Reg. No.												

Question Paper Code	11600

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV/DEC 2022

Fifth Semester

Production Engineering

20PRPC504 - DESIGN OF JIGS, FIXTURES AND PRESS TOOLS

(Regulations 2020)

(Use of approved Design Data Book is permitted)

Duration: 3 Hours Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	What is meant by redundant location?	2,K1,CO1
2.	Name the different types of clamps.	2,K1,CO1
3.	What are assembly fixtures?	2,K1,CO3
4.	What are mandrels?	2,K1,CO3
5.	Name any four components of a simple press? Mention the broad classification of press operations.	2,K2,CO4
6.	What is meant by clearance? Why is it important in shearing operations?	2,K2,CO4
7.	Define center of pressure. How will you calculate irregular work parts?	2,K2,CO5
8.	List out the main parts of a power press.	2,K1,CO5
9.	What is SMED?	2,K1,CO6
10.	Write the components of a CNC machine	2,K1,CO6

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

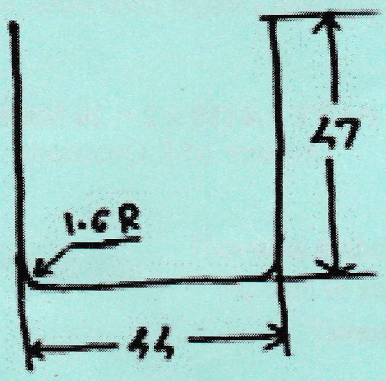
11.	a)	What are the various location devices? Explain any four of them with the aid of suitable sketches.	13,K2,CO1
		OR	
	b)	Explain 3-2-1 principle of location and show how many degrees of freedom are arrested using them.	13,K2,CO1
12.	a)	Sketch and explain a turning fixture used for machining non-cylindrical components.	13,K2,CO3
		OR	
	b)	Sketch and explain a welding fixture for door frame fabrication.	13,K2,CO3
13.	a)	Design a die for 20x20 mm plate with a 5 mm hole in the center. Stock thickness is 0.5 mm and the material is mild steel. Take f_s=120 N/mm^2.	13,K3,CO4
		OR	

b) Design a die for a 50 mm washer with a 10 mm hole in the center. Thickness of the washer is 0.8 mm and the material is mild steel. *13,K3,CO4*

14. a) Explain the variables affecting the metal flow in drawing operations. *13,K2,CO5*

OR

b) Design a drawing tool for the component shown in Fig. Considering the following assumptions, the material of the sheet is mild steel, 0.8mm thickness and ultimate tensile strength 42kg/mm^2. Determine the following a) Blank size b) Draw ratio c) No. of draws d) Percentage of reduction e) Die and punch radius f) Die clearance. *13,K3,CO5*



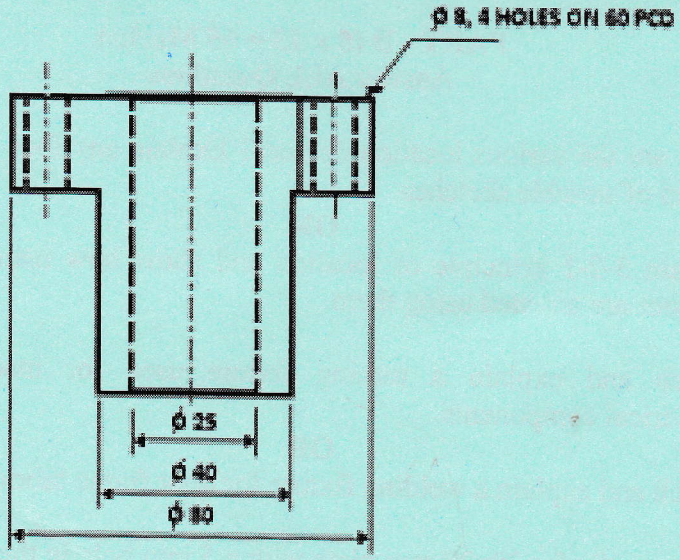
15. a) Explain the setup reduction for work holding in detail. *13,K2,CO6*

OR

b) Briefly explain the concept of poka yoke. *13,K2,CO6*

PART - C (1 × 15 = 15 Marks)

16. a) Design and draw a drill jig which can be used to drill holes on the flange coupling. *15,K3,CO2*



OR

b) Design a leaf jig for drilling two holes of 10 mm diameter on the given work piece. *15,K3,CO2*