

M.E. First Semester (Production Tech. & Mgt.) (P.T.) (CBS)
13530 : Advanced Metal Cutting And Welding Technology : 1 SPTM 1

P. Pages : 2

Time : Three Hours



AU - 3242

Max. Marks : 80

- Notes :
1. Answer **three** question from Section A and **three** question from Section B.
 2. Assume suitable data wherever necessary.
 3. Illustrate your answer necessary with the help of neat sketches.
 4. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION - A

1. What are the various theories associated with metal cutting ? State the assumptions of merchant theory and explain the graphical method of calculating the various component of resultant force from merchant circle. 13
2. Explain the following : 14
 - i) Velocity relations
 - ii) Shear angle
 - iii) Mechanism of chip formation
3. a) What is AWR, RBF and HTS ? With a ternary plot explain the positions of various important tool materials. 7
- b) What are the various tool life criteria ? Explain. 6
4. How are the form tools classified ? Draw a circular or flat form tool for producing a profile of your choice on a circular workpiece of your choice. 13
5. Explain the geometric elements of the following tools with neat sketch. 13
 - i) Four fluted tap
 - ii) Twist Drill
 - iii) Plain Milling Cutter

SECTION - B

6. a) What are the various principles of location ? Explain with neat sketch. 7
- b) Explain the following types of clamps with neat sketches. 7
 - i) Strap clamp
 - ii) Quick acting nut
7. a) How do the Jigs differ from the fixtures ? Explain. 6
- b) Explain the following with neat sketch. 7
 - i) Nest location
 - ii) Conical locators

8. Design a drill jig for drilling six holes in flange of a component with a hub. Assume suitable dimension. Mention clearly in words the following aspects of this jig. 13
- i) The type of jig
 - ii) The surfaces used for location
 - iii) The type of locator used.
 - iv) The type of clamp used.
 - v) Other significant feature of this jig if any.
9. a) Explain the principle of working applications and limitations of the following : 6
- i) Chemical machining
 - ii) Laser beam welding
10. a) What are the various sources of heat in brazing and soldering operations ? 6
- b) What is the principle of working of submerged Arc Welding. Also state the applications and limitations of this process. 7
