6029

BOARD DIPLOMA EXAMINATION

JUNE - 2019

DIPLOMA IN ELECTRONICS AND COMMUNICATION 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 unit system**
2. A body is thrown with some velocity at an angle of 60° with the horizontal. If its horizontal component is 50 m/s what is the actual velocity and its vertical component
3. A body is allowed to fall freely from a height 490 m. Find the time taken to reach the ground
4. The displacement of a particle executing SHM is given as $y = 5 \sin (2\pi t + \pi/6)$. Find its time period, frequency and amplitude
5. What is perfect gas. Write the perfect gas equation
6. **Write any three differences between musical sound and noise.**
7. Define strain. State the Hooke's law
8. Define capillarity. Give one example
9. State Kirchoff's current law. Is this law applicable for loops or junctions?
10. Explain the phenomenon of total internal reflection with a neat diagram

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 and write any two examples of scalar product 4M

    b. Write any six properties of scalar product 6M

12. a) Derive expression for maximum height and horizontal range of a projectile in oblique projection. 6M

b) A body is projected obliquely with an initial velocity of 19.6 m/s at an angle of 30° with the horizontal. Find the maximum height reached and horizontal range 4M

13. a) Define friction. 2M

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

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

14. a) Define potential energy and kinetic energy. 4M

b) State and prove work energy theorem 6M

15. a) Derive an expression to find the time period of a simple pendulum. 7M

b) The time period of simple pendulum is 2 seconds. If its length is doubled, what is the new time period 3M

16. a) State first and second laws of thermodynamics. 3M

b) Derive a relationship between C_p and C_v 7M

17. a) Define Doppler effect and write any Three applications of Doppler effect 5M

b) Define reverberation time. Write Sabine's formula and name the physical quantities involved 5M

18. a) Define magnetic induction field strength. State its SI unit. 4M

b) Derive an expression for moment of couple acting on a bar magnet placed in a uniform magnetic field 6M

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