3003

BOARD DIPLOMA EXAMINATION, (C-09)
OCTOBER/NOVEMBER-2018
FIRST YEAR EXAMINATION

ENGINEERING PHYSICS

Time : 3 Hours] [Total Marks: 80

PART-A

3X10=30

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. Using dimensional method, check the equation $V=\sqrt{P/D}$, where 'V' is the velocity,

'P**'** pressure and 'D' is the density.

2. If $\vec{A} = i - 2j + 2k$ and $\vec{B} = 3i - j + 6k$, find $\vec{A} \cdot \vec{B}$.

3. Derive the expression for the Time Descent of a body allowed to fall freely.

4. Define coefficient of friction, angle of friction and angle of repose.

5. State any three conditions of SHM.

6. State the Boyle's law.Write its mathematical expression.

7. Write any three methods of minimizing echoes.

8. Does the surface tension depend upon the area of the surface? Explain.

9. Write an expression for the moment of couple on a bar magnet placed in uniform

magnetic field. Find the angle at which maximum couple is obtained.

10. Define critical angle and total internal reflection of light.

PART-B

Instructions :   1. Answer any **Five** questions.

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

                 3. Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer

11. (a) State and explain triangle law and parallelogram law of vectors with figures.

     (b) If $\vec{A} = (i - 2j + 3k)$ and $\vec{B} = (3i - j + 6k)$, find $|\vec{A} + \vec{B}|$ and $|\vec{A} - \vec{B}|$.

12. (a) Show that the path followed by a obliquely projected body is a parabola.

     (b) A football is projected with a velocity of 29.4 m/s at angle of 30^0 to the horizontal. Find the maximum height reached by it.

13. (a) State and prove that Work-Energy theorem.

     (b) A bullet weighing 10gm is fire with a velocity of 600 m/s. After passing through a mud wall of 1m thick, its velocity decreases to 100 m/s. Find the average resistance offered by the mud wall.

14. (a) Drive an expression for velocity and acceleration of a particle executing SHM.

     (b) Calculate   (i) Initial displacement (ii) Amplitude (iii) Phase constant for a particle in SHM, whose displacement in time t is given by $y = 5 \sin (10t + \pi/4$.

15. (a) For an ideal gas, show that the difference for molar specific heats is equal to the universal gas constant.

     (b) State 1st and 2nd laws of thermodynamics.

16. Define beats and write any two applications.

     (b) Write any six methods of controlling noise pollutions.

17. A) State Hook's law of elasticity.

     (b) Describe an experiment to determine coefficient of viscosity of a liquid.

18. (a) State Kirchhoff's laws.

     (b) Derive the balancing condition in a Whetstone's bridge

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