

QP Code : 5431

(3 Hours)

[Total Marks :80

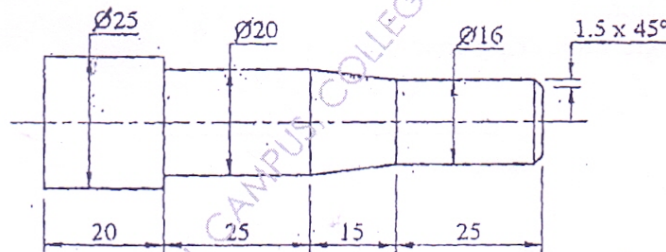
- N.B. : (1) Question no. 1 is compulsory.
 (2) Attempt any three questions out of remaining.
 (3) Assume suitable data if necessary.
 (4) Illustrate your answer with neat sketches wherever necessary.

1. Attempt any four:-

20

- Explain Gear hobbing process of gear manufacturing.
- Differentiate orthogonal and oblique cutting
- Write short note on Tool holders and inserts
- Discuss cutting fluids.
- Prove that $V_f = V_c \cdot r$

- Sketch the internal round broach and write briefly on the following elements
 - Rake and relief angles
 - Depth of cut per tooth
 - Width of land
 - Prepare the CNC part programme for machining of workpiece shown in figure 10 below for $\phi 25$ size bar stock.



(All dimensions are in MM)

- Discuss the assumptions made in Merchant's theory. Derive the relationship $2\phi + \beta = \frac{\pi}{2}$ 10
 - State various vertical machining centres. describe any one in detail. 10
- Write note on two dimensional Tool dynamometer. 5
 - Describe carbides and ceramic as cutting tools. 5
 - Derive an expression of tool life for minimum cost criteria in metal cutting. 10

[TURN OVER

5. (a) A work piece of 38 mm diameter is being turned on a lathe with tool having 10° rake angle and period of 0.15 mm/rev. The length of chip over one revolution of workpiece is 72 mm. The tangential force is 410 N and feed force is 170 N calculate:
- (a) Coefficient of friction on rake force
 - (b) Thickness of chip
 - (c) Angle of shear
 - (d) Velocity of shear
- (b) Write steps for designing form tool by graphical method. 10
- Design and draw circular form tool having
- Maximum radius = 60mm
 - Minimum radius = 40mm
 - Rake angle = 10°
 - Relief angle = 6°
6. Write short notes on (any four):- 20
- (a) Lapping and honing
 - (b) Tool wear
 - (c) Geometry of milling cutter
 - (d) Cutting fluids
 - (e) Co-ordinate measuring machine
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Course: S.E. (SEM-IV) (REV-2012) (CBSGS) (MECH ENGG.) C.W. (AUT ENGG.)
(PROG-T1824 CW T0524)

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Correction:

**QUE: 5(a) MISSING DATA:-----The cutting speed is
12.5 m/min.**

Query Update time: 10/12/2015 03:55 PM

MEC4040
MEC4031

Patil
Patil

} Block 10

Patil
Dada Patil
10/12/2015

Course: S.E. (SEM-IV) (REV-2012) (CBSGS) (MECH ENGG.) C.W. (AUT ENGG.)
(PROG-T1824 CW T0524)

QP Code: 5431 (2nd Query)

Correction:

**Que: 5(a) READ AS: A work.....feed of
0.15 mm/rev.**

**INSTEAD OF : A work.....period of 0.15
mm/rev.**

Query Update time: 10/12/2015 04:15 PM