

C U SHAH UNIVERSITY

WADHWAN CITY

Subject Code: 4TE04MPR1

Date: 23/05/2015

Subject Name: Manufacturing Processes - I

Total Marks: 70

Instructions:

1. Make suitable assumptions whenever necessary.
2. Figures to the right indicate full marks.
3. All questions are compulsory.

Section - I

- Q-1 (a) Define primary cutting motions in machine tools. 02
- (b) Give classification of machine tools. 02
- (c) Find the time required on lathe for one complete cut on a piece of work 350 mm long & 50 mm in diameter. The cutting speed is 35 meters per minute and the feed is 0.5 mm per revolution. 03
- Q-2 (a) Explain with neat sketch 9-speed all geared head stock. 05
- (b) Explain with the help of neat sketch 'Taper turning by setting over the tail stock method'. 05
- (c) Explain Reaming & Trepanning operation with neat sketch. 04

OR

- Q-2 (a) A lathe has four steps, the diameter of each being 90 mm, 130 mm, 170 mm & 210 mm. The countershaft pulley revolves at 100 rpm. The gears A, B, C, & D have 16, 48, 16, 48 teeth respectively. Find the various speed of the spindle. 07
- (b) Explain with neat sketch the construction and working of spindle, quill and drill head assembly. 07
- Q-3 (a) Explain "Apron Mechanism" with neat sketch. 07
- (b) Explain with neat sketch Jig boring machine and write its applications. 07

OR

- Q-3 (a) Explain with the help of neat sketch following alignment tests on Lathe i) Leveling of the machine ii) Parallelism of spindle axis and bed. 07
- (b) Describe in brief the different operations that can be performed on a horizontal boring machine. 07

Section -II

- Q-4 (a) Define with neat sketch form milling operation. 02
- (b) Define with neat sketch angular milling operation. 02
- (c) Compare shaper, planer & slotter. 03
- Q-5 (a) Discuss with sketch characteristics of conventional Up and Climb milling. 05
- (b) A slot of 30mm X 30mm is to be milled in a work piece of 300 mm length using a side and face milling cutter of diameter 100 mm, width 30 mm and having teeth 20. Taking depth of cut 5 mm, feed per tooth 0.1mm, cutting speed 35 m/min and over travel distance of 5 mm. Calculate time required for milling the slot. 05
- (c) How stroke length and stroke position can be set on a shaper having crank and 04

slotted link mechanism?

OR

- Q-5 (a) Enlist common methods of indexing using dividing head. Explain any two with suitable examples. 07
- (b) Explain the principle of quick return motion in the shaper. Explain Withworth quick return mechanism. 07
- Q-6 (a) Discuss various broaching methods in details with its applications. 07
- (b) How grinding wheel is specified? Explain in details. 07
- OR
- Q-6 (a) What is sawing? Explain reciprocating saw. 07
- (b) Explain centreless cylindrical grinding with neat sketch. 07