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                                                                                 CMPC 102

1st Sem Mtech Regular/ Back Examination – 2015-16
SUBJECT NAME: Computer Applications in Design
BRANCH(S): CAD/CAM
Time: 3 Hours
Max marks: 70
Q.CODE:T955
Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1   Answer the following questions: (2 x 10)
    a) What are the capabilities and limitations of directed beam refresh
        graphics terminal?
    b) Describe the various database models which are generally used.
    c) What do you mean by geometric modelling?
    d) Explain briefly the techniques for visual realism.
    e) What are the various types of geometric tolerances?
    f) What is the principle behind visualization of parts?
    g) Explain how CAD helps to synthesize a product design and to do
        engineering analysis for getting optimal design.
    h) What do you mean by rapid prototyping? Explain.
    i) What are various output primitives?
    j) What are the reasons for implementing a computer aided design
        system.

Q2 a) Find the equation of a B-Spline surface that covers the region R. Also ,   (5)
        find the surface vectors and its mid point.
    b) Explain the principle of parametric modification of geometric   (5)
        models.

Q3 a) For a given radius and centre point write Auto LISP command to draw   (5)
        circle.
    b) What is clipping? Explain Liang-Barsky line clipping algorithm in detail   (5)
        with examples.

Q4   A triangle is defined in a two-dimensional ICG system by its vertices   (10)
        (0,2),(0,3),and(1,2).Perform the following transformations on this
        triangle.
        Translate the triangle in space by 2 units in the x direction and 5 units
        in the y direction.
        Scale the original triangle by a factor of 1.5.
        Scale the original triangle by a factor of 1.5 in the x direction and 3.0 in
        the y direction.
        Rotate the original triangle by 450 about the origin.

Q5 a) List and explain standard tool bars available in any solid modelling   (5)
         packages.
     b) What is transformation? How many types for transformations are there   (5)
         to change the geometry?

Q6 a) Write down the different techniques for the hidden surface removal.   (5)
         Explain?
     b) Explain the consolidated features of data exchange standards   (5)

Q7 a) Make a note on sweep representations in solid modeling.   (5)
     b) What are the steps in interactive programs to solve design problems?   (5)
         Describe each step briefly.

Q8   Answer any two   (5 x 2)
     a) Customizing
     b) Solid modeling pack
     c) Tolerance analysis mass property calculations
     d) Editing tools