

6003

## BOARD DIPLOMA EXAMINATION

MARCH/APRIL - 2019

## DIPLOMA IN AUTOMOBILE 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. Write any three advantages of S.I system of units.
2. A body is thrown with some velocity at an angle of  $30^\circ$  with its horizontal. If its horizontal component is 30 m/s what is the actual velocity and its vertical component.
3. A football is projected with a velocity of 9.8 m/s at an angle of  $30^\circ$  to the horizontal. Find its time of flight
4. Define the terms time period, frequency and phase of a particle in SHM
5. Write the significance of universal gas constant ( $R$ )
6. Define reverberation time and write the Sabine's formula for reverberation time
7. Explain the effect of temperature on viscosity of gases
8. Define angle of contact? What is the angle of contact for glass with pure water?
9. State Ohm's law. Write equation of Ohm's law
10. Write any three uses of photo electric cells

**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 scalar product. Write any four properties of scalar product 6m
- b) Explain the work done as an example of scalar product 4m
12. a) Derive expression for maximum height and horizontal range of a projectile in oblique projection. 7m
- b) A body is projected with a velocity of 39.2 m/s at an angle of  $45^\circ$  with the horizontal. Find its maximum height 3m

13. a) Derive expression for distance travelled and time taken by a body moving on a rough horizontal surface to come to rest. 6m  
 b) Write any four minimising methods of friction. 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 time period of simple pendulum. 7m  
 b) Find the acceleration due to gravity of a seconds pendulum whose length is 1 m. 3m
16. a) Derive ideal gas equation. 6m  
 b) A gas occupies 25 litre of volume at temperature of 37°C under a pressure of 72 cm of Hg. Find its volume at 27 °C temperature and 75 cm of Hg pressure 4m
17. a) Write any four effects of noise pollution. 4m  
 b) Write any four methods of minimising noise pollution. 4m  
 c) Two sound notes of frequencies 500 Hz and 505 Hz are sounded together to produce beats. Find the number of beats produced per second? 2m
18. a) Derive an expression for the magnetic induction field strength at a point on the axial line of a short bar magnet. 7m  
 b) Two magnetic poles of strength 40 Am and 10 Am are separated by a distance of 20 cm in air. Find the force between them. 3m  
 ( $\mu_0 = 4\pi \times 10^{-7} \text{ H/m}$ )