

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Summer 2018-19 Examination

Semester: 5
Subject Code: 03113302
Subject Name: Manufacturing Process I

Date: 17/05/2019
Time: 10:30 AM to 1:00 PM
Total Marks: 60

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions - (Fill in the blanks, one word answer, MCQ-not more than Five in case of MCQ) (All are compulsory) (Each of one mark) **(15)**

1. The lead screw of a lathe has _____ threads.
 A. single start B. double start C. multi-start D. any one of these
2. Large number of cutting tools can be simultaneously used in
 A. Shaping machine B. Planing machine C. Slotting machine D. None of the above
3. In high speed machining of steels the teeth of milling cutters may fail by
 A. mechanical breakage B. plastic deformation C. wear D. all of the above
4. A twist drill is a
 A. side cutting tool B. front cutting tool C. end cutting tool D. none of these
5. Negative rakes are used for
 A. carbide tools B. heavy loads C. harder materials D. all of these
6. Segmental chips are generally formed during machining of _____ material.
7. In a turning operation, the change in diameter of the work part is equal to _____ x depth of cut.
8. Cemented carbide tool tips are produced by powder metallurgy. It's true or false
9. In cutting tools, crater wear develops at _____ face of the tool
10. Why is coarse grain and open structured wheel is preferred for stock removal grinding?
11. The main purpose of a boring operation, as compared to drilling, is to _____
12. Why even a battery operated pencil sharpener cannot be accepted as a machine tool?
13. State the specific application of a planetary internal grinder.
14. What is the specific difference between orthogonal & oblique machining process?
15. A live center is one way of holding a work piece in the headstock of a lathe, whereas a dead center is used to hold the work in the tailstock. True or False?

Q.2 Answer the following questions. (Attempt any three) **(15)**

- A) Draw twist drill nomenclature and explain (a) helix angle (b) point angle
- B) Explain briefly with neat sketch (a) drilling (b) reaming (c) boring (d) counter boring (e) spot facing.
- C) Explain crank and slotted link quick return mechanism in a shaper.
- D) Draw the nomenclature of broach & calculate tooth load on a broach.

Q.3 A) List the methods of taper turning on lathe machine. Describe any two method of taper turning. **(07)**

- B) Draw a Merchant's Circle Diagram and derive expressions to show relationships amongst the different forces acting on the cutting tool and also derive the equation of co-efficient of friction. **(08)**

OR

- B) The following observations were made during orthogonal turning of a mild steel tubing of 60 mm diameter on a lathe. **(08)**

- (1) Cutting speed24 m/min
- (2) Tool rake angle32°
- (3) Feed rate0.12 mm/rev
- (4) Tangential cutting force.....3000N
- (5) Feed force.....1200N
- (6) Length of continuous chip in one revolution...96 mm

Determine: (i) Co-efficient of friction (ii) Shear plane angle (iii) Velocity of chip tool face
 (iv) Chip thickness

Q.4 A) Explain difference between conventional milling and climb milling with neat sketch. (07)

OR

A) Draw front view, top view and side view of single point cutting tool. Indicate all elements and important angles with its significance. Identify following tool signature 8-14-6-6-20-15-4. (07)

B) Explain the standard marking system for conventional grinding wheels (08)