MECH/IV/CBGS/PP-II / Production process-II

15-12-16

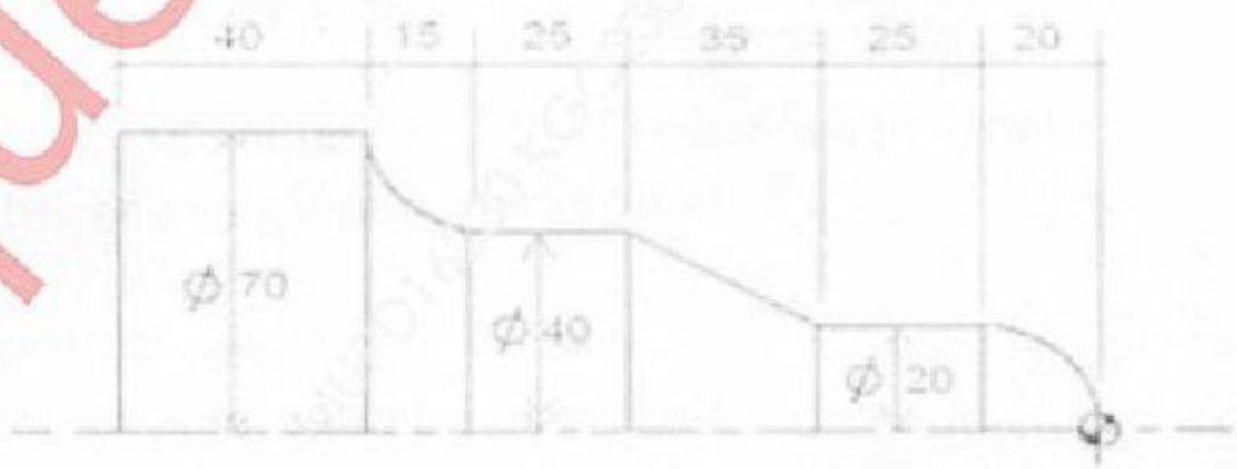
Q.P. Code : 555503

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

N.B. : (1) Question **No.1** is **Compulsory.** Attempt any **Three** questions from remaining.
(2) **All** questions carry **equal** marks.
(3) Answer to each new question should be started on a fresh page
(4) **Figure** in brackets on the **right** hand side indicate full **marks.**
(5) Assume suitable data if necessary.

1. (a) List operations which may be performed on a Milling machine and explain any two operations with sketch. **5**
(b) What do you understand from machinability of a material? List any two properties, which have a bearing on machinability. **5**
(c) Compare Gear shaping and Gear shaving processes. **5**
(d) Explain coordinate measuring machine. Explain its application. **5**

2. (a) Write Part Program using G and M-Code for machining external contour as shown in Figure 1 below. Write Process plan for a turning operation and an efficient CNC part program for the same. **10**



RAW MATERIAL: MS BAR OF DIAMETER 70 MM
AND LENGTH 160 MM
DIAGRAM NOT TO SCALE
ALL DIMENSIONS ARE IN MM

(b) Derive an expression for shear angle in orthogonal cutting in terms of rake angle and chip thickness ratio. **6**

(c) List the various gear cutting processes. How are they classified. **4**

TURN OVER

3. (a) With neat sketch explain different angles associated with drill tool. 8

(b) Two cutting tools are being compared for a machining operation. 6
The tool life equations are :
Carbide tool : $VT^{1.6} = 2850$
HSS tool: $VT^{0.6} = 180$
where V is the cutting speed in m/min and T is the tool life in min.
Calculate the cutting speed value which exceeds so that, the carbide tool will provide higher tool life.

(c) Compare Lapping and Honing process 6

4 (a) Give Classification, Selection procedure and applications of drilling Machines. 8

(b) Explain procedure to estimate cutting forces. 5

(c) List different types of dynamometers and explain with sketch electromagnetic dynamometer. 7

5. (a) Design and explain steps involved in Broach tool design. 10

(b) How do you define tool life? Explain the parameters that control the tool life of a single point cutting tool. 10

6. Write Short Notes on: 20
(1) Single point cutting tool geometry.
(2) Types of coolants
(3) Operations performed on shaping machine (any FIVE).
(4) Dressing & truing of Grinding wheels
