Sanjay Ghodawat University, Kolhapur **2020-21**

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Year and Program: 2020-21 T.Y.B.Tech	**School of Technology**	**Department: Mechanical Engineering**
Course Code: MET305	**Course Title: Mechanics of Metal cutting and Tool Design**	**Semester : V**
Day : Monday **Date : 21.12.2020**	**End Semester Examination**	**Time : 2 Hrs.** **Max Marks : 50**

Instructions: 1) All Questions are compulsory.
2) Draw neat diagrams whenever necessary.

		Marks	Bloom's Level	CO
Q.1	**Answer the following (any Two)**–			
a)	In orthogonal cutting operation, following observations were taken. Uncut chip thickness 0.18mm, cutting speed 120m/min, width of cut 6.3mm, Rake angle 8^0 ,cutting force 1000N, feed force 280N, chip thickness 0.22mm. Determine: 1) shear angle 2) Friction angle by drawing merchant circle.	8	L3	CO1
b)	List the systems used for tool signature ORS & ASA and explain any one system.	8	L2	CO1
c)	How strain gauge can be used for force measurement? Explain with construction, advantages and applications with neat sketch.	8	L2	CO1
Q.2	**Answer the following (any two)** –			
a)	During the machining of some component, when the cutting speed was changed from 150m/min to 40m/min, the tool life was observed to change from 20min to 200min.Determine the Taylor's tool life equation.	8	L3	CO2
b)	How the post locator is suitable for a component having bore? Explain with neat sketch and state its different applications.	8	L3	CO3
c)	Draw and describe different clamping (any two) can be used for following shape component shown in Fig.1 with neat sketch.	8	L3	CO3

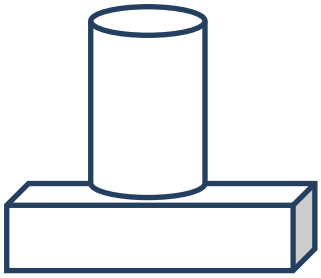


Fig.1

Q.3 Answer the following (any two) –

a) Design and draw a jig for 4 holes 16mm diameter on 120mm PCD as shown in Fig.2. Draw type of jig, jig plate and jig bush for the component. Draw F.V and T.V with 1:3 scale. 9 L4 CO3

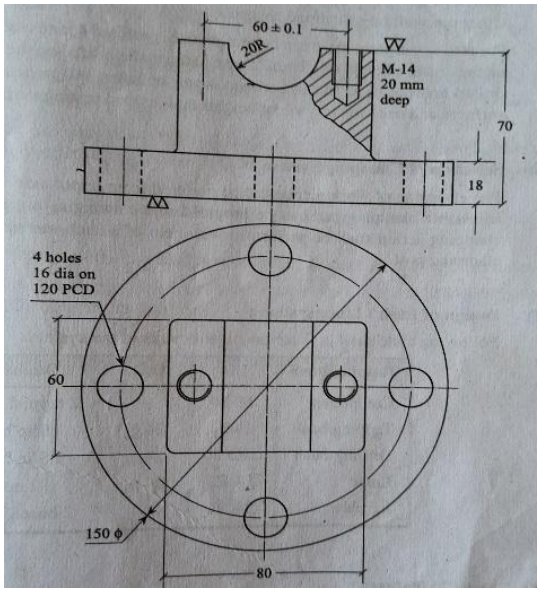


Fig.2

b) How would you compare between compound die set and progressive die set on the basis of working and application? 9 L2 CO4

c) A washer with 12.7mm internal hole and 25.4mm outer hole is to be made from 1.5mm thick strip of 0.2% carbon steel. Considering the elastic recovery of the material, Find; 1) clearance 2) Blanking Die opening size 3) Blanking punch size 4) Piercing punch size 5) piercing die opening size. 9 L3 CO4

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