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## P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

**Fifth Semester, B.E. - Mechanical Engineering**

**Semester End Examination; Dec - 2017/Jan - 2018**

**CAD/CAM**

*Time: 3 hrs*

*Max. Marks: 100*

*Note: i) Answer FIVE full questions, selecting ONE full question from each unit  
ii) Assume suitably missing data if any.*

### UNIT - I

- 1 a. Describe the impact of CAD/CAM on product cycle with the help of a block diagram. 10
- b. State the merits of CAD. 10
- 2 a. Explain the following with neat sketch : 10
- (i) LCD Monitor (ii) DVST.
- b. Explain the working principle of the following with neat sketch. 10
- (i) Electronic Tablet and Pen (ii) Digitizer.

### UNIT - II

- 3 a. Differentiate between wireframe model, surface model and solid model. 10
- b. A Square represented by (2, 0) (4, 2) (2, 4) (0, 2) in two-dimensional ICG systems. Perform following transformations on this square : 10
- (i) Translate it by 2.5 units in X-direction and 3.5 units in Y-direction
- (ii) Scale the square by 1.5 units in X-direction and 2 units in Y-direction
- (iii) Rotate the square by 45° CCW about origin
- (iv) Show the transformations on graph sheet. 10
- 4 a. Describe DXF and STEP files. 10
- b. Explain Bezier curve, B-Splines and NURBS with sketches. 10

### UNIT - III

- 5 a. Describe NC procedure. 8
- b. Explain the following with sketches: 12
- (i) NC coordinate system (ii) NC motion control.
- 6 a. Explain the merits and demerits of NC. 8
- b. What are features of CNC machining centre and CNC Turning centre? 12

### UNIT - IV

- 7 a. With a neat sketch, explain recirculating ball screws and also list its advantages. 6
- b. Describe two types of rotary encoders with sketches. 10
- c. List cutting tools materials and explain any one. 4

- 8 a. What is tool presetting and explain with a sketch simple mechanical type tool setting device. 8
- b. List out the tool change activity of a single gripper tool change arm. 8
- c. Explain the following work holding devices : 4
  - (i) Grid Plate
  - (ii) Tombstone.

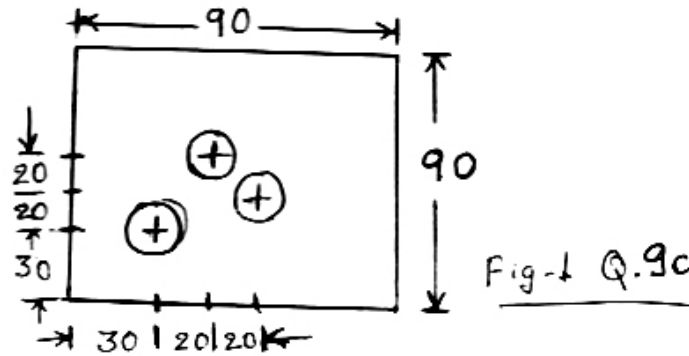
**UNIT - V**

- 9 a. Describe various formats used in NC part program with examples. 6
- b. Explain canned cycles used in NC part program with examples. 4
- c. For the component shown in Fig .Q.9(c) write a part program using canned cycle to perform drilling and reaming operations : 10

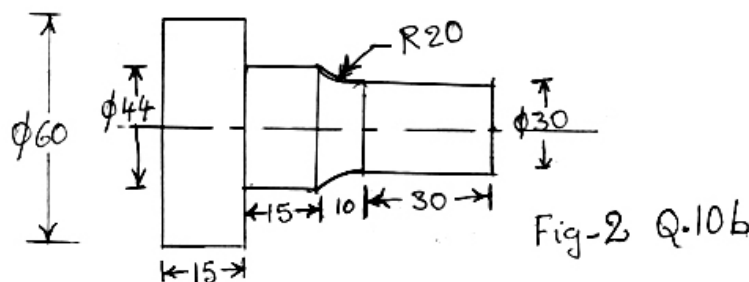
Part thickness = 15 mm

Diameter of all three holes = 10 mm

Tool set point location is (20, 20, 20) mm from lower left corner of the part. Any other data may suitably be assumed.



- 10 a. List out the differences of Turning centre programming with respect to Machining Centre Programming. 10
- b. Write a part program for rough cut and finish cut for the part shown in Fig.2 Q.10b, use suitable data. 10



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