

CBCS SCHEME

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15MA653

Sixth Semester B.E. Degree Examination, June/July 2018 Jigs and Fixtures

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Mention the principles of location. (06 Marks)
b. Discuss the principles of clamping. (10 Marks)

OR

- 2 a. Illustrate the air-to-hydraulic booster circuit used for clamp actuation. (10 Marks)
b. Sketch and describe 'pinch clamp'. (06 Marks)

Module-2

- 3 a. Discuss an inspection fixture for checking the concentricity of the angular seat of the valve with respect to its stem. (08 Marks)
b. Illustrate a lathe fixture. (08 Marks)

OR

- 4 Sketch and describe a subplate modular fixturing system. (16 Marks)

Module-3

- 5 a. Discuss the major components of an openback inclinable press, with a neat diagram. (08 Marks)
b. What is the function of a pilot used in press working? How they are classified? (02 Marks)
c. Illustrate a spring-loaded pilot. (06 Marks)

OR

- 6 a. Calculate the cutting force and stripping force for the following blanking operation: The work piece material is 1020 steel with the shear strength of 385 N/mm^2 and thickness is 3.25mm. The blanking perimeter is 70mm. (04 Marks)
b. Sketch and explain - 'Trip stop'. (06 Marks)
c. Write a note on die clearance. (06 Marks)

Module-4

- 7 a. Discuss the two bending methods with schematic diagrams. (08 Marks)
b. Discuss any one method of preventing spring back in wiping dies. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

OR

- 8 a. Explain a single-action draw die with spring loaded knockout. (08 Marks)
- b. A symmetrical cup work piece shown in Fig. Q8(b) with a shell height of 40mm and a shell diameter of 50mm, is to be drawn. The corner radius at the bottom is 1.6mm. The work piece material is 1020 cold-rolled steel 0.8mm thick, with ultimate tensile strength 421 N/mm^2 , constant to cover friction is 0.7. determine the following :
 i) Blank size ii) % reduction iii) draw pressure. (08 Marks)

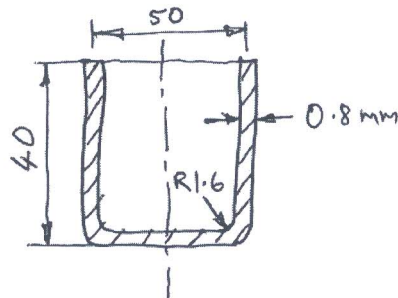


Fig.Q8(b)

Module-5

- 9 a. Write a note on 'reducing tool' used to decrease the size of a drawn cup to form a bottleneck. (08 Marks)
- b. Explain the principle of curling with a neat sketch. Why curling is needed? (08 Marks)

OR

- 10 a. What is embossing? Why it is used? Explain the embossing operation with a neat diagram. (08 Marks)
- b. Illustrate the rubber bulging. (08 Marks)

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