

[Time: Three Hours]



[ Marks:80]

- N.B:
1. Question.No.1 is compulsory.
  2. Attempt any three questions from remaining five questions.
  3. Assume suitable data wherever necessary.

1. Answer the following 20
  - a) Explain working principle of any one optical chemical sensor.
  - b) Explain working principle of ADXL345 digital accelerometer.
  - c) Explain any one etching technique used in MEMS fabrication.
  - d) Explain optical method of dissolved oxygen measurement.
  
2. a) List various types of sensors based on Chemical transduction principle and explain any two. 10
  - b) Explain various techniques of deposition for MEMS sensor fabrication. 10
  
3. a) Give comparative study of thermal sensors. 10
  - b) Explain lift-off fabrication technique in detail. 10
  
4. a) List various ADCs used for sensor signal conditioning and explain any one in detail. 10
  - b) Explain digital humidity and temperature DHT sensor. 10
  
5. a) Explain smart analog IC 500 in detail. 10
  - b) List various mechanical sensors and explain application of any one sensor in detail. 10
  
6. Write short note on **any two** : 20
  - a) Sensors for soil moisture measurement
  - b) Photolithography
  - c) Carbon Dioxide Measurement

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