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FACULTY OF ENGINEERING &TECHNOLOGY

T.E.(Mech) Year Examination-June-2015

CAD/CAM/CAE

(Revised)

Time: Three Hours **Maximum Marks:80**

"Please check whether you have got the right question paper."

i) Use suitable data if required.

ii) Attempt three questions from each section.

SECTION-A

Q.1 a) Define and explain the following terms:- 06
1) CAD,
2) CAM
3) CAE

b) Explain the role of CAD, CAM and CIM in product life cycle. 07

OR

Q.1 a) Explain the sound rules and functions to be performed by a graphic software for CAD work system. 07

b) Explain the hardware requirements and its specifications for CAD work station. 06

Q.2 a) Differentiate between wire frame modelling and solid modelling. 06

b) A triangle ABC is defined in a 2D graphic system by its vertices A(2,2), B(5,2) and C(5,5) perform the following transformation on this triangle and represent it. Graphically on graph paper. 07
1) Translation → 2 units in x- direction and 3 units in y-direction.
2) Rotate the original triangle by 45° in anticlockwise direction about the origin.

OR

Q.2 a) Explain the concept of pointing and positioning. 06

b) Explain the need of data exchange formats/ standards in CAD and how STEP is superior to IGES. 07

Q.3 Write short notes on any two. 14
1) Concurrent engineering
2) LCD and plasma panels
3) Bezier curves
4) Manufacturing data base.

SECTION-B

Q.4 a) Explain the coordinate system used in the following NC machine tools:- 06
1) Drilling machines
2) Milling machines
3) Lathe machine.

b) What is Group technology? What are its advantages? 07

OR

Q.4 Write down the manuscript of the manual part program (sequential) for the drilling and reaming operation to be performed on a square plate of 100 mm side. Three holes of 10mm diameter are to be drilled and reamed which are equidistance on a circle having PCD of 50mm. the center of the circle coincide with the center of plate. Draw the neat diagram and use the following data:- 13

1) Thickness of the plate 20mm.
2) The machine is 3 – axis MC.
3) The speed and feed for drilling 750rpm and 32mm/min res P.
4) The speed and feed for scamming is 550rpm and 38mm/min.
5) Use the separate tool for drilling and reaming operation.
6) The machine has floating zero and incremental positioning.

Q.5 a) Explain the concept of fixed zero and floating zero with reference to MC machines. 06

b) Explain in brief the rules of APT programming. 07

OR

Q.5 a) Explain with neat diagrams the physical configuration of Robot. 06

b) Explain with neat diagram different types of sensors and grippers used in robots. 07

Q.6 Write short notes on :- (<u>any two</u>) 14

1) Adaptive control system.
2) FMS
3) CAPP
4) CIM