM. 7M

b) The displacement of a particle in SHM is given by $y = 10 \sin (\frac{\pi}{2}t + \pi/3)$. Find its initial displacement and its displacement when t = 1 s. 3M

16. a) Derive ideal gas equation.

b) A gas occupies 1 litre of volume at temperature of 7 °C under a pressure of 700 mm of Hg. Find its volume at 27 °C temperature and 600 mm of Hg pressure. 6M 4M

17. a) Explain the phenomenon of beats with a neat diagram. 5M

b) Write any five methods of controlling noise pollution 5M

18. a) State and explain Kirchhoff's laws. 7M

b) Three currents 1 mA, 3 mA and i_3 mA are flowing towards the junction and two currents 2 mA and 5 mA are flowing away the junction. Find the value of current i_3 3M

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