

Course: B.Tech.**Name of Subject: Measurements and Instrumentation****Subject Code: BTAE-505**

Time Allowed: 3 hrs

Paper ID-A2065

Maximum Marks: 60

Instructions to Candidates: There are three sections in this question paper. Attempt **all the questions from Section-A; any four questions from Section-B; and any two questions from Section-C.**

Section -A

- Q1.(a) Distinguish between range and span by giving appropriate example. 2
- (b) Explain the difference between threshold and resolution. 2
- (c) What is vacuum pressure? 2
- (d) Briefly explain the principle employed in manometers used for the measurement of pressure. 2
- (e) Suggest a method for measuring dynamic pressure variations in the exhaust manifold of an IC engine. 2
- (f) What is working principle of electromagnetic flow meter? 2
- (g) What are total radiation pyrometers? where are they used? 2
- (h) List different principles on which the force measurements are made. 2
- (i) How displacement is measured with Moire-Fringe method? 2
- (j) What is difference between systematic and random errors? 2

Section-B

- Q2. Classify various types of instruments. 5
- Q3. Explain construction, working and applications of hot wire anemometer. 5
- Q4. Explain construction, working and applications of optical pyrometer. 5
- Q5. Explain any two types of accelerometers. 5
- Q6. Explain hydraulic load cell and pneumatic load cell. 5

Section-C

- Q7. What are different sources of errors in measurements and measuring instruments? Explain. 10
- Q8. What are transducers and how are they classified? Explain their importance in an instrumentation process. Give some examples of mechanical transducers where there is a trasduction from i) force to displacement ii) velocity to pressure iii) temperature to displacement iv) fluid pressure to displacement 10
- Q9. Discuss construction and working of various gauges to measure low pressure. 10

End