3003

BOARD DIPLOMA EXAMINATION, (C-09)

MARCH/APRIL - 2019

DIPLOMA IN AUTOMOBILE ENGINEERING

ENGINEERING PHYSICS (COMMON)

FIRST YEAR EXAMINATION

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

PART - A (10 x 3 = 30 Marks)

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 the dimensional formulae for the following.
   a) velocity b) acceleration c) force
2. State whether the following quantities are scalars or vectors.
   a) Power b) Volume c) Momentum
3. A body is projected vertically upwards with a velocity of 39.2 m/s from the ground. Find its time of ascent.
4. What is normal reaction? Draw the direction of normal reaction when a body is on
   i) a horizontal plane ii) inclined plane.
5. Explain the effect of the mass of the bob, on the time period of a simple pendulum of a given material.How does it change with the material of the bob?
6. Define isothermal and an adiabatic process.
7. Write any three applications of Doppler effect?
8. Define surface tension and write any two exmples of it.
9. Define the couple and write the expression for the moment of couple in case of a magnet placed in a uniform magnetic field.
10. Write any three properties of super conductors.

PART - B (5 x 10 = 50 Marks)

Note 1:Answer any five questions and each question 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 and vector product of two vectors. 6 marks
    b) Write any four properties of scalar product. 4 marks
12. a) Write the equations for horizontal range and maximum height in case of a projectile. 2 marks
    b) Show that the path of a projectile is a parabola in case of an oblique projection. 5 marks
    c) A stone is projected with a velocity of 20 m/s at an angle of 30^{o} to the horizontal.After1.5 seconds, find the horizontal distance and vertical height from its starting point. 3 marks
13. a) Define Kinetic Energy. Mention its units and dimensional formula. 3 marks
    b) Derive the expression for kinetic energy 5 marks
    c) A person carrying luggage on his head and moving in horizontal direction does no work. Explain 2 marks

14. a. Define the terms i) Time period ii) Amplitude iii) Phase of SHM. 3 marks
    b. Derive the expression for the time period of a particle executing SHM 4 marks
    c. A particle is performing SHM with an amplitude of 0.5 m and has an angular velocity 100 rad/s. Find the velocity at a distance of 0.3 m from the equilibrium position. 3 marks

15. a) State and explain Boyle's law. 3 marks
    b) Describe the method of experimental verification of Boyle's law. 7 marks

16. (a) Define musical sound and noise. Write one example each 4 marks
    (b) What are Six the methods to minimize noise pollution 6 marks

17. a) What is elasticity? Write the differences between elastic substance and a plastic substance giving two examples each. 6 marks
    b) Derive the expression for bulk modulus. 4 marks

18. a) Derive an expression for the specific resistance of the material of a conductor. State its SI units. 4 marks

    b) State and explain Kirchhoff's laws. 6 marks

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