



**OR**

- 7.a) Distinguish between the operating principles of Fine boring machines and Vertical Jig boring machine.
- b) Explain the principle of working and applications of a Planing machine. [5+5]
- 8.a) Distinguish between the principal features of vertical and universal milling machines.
- b) Explain the principle of operation and applications of Broaching machines. [5+5]

**OR**

- 9.a) Explain the following methods of indexing used in Milling machines :  
(i) Compound indexing (ii) Differential indexing.
- b) Index for 87 divisions, using the method of Compound indexing. [5+5]
- 10.a) What are the special features of grinding process? Explain.
- b) What are the different types of grinding wheel wear? Explain with a suitable sketch.

[5+5]

**OR**

- 11.a) Describe, with a neat sketch, the Kinematic Scheme of a Surface grinding machine.
- b) Explain different types of abrasives used in making a grinding wheel. [5+5]

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