GUJARAT TECHNOLOGICAL UNIVERSITY  
BE - SEMESTER- III EXAMINATION – SUMMER 2015  

Subject Code: 2131903  
Subject Name: MANUFACTURING PROCESSES-I  
Time: 02.30pm-05.00pm  

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?  
(b) State the purpose of each part on lathe:  
   (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:  
   (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.  

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°m. An approach and over travel may be assumed to be 8mm.  

Q.3 (a) With help of neat sketch explain vertical boring machine and state function of its parts.  
(b) List different type of reamers commonly used on drilling machine and describes with neat sketch any three.  

OR  
Q.3 (a) What do you understand by (1) Gang milling (2) Straddle milling (3) String milling?  
(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.  

Q.4 (a) Explain with neat sketch shaper feed mechanism.  
(b) Draw a neat sketch of slotter and explain function of principle parts of slotter.  

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.  
(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.  

Q.5 (a) What is meant by setting the saw teeth? Describe various types of teeth sets and give their application.  

(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.

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.
(b) Explain how you will check the following on milling machine:
(1) Central T-slot square with arbor (2) Work table parallel with arbor rising towards over arm.

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