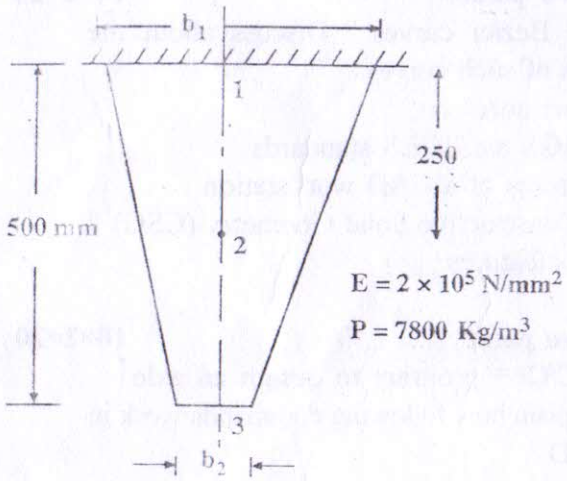

(b) From the following data, obtain Y as a linear function of X using the method of least square :

X_i	1.0	1.6	3.4	4.0	5.2
Y_i	1.2	2.0	2.4	3.5	3.5

(c) Find the solution to the equation

$e^x - 3\cos \Pi x = 0$ with in a tolerance $t = 0.02$ using Newton's Raphson method.

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(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0400 Roll No.

B. Tech.

(SEM. VII) EXAMINATION, 2008-09

COMPUTER AIDED DESIGN

Time : 3 Hours] *[Total Marks : 100*

Note : (1) All questions are compulsory.

(2) Assume any missing data suitably.

1 Attempt only **four** parts : 5×4=20

(a) What are the various display devices that are used for displaying information ? List their merits and demerits.

(b) Explain any two of the following terms :

(a) Screen butter

(b) Scanning

(c) Video RAM

(d) OOP in C++.

(c) Write the output of the following C-program with explanation :

```
# include <stdio.h>
main ( )
{
    int x;
    for (x = 1; x < = 10; x++)
    {
    if (x == 5)
    continue;
    print f ("%d", 'x');
    }
}
```

(d) What are the activities of CAE ? Discuss.

(e) Discuss various coordinate systems used in a CAD system.

(f) Write a brief note on liquid crystal display.

2 Attempt any **four** parts : 5×4=20

(a) Digitise the line with end points (18, 8) and (2.5,15) using DDA algorithm.

(b) Explain the midpoint circle algorithm for raster display.

(c) Rotate an object defined by A (0,0), B (1,0), C (1,1) and D (0,1) by 45° about origin.

(d) Explain the composite transformation.

(e) Briefly discuss the plasma panel display.

(f) Find the reflection matrix when the axis of reflection is line $y = zx$.

3 Answer any **two** parts : 10×2=20

(a) What are Bezier curves ? Discuss about the properteis of such curves.

(b) Write short notes on :

(i) PHIGS and IGES standards

(ii) Features of a CAD workstation.

(c) What is Constructive Solid Geometry (CSG) ? Discuss its features.

4 Attempt any **two** parts : 10×2=20

(a) Write a C/C++ program to design an axle.

(b) Briefly explain how following commands work in Auto CAD :

(i) Rotate

(ii) Array

(iii) Trim.

(c) A mild steel shaft is required to transmit 100 kW at 500 rpm. The supported length of the shaft is 3m. It carries two pulleys each weighing 1500 N supported at a distance of 1m from the ends respectively. Determine the shaft diameter if allowable shear stress for shaft material is 60 N/mm^2.

5 Attempt any **two** parts : 10×2=20

(a) Determine the extension of bar shown in figure due to self weight. Given $b_1 = 180\ mm$, $b_2 = 80\ mm$, t = 20 mm, Material of bar is steel with $E = 2 \times 10^5\ N/mm^2$ and P = 7800 kg/m^3. Use the bar as two elements of equal length and self weight of each element acting of the nodes 2 and 3 :