

-
6. A periscope is primarily used to_____.
- a. measure water depth.
 - b. see objects that are not in direct line of sight.
 - c. measure wind speed.
 - d. detect temperature changes.
7. The slope of the V-I graph for an ohmic conductor represents
- a. current
 - b. voltage
 - c. resistance
 - d. conductance.
8. KVL is based on the principle of_____.
- a. conservation of momentum.
 - b. conservation of energy.
 - c. conservation of charge.
 - d. conservation of resistance.
9. An ultrasonic flow meter measures flow rate using_____.
- a. pressure difference.
 - b. electromagnetic induction.
 - c. ultrasound waves.
 - d. rotating turbine.
10. In order to obtain the radar receiver output, which filter is used to maximize the output signal-to-noise ratio?
- a. Matched filter.
 - b. High pass filter.
 - c. Band reject filter.
 - d. Doppler filter.

Section B

Five Questions of 02 Marks each

- 11. Define the term "Gyro inertia".
- 12. State Charles's law.
- 13. What is the electromagnetic spectrum?
- 14. State Faraday's law of electromagnetic induction.
- 15. Define a radio transmitter and list its types based on modulation.

Section C

Seven Questions of 10 Marks each of which any 05 questions to be answered.

- 16.a) State Pascal's Law. Explain how it is useful for the operation of hydraulic lift. **(7 Marks)**
 - b) A thin metal ring of diameter 0.8m and mass 1 Kg starts from the rest and rolls down on inclined plane. Its linear velocity on reaching the foot of the plane is 4 m/s. Calculate the moment of inertia of the ring and the kinetic energy of rotation of that instant. **(3 marks)**
 - 17.a) What is buoyant force? State the laws of flotation. **(4 Marks)**
-

Using a clear block diagram, describe how reflection is used in echo sounder for depth measurement. **(6 Marks)**

18. a. What is total internal reflection and describe the formation of a mirage in detail. **(7 marks)**

b. The critical angle of liquid is 30° . Find the refractive index of liquid. **(3 marks)**

19. a. Explain with one example what is heating effect of electric current. **(7 marks)**

b. Two coils having self-inductances of 16 H and 4 H are coupled in such a way that the mutual inductance is 4 H. Find the coefficient of coupling. **(3 marks)**

20. a. State Bernoulli's principle and explain its role in finding the velocity of a fluid flowing through an orifice. **(7 marks)**

b) A 50W, 220V rated lamp is connected in series with 40W, 200V rated lamp across 230V supply. Calculate the current taken, voltage across each lamp, power given by the lamps. Assume that the resistance of the lamps remains constant. **(3 Marks)**

21. a. Explain in detail thermistor as heat sensor. **(5 marks)**

b. What is an antenna and draw the neat, labelled diagram of a Yagi-Uda antenna. **(5 marks)**

22. a. What are radio waves? Explain with neat labelled diagram the propagation of ground waves, space waves, and sky waves. **(10 marks)**

