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**

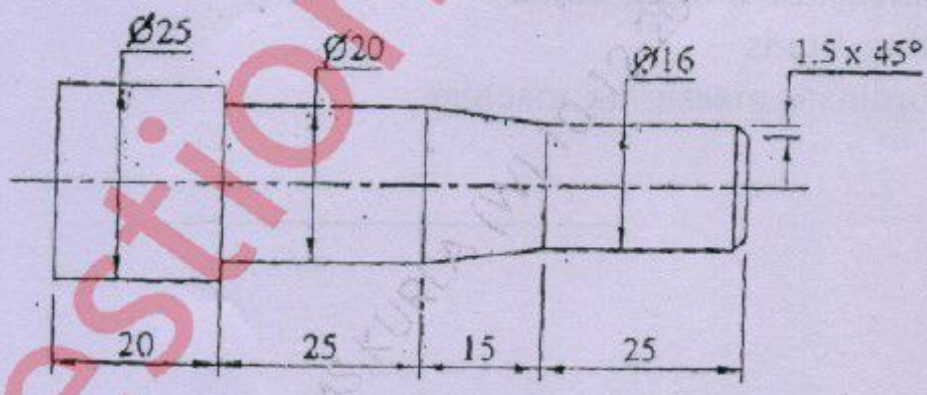
(3 Hours) [Total Marks :80

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**:- 20
   (a) Explain Gear hobbing process of gear manufacturing.
   (b) Differentiate orthogonal and oblique cutting
   (c) Write short note on Tool holders and inserts
   (d) Discuss cutting fluids.
   (e) Prove that $V_f = V_c.r$

2. (a) Sketch the internal round broach and write briefly on the following elements 10
   (i) Rake and relief angles
   (ii) Depth of cut per tooth
   (iii) Width of land

   (b) Prepare the CNC part programe for machining of workpiece shown in figure below for $\Phi 25$ size bar stock. 10



(All dimensions are in MM)

3. (a) Discuss the assumptions made in Merchant's theory. Derive the relationship $2\Phi + \beta = \frac{\pi}{2}$ 10
   (b) State various vertical machining centres. describe any one in detail. 10

4. (a) Write note on two dimensional Tool dynamometer. 5
   (b) Describe carbides and ceramic as cutting tools. 5
   (c) 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 33^0 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: 10
   (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 = 10^0
   Relief angle = 6^0

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
