

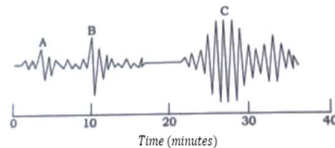
Solid and Semiconductor

1. a. Distinguish between intrinsic and extrinsic semiconductor.
- b. What is a PN Junction diode. Explain the characteristics of the diode in the (i) forward and (ii) reverse biased condition.
- c. What is a rectifier? Describe the working of (i) half wave rectifier (ii) full wave rectifier.
- d. What is Zener diode? Write the differences between normal diode and Zener diode.
- e. What is logic gat? Describe with truth tables, three basic gates: OR, AND and NOT gate.
- f. Write the truth table and Boolean algebra for NAND and NOR gate.
- g. What are avalanche effect and Zener effect?

Recent trend in physics

1. From where earthquake waves are generated?
 - a. **focus**
 - b. solid inner core
 - c. epicenter
 - d. none of the above
2. S wave can travel through
 - a. **solids but not liquids**
 - b. liquids but not solids
 - c. neither solid nor liquid
 - d. both liquids and solids
3. Which sets of waves in the figure represent surface wave?
 - a. A
 - b. B
 - c. C
 - d. All are surface wave
4. The point of origin of the seismic wave is called the focus. The point on the earth's surface vertically above the focus
 - a. hypocenter
 - b. metacenter
 - c. **epicenter**
 - d. barycenter
5. The existence of gravitational waves was predicted by Einstein in his:
 - a. Special theory of relativity
 - b. **General theory of relativity**
 - c. Theory of photoelectric effect
 - d. None of the above
6. Which of the following wave travels in solid rocks and liquids?
 - a. **P wave**
 - b. Gravitational wave
 - c. S wave
 - d. All of above

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1. a. In 1916, in general theory of relativity (GTR), Albert Einstein theorized (predicted) that when objects move through space, they create waves in space time around them.
 - i. What are gravitational waves? 1
 - ii. What are the basic properties of gravitational waves? 2
- b. What is seismic wave? What major difference is there in P and S wave? 3
- c. Love wave is the most destructive seismic wave. Why? 2
7. a. What are gravitational waves? What causes gravitational wave?
 - b. What are the properties and importance of gravitational waves? Do gravitational waves affect time?
 - c. What is nanotechnology? Describe its applications. 2
 - d. What is Higgs boson? Why is it called as God Particle? 2