

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– III EXAMINATION – SUMMER 2015

Subject Code: 2131903

Date: 29/05/2015

Subject Name: MANUFACTURING PROCESSES-I

Time: 02.30pm-05.00pm

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) List the surface finishing processes. Why can close dimensional tolerances be not guaranteed with surface finishing operations? **07**
- (b) State the purpose of each part on lathe: **07**
(1) Face Plate, (2) Lead screw, (3) Steady rest, (4) Chasing dial, (5) Mandrel, (6) Split nut and (7) Tail stock.
- Q.2** (a) With help of neat diagram explain the following setup on centre lathe: **07**
(1) Use of fixed steady for drilling on end of a long bar.
(2) A knurling operation set up.
(3) Taper turning by swiveling compound rest.
- (b) List the work holding devices used for holding work on a drilling machine and explain with neat sketch any three. **07**
- OR**
- (b) Determine the time required to drill a hole of 25mm diameter in a cast iron work piece 50mm thick using a high speed steel drill. The cutting speed and feed rate for the operation may be assumed to be 0.50 m/s and 0.5 mm/rev respectively. The drill point angle is 118° . An approach and over travel may be assumed to be 8mm. **07**
- Q.3** (a) With help of neat sketch explain vertical boring machine and state function of its parts. **07**
- (b) List different type of reamers commonly used on drilling machine and describes with neat sketch any three. **07**
- OR**
- Q.3** (a) What do you understand by (1) Gang milling (2) Straddle milling (3) String milling? **07**
- (b) Explain method of mounting and application of the following cutters used on milling machine: (1) End mills, (2) Slitting saws and (3) Slab milling cutter. **07**
- Q.4** (a) Explain with neat sketch shaper feed mechanism. **07**
- (b) Draw a neat sketch of slotter and explain function of principle parts of slotter. **07**
- OR**
- Q.4** (a) Calculate machining time for steel slab top surface 400mm wide and 500mm long to be planed on a planer. The cutting speed and return speed are 20 m/min and 80 m/min respectively. Take machining allowance as 10mm, side over travel of tool as 3mm, table over travel on both side as 100mm and tool approach angle as 45° . The cross feed of tool is 3mm/full stroke. **07**
- (b) Explain basic principle of broaching. Make neat sketch of internal pull type broach showing various terms related to its teeth and explain significance of these terms. **07**
- Q.5** (a) What is meant by setting the saw teeth? Describe various types of teeth sets and give their application. **07**

- (b) Discuss with neat sketch how are the following alignment test conducted on lathe : (1) Spindle Centre run out (2) Pitch accuracy of lead screw. **07**

OR

- Q.5** (a) List the various types of bond used in manufacture of grinding wheels. State the type of application in which each bond is useful. **07**
- (b) Explain how you will check the following on milling machine: **07**
(1) Central T-slot square with arbor (2) Work table parallel with arbor rising towards over arm.
