FACULTY OF ENGINEERING

B.E. 4/4 (M/P) II – Semester (Make-up) Examination, August 2012

Subject: **Machine Tool Design (Elective – II)**

Time: 3 Hours

Max. Marks: 75

Note: Answer all questions from Part – A. Answer any five questions from Part – B.

PART – A (25 Marks)

1. What is stick-slip motion and how can it be eliminated?
2. Draw the schematic structure of screw cutting machine.
3. Define quality and quantity of production and mention the parameters which affect them.
4. What are the advantages and limitations of hydraulic drives?
5. Differentiate between stepped and stepless drives used in machine tools.
6. What are the various shapes used for guide ways in machine tools?
7. What materials are used for machine tool structures and mention their relative advantages?
8. How the clearances affect the overall performance of spindle?
9. Explain the working principle of hydro-dynamic bearing.
10. What is range ratio and how the highest speed is found?

PART – B (5x10 = 50 Marks)

11.(a) Sketch and explain various intermittent motion mechanisms used in practice.
(b) With a schematic diagram explain the construction and working of CIVC machines.

12.(a) What are the advantages and limitations of special purpose machines?
(b) Differentiate between linear and rotary transfer machines and mention their applications.

13.(a) Draw the optimum ray diagram for 12 speed gear box.
(b) How the speed gear box is designed for gear teeth and diameter of shafts?

14.(a) Differentiate between stepped and stepless regulation used in gear boxes.
(b) Sketch and explain the construction and working of Norton gear box.

15.(a) What are the various factors affecting the stiffness of machine tool structure and mention the methods to improve?
(b) Describe the design procedure for the beds of machine tool structures.

16.(a) What are the various factors to be considered in the design of spindle for grinding machine?
(b) Differentiate between hydrostatic and hydrodynamic bearings.

17. Answer the following:
(a) Electrical and electronic controls
(b) Vane pump
(c) Direction control valves.

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