

22565

22232

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.
 - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.

Marks

1. Attempt any FIVE of the following :

10

- (a) State the basic requirements for chip formation.
- (b) State the composition of High Speed Steel.
- (c) List the types of Locators.
- (d) Define Jigs and Fixtures.
- (e) Define centre of pressure in press tool.
- (f) List the parts of bending die.
- (g) State the applications of stock stop in press tool.



- 2. Attempt any THREE of the following :** **12**
- (a) Explain types of chips with sketch.
 - (b) Explain the ISO designation of indexable inserts in following example :
D – C – M – T – 11
 - (c) Explain the screw clamp with neat sketch.
 - (d) Explain the construction of Box type jig with sketch.
- 3. Attempt any THREE of the following :** **12**
- (a) Explain 3 – 2 – 1 principle of location with neat sketch.
 - (b) Explain the methods of application of Die clearance.
 - (c) Explain the working of strippers and knockouts in press tool (any one).
 - (d) Explain U-dies or channel dies principle of working.
 - (e) Classify the forging dies and explain any one with neat sketch.
- 4. Attempt any TWO of the following :** **12**
- (a) During a turning of mild steel component with a 0 – 10 – 7 – 7 – 8 – 9 – 1.5 mm shaped orthogonal shaped tool, a depth of cut of 1.8 mm is used. If feed is 0.18 mm/rev and a chip thickness of 0.36 mm is obtained, determine the
 - (i) Chip thickness ratio
 - (ii) Shear angle
 - (b) P S R N R 16 16 H 12
Explain the ISO designation of tool holders.
 - (c) Draw the location of a component effectively located with the help of a cylindrical pin and a diamond pin locator and state the use of these locators.

5. Attempt any TWO of the following :**12**

- (a) Draw a neat sketch of plain milling fixture and explain in brief.
- (b) A washer with a 12.7 mm internal hole and an outside diameter of 25.4 mm is to be made from 1.5 mm thickness of strip of 0.2 % carbon steel.

Calculate :

- (i) Clearance
- (ii) Size of the punch and die.
- (c) Determine the blank size required to produce a cup of ϕ 65 mm diameter, height of 75 mm and corner radius of 3.5 mm drawn from a 1 mm thickness of steel.

6. Attempt any TWO of the following :**12**

- (a) Explain the design considerations and procedure for Jigs and Fixtures.
 - (b) For a washer, it is proposed to have the burrs obtained in the two operations, viz., blanking and piercing suggest a suitable arrangement of the die giving reasons.
 - (c) Draw a general assembly sketch of progressive cutting die showing all the components.
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