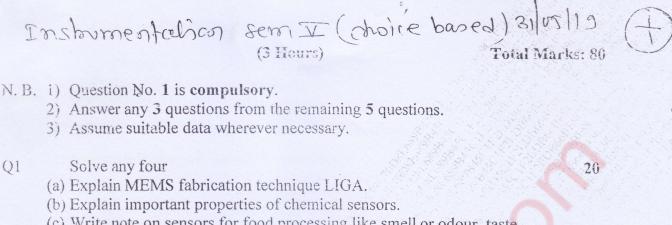
Instrumentation sem I (choice based) 31/05/19



- (c) Write note on sensors for food processing like smell or odour, taste. (d) Give comparative study of thermal sensors. (e) Explain working principle of digital humidity temperature smart sensor.
- (a) Explain various techniques of etching for MEMS sensor fabrication Q2 20 (b) Explain photolithography technique used in MEMS.
- Q3 (a) Explain briefly:-20 (1) Surface processing using sputtering (2) Chemical vapor deposition (b) Explain selection criteria for various transducers? Also elaborate design considerations for sensor fabrication.
- (a) Explain in brief Q4 20 ADXL 345 i) MEMS gyroscope
 - (b) Give comparative study of analog to digital converters used for sensor signal conditioning.
- (a) Write about different materials used in sensor fabrication. Q5 20 (b) Explain in detail differences between thin film and thick film sensors.
- Write short note. (Any Four) 06 20 a) Surface and bulk micro machining b) Any one application of optical sensors
 - c) Biological Oxygen Demand (BOD) d) Agriculture measurements such as soil moisture, wind speed, leaf wetness duration
 - e) Measurement of carbon dioxide (COx)