

Time: 3 hours

Max. Marks: 75

Answer any five questions

All questions carry equal marks

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- 1.a) A gear ring of 85mm diameter bore is fitted on to a hub resulting in H7 /J6 fit. Calculate the tolerances and hence the limits of size for hub and gear bore. Specify the type of fit. The diameter step is 80 – 100 mm. The fundamental deviation for ' J ' shaft is 0.009mm.
- b) What is interchangeable manufacture? Briefly describe different types of interchangeability.
- 2.a) Taking an example, Explain the concept of limit gauging. What are its advantages and disadvantages?
- b) What are angle gauges? Discuss their use in Metrology lab.
- 3.a) Explain how flatness errors of lapped surfaces are measured with an optical flat?
- b) Describe the three methods of testing straight edge of one meter long?
- 4.a) In the measurement of surface roughness, heights of 10 successive peaks and valleys were measured from a datum as follows:
- | | | | | | |
|----------|----|----|----|----|--------------------|
| Peaks: | 45 | 42 | 40 | 35 | 35 μm |
| Valleys: | 30 | 25 | 25 | 24 | 18 μm . |
- Determine the R_z value of the surface.
- b) Write short note on grades for specifying the surface texture.
- 5.a) Give the complete classification of comparators.
- b) What is the basic principle of working of comparator?
- c) What characteristics are expected from a comparator?
- 6.a) Explain the use of rollers and slip gauges for the measurement of minor diameter of internal threads.
- b) Explain how effective diameter of an external thread can be measured using two wire method.
- 7.a) Discuss the various surface cleaning techniques.
- b) What remedial measures are to be taken to reduce corrosion on surfaces?
- 8.a) Briefly discuss about ion implantation.
- b) With the help of line diagrams explain the steps involved in chemical vapor deposition.
