



- Notes :
1. Answer **three** question from Section A and **three** question from Section B.
  2. Due credit will be given to neatness and adequate dimensions.
  3. Assume suitable data wherever necessary.
  4. Illustrate your answer necessary with the help of neat sketches.
  5. Use of pen Blue/Black ink/refill only for writing the answer book.

**SECTION - A**

1. a) Define the term related to semiconductor sensor. 10  
i) Typical. ii) Sensitivity.  
iii) Static Accuracy. iv) Ratiometricity.  
v) Overpressure.

- b) Explain the effect of temperature on piezo resistive pressure sensor with the help of curve. 4

**OR**

2. a) Explain noise and interference aspects of in sensor. 7

- b) What is meant by smart sensor? Give advantages and disadvantages of smart sensor over ordinary sensor. 7

3. a) Draw and explain block diagram of incremental optical encoder. 7

- b) Explain the following terms with example. 6

- i) Piezoelectric sensing.  
ii) Capacitive sensing.

**OR**

4. a) What is a Hall effect? How is it employed in a sensor? State its applications. 7

- b) How is low-power pressure measurement accomplished? Explain in detail. 6

5. a) What are the different types of ADC? Explain block diagram of first order sigma delta ADC. 7

- b) Explain pressure sensor with 4 to 20 mA transmitter. 6

**OR**

6. a) Explain barometer application circuit with an example. 7

- b) Explain the function of programmable resistor divider array in inherent power supply rejection. 6

**SECTION – B**

7. a) Explain various building blocks of MCU. 7  
b) What is meant by radio frequency interference? How it can be minimized? 7

**OR**

8. a) How is PWM control used in pressure sensor? Explain with suitable circuit diagram. 7  
b) Discuss with example, direct sensing and indirect sensing. 7  
9. a) Explain speed control of motor using PID with the help of block diagram. 7  
b) What is meant by neural network? Explain structure of neuron with hidden layer. 6

**OR**

10. a) Draw and explain block diagram of Fuzzy Interface Unit (FIU). 7  
b) Explain the impact of artificial intelligence. 6  
11. a) Explain Vehicle Navigation And Warning (VNAW) system for intelligent transportation. 7  
b) Why optical signal transmission is suitable for transmission of a signal in a sensor? Explain in detail. 6

**OR**

12. a) Explain wireless Local Area Networks. 6  
b) Which sensors operates on radar principles? Explain radar proximity sensor with the help of a neat schematic diagram. 7

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