PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Summer 2022 - 23 Examination

Semester: 4th   Date: 24/03/2022
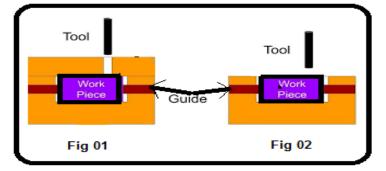Subject Code: 203109255   Time: 2.00 pm to 4.30 pm
Subject Name: Manufacturing Technology   Total Marks: 60

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

Q.1   **Objective Type Questions (All are compulsory) (Each of one mark)**   (15)

1. Dielectric fluid is used in _____ machining operation as a medium for workpiece.
   (a) Chemical
   (b) LASER beam
   (c) Water jet
   (d) Electro Discharge

2. Out of below which is not a metal forming operation?
   (a) Wire drawing
   (b) Deep drawing
   (c) Forging
   (d) Milling

3. _____ die consists of number of stations arranged in a line to perform sequential press working operations.
   (a) combination
   (b) progressive
   (c) compound
   (d) none of above

4. In Stainless steel can not be cut by _____.
   (a) Gas cutting
   (b) Plasma Arc cutting
   (c) Shearing machine
   (d) LASER beam

5. In metal turning operation on lathe, the ratio of chip flow velocity to cutting velocity is found to be same as _____
   (a) Shear angle
   (b) Chip thickness ratio
   (c) Rake angle
   (d) None of above

6. In the below figure which one represents the basic function of jig? Fig 01 or Fig 02.

7. Which arc welding process uses non consumable electrode?
8. In which welding process the electrical arc is fully covered under granular flux?
9. Enlist any three Solid state welding processes.
10. Name any two types of dynamometers used for force measurement in lathe.
11. A turning tool with rake angle as 10° used for turning of 50 mm diameter rod at feed of 0.07 mm/rev and produce 0.12 mm thickness of chip. What will be the chip thickness ratio?
12. Write down equation to find out shear angle as a function of chip thickness ratio and rake angle in metal cutting.
13. Write Earnst – Merchant equation.
14. Write down Taylor`s tool life equation to show relationship between cutting speed and tool life.
15. Write down equation of heat generation in Resistance welding process.

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

   A) Differentiate between orthogonal cutting and oblique cutting.

   B) How do you differentiate between jigs and fixtures?

   C) H.S.S tool is used for machining workpiece of M.S. While machining at a cutting speed of 30 m/min, the useful life of tool is found to be 1 hour. What will be tool life if the same tool is used to cut at speed of 40 m/min, other parameters remaining the same. Assume the value of exponent (n) of standard Tayor's equation= 0.12

   D) What is Rapid Prototyping? Write any four applications in the field of manufacturing.

Q.3 A) Draw Merchant Circle diagram and show force triangles with standard nomenclature. **(07)**

   B) Explain 3-2-1 principle for locating an object. Draw necessary figure to support your answer. **(08)**

OR

   B) Enlist any five gear finishing operations and out of them explain any three in brief .Support your answer with neat sketch if necessary. **(08)**

Q.4 A) Explain working principle, consumables and application of shielded metal Arc Welding (SMAW) with neat sketch(schematic). **(07)**

OR

   A) Give detailed classification of Press in different aspects. **(07)**

   B) Enlist any five Non Conventional Machining methods. Explain Abrasive Jet Machining (AJM) in context of principle of operation, application, advantages and disadvantages. Also Draw schematic figure of AJM operational set up. **(08)**