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Question Paper Code : 11049

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2014.

Seventh Semester

Mechanical Engineering

080120043 — DESIGN OF JIGS, FIXTURES, PRESS TOOLS AND MOULDS

(Regulation 2008)

Time : Three hours Maximum : 100 marks

Use of design data book is permitted.

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Which type of work pieces often need more than six locating points?
2. What are the important properties required for clamps?
3. What are liner bushes?
4. What are the main types of boring fixtures?
5. Differentiate a compound die and a combination die.
6. Why back-pin die sets are preferred for lateral feeding?
7. State the advantages of V bending.
8. What is ironing effect in drawing?
9. What is the use of chase in compression moulding?
10. State any two factors that decide the operating temperature of a mould.

PART B — (5 × 16 = 80 marks)

11. (a) Write short notes on the following locators :

(i) V-locator (4)

(ii) Profile locator (4)

(iii) Diamond pin (4)

(iv) Equalising jack. (4)

Or

(b) (i) Explain the various principles involved in clamping. (10)

(ii) Write a note on clamping force. (6)

12. (a) Design a jig for drilling the dia 5 mm holes in the component shown in fig.1 (16)

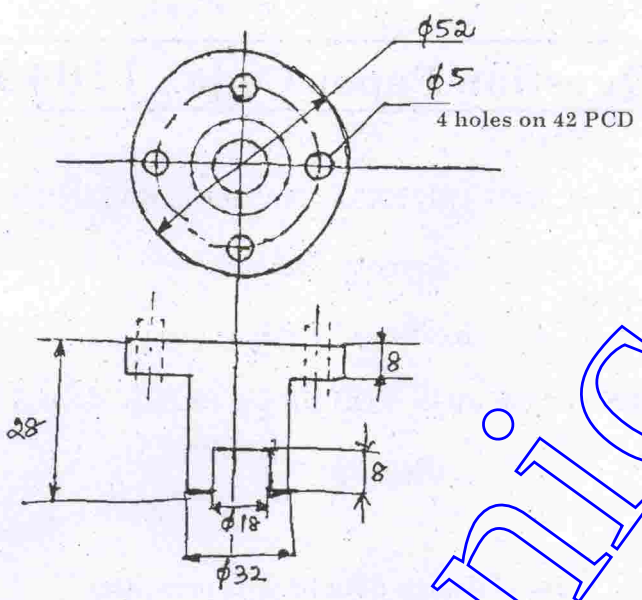

Fig. 1

Or

(b) Sketch and describe a milling fixture for the mild steel component shown in fig.2. (16)

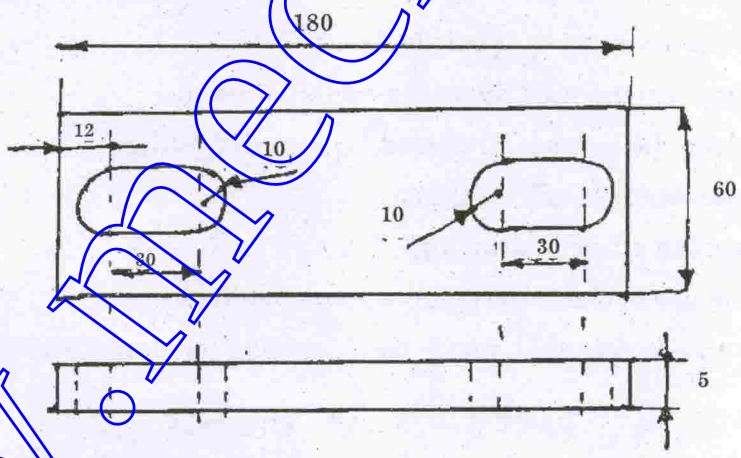

Fig. 2

13. (a) A steel washer of 44mm outer diameter and 24mm inner diameter is to be made from 2mm thick sheet. If the shear stress of the material is 385 N/mm² and percentage penetration is 22%, design a progressive die. (16)

Or

(b) (i) Determine the centre of pressure of the given component shown in fig3. (12)

(ii) Write a note on staggering of punches. (4)

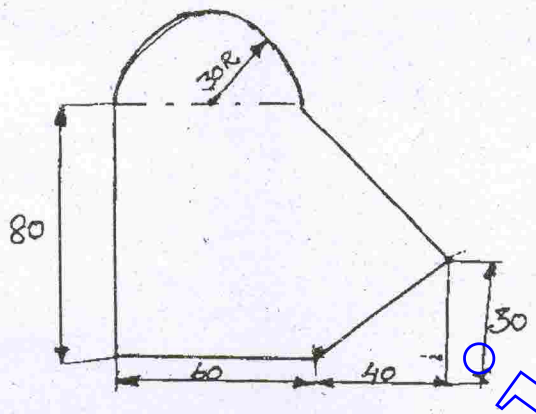

Fig. 3

14. (a) (i) Calculate the blank length to make the part shown in fig4. Also determine the bending force required if the ultimate tensile strength of material is 3500 kg/cm^2. The die radius is 8mm and the bend length is 120cm. (12)

(ii) Discuss the salient features of forming dies. (4)

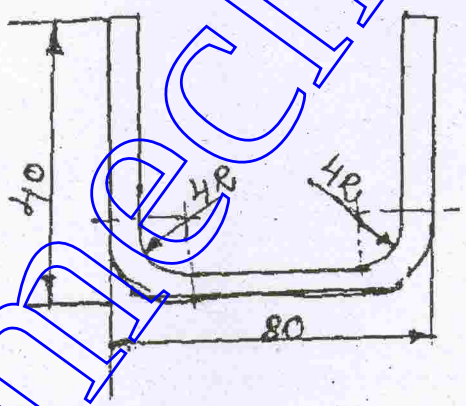

Fig. 4

Or

(b) Discuss in detail the various factors affecting drawing. (16)

15. (a) Write a detailed note on the various components of feed system of injection moulding. (16)

Or

(b) Explain with figures the principle and process of compression moulding. (16)