(157) SE - sem - IV - CBGS - Mech - PP - II 31/5/16

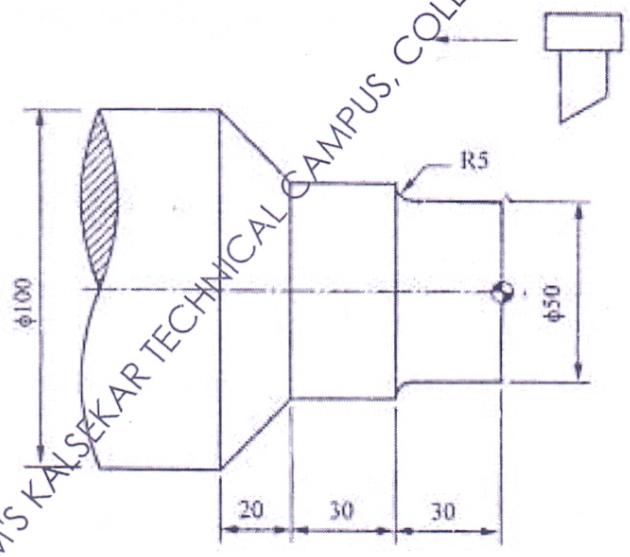
Q.P. Code : 555501

(3 Hours) **[Total Marks : 80**

N.B. : (1) Question No.**1** is **compulsory**.
(2) Attempt any **three** questions out of remaining **five** questions.
(3) Assume suitable data if necessary

1. Attempt any **four** of following :- **20**
   (a) Distinguish between gear hobbing and gear shaping.
   (b) What is NC, CNC, DNC ? State the advantages and limitations of Nc systems over conventional system.
   (c) Explain the mechonism of chip formation
   (d) Explain with neat sketch any one type of lathe tool dynamometer
   (e) Discuss tool angles in ASA system with neat sketch.

2. (a) Write a manual part program for finishing a forged component as shown fig. Assume the speed and feed on the turning center are 200 rpm and 0.35 mm/rev. Assume 1 mm material is to be removed radially from external diameter. **10**



   (b) While machining steel with a tool of [0-10-6-6-75-1] ORS shape fallowing observations were made. **10**
   (i) Spindle speed 400 rpm
   (ii) Work diameter 60 mm

[TURN OVER

(iii) Depth of cut 2.5 mm
(iv) Tool feed rate 80mm/min
(v) Cut chip thickness 0.40 mm

Determine chip thickness ratio, shear plane angle, Dynamic shear and Theoretical continuous chip length per minute.

3. (a) Derive the original merchants theory along with diagram and assumption. **10**

(b) Discuss in detail various factors affecting the tool life. **10**

4. (a) The fallowing equation of tool life is given for turning operation **10**

$VT^{0.13} f^{0.77} d^{0.37} = C$

A 60 minute tool life was obtained while cutting at V = 30m/min, f = 0.30 mm/rev and depth of cut, d = 0.5 mm calculate the change in tool life if the cutting speed, feed, depth of cut are increased by 20% individualy and also taken together. What will be their effect on tool life.

(b) Discuss cutting tool materials with their properties and applications. **10**

5. (a) Discuss various Broach terms with neat sketceh. **10**

Write the formulas for fallowing elements.

(i) Tool pitch
(ii) Rise per tooth
(iii) Total no of teeth in a broach
(iv) effective length

(b) what are the functions of cutting fluid? Explain different types of cutting fluid. **10**

6. Write short notes on (Any **four**) **20**

(i) Form tool design
(ii) Types of chips
(iii) Lapping and honing
(iv) Classification of shapers
(v) Co-ordinate measuring machine\
