



- Notes :
1. All questions carry marks as indicated.
  2. Solve Question 1 OR Questions No. 2.
  3. Solve Question 3 OR Questions No. 4.
  4. Solve Question 5 OR Questions No. 6.
  5. Solve Question 7 OR Questions No. 8.
  6. Solve Question 9 OR Questions No. 10.
  7. Solve Question 11 OR Questions No. 12.
  8. Due credit will be given to neatness and adequate dimensions.
  9. Assume suitable data wherever necessary.
  10. Illustrate your answers wherever necessary with the help of neat sketches.
  11. Use of non programmable calculator is permitted.
  12. Use of design data book is permitted.

1. a) List the various functional elements of a measuring system. Identify different functional element of pressure thermometer. **6**
- b) Explain the following in brief **8**
- |                 |                          |
|-----------------|--------------------------|
| i) Range & Span | ii) Measuring lag        |
| iii) Fidelity   | iv) Linearity & Backlash |

**OR**

2. a) Name the different methods for correction of undesired inputs to a measuring system. Explain with neat sketch method of opposing input with an example of strain measurement setup. **8**
- b) Explain in brief Errors and describe Uncertainty. **6**
3. a) Explain the principle of operation and working of LVDT. State advantages and limitation. **7**
- b) Explain the working of Rope Break Dynamometer with neat sketch. **6**

**OR**

4. a) Explain the principle of operation of photoelectric pickup for rotary speed measurement. **7**
- b) Explain with a neat sketch the working of cantilever type load cell using strain gauge mounted in full bridge configuration. **6**
5. a) Explain with neat sketch working of resistance thermometer vacuum gauge. Give its advantages, limitations and application. **7**
- b) Explain with neat sketch the working of Pirani gauge and state its salient features. **6**

**OR**

6. a) Explain with neat sketch working of RTD. Also states its advantages, limitations and application. **6**

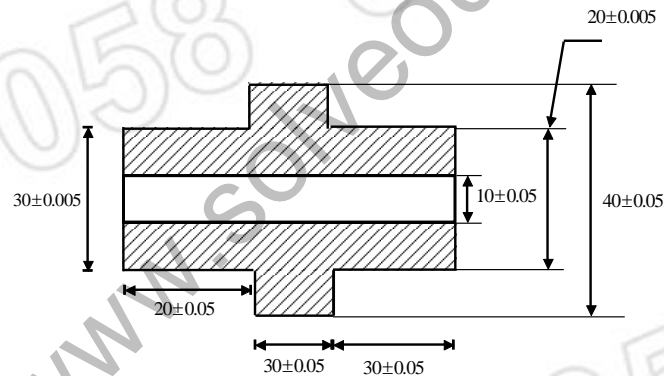
- b) Explain with neat sketch working of electrodynamic microphone. Give its advantages, limitations & Applications. **7**
7. a) Differentiate between line and end standard. Also explain wave length standard. **6**
- b) Give classification of measuring instrument. Explain angle gauges in brief. **7**

**OR**

8. a) Explain with neat sketch the setup for measurement of tapes angle with the help of sine bar. Also discuss why sine bar is not preferred for measurement of angle more than 45°. **7**
- b) Explain interchangeability and selective assembly in details. **6**
9. a) Design (General type) Go and No Go gauges for checking a hole and shaft pair designated by 25H7f8. Draw dimensioned sketches of the gauges. Assume gauge Makel's tolerance = 10% of work tolerance. **10**
- b) Discuss with suitable examples Taylor's principle of gauge design. **4**

**OR**

10. a) Prepare a plan of Manufacturing for the part shown in figure below in terms of  
 a) Selection of Raw material  
 b) Index table  
 c) Process planning sheet. **12**



All dimensions are in mm.

- b) Explain Hole basis and shaft basis system. **2**
11. a) Explain with neat sketch sigma mechanical comparator. Also states its advantages and limitations. **7**
- b) Explain two-wire method of measuring effective diameters of a screw thread. **6**

**OR**

12. a) Discuss with neat sketch, pneumatic comparator giving its advantages, limitations and applications. **7**
- b) Explain how straightness can be measured with the help of auto collimates. **6**

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