22565

**22232**

**3 Hours / 70 Marks** Seat No. | | | | | | | | |

***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 indexible 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 $\phi$ 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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