

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