B.E. Fifth Semester (Mechanical Engineering) (C.B.S.)
Mechanical Measurement & Metrology

P. Pages : 2

NKT/KS/17/7342

Time : Three Hours

0063

Max. Marks : 80

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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 whenever necessary.
10. Illustrate your answers whenever necessary with the help of neat sketches.
11. Use of non programmable calculator is permitted.
12. Design data book is permitted.

1. a) Draw the block diagram representation of a generalised measurement system. Identify the functions performed by each element. **7**

b) What is calibration? Why it is necessary for an instrument? **6**

OR

2. a) State and explain the static characteristics of a measurement system. **6**

b) What is error in measurement? Explain types of error. **7**

3. a) What is a sensor? How are they classified? **6**

b) Describe the construction and working principle of LVDT. **7**

OR

4. a) Explain the basic working principle of a stroboscope with neat sketch. **6**

b) What do you mean by resistance strain gauge? Discuss its operation principle and binding material. **7**

5. a) What is a dead weight pressure gauge tester? Explain the precautions required for minimising errors. **7**

b) Describe with neat sketch a Mcleod gauge. Mention its salient features. **7**

OR

6. a) Explain the working principle of a thermocouple and state its features advantages and disadvantages. **7**

b) What do you mean by sound? State the functions and limitations of a sound meter. **7**

7.	a)	Define the terms line, end and wavelength standards and compare them giving suitable examples.	**7**
	b)	What is interchangeability? How it is different from selective assembly?	**6**

OR

8.	a)	Describe a sine bar. How it is used with slip gauges for angle measurement?	**7**
	b)	Explain the use of monochromatic light for flatness testing.	**6**
9.	a)	Define a fit and explain its various type.	**4**
	b)	Design a general type GO NOGO gauge for a fit designated as $\phi 40H_7d_8$.	**10**

OR

10.	a)	Discuss the importance of tolerance analysis.	**4**
	b)	Prepare a plan of manufacture for a part shown in fig. Q. No. 10 b in terms of :	**10**

       i)   Selection of raw material.
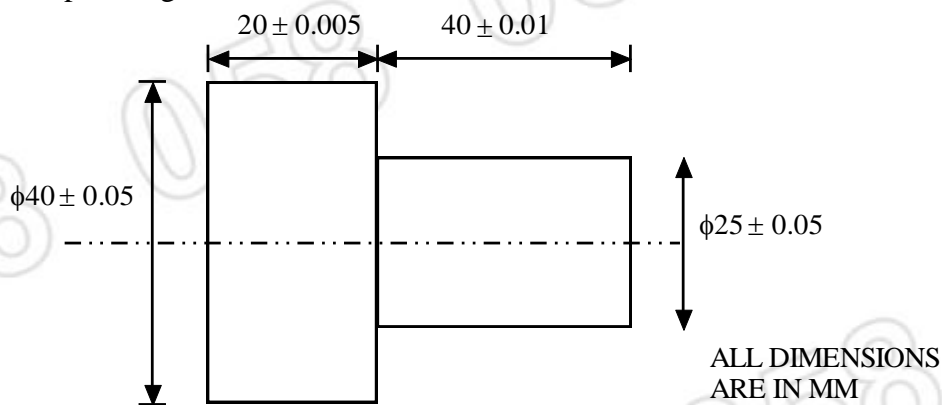   ii) Manufacturing plan.
       iii) Process planning sheet.

Fig. Q. 10 (b)

11.	a)	Sketch a Tool Maker's microscope and highlight the constructional feature of this optical instrument.	**6**
	b)	Explain two wire method for thread measurement.	**7**

OR

12.	a)	What is a comparator? Explain reed type mechanical comparator.	**7**
	b)	Give a detailed note on Pneumatic comparator.	**6**

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