

Total No. of Questions : 10]

SEAT No. :

P2931

[Total No. of Pages : 3

[5669]-520

T.E. (Mechanical) (Semester-II)
MANUFACTURING PROCESS - II

(2015 Pattern)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Attempt Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10.
- 2) Figures to the right indicate full marks.
- 3) Use of electronic pocket calculator is allowed.
- 4) Assume suitable data, if necessary.

Q1) a) Explain radial drilling machine with neat sketch. Justify requirement of such machine tool from industrial applications perspective. **[4]**

b) Derive an expression between the chip thickness ratio (r), shear plane angle (ϕ) and top rake angle (α). **[6]**

OR

Q2) a) Taylor's tool life equation for machining C-40 steel $VT^n = C$. Feed is 0.2 mm/rev. Determine n , C and cutting speed for 60 minutes tool life. **[4]**

V (m/min)	25	35
T (min)	90	20

b) Explain different types of chips in metal cutting operation with neat sketches. **[6]**

Q3) a) Calculate machining time required to produce 10 holes on 40 mm thick plate with following data. Cutting speed: 25 m/min, feed: 0.1 mm/rev, Drill Diameter: 30mm, overrun: 15mm, **[4]**

b) Explain Lapping and honing process with neat sketch. **[6]**

OR

Q4) a) Sketch Broach Tool geometry and discuss main parts. **[4]**

b) Index 97 divisions using differential indexing. Following change gears are available: 24, 24, 28, 32, 40, 44, 48, 56, 64, 72, 86, 100. **[6]**

P.T.O.

Q5) a) Explain working principle of EDM process in detail with neat sketch. Discuss the role of dielectric fluid. **[8]**

b) With neat sketch of USM process, discuss its principle and the effect of followings with neat graph: **[8]**

- i) Slurry concentration,
- ii) Grain size,
- iii) Frequency of vibration,
- iv) Amplitude on MRR.

OR

Q6) a) Explain LBM process principle with neat sketch. State its advantages, limitations and applications. **[8]**

b) Explain ECM process principle with neat sketch. State its advantages, limitations and applications. **[8]**

Q7) a) Differentiate between NC, CNC and DNC with neat sketch. Discuss advantages of DNC. **[8]**

b) Explain following codes: G01, G02, G03, G70, G71, M02, M04, M05 **[8]**

OR

Q8) a) Explain the machining centre with neat sketch. How AFC will work on it? **[8]**

b) Explain automatic pallet changer with neat sketch. State its advantages, limitations and applications. **[8]**

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- Q9) a) Explain 3-2-1 principle of location with neat sketch. [4]
- b) Draw a drill jig for drilling holes of radius 6.35 mm and diameter 31.7 mm for the component as shown in the Fig. 1 below. Suggest [14]
- Type of drilling machine,
 - Locating devices,
 - Clamping elements,
 - Drill bushes etc.

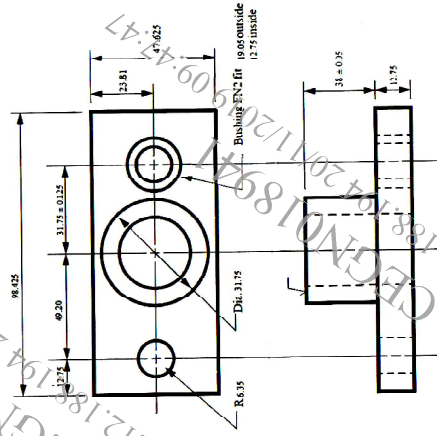


Fig - 1

OR

- Q10) a) List different types of drill bushes. Explain any one with neat sketch. [6]
- b) List various types of clamping devices used in Jigs and fixtures. Explain any one with neat sketch. [6]
- c) Explain with neat sketch the concept of Poka Yoke in Jig and Fixture. [6]

