

314340

24225

3 Hours / 70 Marks

Seat No.

--	--	--	--	--	--	--	--

- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.
 - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following :

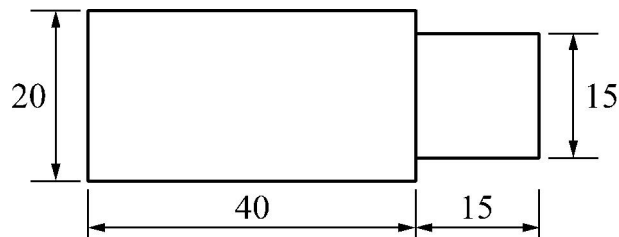
10

- (a) State meaning of (i) G00 (ii) G03.
- (b) Differentiate between grinding and lapping.
- (c) Enlist the different methods of manufacturing gear.
- (d) Write only classification of Press.
- (e) List the advantages and disadvantages of EDM.
- (f) State any four advantages of CNC.
- (g) Explain Rapid Prototyping.



2. Attempt any THREE of the following :**12**

- (a) Explain with neat sketch Rack cutter gear generating process.
- (b) Prepare a part program to machine the workpiece shown in figure No. 1 on CNC lathe.

**Fig. No. – 1**

- (c) Explain the difference between cylindrical grinding and surface grinding. How do the grinding wheel orientations differ in these two processes ?
- (d) Explain the difference between Jigs and Fixtures. Give example of each.

3. Attempt any THREE of the following :**12**

- (a) Explain the use of following codes in CNC part program :
 - (i) G00
 - (ii) G03
 - (iii) M03
 - (iv) M30
- (b) How a grinding wheel is marked (coded) ? Describe Indian standard marking system.

- (c) Explain the following operations with neat sketches :
- (i) Blanking
 - (ii) Lancing
 - (iii) Piercing
 - (iv) Punching
- (d) Give the list of common sheet metals used in industry. (Any 8)

4. Attempt any THREE of the following :

12

- (a) Explain the function of bonds in grinding wheels. Indicate bonding materials and name their corresponding grinding wheel.
- (b) Explain in brief :
- (i) Gear Shaping
 - (ii) Gear Hobbing
- (c) Prepare a part program to machine the part given in figure No. 2 on CNC milling machine.

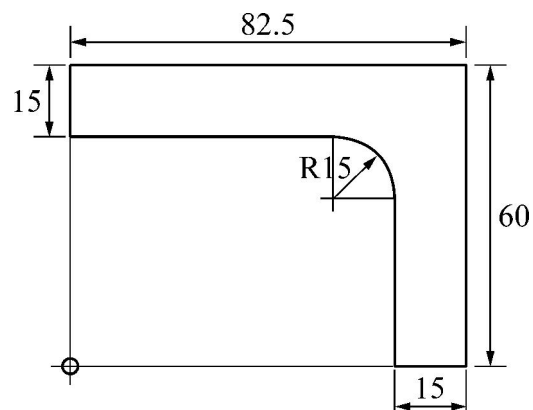


Fig. No. – 2

- (d) Explain the purpose of Electrolyte in ECM.
- (e) A gear with a small number of teeth (10) and a small module (2 mm) is to be produced. The gear requires a moderate surface finish and average accuracy. Which gear manufacturing method would be most suitable and why ?

5. Attempt any TWO of the following :

12

- (a) Evaluate the suitability of different superfinishing processes (i.e. honing, lapping, polishing) for achieving a mirror-like finish on a stainless steel workpiece.
- (b) Compare and contrast the advantages and disadvantages of using a hydraulic press versus mechanical press for a specific manufacturing application.
- (c) Explain Gear hobbing process with neat sketch.

6. Attempt any TWO of the following :

12

- (a) A gear with 60 teeth, 8 mm module and 25° pressure angle is to be manufactured in large quantities. Recommend a suitable gear manufacturing method and justify.
 - (b) Explain Ultrasonic Machining (USM) with neat sketch.
 - (c) Sketch and describe the construction, operation and use of hydraulic press.
-