Maximum Marks : 60

Note: Answer ALL the questions.
Assume suitable data of missing.

1. (a) Solve the following system

\[
\begin{align*}
10x + 2y + z &= 9 \\
2x + 20y - 2z &= -44 \\
-2x - 3y + 10z &= 22
\end{align*}
\]

by Gauss-Seidal method correct to two places of decimal.

(b) Find a root of \(x^3 - 3x - 5 = 0\). Use four iterations of Newton-Raphson method, starting with \(x_0 = 3\).

OR

(b') Find the value of \(\frac{1}{18}\) by Newton-Raphson Method, correct to three decimal places (starting with \(x_0 = 0.05\)).

(c) Apply the general iterative method to find the real root of \(x^3 + x^2 - 1 = 0\). [5,5,5] assuming that the initial approximation is \(x_0 = 0.8\), correct to three decimal places.

2. (a) Applying Newton's forward interpolation formula compute the value of \(\sqrt{5.5}\), given that \(\sqrt{5} = 2.236\), \(\sqrt{6} = 2.449\), \(\sqrt{7} = 2.646\) and \(\sqrt{8} = 2.828\), correct upto three places of decimal.

(b) Find the missing values in the following table:

<table>
<thead>
<tr>
<th>(x)</th>
<th>45</th>
<th>50</th>
<th>55</th>
<th>60</th>
<th>65</th>
</tr>
</thead>
<tbody>
<tr>
<td>(y)</td>
<td>3</td>
<td></td>
<td>2</td>
<td></td>
<td>2.4</td>
</tr>
</tbody>
</table>

(c) Find the cubic polynomial which takes the following values:

<table>
<thead>
<tr>
<th>(x)</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>(y)</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>10</td>
</tr>
</tbody>
</table>

OR

(c') Using Lagrange's interpolation formula, find the value of \(y\) corresponding to \(x = 3\) [5,5,5] from the following table:

<table>
<thead>
<tr>
<th>(x)</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>(f(x))</td>
<td>580</td>
<td>556</td>
<td>520</td>
<td>385</td>
</tr>
</tbody>
</table>

Contd......2
3. (a) Find an approximate value of \( \log_{10} 5 \) by calculating to four decimal places by Simpson’s \( \frac{1}{3} \) rule. Also evaluate \( \int_{a}^{b} \frac{dx}{4x+5} \), dividing the range into 10 equal parts.

OR

(a') Calculate \( \int_{a}^{b} e^x \, dx \), dividing the interval into sub intervals, by Trapezoidal rule.

(b) Using Taylor series method, obtain the solution of \( \frac{dy}{dx} = 3x + y^2 \), \( y(0) = 1 \). Find the value of \( y \) for \( x = 0.1 \), correct to four places of decimals.

(c) Apply Runge-Kutta method (Fourth order) to find an approximate value of \( y \) when \( x = 0.2 \), given that \( \frac{dy}{dx} = x + y^2 \) and \( y = 1 \) when \( x = 0 \), (take \( h = 0.1 \)).

4. (a) Find the Laplace transform of the following:
   (i) \( L[e^t \cdot \sin^2 t] \)
   (ii) \( L\left[\frac{e^{-t} - \cos t}{t}\right] \)
   (iii) \( L[\cos at \cdot \sin bt] \)

(b) (i) Find \( L^{-1}\left[\frac{s^2}{(s^2 + 1)(s^2 + 4)}\right] \), using convolution theorem
   (ii) Find the inverse Laplace transform of \( \log\left(\frac{s + 1}{s - 1}\right) \).

(c) Using Laplace transform method solve the following differential equation
   \( (D^2 + 2D - 1)y = t, \quad y(0) = 0 \text{ and } y'(0) = 1 \).

OR

(c') Solve the following simultaneous differential equations by Laplace transform method.

\[
\begin{align*}
\frac{dy}{dt} - y &= e^t \\
\frac{dy}{dt} + x &= \sin t
\end{align*}
\]

given \( x(0) = 1, y(0) = 0 \)

-----------------------------
1. (a) Prove that
\[ \text{Curl} \left( \vec{u} \times \vec{v} \right) = \vec{v} \cdot \nabla \vec{u} - \vec{u} \cdot \nabla \vec{v} + \vec{u} \text{ div } \vec{v} - \vec{v} \text{ div } \vec{u} \]

OR

(a') Prove that
\[ \text{div}(\vec{u} \times \vec{v}) = \vec{v} \cdot \text{curl} \vec{u} - \vec{u} \cdot \text{curl} \vec{v}. \]

Hence prove that if \( \vec{A} \) and \( \vec{B} \) are irrotational then \( \vec{A} \times \vec{B} \) is solenoidal.

(b) Fluid motion is given by
\[ \vec{V} = a\vec{i} + ay\vec{j} - 2az\vec{k}. \]

(i) Is it possible to find out the velocity potential? If so, find it.
(ii) Is the motion possible for an incompressible fluid?

(c) Find the values of \( a, b, c \) so that the directional derivative of \[ \phi = ax^2 - byz + cz^2 \] at \((1, 2, -1)\) has maximum magnitude 64 in the direction parallel to z-axis.

2. (a) Verify the divergence theorem for \( \vec{A} = 4x\vec{i} - 2y^2\vec{j} + z^2\vec{k} \) taken over the region bounded by \( x^2 + y^2 = 4, z = 0 \) and \( z = 3 \).

(b) Verify Green's theorem in the plane for \[ \int_C \left( x^3 - x^2y \right) dx + xy^2 dy \], where \( C \) is the boundary of the region enclosed by the circles \( x^2 + y^2 = 4 \) and \( x^2 + y^2 = 16 \).

OR

(b') Verify Stoke's theorem for \( \vec{F} = (2x - y)\vec{i} - yz^2\vec{j} - y^2z\vec{k} \) where \( S \) is the upper half of the sphere \( x^2 + y^2 + z^2 = 1 \) and \( C \) is its boundary.

3. (a) (i) Find the Laplace transform of
\[ \frac{1 - \cos t}{t^2} \]

OR

(a) (i') Find the inverse Laplace transform of \[ \frac{s^2}{(s^2 + a^2)(s^2 + b^2)} \] using convolution theorem, \( a, b \) being constants.
(ii) Find the inverse Laplace transform of \( \cos^{-1}\left(\frac{s}{k}\right) \), where \( k \) is a constant.

(b) Find the Laplace transform of the triangular wave represented in the figure below:

![Triangular wave](image)

OR

(b') An alternating e.m.f. \( E\sin \omega t \) is applied to an inductance \( L \) and a capacitance \( C \) in series. Use Laplace transform method to show that the current in the circuit is

\[
\frac{E}{L(R^2 + n^2)} \left( \cos \omega t - \cos n t \right), \text{ where } n^2 = \frac{1}{LC}.
\]

(c) (i) Using Laplace transform method, solve the differential equation

\[ y''(t) + 9y(t) = 18t \text{ given that } y(0) = 0 = y\left(\frac{\pi}{2}\right). \]

(ii) Using Laplace transform method solve the integral equation

\[ y + \int_0^t y \, dt = t - e^{-t}. \]

4. (a) The points of trisection of a string are pulled aside through a distance \( b \) on opposite sides of the position of equilibrium, and the string is released from rest. Find an expression for the displacement of the string at any subsequent time and show that the mid-point of the string always remains at rest.

OR

(a') The equation for the conduction of heat along a bar of length \( L \) is

\[
\frac{\partial u}{\partial t} = \alpha^2 \frac{\partial^2 u}{\partial x^2},
\]

neglecting radiation. Find an expression for \( u \), if the ends of the bar are maintained at zero temperature and if, initially, the temperature is \( t \) at the centre of the bar and falls uniformly to zero at its ends.

(b) Find the particular solution of the Laplace equation \( \frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 0 \) by the method of separation of variables.
2012-13
B. TECH. (WINTER SEMESTER) EXAMINATION
CIVIL ENGINEERING
STRUCTURAL MECHANICS
CE 216

Maximum Marks: 60
Credits: 04
Duration: Three Hours

Answer all the questions.
Assume suitable data if missing.
Notations used have their usual meaning.

Q. No.  

**Question**  

1(a) A masonry dam of trapezoidal section, 1.5 m wide at top, 3 m at bottom and 7 m high with vertical face towards water, contains 6.5 m depth of water. Check the safety against overturning and calculate extreme stresses at base of dam. Assume unit wt of masonry and water as 20 kN/m² and 10 kN/m³ respectively. [06]

1(b) A boiler shell is 1.5 m in diameter and 4 m long has a wall thickness of 15 mm. It is subjected to an internal pressure of 2 N/mm². Find the changes in the diameter, length, and volume of the shell assuming Young’s modulus of elasticity $E = 2 \times 10^5$ N/mm² and Poisson’s ratio $\nu = 0.25$. [06]

OR

1' Analyse the truss shown in Fig. 1. Find forces in members BE, CE, CF and EF. [12]

![Fig. 1](image)

2(a) 3D-stresses at a point in some material are given with respect to (X,Y,Z) axes as given below. Transform these stresses with respect to (X', Y', Z') axes obtained by
rotating Y and Z axes, anti clockwise by 30° in their own plane, keeping X and X' axes overlapping.

\[
\begin{pmatrix}
20 & 0 & 7 \\
0 & -15 & 5 \\
7 & 5 & 10
\end{pmatrix}
\]

2(b) Describe Generalised Hooke's law and its modified form for homogeneous and isotropic materials.

OR

2'(a) Describe in brief the following failure theories applied to homogeneous and isotropic materials:

(i) Maximum principal strain theory
(ii) Maximum shear stress theory

2'(b) A steel shaft of 10 cm dia. and 1.5 m long is fixed at one end, and subjected to an axial load of 200 kN and a torque of 25 kNm at free end. Calculate maximum principal stresses and check the safety of the material against the following failure theories, if uni-axial yield stress for steel is 150 MPa and Poisson’s ratio \( \nu = 0.3 \)

(i) Maximum principal stress theory
(ii) Total strain energy theory.

3(a) A cantilever beam AB is subjected to a downward load \( W_1 \) at the free end and an upward load \( W_2 \) at its mid span C. Find the ratio of \( W_1 \) and \( W_2 \) if

(i) the deflection is zero at the free end
(ii) the deflection is zero at the mid span.

3(b) A 6 m long simply supported beam carries 450 kN-m clockwise couple centred at 2 m from the right support. Taking \( EI = 8 \times 10^4 \) kN/m², calculate

(i) the deflection at the point of application of couple
(ii) the maximum deflection.

OR

......3
3' Find the slope at the supports and the deflection at sections C and D for the simply supported beam loaded as shown in Fig. 2.

![Fig. 2](image)

4 A simply supported beam AB of uniform cross section, 6 m long is loaded as shown in Fig. 3. Using Castiglione's theorem, determine slope at end A and vertical deflection at C.

Take \( E = 2 \times 10^6 \text{ MPa} \) and \( I = 2.5 \times 10^9 \text{ mm}^4 \).

![Fig. 3](image)

5(a) Determine the ratio of the buckling strengths of a solid steel column to that of a hollow column of the same material and having the same cross sectional area. The internal diameter of the hollow column is \( \frac{3}{4} \) of its external diameter. Both the columns are of same length and are pinned at both ends.

5(b) A hollow circular column of length 5 m, external diameter 200 mm and internal diameter 150 mm is fixed at both ends. It carries a load of 200 kN at an eccentricity of 15 mm from the axis of the column. Find the maximum stresses developed. What should be the limiting eccentricity if tension is not to develop?
2012-13
B.TECH. (WINTER SEMESTER) EXAMINATION
CIVIL ENGINEERING
CONSTRUCTION PRACTICE
CE - 217

Maximum Marks: 60
Credits: 04
Duration: Three Hours

Answer all the questions.

Q.No.  
Question  
M.M.

1(a) What do you understand by orientation of a building? Discuss the criteria used in deciding orientation of a building as per CBR guidelines.  
[06]

1(b) What points should be considered while selecting suitable site for a building?  
[06]

2(a) Explain in brief the factors affecting the selection of a floor finish.  
[06]

2(b) Explain briefly various types of shallow foundations with the help of neat sketches.  
[06]

OR

2'(a) Explain the methods for the design of a load bearing walls.  
[06]

2'(b) Classify and explain different types of doors with the help of neat sketches.  
[06]

3(a) Briefly describe the method of setting out or ground tracing of foundation trenches with the help of neat sketches  
[06]

(b) Describe the process Well Point System of dewatering the foundation trenches with the help of neat sketches  
[06]

OR

3'(a) What is scaffolding? Mention its various components.  
[06]

(b) Define underpinning and mention some of the situations where underpinning is required. Giving a neat sketch, briefly describe the pit method of underpinning.  
[06]

4(a) Describe various methods of damp proofing in buildings.  
[06]

(b) Explain how pre and post construction anti-termite treatment is carried out.  
[06]

5(a) What are the important considerations in fire protection of a building?  
[06]

5(b) Explain causes and repair measures of horizontal cracks in the wall of a building with the help of neat sketches.
Answer all the questions. Assume suitable data if missing. Notations used have their usual meaning.

Q.No. Question M.M.
1(a) Briefly describe the different types of chains used in chain surveying. [04]
1(b) A and D are points on the opposite sides of a pond. The surveyor establishes a line AC clear of the pond such that B is visible from C. The surveyor establishes another point D on the line CB produced so that the line AD is also clear of the pond. If the distances AC, CB, BD and DA are respectively, 300 m, 150 m, 175 m and 250 m, determine the distance AB. [08]

OR

1'(a) Briefly describe the functioning of a cross staff and an optical square [04]
1'(b) The paper of an old map drawn to a scale of 100 m to 1 cm has shrunk, so that a line originally 10 cm has now become 9.6 cm. The survey was done with a 20 m chain 10 cm too short. If the area measured now is 71 sq cm, find the correct area on the ground. [08]

2(a) Differentiate between magnetic meridian and true meridian [02]
2(b) The following bearings were observed with a compass [08]

<table>
<thead>
<tr>
<th>Line</th>
<th>Fore bearing</th>
<th>Back Bearing</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>74° 0'</td>
<td>254° 0'</td>
</tr>
<tr>
<td>BC</td>
<td>91° 0'</td>
<td>271° 0'</td>
</tr>
<tr>
<td>CD</td>
<td>166° 0'</td>
<td>343° 0'</td>
</tr>
<tr>
<td>DE</td>
<td>177° 0'</td>
<td>0° 0'</td>
</tr>
<tr>
<td>EA</td>
<td>185° 0'</td>
<td>9° 0'</td>
</tr>
</tbody>
</table>

Correct the bearings for local attractions. Also find the true bearings of lines if the magnetic declination at the time and place of observation was found to be 5° E.

2(c) Briefly describe the process of orientation of plane table by back sighting method. [02]

3(a) Differentiate between profile levelling and cross sectioning [04]

...Contd....
The following notes refer to reciprocal levels taken with one level.

<table>
<thead>
<tr>
<th>Instrument Near</th>
<th>Staff Readings on</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>P</td>
<td>Distance PQ = 1010 m</td>
</tr>
<tr>
<td>1.824</td>
<td>2.748</td>
<td></td>
</tr>
<tr>
<td>Q</td>
<td>0.928</td>
<td>R.L. of P = 235.545</td>
</tr>
<tr>
<td>1.606</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Find the (a) true R.L. of B
(b) the combine correction for curvature and refraction
(c) the angular error in collimation adjustment, if any

4(a) What is error of closure? Briefly describe the different methods of adjustment of closing error of a closed traverse.

4(b) A closed traverse was conducted round an obstacle and the following observations were made. Work out the missing quantities

<table>
<thead>
<tr>
<th>Line</th>
<th>Length</th>
<th>Bearing</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>500</td>
<td>98° 30'</td>
</tr>
<tr>
<td>BC</td>
<td>620</td>
<td>30° 20'</td>
</tr>
<tr>
<td>CD</td>
<td>468</td>
<td>298° 30'</td>
</tr>
<tr>
<td>DE</td>
<td>?</td>
<td>230° 0'</td>
</tr>
<tr>
<td>EA</td>
<td>?</td>
<td>150° 10'</td>
</tr>
</tbody>
</table>

OR

4(a) Differentiate between loose needle and fast needle methods of theodolite traversing

4(b) A straight tunnel is to be run between two points A and B, whose coordinates are given below:

<table>
<thead>
<tr>
<th>Point</th>
<th>Coordinates</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0</td>
</tr>
<tr>
<td>B</td>
<td>3014</td>
</tr>
<tr>
<td>C</td>
<td>1764</td>
</tr>
<tr>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>E</td>
<td>256</td>
</tr>
<tr>
<td>1398</td>
<td></td>
</tr>
</tbody>
</table>

It is desired to sink a shaft at D, the middle point of AB, but it is impossible to measure along AB directly, so D is to be fixed from C, a third known point.

Calculate: (a) The coordinates of D
(b) the length and bearing of CD
(c) The angle ACD, given that the bearing of AC is 38° 24' E of N

5(a) Describe the different methods of determination of area of a closed traverse.

5(b) Derive the equations used for the determination of area of a two level and side hill two level section
2012-13
B.TECH. (WINTER SEMESTER) EXAMINATION
CIVIL
HYDROLOGY
CE-219

Maximum Marks: 60

Credits: 04

Duration: Three Hours

Answer all the questions.
Assume suitable data if missing.
Notations used have their usual meaning.

Q.No. 

Question

MLM

1(a) Give the step-wise procedure of determining average rainfall over a basin by Thiessen polygon method.

[07]

1(b) The annual rainfall at seven rain gauge stations in a basin are 55, 90, 60, 45, 20, 88, and 69 cm respectively. How many additional gauges are required if it is desired to limit the error to only 9% in the measurement of average rainfall?

OR

1'(a) Discuss hydrological cycle with the help of a neat sketch.

[07]

(b) Write short notes on:

(i) Float type rain gauge

(ii) Mass curve and Hyetograph.

[08]

2(a) Differentiate between P.E.T. and Consumptive use. Give the step-wise procedure to calculate annual P.E.T. by Thornthwaite method.

[07]

2(b) Infiltration test is conducted on an automatic adjustable depth of flooding type double ring infiltrometer with a constant depth of flooding of 1.5 cm. The diameter of the inner ring and the tank feeding water to it are 30 cm and 15 cm, respectively. The observation of water levels in the tank are as given below:

<table>
<thead>
<tr>
<th>Time in minutes since start</th>
<th>Water level in the feeder tank (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>55</td>
</tr>
<tr>
<td>2</td>
<td>53</td>
</tr>
<tr>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>30</td>
<td>45</td>
</tr>
<tr>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>90</td>
<td>38</td>
</tr>
<tr>
<td>120</td>
<td>36</td>
</tr>
<tr>
<td>240</td>
<td>32</td>
</tr>
</tbody>
</table>

Determine the infiltration capacity for the time intervals in the test.

Contd.
3(a) What are the assumptions of the unit hydrograph theory?

3(b) The ordinates of a 2 h unit hydrograph are given below:

<table>
<thead>
<tr>
<th>Time (Hour)</th>
<th>0</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
<th>14</th>
<th>16</th>
<th>18</th>
<th>20</th>
<th>22</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 hour UH ordinates (m³/s)</td>
<td>0</td>
<td>25</td>
<td>105</td>
<td>165</td>
<td>195</td>
<td>175</td>
<td>115</td>
<td>75</td>
<td>35</td>
<td>25</td>
<td>7</td>
<td>0</td>
</tr>
</tbody>
</table>

Determine the ordinates of an S-curve hydrograph and using these ordinates determine the ordinates of a 4 hour unit hydrograph.

OR

3'(a) A basin has an area of 27500 km², perimeter 1000 km and length 230 km. Determine the following:
(i) form factor,
(ii) compactness coefficient,
(iii) elongation ratio,
(iv) circularity ratio.

3'(b) The following are the ordinates of the hydrograph of flow from a catchment area of 780 km² due to a 6 hour rainfall. Derive the ordinates of 6-hour unit hydrograph for the basin and state its peak.

<table>
<thead>
<tr>
<th>Date</th>
<th>1 March 1980</th>
<th>2 March 1980</th>
<th>3 March 1980</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time (Hours)</td>
<td>6</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>Discharge m³/s.</td>
<td>40</td>
<td>64</td>
<td>215</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>4 March 1980</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time (Hours)</td>
<td>0</td>
</tr>
<tr>
<td>Discharge m³/s.</td>
<td>50</td>
</tr>
</tbody>
</table>

4(a) Write short notes on the following:
(i) Specific capacity and well losses,
(ii) Assumptions in the Thiem's method.

4(b) In a pumping out test on a tube well of 30cm diameter penetrating fully in an unconfined aquifer, the following observations were made:
Tube well discharge = 0.05 cusecs
R.L. of initial water surface before pumping started = 228.0m
R.L. of water in the observation well, located 50m radially from the well = 227.0m
R.L. of impervious layer = 200m
Determine the following:
(i) Coefficient of permeability of the aquifer.
(ii) Radius of influence.
Q.No. Question M.M.

1(a) A truck is just purchased for $4600, which is to be used for delivery in a particular city. The expected life and salvage value is 5 years and $300, respectively. The combined insurance, maintenance, fuel, and lubrication costs are expected to be $650 the first year and to increase by $50 per year thereafter, while delivery service will bring an extra $1200 per year for the company. Determine the equivalent annual worth of the truck at an interest rate of 10% per year. [06]

1(b) A plant superintendent is trying to decide between two machines. Machine A has the first cost of $11,000, annual operating cost of $3500 and salvage value at the end of its 5 years useful life is $1000. While cost for machine B is $18,000, annual operating cost of $3100 and salvage value of $2000 at the end of its 10 year useful life. Compare the two alternatives on the basis of present worth using an interest rate of 12% per year. [06]

OR

1' (b) A sum of Rs 500,000 was allotted to a city for the construction and continued upkeep of a community centre by the local government body. Annual maintenance for the centre is estimated at Rs 15000. In addition, Rs 25000 will be needed every 10 years for painting and major repairs. How much will be left for the initial construction cost, after funds are allocated for perpetual upkeep? Deposited funds can earn 6% annual interest, and these returns are not subjected to taxes. [06]

2 (a) Three years back a machine was purchased at a cost of Rs. 300000 to be useful for 10

Contd......2
years. Its salvage value at the end of its estimated life is Rs. 50000. Its annual maintenance cost is Rs. 40000. The market value of the present machine is Rs. 200000. A new machine to cater to the need of present machine is available at Rs. 250000 to be useful for 7 years. Its annual maintenance cost is Rs. 14000. The salvage value of the new machine is Rs. 20000. Using an interest rate of 15%, find whether it is worth replacing the present machine with the new one.

2(b) Using benefit-cost (B/C) ratio analysis, determine which one of the following alternatives should be selected. Each alternative has 10 years useful life with no salvage value. Assume a tax free interest rate of 12%.

\[
\begin{array}{cccc}
\text{A} & \text{B} & \text{C} & \text{D} \\
\text{First cost, $} & 15000 & 19000 & 25000 & 33000 \\
\text{Annual cost, $} & 1000 & 1200 & 900 & 1100 \\
\text{Annual benefit, $} & 1500 & 2000 & 1900 & 2200 \\
\end{array}
\]

OR

2'(b) What do you mean by depreciation? Give the reasons for declining value of an asset.
An asset has a first cost of $25000 and an expected salvage value of $4000 after 12 years. Calculate depreciation for the fourth year and the book value at the end of fifth year using double declining balance (DDB) method.

3(a) What is decision making in the context of management? Explain any one decision making technique.

3(b) Briefly describe the managerial roles and skills possessed by effective managers.

3'(b) Describe the basic functions of management process.

3(c) "Information is a key resource", comment. What are the characteristics of useful information?

4(a) Planning is an integral part of management process. Comment on its importance.

4(b) Differentiate between (i) job enrichment and job enlargement; (ii) tall and flat structures.

OR

Contd.....3
4' (a) Discuss the concept and process of control. Give the steps involved in the control process.

4' (b) What is motivation and how it is related to management process? Discuss the importance of employee motivation.

5 (a) What is forecasting? The demand for the disposable plastic tubing for a general hospital is 300, 350, 320 units for September, October, and November respectively. The forecast for September was 200 units. Using first order exponential smoothing, compute the forecast for the month of December, taking $\alpha = 0.3$.

5 (b) Define inventory and inventory control. Describe the basic economic order quantity model of inventory control.

5 (c) Discuss human resource planning. Give the various methods of selecting and developing human resource.

OR

5' (c) Discuss the importance of international business. Briefly describe different forms of international business.