

S.E. (SEM. IV) (CBSGS) (MECHANICAL ENGG.)
PRODUCTION PROCESSES-II

10th Dec. 2015
3.00 pm to 6.00 pm

Mechanical/Automobile

QP Code : 5431

(3 Hours)

[Total Marks :80

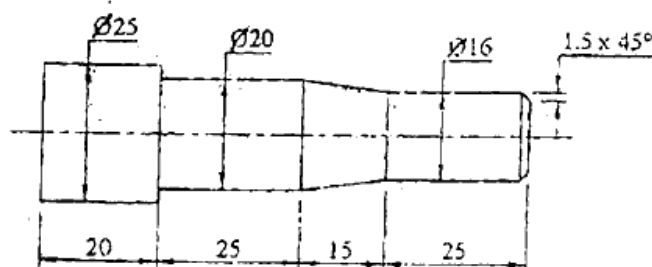
- N.B. : (1) Question no. 1 is compulsory.
(2) Attempt any three questions out of remaining.
(3) Assume suitable data if necessary.
(4) Illustrate your answer with neat sketches wherever necessary.

1. Attempt any four:-

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- 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 $V_r = V_c \cdot r$

- Sketch the internal round broach and write briefly on the following elements 10
 - Rake and relief angles
 - Depth of cut per tooth
 - Width of land
 - Prepare the CNC part programe 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 10

$$2\Phi + \beta = \frac{\pi}{2}$$
 - 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 a rake angle of 33° 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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