MIDWESTERN UNIVERSITY
FACULTY OF ENGINEERING

Examination Control Division

2073 Chaitra

Exam	Regular/Back		
Level	BE	**Full Marks**	50
Program	Civil	**Pass Marks**	25
Year/Part	II/I	**Time**	3.0 Hrs.

Subject: CE208 Building Construction and Building Drawings

- *Attempt all questions*
- *Candidates are required to answer the questions in their own words as far as possible.*
- *Assume suitable values, with stipulation, if necessary.*
- *Provide necessary figures with labeling.*
- *Figures in margin indicate full marks.*

1.a. What are the different modes of sound transfer in buildings? What are the ill effects of noise in the occupants of a building? **[2]**

Differentiate between sound insulation and sound absorbing materials that are commonly used in building construction. Highlighting their properties, illustrate their use in ensuring best acoustics in a building. **[4]**

b. Explain the few types of foundation? Explain the purpose and procedure of underpinning with detailed figures. **[4]**

2. a. Explain the following terminologies with labeled figures: **[5]**

a) Mortar (b) Masonry (c) Flemish Bond (d) Ashlars (e) English Bond

b. Plan a suitable open newel stair for a residential building in which the floor-to-floor height between successive floors is 3.15 m and the thickness of slab is 15 cm. The measurement of stair hall is 3.6m × 4.5 m. Also, provide the schematics of your design and perform the required checks to ensure proper landings and approach for the designed stair. **[5]**

3. a. What are the features of a good roofing material? **[1+1]**

Describe the features of Collar Beam Roof and Queen Post Roof with well labeled sketches. **[3]**

b. Explain with necessary figures the various types of windows used in buildings. **[5]**

4. a. Explain formworks with its function and requirements. **[1.5]**

With neat and labeled sketches explain the features of different types of shoring. **[3.5]**

b. Explain the importance of plastering in building construction. Also, differentiate between load bearing and non-load bearing claddings. **[3]**

c. Explain the importance of rain water harvesting in modern metropolitan areas. **[2]**

5.a. What do you mean by thermal comfort in building science? Explain the various ways of ensuring thermal comfort in eco-friendly and low cost buildings. **[1+3]**

b. Write short notes on (any three) **[3x2]**

a) Ferro cements
b) Isolation Joints
c) Floor and wall tiles
d) Fiber reinforced concrete

MIDWESTERN UNIVERSITY
FACULTY OF ENGINEERING

Examination Control Division

Exam		Retake	
Level	BE	**Full Marks**	50
Program	Civil	**Pass Marks**	25
Year/Part	II/I	**Time**	3.0 Hrs.

2074 Kartik

Subject: Building Construction and Building Drawing (CE208)

- *Attempt all questions*
- *Candidates are required to answer the questions in their own words as far as possible.*
- *Assume suitable values, with stipulation, if necessary.*
- *Provide necessary figures with labeling.*
- *Figures in margin indicate full marks.*

1.a. What are the different modes of moisture movement in buildings? What are the ill effects of moisture in building **[2]**

In building technology, what do you mean by ventilation? With proper illustration, explain the standards and design of various types of ventilation system in a building. **[4]**

b. Explain the few types of defects in foundation? Illustrate some of the remedies that can be opted to seal the cracks in building basements. **[4]**

2. a. Explain the following terminologies with labeled sketches: **[5]**

a) Masonry Unit (b) Frog (c) Panel Wall (d) Rat-Trap Bond (e) Queen Closure

b. Plan a suitable open newel stair for a residential building in which the floor-to-floor height between successive floors is 3.15m and the thickness of slab is 15cm. The measurement of stair hall is 3.0m × 4.8m. Also, provide the schematics of your design and perform the required checks to ensure proper landings and approach for the designed stair. **[5]**

3. a. Illustrate basic components of roofs. How do you differentiate between single, double and triple roofs? **[1+1]**

Describe the features of Lean-to Roofs and King Post Roof with well labeled sketches. **[3]**

b. Explain with necessary figures the various types of doors used in buildings. **[5]**

4. a. Explain scaffolding and its function. **[1.5]**

What are the desirable properties of formworks? With neat and labeled sketches explain the features of formwork for column and slabs. **[3.5]**

b. What are the attributes of good plaster? Describe the basic components of paints. **[1.5x2]**

c. What are the salient features of Ferro-cements and describe its importance in developing country like Nepal. **[2]**

5.a. What do you mean by building orientation? Explain the effects of Building Orientation in energy consumption in a Building. **[1+3]**

b. Write short notes on (any three) **[3x2]**

    e) Use of agro wastes in building construction

    f) Joint Treatment

    g) Types of flooring

    h) Septic Tank

Exam	Regular/Back		
Level	BE	**Full Marks**	50
Program	Civil	**Pass Marks**	25
Year/Part	II/I	**Time**	3 Hrs.

Subject: Engineering Geology (CE207)

- *Candidates are required to answer the questions in their own words as far as possible.*

- *Assume suitable values, with stipulation, if necessary.*

- *Figures in margin indicate full marks.*

1 (a) Write the definition of engineering geology according to IAEG.What is the role of civil engineer and engineering geologist in reconstruction after GorkhaEarthquake. 5

(b) Define engineering geology. Describe the scope and objective of engineering geology in civil engineering practices in Nepal. 5

2 (a) Describe crystal systems with figure. Explain engineering significance of rock forming minerals. 5

(b) Define petrology, petrography and petrogenesis. Write about rock cycle. 5

3 (a) Define and illustrate different parts of fold. What engineering problems are created by the presence of fault and joint? 5

(b) What are planes of discontinuities in the rock masses? Calculate RQD, Core Recovery and Core Loss from the given data: 5

Core Run= 200cm, Pieces in cm= 4,12,6,48,20,37,15,25

4 (a) What is landslide? Describe its causes. Explain the technique to prevent the landslide. 5

(b) What is auifer? Explain its types with neat sketch. 5

5 (a) Describe the physicographic divisions of Nepal with neat sketch. Also explain the engineering related problems that can exists in such divisions 5

(b) What are the objectives of site selection? Write down site investigation methodology 5

MIDWESTERN UNIVERSITY
FACULTY OF ENGINEERING

Examination Control Division

2073 Chaitra

Exam		Regular/Back	
Level	BE	**Full Marks**	50
Program	Civil	**Pass Marks**	25
Year/Part	II/I	**Time**	3 Hrs.

Subject: (Engineering Geology) CE207

- *Candidates are required to answer the questions in their own words as far as possible.*

- *Assume suitable values, with stipulation, if necessary.*

- *Figures in margin indicate full marks.*

1 *(a)* What is earthquake? Write down how its occur. **5**

(b) What are the role of engineering geologist and civil engineer together in context of development in Nepal. **5**

2 *(a)* What is rock. Write down its physical properties in brief. **5**

(b) What is metamorphic and sedimentary rocks. Write down its engineering signification. **5**

3 *(a)* Define and illustrate different types of fault. What engineering problems are created by the presence of fault and joint? **5**

(b) What are planes of discontinuities in the rock masses? Calculate RQD, Core Recovery and Core Loss from the given data: **5**
Core Run= 210cm, Pieces in cm= 6,10,10,40,25,36,15,14

4 *(a)* Discuss hazard and risk. Write down the classification of landslide. **5**

(b) State Darcy's law. Explain the various types of drainage patterns. **5**

5 *(a)* Describe the tectonic divisions of Nepal with neat sketch indicating tentative location of tectonic boundaries such as HFT, MBT and MCT. Also, explain the engineering related problems that can exists in such boundaries. **5**

(b) What are the objectives of site selection? Write down site investigation methodology. **5**

BEST OF LUCK

MIDWESTERN UNIVERSITY
FACULTY OF ENGINEERING
Examination Control Division

Exam	Regular/Back		
Level	BE	**Full Marks**	50
Program	Civil/Hydro	**Pass Marks**	25
Year/Part	II/I	**Time**	3 Hrs.

2074Chaitra

Subject: Engineering Mathematics –III (SH203)

- *Attempt all questions*

- *Candidates are required to answer the questions in their own words as far as possible.*

- *Assume suitable values, with stipulation, if necessary.*

- *Figures in margin indicate full marks.*

1. a. (i) Defined the linear transformation. Check the given transformation is linear or not. (2+3)
   T: be defined by .
   (ii)Obtain a Fourier series to represent the function   f(x) = .
   =1

   b. (i) Solve the equation .= 0
      (ii) Defined Eigen value and Eigen vector. Find the Eigen value and Eigen vector of the following matrix.
   .
   (2+3)

2. a .(i) Find the inverse of Laplace transform. . (2+3)

   (ii) Define the Laplace transform .Find the Laplace transform of

   b. Solve the following differential equation by Laplace transform method. (5)
    ,given that

3. a. (i) Evaluate where v is the region bounded by unite cube and (2+3)
      (ii)Obtain the half-range cosine and sine series for

   b. Prove that. (5)

4. a. proved that the line integral is independent to the path joining any two points A and B in a region (5)
   if and only if . For simple closed curve in c.

   b. Verify Stokes theorem for the function =y+z+ ,Where S is the portion of the surface (5)
    above the

5. a. Evaluate where $=(x^2, e^y, 1)$, S: x + y + z = 1 x 0, y 0, z 0. (5)

b. Defined the line integral with example? Find the work done in moving partial in the force field =++ 2, along the straight line from .   (5)

-   *Attempt all questions*

- *Candidates are required to answer the questions in their own words as far as possible.*
- *Assume suitable values, with stipulation, if necessary.*
- *Figures in margin indicate full marks.*

1. (a) i. Find the rank of the matrix: .   **[2+3]**
     ii. Find the Fourier series to represent the function $f(x)$ = .

  (b) i. If V= be a vector space, show that W= are vector subspace of V.   **[2+3]**

     ii. If then solve the equation: .

2. (a) i. Evaluate the following integrals by using Laplace transform   **[2+3]**
     ii. Define the Laplace transform .Find the inverse Laplace transform of .

  (b) Solve the following differential equation by Laplace transform method.   **[5]**
     , given that

3. (a) i. Evaluate ,where $F = [y,\ xz^3,\ -zy^3]$, C the circle z= -3   **[2+3]**

     ii. Find the half-range sine series of the following. $f(x)=x- x^2$ the range 0

  (b) State Cayley-Hamiltan theorem. Verify Cayley – Hamiltan theorem for the matrix A, and
     find its inverse. A =.   **[5]**

4. (a) State and proved Green's theorem.   **[5]**

  (b) Evaluate.ds , where =(+y^2 -(x+3y), where S is the surface bounded by the plane   **[5]**
     2x+2y+z=6 , x = 0 ,y = 0 , z = 0 , by using Gauss Divergence theorem.

5. (a) Evaluate. dv ,where V is the region bounded by   **[5]**
     =+ +.

  (b) Defined the line integral with example? Find the work done in moving partial in the force field
     =++ 2, along the curve defined by from x = 0 to x = 2   **[5]**

MIDWESTERN UNIVERSITY FACULTY OF ENGINEERING Examination Control Division				
	Exam		Regular/Back	
	Level	BE	**Full Marks**	50
	Program	Civil	**Pass Marks**	25
	Year/Part	II/I	**Time**	3 Hrs.

2073 Chaitra

Subject: (Communication English) (SH207)

1 Rewrite the following words using suitable **prefixes** or **suffixes**.   **5**
Pleasure, teach , develop, patient ,comfort, communication, discuss , correct, nation, migration

2 Mid-Western University, is constructing its central library building of estimated cost Rupees 70, 00000/- (Seventy Lakhs) in   **5**
Birendranagar, Surkhet. As an Engineer, write a well-structured **Tender -notice** on behalf of the University.

3 Highlight the importance of minute writing and mention three things that the writer has to keep in mind while preparing a   **5**
minute.

4 Why do we need to develop technical proposals? Explain it with its components.   **5**

5 Mention several composing and editing strategies for effective writing.   **5**

6 Why do engineers need to have the sound knowledge of English language?   **5**

7 Explain the fundamentals of effective speaking with some relevant examples in your context.   **10**

8 **Read the following passage and answer the questions that follow:**   **10**
One common mistake that many people have made is this: they have thought that it would be a very good thing if everybody
had exactly the same amount of money. No matter whether they worked hard or lived quite idly. They forget that very few
people would work at all if it were not for the money their work brings them, and that without work there would be no money.
And they have imagined that if all the money in the country were equally divided everybody would be rich. Now that is very
great mistake, because there simply is not enough money to make everybody rich. If it were shared, equally all round
everyone then would, on the basis of the calculations made in1935, receive only about Rs. 65 a year. Today with a rise in the
price level, it might be Rs.150 a year. That may be more than you receive now or it may be less, but would certainly not make
you really rich. It is quite true that there are in this country a small number of very rich people; but they are so few in
comparison with the whole population that even if they were to share out all their wealth among the rest, it would make very
little difference. It is said that if you flattened out that great French mountain Mont Blanc, the highest mountain in Europe, and
spread it over the whole of France you would only raise the level if the land by about six inches. See if you can think out what
that has to do with the question I have been talking about.
Questions:
(i) What would people do if everybody was given exactly the same amount of money?
(ii) Why is it not possible to make everybody rich?
(iii) What is the proportion of very rich people and the whole population in a country?
(iv) What happens if the highest mountain of Europe is flattened and spread over the whole of France?
(v) What is the common mistake that every people make?

MIDWESTERN UNIVERSITY
FACULTY OF ENGINEERING

Examination Control Division

2074 Kartik

Exam		Retake	
Level	BE	**Full Marks**	50
Program	Civil	**Pass Marks**	25
Year/Part	II/I	**Time**	3 Hrs.

Subject: Communication English (SH207)

- *Candidates are required to answer the questions in their own words as far as possible.*

- *Assume suitable values, with stipulation, if necessary.*

- *Figures in margin indicate full marks.*

1. Rewrite the following words using suitable **prefixes** or **suffixes**.   **5**
Profession, Legal, Friend, Normal, Paid, Pure, Visible, Understand, Pack, Regular

2. Enlist the fundamentals of effective speaking and explain any one of them in brief.   **5**

3. What is paragraph writing? What are the strategies for maintaining unity in paragraph writing?   **5**

4. Explain the four characteristics of effective technical writing with examples.   **5**

5. Differentiate between internal and external proposals with sufficient examples. **5**

6. What is an executive summary? Write its purpose in brief. **5**

7. Mid-Western University, is constructing its central library building of estimated cost Rupees 70, 00000/- (Seventy Lakhs) in Birendranagar, Surkhet. As an Engineer, write a well-structured **Tender -notice** on behalf of the University. **10**

8. **Read the following passage and answer the questions that follow:** **10**

One common mistake that many people have made is this: they have thought that it would be a very good thing if everybody had exactly the same amount of money. No matter whether they worked hard or lived quite idly. They forget that very few people would work at all if it were not for the money their work brings them, and that without work there would be no money. And they have imagined that if all the money in the country were equally divided everybody would be rich. Now that is very great mistake, because there simply is not enough money to make everybody rich. If it were shared, equally all round everyone then would, on the basis of the calculations made in1935, receive only about Rs. 65 a year. Today with a rise in the price level, it might be Rs.150 a year. That may be more than you receive now or it may be less, but would certainly not make you really rich. It is quite true that there are in this country a small number of very rich people; but they are so few in comparison with the whole population that even if they were to share out all their wealth among the rest, it would make very little difference. It is said that if you flattened out that great French mountain Mont Blanc, the highest mountain in Europe, and spread it over the whole of France you would only raise the level if the land by about six inches. See if you can think out what that has to do with the question I have been talking about.
Questions:
(i) What would people do if everybody was given exactly the same amount of money?
(ii) Why is it not possible to make everybody rich?
(iii) What is the proportion of very rich people and the whole population in a country?
(iv) What happens if the highest mountain of Europe is flattened and spread over the whole of France?
(v) What is the common mistake that every people make?

MIDWESTERN UNIVERSITY
FACULTY OF ENGINEERING

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2073 Chaitra

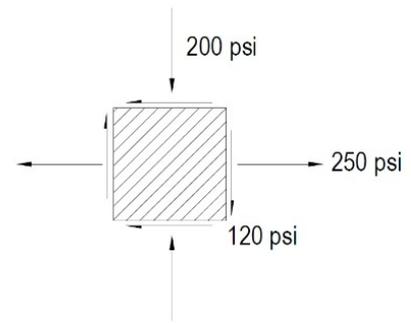| Exam	Regular/Back		
Level	BE	**Full Marks**	50
Program	Civil	**Pass Marks**	25
Year/Part	II/I	**Time**	3 Hrs.

Subject: CE204 Strength of Materials

- *Attempt all questions*
- *Candidates are required to answer the questions in their own words as far as possible.*
- *Assume suitable values, with stipulation, if necessary.*
- *Figures in margin indicate full marks.*

1.a. What do you understand by loads on structure? Classify loads on structure with appropriate examples. **[2]**

b. A 400 meter long uniform steel rope is hung vertically. Find the elongation of the top 150m length of the rope due to self -weight. Weight density of steel=78 KN/m^2 , E=210 GN/m^2 **[3]**

c. Establish the mathematical relationship between *E*, *G*, and *K*, where each of the notations bears usual meaning of solid mechanics. **[5]**

2. a. For the adjoining figure, locate the centroid of the shaded area. And then, **[6]**

   a) Compute the moments of inertia of the shaded area about its centroidal axis.

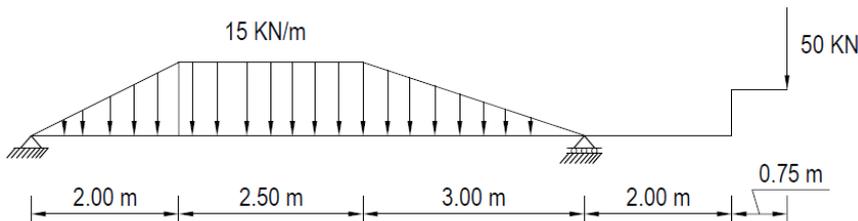b) Obtain the orientation of the principal axis and hence find the Principal moments of inertia.
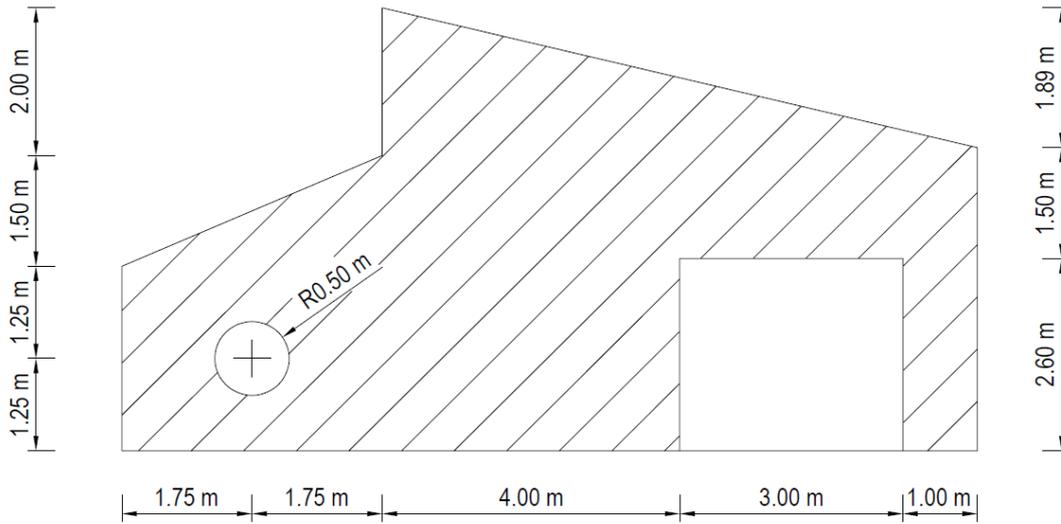
b. At a certain point in a wooden member, the state of stress is as shown in the figure below. The direction of grain in the wood makes and angle of +28½°. The allowable shear stress parallel to the grain is 150 psi for this wood. Is this state of stress permissible? Verify your answer with the aid of mathematical calculations. **[4]**

3. a. For the beam shown in the figure, calculate the support reactions and draw the axial force, shear force and bending moment diagrams. **[6]**

b. A closed cylindrical steel pressure vessel with radius of cylinder 900 mm and wall thickness 9 mm contained pressurized gas at 1 MPa. Determine the stresses in this cylinder. **[4]**

4. a. Prove that in case of a beam of rectangular cross section the maximum shear stress developed is 1.5 times the average shear stress. **[5]**

b. Calculate the buckling load for a strut of T section, the width being 100mm, overall depth being 80mm, and both flange stem being 10 mm thick. The strut is 3 m long and hinged at both ends. E=200GN/m$^{2.}$ **[5]**

5. a. Consider the stepped shaft as shown in the figure rigidly attached to a wall at E, and determine the angle **[6]**

of twist of the end A when the two torques at B and at D are applied. Assume G to be 80 GPa.
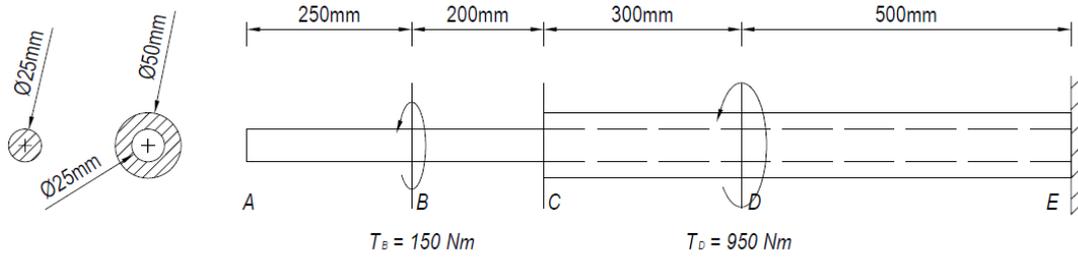
b. Write short notes on (any two):   **[2x2]**

   a) Determinate and structures

   b) Stress-Strain diagram for mild steel

   c) Limitations of Euler's Bulking Theory

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- *Attempt all questions*

- *Candidates are required to answer the questions in their own words as far as possible.*

- *Assume suitable values, with stipulation, if necessary.*

- *Figures in margin indicates full marks.*

1.a. What do you mean by structure? With appropriate examples distinguish between determinate and indeterminate structures.   **[2]**

b. In a California oil field, a very long steel drill pipe got stuck in hard clay. It was necessary to determine at what depth this occurred. The site engineer on the job ordered the pipe subjected to a large upward tensile force. Because of this operation, the pipe came up elastically 600 mm. At the same time the pipe elongated 0.035 mm in a 200 mm gage length. Approximately where was the pipe stuck? [Stipulate any assumption you make for approximation]   **[3]**

c. What do you mean by the term "Dilation"? Formulate the mathematical relationship G, and K, where each of the notations bears usual meaning of solid mechanics.   **[5]**

2. a. For the adjoining figure, locate the centroid of the shaded area. And then, **[6]**

    c) Compute the moments of inertia of the shaded area about its centroidal axis.

   d) Obtain the orientation of the principal axis and hence find the Principal moments of inertia.
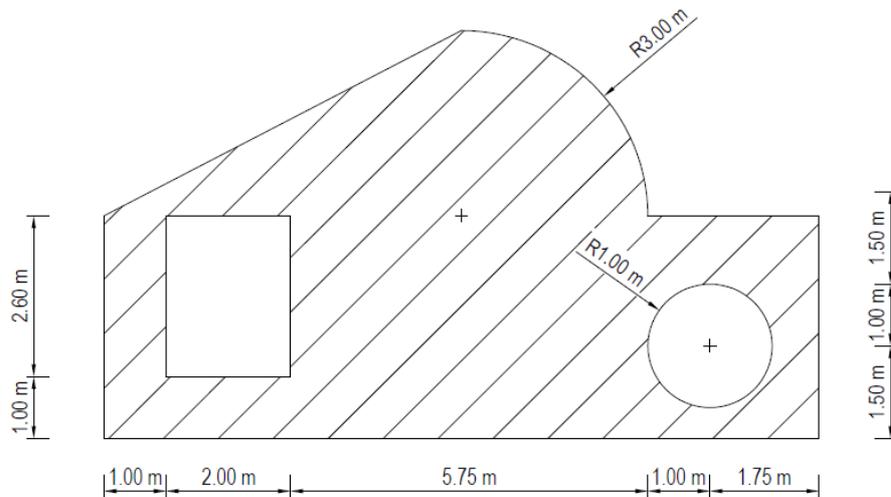
b. At a certain point in a structural member, the state of stress is as shown   in **[4]** the figure below. Using the Mohr's Circle Method, compute the following:

    i.   Normal and shear stresses at the plane shown in figure

    ii.   Orientation of principal axis

   iii.   Principal stresses

    iv.   Maximum shear stress
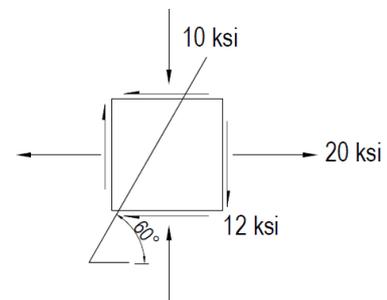
3. a. For the frame shown in the figure, calculate the support reactions and draw the axial force, shear force and **[6]** bending moment diagrams. (The 10 KN point load is acting at the center of the vertical member)
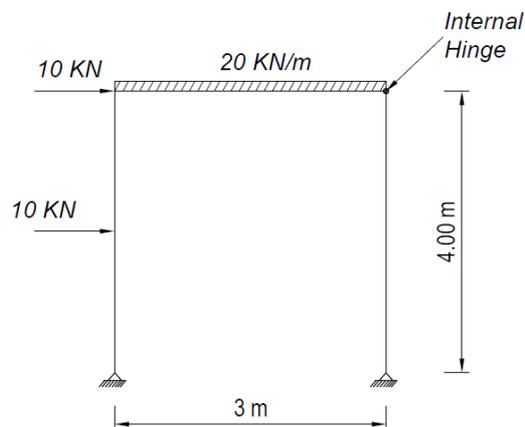
b. A closed cylindrical steel pressure vessel with radius of cylinder 1000 mm and wall thickness 12 mm **[4]** contained pressurized gas at 1.5 MPa. Examine the stability of the pressure vessel if the allowable stress for the vessel material is 250 MPa.

4. a. Consider the beam cross section shown in the adjoining figure. The side plates are of brass while the central **[6]** piece is of steel. Considering perfect bonding between steel and brass determine the flexural strength for the

cross section around the horizontal axis such that the stress would not exceed 40 MPa. (All dimensions are in mm; E_s = 200 GPa and E_B = 86 GPa)
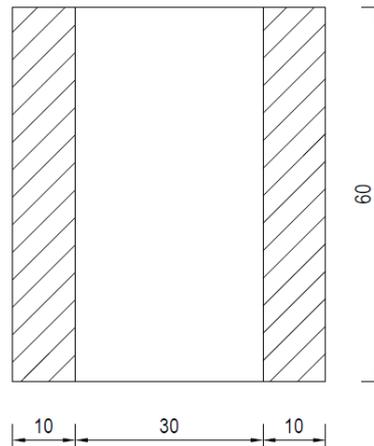
b. Derive the expression for critical load to buckle a column of length *l*, using Euler's method. The column has boundary condition of a both ends pinned. **[4]**

5. a. A circular bar made of cast-iron is to resist an occasional torque of 2.20 KNm acting in transverse plane. If the allowable stress in compression, tension, and shear are 100 MPa, 35 MPa, and 50 MPa respectively. Find the diameter of the bar, angle of twist under the applied torque per meter length of the bar. **[5]**

b. In a tensile test, a specimen of 25 mm diameter, 200 mm gage length, stretched 0.0875 m under a pull of 45 KN. In torsion test, the same rod twisted 0.025 radians over a length of 200 mm when a torque of 0.40 KNm was applied. Evaluate the Poisson's Ratio and the three elastic moduli for the material. **[5]**

- *Attempt all questions*

- *Candidates are required to answer the questions in their own words as far as possible.*

- *Assume suitable values, with stipulation, if necessary.*

- *Provide necessary figures with labeling.*

- *Figures in margin indicate full marks.*

1 .a. Define the following terms: **[2]**
   i) Mass density ii) Specific weight iii) Specific gravity iv)viscosity

b. A shaft 70mm in diameter is fixed axially and rotated inside a sleeve of diameter 71.2mm at 210 rpm. The length of the shaft is 200 mm. Determine the resisting torque exerted by the oil and the power required to rotate the shaft. Take viscosity of oil = 5 NS/m^2. **[3]**

2.a. Define the term center of pressure. Describe the analytical method of determination of metacentric height. **[1+4]**

b. For force vortex motion, in case of cylindrical vessel show that rise of liquid is equal to fall of liquid. **[3]**

3.a. The 1.5m diameter cylinder in the fig. weighs 100000N and 1.2m long. Determine the reactions at A and B, neglecting friction. **[4]**
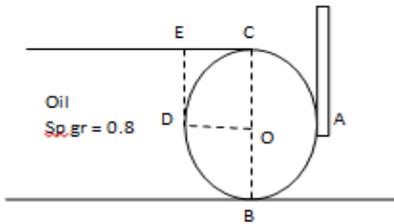
b. A wooden block of width 2m, depth 1.5m and length 4m floats horizontally in water. Find the volume of water displaced and the position of center of buoyancy. The specific gravity of wooden block is 0.8. **[3]**

4.a. Describe the types of fluid flow .State the principle of conservation of mass in fluid mechanics. **[4+1]**

b. Derive the expression for Eulers equation for 1D fluid flow and hence find the Bernoullis equation . **[3+2]**

c. An orifice meter is provided in a vertical pipeline of 250 mm diameter carrying oil of sp.gr. 0.9, the flow being upwards. The difference in elevation of the upstream and downstream ends of the manometer on the orifice meter is 350mm. The differential U-tube mercury manometer shows a gauge deflection of 190mm. Calculate the discharge of oil. The diameter of the orifice is 150mm. Take $C_d = 0.65$. **[5]**

5.a. A 1.25m diameter circular tank contains water up to a height of 5m. At the bottom of the tank, an orifice of 50 mm diameter is provided. Find the height of water above the orifice after 1.5 minutes. Take $C_d = 0.62$. **[5]**

b. A 45^0 pipe bend tapers from 600 mm diameter at inlet to 300mm diameter at outlet. The pressure at inlet is 140KN/m^2 and the rate of flow is 0.425m^3/s. At outlet the pressure is 123KN/m^2 gauge. Neglecting friction, calculate the resultant force exerted by the water on the bend in magnitude and direction. The bend lies in a horizontal plane. **[5]**
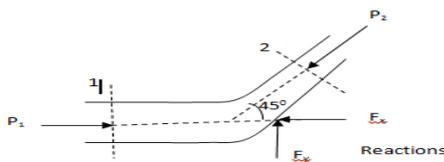
c. Define similitude. Differentiate between distorted and undistorted model. Explain about Reynolds and Frouds number **[1+2+1 +1]**

Subject: Engineering Mathematics – III (SH203)

- *Attempt all questions*

- *Candidates are required to answer the questions in their own words as far as possible.*

- *Assume suitable values, with stipulation, if necessary.*

- *Figures in margin indicate full marks.*

1. a. (i) Define symmetric and skew-symmetric matrix. Express the given matrix as the sum of a symmetric and **(2+3)**

    skew-symmetric matrix. .

    (ii) Find the Fourier series representation of the periodic function for
    b. (i) Define the rank of the matrix. Find the rank of the matrix.

    (ii) Find Eigen values and corresponding Eigen vectors of a square matrix
         A =

                                                                                    (2+3)
2. a .(i) Find the Laplace transform of the following function ,   **(2+3)**
      (ii) Define the inverse Laplace transform .Find the inverse Laplace transform of .

b. Solve the following differential equation by Laplace transform method. **(5)**
  ,given that

3. a. (i) Evaluate. where = and C is the curve **(2+3)**
     (ii)Obtain the half-range cosine and sine series for Hence show that
   .
   b. Solve the following equation by using Gauss elimination method. **(5)**
    ,   and
4. a. State and prove Stocke's theorem. **(5)**

                        OR

    Verify Gauss divergence theorem for   where , s is the surface of the plane 2x+3y+6z=12 in the first octant.

   b. Evaluate dv ,where v is the region bounded by and **(5)**
    =2xz- x+.

5. a. State Greens theorem in plane. Evaluate where C is the boundary of the triangle with vertices (0,0), (1,0), **(5)**
    (0,2) counter clockwise.

   b. Verify Stoke's theorem for the function =+2 ,integral round the square in the plane z =0 ,and bounded by **(5)**
    the line

Exam	Regular/Back		
Level	BE	**Full Marks**	50
Program	Civil	**Pass Marks**	25
Year/Part	II/I	**Time**	3 Hrs.

Subject: Surveying - I (CE206)

- *Candidates are required to answer the questions in their own words as far as possible.*

- *Assume suitable values, with stipulation, if necessary.*

- *Figures in margin indicate full marks.*

- *Attempt all question.*

1.a) Distinguish between plane and geodetic survey and describe the types of error. **3+2**

b) A line was measure with a steel tape of 30m long standardized at 15^{0c} with a pull of 100N was used, the measured length being 1550.50m. find the true length of line, if the temperature at the time of measurement was 20^{0c} and the pull exerted was 160N. Weight of 1 cubic cm of steel is 0.0785N. Weight of the tape=8N. $E=2.1*10^5$ kg/cm^2. Coefficient of expansion of tape per $1^{0c}=7.1*10^{-7}$. **5**

2. a) What is abney level? How can we laying the right angle in field by using tape? **1+3**

b) The following bearings were observed in a compass traverse. **6**

Line	F.B.	B.B.
AB	$305^030'$	$125^030'$
BC	$75^030'$	$254^030'$
CD	$115^030'$	$297^030'$
DE	$166^030'$	$345^000'$
EA	$225^000'$	$44^000'$

At which stations do you suspect local attraction? Find the correct bearings of all the lines.

3.a) Write the merits and demerits of plane table survey. **4**

b) In running fly levels from a B.M. of R.L=250.00m, the followings readings were obtained: **6**
Back sight=1.315,2.035,1.980,2.625
Fore Sight=1.150,3.450,2.255
From the last position of the instrument, five pegs at 25m intervals are to be set out on a uniform rising gradient of 1 in 50. The first peg is to have a R.L. of 247.245m. Work out the staff readings required for settings the tops of the pegs on the given gradient.

4.a) Describe the temporary adjustment of theodolite. **4**

b) During the theodolite survey the following details were obtained: **6**

Line	Length(m)	Bearings
AB	550	60^0
BC	1200	115^0
CD	?	?
DA	1050	310^0

Calculate the length and bearing of the line CD.

5.a) Difference between Triangulation and Trilateration. **4**

b) A road embankment is 9m wide at formation level with side slope of 4 to 2. Assuming the ground to be level transversely, calculate the volume of the embankment in cubic meter in a length of 180m, the center heights at 30m interval being 0.6, 0.8, 1.5, 1.8, 0.75, 0.3 and 0.67 m respectively. Use Trapezoidal method. **6**

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