



- 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. Use of non programmable calculator is permitted.

1. a) What are the basic consideration for design of drives for machines tools. **6**
- b) Explain the different working & auxiliary motions in machines tools. **7**

**OR**

2. a) Discuss the Geneva mechanism. Name the different mechanism used for obtaining motion. **7**
- b) Explain Rotary and translatory hydraulic drives used in machine tools. **6**
3. a) Explain with the circuit diagram ward Leonard system for controlling the speed of a planer table. **7**
- b) Classify speed boxes in detail. **7**

**OR**

4. Draw structural diagrams of a machine tool speed box for  $n_{\min} = 16\text{rpm}$ ,  $n_{\max} = 710\text{rpm}$  and  $\phi = 1.26$  which layout is best and why? **14**
5. a) Explain the functions of machine tool structure and methods of improving it. **7**
- b) State and explain the different materials used for machine tool structure. **6**

**OR**

6. a) What are different bed sections used for machine tool? Explain with their advantages & disadvantages. **6**
- b) Why cast iron is predominantly used for making beds, columns and frames of machine tool. **5**
- c) What is static and dynamic stiffness. **2**

7. a) What are the requirements, guide ways need to fulfil? State the various types of guide ways along with their merits. 7
- b) Describe in brief the classification of various bearings used in slide ways. 6

**OR**

8. a) Compare hydrostatic slide ways with hydrodynamic slide ways along with their application areas. 7
- b) What are the effective means used for accurate positioning of slide ways? Explain. 6
9. a) What are the basic requirements of the spindle must satisfy? Explain the design consideration of spindle used in vertical milling machine. 7
- b) What are the distinguishing features of anti friction bearing as compared to sliding bearing. 6

**OR**

10. a) Explain Air lubricated bearings. State its types & applications. 7
- b) Explain spindle run out. 6
11. a) Describe the important instrument required for alignment testing. 7
- b) Explain the systematic procedure for acceptance test of lathe machine. 7

**OR**

12. a) Explain the procedure for acceptance test of milling machine. 7
- b) What do you understand by the testing machine tool? What are the standard tests for acceptance of machine tools. 7

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