

20/11/13

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B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2013

MANUFACTURING ENGINEERING

Fifth Semester

MF 9303 PRECISION ENGINEERING

(Regulation 2008)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. What are the factors influence the working accuracy?
2. Give the advantages of coating the face of tungsten carbide tools with a thin coating of titanium nitride
3. Mention the application of clearance, interference and transition fits
4. Differentiate equidistance and coincidence
5. Give the various design requirements for a good guide ways
6. Classify rolling element bearings based on the shape of the rolling element
7. Define micro sensor and its advantages
8. Give some of the materials commonly used for MEMS
9. Define 'zero shifting'
10. List some common external heat sources that affect accuracy of a machine tool

PART – B (5 x 16 = 80 Marks)

11. (i). What are the objectives need for achieving a higher precision in manufacturing engineering? (8)
(ii). Write short note on Cubic boron nitride and its various important characteristics (8)
12. (a). (i). What are geometrical tolerances? How are they specified? Give examples (8)
(ii). Define selective assembly. Find out the co-efficient of increase of accuracy in selective assembly with suitable example (8)

(OR)

- (b). (i). Determine the tolerances on the hole and the shaft for a precision running fit designated by 50H7g6 given; 50 mm lies between 30-50 mm i (in

microns) $=0.45(D)^{1/3}+0.001D$. Fundamental deviation for 'H' hole=0, Fundamental deviation for g shaft = $-2.5D^{0.34}$, IT7=16i and IT6=10i. State the actual maximum and minimum sizes of the hole and shaft and maximum and minimum clearances. (10)

(ii). Explain the various methods to check straightness of a line in two planes and components with simple sketch (6)

13. (a).(i). Explain the various types of guide ways generally used in machines with simple sketch (12)

(ii). Give the application and advantages of ball screw drive assembly (4)

(OR)

(b).(i). What is linear motor drive? and its advantage and limitations (12)

(ii). Describe the principle of lubrication (4)

14. (a).(i). What is MEMS? Explain its principle and characteristics (12)

(ii). Differentiate micro system and micro electronics (4)

(OR)

(b). (i). Explain the use of micro systems and MEMS devices for defence applications (12)

(ii). How surface micromachining is differ from bulk micromachining (4)

15. (a).(i). Explain the various kinds of deformation in a machine tool (12)

(ii). Write short note on compliance of work piece (4)

(OR)

(b).(i). Explain the various methods to decreasing the thermal effect in a machine (12)

(ii). List the various ways to reduce the wastage of power in hydraulic system (4)