

First Semester M. E. (Production Tech. and Mgt.) Examination

ADVANCED METAL CUTTING AND WELDING TECHNOLOGY

Paper - 1 SPTM 1

P. Pages : 3

Time : Three Hours]

[Max. Marks : 80

- Note :** (1) Separate answer book must be used for each section in the subject Geology, Engineering material of civil branch and Separate answer book must be used for Section A and B in Pharmacy and Cosmetic Tech.
- (2) All question carry equal marks.
- (3) Answer **Three** questions from Section A and **Three** questions from Section B.
- (4) Due credit will be given to neatness and adequate dimensions.
- (5) Illustrate your answer wherever necessary with the help of neat sketches.
- (6) Use pen of Blue/Black ink/refill only for writing the answer book.

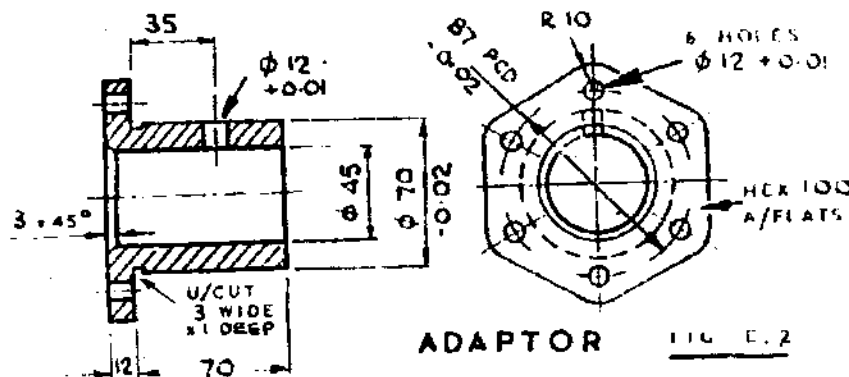
SECTION A

1. (a) Explain Merchant theory with neat sketch. 7
- (b) What is metal cutting ? Explain orthogonal and oblique cutting. 6
2. (a) What are the types of chips ? Explain process of chip formation. 7
- (b) Explain various types of chip breakers. Why are they needed ? 6
3. (a) Explain the effect of tool geometry and cutting variables on tool life. 6
- (b) Why cutting fluid is required in metal cutting ? List out different types of cutting fluids. 7
4. (a) What is form tool ? Draw circular form tool for job of your choice. 9
- (b) Draw neat sketch of a single point cutting tool as per ASA system. 5
5. Show the geometric elements of following tools with neat sketch.
 - (i) Tap
 - (ii) Reamer
 - (iii) Drill bit.

SECTION B

6. Design a drill jig for drilling 6 holes of 12 mm diameter in the flange of Adaptor shown in fig.E2. The part is complete except this operation. Mention clearly in words

- (i) The surface used for location.
- (ii) The type of locator used for location.
- (iii) The surface selected for clamping.
- (iv) Type of clamps used.
- (v) Type of jig.



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7. (a) What is redundant location ? Explain it in context of the locating from two holes in a component. 7
- (b) What is need of clamping ? What are basic principles of clamping related to positioning of clamps and clamping forces ? Explain. 6
8. (a) What are the different types of clamps ? Explain any one with neat sketch. 6
- (b) Explain : —
 - (i) Setting block 7
 - (ii) Use of dowels.
9. (a) How are the welding processes classified ? Explain principle of working of oxy-acetylene welding. 7

(b) What are common welding defects ? Explain how they can be avoided. 6

10. Explain the following (Any Three) :—

- (i) Electron beam welding.
- (ii) Rest pad, rest plate and rest buttons.
- (iii) C-washer.
- (iv) Weldability.
- (v) Resistance welding.

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