

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER V • EXAMINATION – WINTER - 2013

Subject code: 152002

Date: 12-01-2013

Subject Name: Manufacturing Technology – I

Time: 02:30 pm to 05:00 pm

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) Enlist the specifications of an engine lathe and explain any two with neat sketch. **07**
(b) A lathe has four step pulleys. The diameter of each being 80 mm, 120 mm, 160 mm and 200 mm. The counter shaft pulley revolves at 110 rpm. The gears A, B, C and D have 16,48,16,48 teeth respectively. Find the various speeds of the spindle. **07**
- Q-2** (a) Explain the following lathe operations with neat sketch. **07**
(i) Facing (ii) Chamfering
(b) Explain with neat sketch any two of the alignment tests of drilling machine. **07**
- OR**
- (b) Explain (i) boring (ii) Spot facing (iii) Trepanning operations with neat labeled sketch. **07**
- Q-3** (a) With neat sketch explain machining time in drilling. At what speed a 200 mm drill will run for cutting steel at 25 m per min surface speed? **07**
(b) Describe with neat sketch (i) Gangmilling (ii) Endmilling **07**
- OR**
- Q-3** (a) Write a short note on types of shapers. **07**
(b) How machining time is calculated using plain milling cutter for a circular work piece of known length? Explain with neat sketch. **07**
- Q-4** (a) Index 69 divisions by compound indexing. Assume following Brown & Sharpe plates are available. **07**
Plate no. 1. 15,16,17,18,19,20
2. 21,23,27,29,31,33
3. 37,39,41,43,47,49,
(b) (i) Differentiate between dressing and truing of grinding wheels. **07**
(ii) How a grinding wheel is marked with a standard marking system? Explain in brief.
- OR**
- Q-4** (a) Write a short note on rough and precision grinders. **07**
(b) With neat sketch explain cutting forces in conventional turning process. **07**
- Q-5** (a) State the various factors for deciding speed and feed in metal cutting. **07.**
(b) Differentiate between shaper and planer. **07**
- OR**
- Q-5** (a) Enlist the various surface finishing processes. Explain any two briefly. **07**
(b) Determine the dimensions with tolerance specifications of the mating components of a 30 mm clearance fit with a maximum clearance of 70 microns and minimum clearance of 10 microns. Use hole basis and assume shaft tolerance to be five times the hole tolerance. **07**