CE-L 49

3E1206

Roll No. _____ [Total No. of Pages : 3]

3E1206

B.Tech. III-Sem. (Main & Back) Examination, January/February - 2024

Agriculture Engineering

3AG2-01 Advance Engineering Mathematics - I

AN,AG,AE,CE,CR,EC,EI,ME,MH,PT

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates:

Attempt all Ten questions from Part A, Five questions out of Seven questions from Part B and Three questions out of Five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ Calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory. **(10×2=20)**

1. Show $\Delta^3 y_2 = \nabla^3 y_5$.
2. Show that $\Delta^2 e^x = (e-1)^2 e^x$; interval of differencing being unity.
3. Write the formulae of Trapezoidal rule and simpson 1/3 rule.
4. Using Euler method find the value of y(0.025). Given $\frac{dy}{dx} = x + y + xy; y(0) = 1$ and step size $h = 0.025$.
5. Find the inverse Laplace transform of $\frac{1}{s(s^2+1)}$
6. *If L(F(t)) = f(S)* then find the Laplace Transform of *F'(t)*.
7. Write the formulae of Fourier sine transform and inverse Fourier sine transform.

50

8. If $F_c[f(x,t)] = \overline{f}(s,t)$ then write $F_c\left[\frac{\partial^2 f(x,t)}{\partial x^2}\right]$

9. State convolution theorem for Z - transform.

10. Find $Z(n)$.

PART - B

(Analytical/Problem solving questions)

Attempt any Five questions. **(5×4=20)**

1. Show $\Delta\tan^{-1}\left(\frac{n-1}{n}\right) = \tan^{-1}\left(\frac{1}{2n^2}\right)$, interval of differencing being unity.

2. The distance covered by an athlete for the 50 meter race is given in the following table.

Time (Seconds)	0	1	2	3	4	5	6
Distance (meters)	0	2.5	8.5	15.5	24.5	36.5	50

Determine the speed of the athlete at t = 5 sec.

3. Find $L(\sin\sqrt{t})$ and hence obtain $L(\cos\sqrt{t}/\sqrt{t})$.

4. Find $\int_0^\infty \left(\frac{e^{-t} - e^{-3t}}{t}\right) dt$

5. Find the Fourier Transform of the following

$$f(x) = \begin{cases} 1-x^2 ; |x| \le 1 \\ 0 \quad ; |x| > 1 \end{cases}$$

6. Solve the following Integral equation

$$\int_0^\infty f(t)\cos\alpha t \, dt = \begin{cases} 1-\alpha & 0 \le \alpha \le 1 \\ 0 & , \alpha > 1 \end{cases},$$

7. Use convolution theorem to show that $Z^{-1}\left\{\frac{z(z+1)}{(z-1)^3}\right\} = n^2$

PART - C

(Descriptive/Analytical/Problem Solving/Design question)

Attempt any Three questions. **(3×10=30)**

1. From the following table find $f'(6)$

x	0	2	3	4	7	9
f(x)	4	26	58	112	466	922

2. Use Milne's Method to obtain the solution of the equation $\frac{dy}{dx} = x - y^2$ *at* $x = 0.8$ *and at* $x = 1$ given that y(0) = 0.

3. Prove $L\left\{\frac{\text{Sin}^2 t}{t}\right\} = \frac{1}{4}\log\left(\frac{S^2+4}{S^2}\right)$ and hence deduce the integral

$$\int_0^\infty \frac{\sin^2 t}{t^2} dt$$

4. Prove $e^{-x}\cos x = \frac{2}{\pi}\int_0^\infty \frac{(\lambda^2+2)\cos\lambda x}{(\lambda^4+4)} d\lambda$

5. Solve the following difference equation by using Z - transform

$$u_{n+2} - u_{n+1} + u_n = n^2 2^n,\ u_0 = u_1 = 0$$

3E1200

Roll No. _____ [Total No. of Pages : 4

3E1200

B.Tech. III-Sem. (Main & Back) Examination, January/February- 2024

Agricultural Engineering

3AG 1-03 Managerial Economics and Financial Accounting

All Branches

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ Calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory **(10×2=20)**

1. Explain Gross Domestic Product (GDP).
2. Draw circular flow of economic activities
3. Draw graph to show
   a) Perfectly Inelastic Demand
   b) Perfectly elastic demand **(1 + 1=2)**
4. What is Giffen Paradox?
5. Give mathematical form of Cobb - Douglas production function.
6. Define Explicit and implicit costs with example. **(1 +1= 2)**
7. Draw a chart to show different market structures.
8. List four important features of Monopoly market. **(0.5 × 4 = 2)**
9. What is golden rule of accounting for real accounts? (1 +1 =2)
10. Define payback period.

PART - B

(Analytical/Problems solving questions)

Attempt any Five questions (5×4 =20)

1. Define National Income. Explain steps involved in the estimation of national income by income method. (1+3=4)
2. Explain economies and diseconomies of scale with examples. (2+2=4)
3. How will you calculate cash flows from operating activities by direct and indirect method. Explain with example. (2+2=4)
4. a) Why is the demand curve of a firm under monopolistic competition more elastic than under monopoly? Explain.
   b) Explain 'freedom of entry and exit to firms in industry' feature of monopolistic competition. (2+2=4)
5. Explain following with help of suitable graph. (1×4=4)
   a) Zero income elasticity
   b) Negative Income elasticity
   c) Unit incom elasticity
   d) Income elasticity greater than unity
6. Give brief answer of following Questions on Balance Sheet: (1×4=4)
   a) On balance sheet, accruals, notes payable, and account payable are listed under which category?
   b) Inventories, cash and equivalents, and accounts receivables are listed as?
   c) A firm buys products but does not pay to suppliers instantly. This is recorded as?
   d) In a balance sheet, the total of common stock and retained earnings are denoted as?
7. Explain following ratios: (Formula is must) (2+2=4)
   a) Liquidity Ratio
   b) Solvency Ratio

PART - C

(Descriptive/Analytical/Problems Solving/Design question)

Attempt any Three questions **(3×10=30)**

1 a) Complete the following table: (0.25×30 =7.5)

QTY (UNITS)	TFC (Rs.)	TVC (Rs.)	TC (Rs.)	AVC (Rs.)	ATC (Rs.)	MC (Rs.)
0	60	.....	.....	.....	.....	.....
1	.....	30	.....	.....	.....	.....
2	.....	.....	100	.....	.....	.....
3	.....	.....	.....	.....	.....	5
4	.....	.....	.....	.....	28.75	.....
5	.....	.....	.....	15	.....	.....

b) Draw graph/graphs showing relationship between any five Costs with Quantity (Units).

You can show them in single graph or in separate five graphs. **(0.5×5=2.5)**

2. Calculate and also comment on degree of elasticity: **(4×2.5=10)**

a) The price of tea per cup is decreased from Rs. 4 to Rs.3 and the demand of coffee is increased from 2 cups per day to 4 cups per day. Calculate Cross Elasticity of Demand.

b) Mr. Gupta's income is raised from Rs. 10,000 to Rs. 15,000 and the demand for good A is raised from 500 to 800 units. Calculate Income Elasticity of Demand.

c) The demand of commodity X is raised from 200 to 250 units when price decreased from Rs. 8 to Rs. 6. Calculate Price Elasticity of Demand.

d) If the price rises of good A rises from Rs. 20 to Rs. 30. Its supply increases from 200 to 800 units. Calculate Elasticity of Supply.

3. "Economics is an art." Elaborate this statement by explaining meaning, nature and scope of Economics. **(2+4+4=10)**

4. "A competitive firm is not a price maker, but adjustor." Explain this statement with reference to price determination in long and short term under perfect competition. **(4+6=10)**

5. From the following balance sheet of Brown and co. Ltd. as on 31st Dec. 2020 and 31stDec.2021:

Liabilities	2020 (Rs.)	2021 (Rs)	Asset	2020 (Rs.)	2021 (Rs.)
Share capital	5,00,000	7,00,000	Land & Building	80,000	1,20,000
Profit & loss a/c	1,00,000	1,60,000	Plant & Machinery	5,00,000	8,00,000
General Reserve	50,000	70,000	Stock	1,00,000	75,000
Sundry creditors	1,53,000	1,90,000	Sundry Debtors	1,50,000	1,60,000
Bills payable	40,000	50,000	Cash at Bank	20,000	20,000
Expenses O/S	7,000	5,000			
TOTAL	**8,50,000**	**11,75,000**	**TOTAL**	**8,50,000**	**11,75,000**

Additional Information:

a) Rs. 50,000 depreciation has been charged on Plant and Machinery during 2021.

b) A piece of Machinery was sold for Rs. 8,000 during the year 2021. It had cost Rs. 12,000; depreciation of Rs. 7,000 had been provided on it.

Prepare a Schedule of changes in Working Capital and a Statement showing the Sources and Application of Funds for 2021. **(3+3+2+2=10)**

(Show Adjusted Profit & Loss Account and Plant & Machinery Account in working notes.)

54

3E1250

Roll No. _____ [Total No. of Pages : 2

3E1250

B.Tech. III-Sem. (Main & Back) Examination, January/February - 2024

Agricultural Engineering

3AG1-02/Technical Communication

All Branches

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates:

*Attempt all **Ten** questions from Part A, **Five** questions out of **Seven** questions from Part B and **Three** questions out of **Five** questions from Part C.*

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ Calculated must be stated clearly.

*Use of following supporting material is permitted during examination. (Mentioned in form **No. 205**)*

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory. **(10×2=20)**

1. What are various aspects of technical communication?
2. Write two importance of technical communication.
3. Define style in technical communication.
4. What are various steps to read a technical text?
5. List the benefits of note - making.
6. Name different technical texts.
7. Correct the following sentences.
   i) Both the sister were seen at the party.
   ii) She is one of the best student in our class.
8. Form two words by using the each prefix - in and - un.

9. Underline and rewrite the noun phrase in the following sentences.

   i) The cat with the stripes tried to trip me.

   ii) My green gym socks are in the hamper.

10. Write a short note on Linguistic Ability.

PART - B

(Analytical/Problem solving questions)

Attempt any Five questions. **(5×4=20)**

1. Explain ERRQ and SQ3R Reading Technique.
2. Reading makes a man complete francis Bacon. How can you develop effective reading skills?
3. What is the process of reading a technical manual?
4. Elaborate various ways to collect information.
5. Enlist various factors which affect designing of a document.
6. What are various types of technical articles? Explain.
7. Enumerate the different characteristics of technical project proposal.

PART - C

(Descriptive/Analytical/Problem Solving/Design question)

Attempt any Three questions. **(3×10=30)**

1. Explain various types of note-making.
2. Describe various features of style in technical communication.
3. Assume yourself as the cultural secretary, you are organizing an instrument playing programme in your Institute/College/ University. Draft an e-mail informing all the teachers, students and staff members of your College about the event and invite them to attend the event. Invent the necessary details.
4. Assuming yourself a hostler, write minutes of the meeting, which you have attended with the hostel wardern and chief warden to improve the quality of food served in the hostel mess.
5. Prepare a report on the Campus placement Drive organized in your College on 12th Jan. 2023.

3E1102

Total No of Questions: **Total No.of Pages:**

Roll No. _____

B.Tech. III-Sem (Back) Exam 2024
HSMCAeronautical Engineering
3AN1-02Technical Communication
3E1102
All branches

Time: 2 Hours **Maximum Marks: 80**
Min. Passing Marks: 28

Attempt all five questions from Part A, four questions out of six questions from Part B and two questions out of three from Part C.
Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.
Use of following supporting material is permitted during examination. (Mentioned in form No.205)
1_____ 2. _____

Part A(Answer should be given up to 25 words only)
All questions are compulsory

Q. 1 what is the meaning of Technical communication?

Q.2Write Down the Various Communication Skills?

Q.3What is the importance of Conference?

Q.4why do we take notes from a long passage? What is its utility?

Q.5Rewrite the name of the following book as you would put it in a bibliographical reference: 1979. 3rd edition. Macmillian. The Elements of Style written by W. Strunk and E. B. White.

5 x 2 = 10

Part BAnalytical/Problem solving questions
Attempt any four questions

Q.1Write an oral presentation for a debate on "Modern Technology is doing more harm than good to man". You are to speak for one minute in favour of the topic.

Q.2How is technical paper written?

Q.3What do you understand by the term technical communication? How is it different from general purpose communication?

Q.4.What is group discussion? Discuss the importance of group discussion and how it is helpful in interviews?

Q.5should email replace the communication forms such as memos and letters? Explain your answer?

Q.6What is Report? Discuss various sections of a formal report in detail.

4 x 10 =40

Part C(Descriptive/Analytical/Problem Solving/Design Question)
Attempt any two questions

Q. 1As the purchase officer of a company, write a complaint letter to comfort Home Appliances, New Delhi, pointing out the damage which was discovered after checking the consignment containing Refrigerators sent to you by supplier

Q.2Write the difference between the following terms with suitable examples:-
(a) Memos and reports.
(b) Press release and newsletters
(c) Dissertation and thesis
(d) References and bibliography

Q.3Write an essay on one of the following:-
a) India in 20-20
b) Role of youth society.

2 x 15 =30

3E1103

Total No. of Questions: **Total No.of Pages:**

Roll No. _____

B.Tech.III Sem (Back) Exam 2024
HSMCAeronautical Engineering
3AN1-03Managerial Economics & Financial Accounting
3E1103
All branches

Time: 2 Hours **Maximum Marks: 80**
Min. Passing Marks: 28

Attempt all five questions from Part A, four questions out of six questions from Part B and two questions out of three from Part C.
Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.
Use of following supporting material is permitted during examination.
(Mentioned in form No.205)
1_____ 2. _____

Part A(Answer should be given up to 25 words only)
All questions are compulsory

Q. 1 Define Managerial Economics?

Q.2 What is Normative Theory of Economics?

Q.3What are the features of Oligopoly?

Q.4 Define Time Value of Money?

Q.5 Mention the concept of Demand?
5 x 2 = 10

Part BAnalytical/Problem solving questions
Attempt any four questions

Q.1Describe fully the concept of price elasticity of demand?

Q.2State the relationship of managerial economics with Other Subjects?

Q.3 What is Perfect Competition State its features?

Q.4.Explain the Different Features of Business Cycle?

Q.5 Explain Capital Budgeting?

Q.6Calculate the BEP in units and rupees using the following details: • Selling price per unit Rs. 100 • Variable costperunitRs.60•FixedcostsRs.20,000•ActualsalesRs.2,00,000
4 x 10 =40

Part C(Descriptive/Analytical/Problem Solving/Design Question)
Attempt any two questions

Q. 1 Explain the concept of Managerial Economics? List out the applications and importance of Managerial Economics?

Q.2How is price and output determination under monopoly different from that under perfect competition?

Q.3. A Company prepares a budget to produce 3, 00,000 Units, with fixed costs as Rs. 15, 00,000 and average variable cost of Rs.10 per unit. The selling price is to Yield 20%profit on Cost. You are required to calculate
(a) BEP in Rupees
(b) P/V Ratio
(c) Margin of Safety
2 x 15 =30

3E1213

Roll No. _____ [Total No. of Pages : 4

3E1213

B.Tech. III-Sem. (Main & Back) Examination, January/February - 2024

Civil Engg.

3CE3-04 Engineering Mechanics

3E1213

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates:

Attempt all Ten questions from Part A, Five questions out of seven questions from Part B and Three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ Calculated must be stated clearly. Use of following supporting material is permitted during examination. (Mentioned in form No.205)

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory **(10×2=20)**

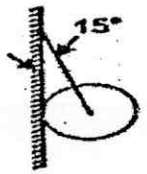
1. State Lami's theorem.
2. Define 'zero force member' in a truss.
3. Define coplanar, collinear, and concurrent forces.
4. Write down the assumption used in the analysis of pin-jointed frames.
5. Define the complementary shear stress.
6. State the parallel axis theorem of the moment of inertia.
7. State the principle of virtual work.
8. Define the angle of friction and coefficient of friction.
9. Define the modulus of rigidity and bulk modulus.
10. What is the parallelogram law of forces?

PART - B

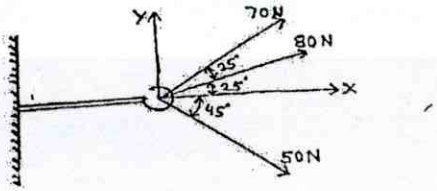
(Analytical/Problem solving questions)

Attempt any Five questions **(5×4=20)**

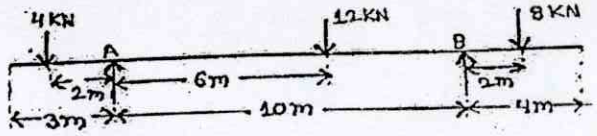
1. Draw and explain the stress-strain curve of mild steel in tension showing all its principal points.
2. Explain the difference between perfect, deficient, and redundant trusses with example.
3. A sphere of weight 100 N is tied to a smooth wall by a string as shown in the figure. The string makes an angle of 15° with the vertical wall. Calculate the tension 'T' in the string and reaction 'R' of the wall.



4. Determine the resultant of forces shown in the figure below:



5. State and prove the 'law of conservation of energy'.
6. By the Principle of virtual work, determine the reactions for the beam shown in the figure beiow.



7. Define the terms:
   i) Centre of gravity.
   ii) Centroid.
   iii) Polar moment of inertia.
   iv) Radius of gyration.

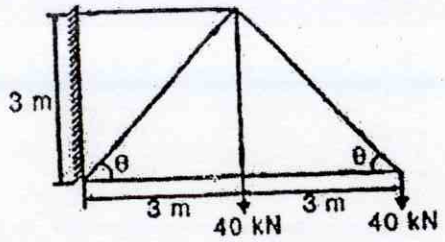
PART - C

(Descriptive/Analytical/Problem Solving/Design questions)

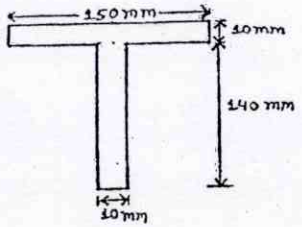
Attempt any three questions **(3×10=30)**

1. A circular rod of 25 mm diameter and 50 mm long is subjected to a tensile force of 60 KN. Determine the modulus of Rigidity, Bulk modulus, and change in volume if Poisson's ratio = 0.3 and Young's modulus $E = 2\times10^5$ N/mm².

2. Find the forces in all the members of the truss shown in the figure and tabulate the results.



3. Determine the moment of inertia of the section shown in the figure about an axis passing through the centroid and parallel to the topmost fiber of the section. Also, determine the moment of inertia about the axis of symmetry. Hence find the radius of gyration.



4. A rough inclined plane with the coefficient of friction (μ) = 0.2, rises 1 cm for every 5 cm of its length. Calculate the effort required to drag a body weighing 100 N up the plane;
   i) when the effort is applied horizontally.
   ii) when the effort is applied parallel to the plane.

5. a) Differentiate between open-coiled and close-coiled helical springs.
   b) A close-coiled helical spring is subjected to an axial pull of 600 N. The spring is made out of a 16mm diameter rod, and has 12 complete coils, each of mean diameter 120mm. Compute
      i) deflection under the pull, and
      ii) energy stored in the spring during extension. The modulus of rigidity of the material of spring is (G) = 0.85 x 10^5N/mm².

60

3E1131

Total No. of Questions: Total No.of Pages: 02

Roll No. _____

B.Tech.III Sem (Back) Exam 2024
ESCCivil Engineering
3CE3-04Engineering Mechanics
3E1131

Time: 2 Hours **Maximum Marks: 80**
Min. Passing Marks: 28

Attempt all five questions from Part A, four questions out of six questions from Part B and two questions out of three from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1. Nil **2. Nil**

Part A(Answer should be given up to 25 words only)
All questions are compulsory

Q.1 Give statement of Lami's theorem.

Q.2 Write names of different types of loadings.

Q.3 Define the terms centroid & moment of inertia.

Q.4What do you understand by poisson's ratio.

Q.5What do you understand by stiffness of springs? **5 x 2 = 10**

Part BAnalytical/Problem solving questions

Attempt any four questions

Q.1Find the magnitude of the two forces, such that if they act at right angles, their resultant is$\sqrt{10}$ N. But if they Act at 60°, their resultant is $\sqrt{}$ N.

Q.2 Discuss about different types of truss structure, what is the difference between determinate and indeterminate structure?

Q.3Define virtual work and explain principle of virtual work, give mathematical relation of principle of virtual work.

Q.4 Write short notes on followings-

(i) Kinetic energy of rigid body

(ii) Principle of work and energy

(iii) Conservation of energy

Q.5 Define friction and angle of friction, also discuss about laws of friction.

Q.6 Define spring and discuss about different types of helical springs. **4 x 10 =40**

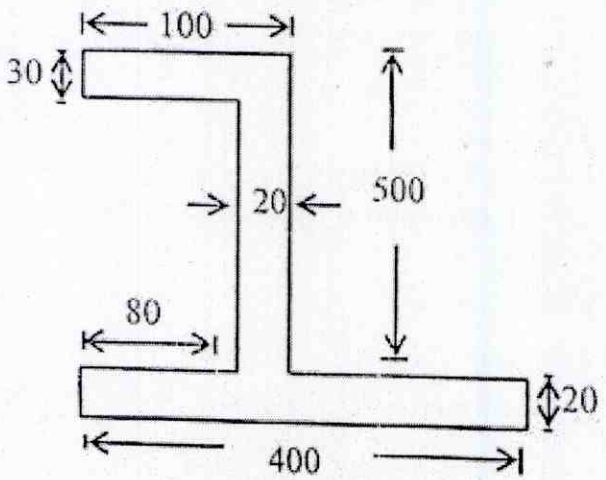
Part C(Descriptive/Analytical/Problem Solving/Design Question)
Attempt any two questions

Q.1 a) Define the term equilibrium and what are the conditions for equilibrium? **(5)**

b) A particle is acted on by three forces 2, $2\sqrt{2}$ and 1 kN. The first force is horizontal and towards the right, the second acts at 45° to the horizontal and inclined right upward, and the third is vertical. Determine the resultant of the given forces. **(10)**

Q.2a) Give definition of polar moment of inertia and principal moment of inertia. **(5)**

b) Determine the principal moments of inertia for the given cross section. **(10)**



All dimensions are in mm.

Q.3 a) Explain Hooke's law with the help of stress-strain diagrams. **(5)**

b) Give relation between Elastic constants Modulus of Elasticity (E), Poisson's ratio (1/m), Bulk Modulus (K) and Modulus of Rigidity (N). **(10)**

3E1215

Roll No. _____ [Total No. of Pages : 3]

3E1215

B.Tech. III-Sem. (Main & Back) Examination, January/February - 2024

Civil Engg.

3CE4-05 Surveying

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ Calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory. **(10×2=20)**

1. What is surveying?
2. What is the use of theodolite?
3. Define transition curve.
4. What is the least count of theodolite and levelling staff?
5. What do you mean by contour interval?
6. What is terrestrial photogrammetry?
7. What is bench mark?
8. What is mean sea Level?
9. Define laying out of building.
10. What is E.D.M?

PART - B

(Answer should be given up to 100 words only)

Attempt any Five questions **(5× 4 = 20)**

1. Differentiate between prismatic and surveyour's compass.
2. The length of a line measured with a 20 metre chain was found to be 240 meters calculate the true length of line if the claim was 10 cm too long.
3. a) Convert the following whate circle bearing to quadrantal bearings

   i) $32^0\ 30'$

   ii) $170^0 12''$

   iii) $212^0 54'$

   b) Convert the following quadrantal bearing to whole circle bearings

   i) $S31^0 35' E$

   ii) $S68^0 5'\ W$
4. Describe various types of curves.
5. What is tilt distortion ? Explain
6. Write down characteristics of contours.
7. Write a short note on Terrestrial photogrammetry.

PART - C

(Descriptive/Analytical/Problem Solving/Design question)

Attempt any Three questions. **(3×10=30)**

1. Describe various types of tape corrections. (10)

2. It was required to ascertain the elevation of two paints p and Q and a line of levels was run from P to Q. The levelling was the continued toa bench mark of 83.500. the readings obtained being as shown below. **(10)**

Obtain the R.L of P and Q.

B.S	I.S	F.S	R.L	Remarks
1.622				P
1.874		0.360		
2.032		1.790		
	2.362			Q
0.984		1.120		
1.906		2.824		
		2.136	83.500	B.M

3. a) Define Super-elevation. **(4)**

b) A transition curve is required for a circular Curve of 200 metre radius, the guage being 1.5m and maximum superelevantion restricted to 15cm. The transiton is to be designed for a velocity such that no lateral pressure is imposed on the rails and the rate of gain of radial acceleration is 30 cm/sec^2. calculate the required length of the transition curve and the design speed. **(6)**

4. Describe the stadia system of tacheometry. **(10)**

5. Explain the termporary adjustment of transit theodalite. **(10)**

3E1214

Roll No. _____ [Total No. of Pages : 3

3E1214

B.Tech. III-Sem. (Main and Back) Examination, January/February- 2024

Civil Engg.

3CE4-06 Fluid Mechanics

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates:

Attempt all Ten questions from Part A, Five questions out of Seven questions from Part B and Three questions out of Five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ Calculated must be stated clearly. Use of following supporting material is permitted during examination. (Mentioned in form No.205)

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory. **(10×2=20)**

1. Define fluid. What is fluid continuum?
2. Differentiate between Newtonian and non-Newtonian fluids.
3. Differentiate between specific weight and specific gravity.
4. What is difference between Gauge pressure and Vacuum pressure?
5. Define total pressure and centre of pressure.
6. Explain the conditions of equilibrium for floating and submerged bodies.
7. Define and discuss types of fluid flow.
8. What do you mean by discharge?

9. Define
   i) Displacement thickness and
   ii) Momentum thickness.
10. What is a siphon?

PART - B

(Analytical/Problem solving questions)

Attempt any Five questions. **(5×4=20)**

1. The shear stress at a point in oil of density 800 kg/m³ is 0.25 N/m² and the rate of shear strain at that point is 0.15 per second, Determine its kinematic viscosity in stoke.
2. A simple u-tube manometer is installed across an orifice -meter. the manometer is filled with mercury (Specific gravity = 13.6) and the liquid above mercury is carbon tetrachloride. (specific gravity = 1.6). If the manometer reads 200 mm, then determine the pressum difference over the manometer.
3. A 10mm water jet leaves the tip of the nozzle fitted at the end of a pipe with 10 m/s velocity in the vertically upward direction. If there is no energy loss and jet remains circular, then determine its diameter at a point 3m above the nozzle tip.
4. Define and obtain an expression for continuity equation in a 3-D flow .
5. Derive Euler's equation of motion.
6. State and derive impulse-momentum equation for steady flow.
7. Obtain an expression for the Hagen poiseuille equation.

PART - C

(Descriptive/Analytical/Problem Solving/Design question)

Attempt any Three questions. **(3×10=30)**

1. Derive Navier-stokes equations.

2. A crude oil of viscosity 0.14 Ns/m² and relative density 0.92 flows through a 25 mm diameter vertical pipe. If the pressure gauge fixed at 15m apart measure 540 kN/m² and 180 kN/m², the lower value of the gauge is at the higher level then determine the direction and rate of flow through pipe.

3. Write short notes on the following.

   i) Venturi-meter

   ii) Orificemeter

   iii) Vorticity and circulation

   iv) Laminar and turbulent flow.

4. Define buoyancy, centre of buoyancy metacentre and metacentric height.

5. State and prove Bernoulli's equation. Also give assumptions, limitations and its applications.

3E1211

Roll No. _____ [Total No. of Pages : 2]

3E1211

B.Tech. III-Sem. (Main & Back) Examination,January/February - 2024
Civil Engg.
3CE4-07 Building Materials and Construction

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates:

Attempt all Ten questions from Part A, Five questions out of Seven questions from Part B and three questions out of Five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ Calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory. **(10×2=20)**

1. Define geological classification of stone.
2. Write any two examples of sedimentary rocks.
3. Differentiate between fat lime and hydraulic lime.
4. Write the compositions of good clay bricks.
5. Draw and define the stretcher and header use in brick masonry.
6. Write any two advantages and disadvantages of concrete partition wall.
7. Define seasoning of timber. Write any two advantages of seasoning.
8. What is baluster use in staircase?
9. Define a mortar? Differentiate between cement and lime mortar.
10. Write any two advantages of concrete partition wall

PART - B

(Analytical/Problem solving questions)

Attempt any Five questions. **(5×4=20)**

1. Explain any six components of arches with their neat sketch.
2. What are the requirements of fly ash in manufacturing of cement and fly ash brick?
3. What is foundation? Differentiate between shallow and deep foundation.
4. Discuss the defects occurs in timber. Mentioned any four defects in the timber.
5. Draw a neat sketch of English and Flemish Bond. Differentiate between English and Flemish bond use in brick masonry.
6. Explain different types of sloping roof use in construction work.
7. Define the stone. Discuss the classification of stone with their suitable example.

PART - C

(Descriptive/Analytical/Problem Solving/Design question)

Attempt anyThree questions. **(3×10=30)**

1. Define brick and stone masonry. Discuss the various types of bond use in brick and stone masonry.
2. List out various quality tests conducted on stone and brick. Describe any four among them.
3. Define the joints use in construction. Explain the construction and expansion joints use in building construction.
4. What is load bearing structure? Differentiate between load bearing and framed structure used in construction.
5. Differentiate between mild steel and HYSD steel. Explain the properties and uses of Mild steel,

3E1212

Roll No. _____ [Total No. of Pages : 2

3E1212

B.Tech. III-Sem. (Main & Back) Examination, January/February - 2024

Civil Engg.

3CE4-08 Engineering Geology

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and.three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ Calculated must be stated clearly. Use of following supporting material is permitted during examination. (Mentioned in form No.205)

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory. **(10×2=20)**

1. Explain Thermal Weathering.
2. Enumerate River Meandering.
3. Define Gneissose structure in metamorphic rocks.
4. Describe the process lithification and diagenesis.
5. What is angular unconformity
6. Explain reclined folds diagrammatically.
7. Describe Traffic Tunnels.
8. What are embankment dams.
9. Explain spatial and spectral resolution.
10. Define electromagnetic spectrum.

PART - B

(Analytical/Problem solving questions)

Attempt any Five questions. **(5×4=20)**

1. Describe various methods of river erosion.
2. Write physical properties of plagioclase, biotite, hornblende and calcite mineral.
3. Describe types of unconformities and their engineering consideration.
4. Explain the principal types of faults based on apparent movements with the help of neat sketches.
5. Describe geotechnical considerations for the site selection of Dams.
6. What are different types of tunnels also explain typical geological profile of a tunnel.
7. What are the essential components of a remote sensing system.

PART - C

(Descriptive/Analytical/Problem Solving/Design question)

Attempt any three questions. **(3×10=30)**

1. Explain the standard Geological time scale with evolution of life in different Eras.
2. Differentiate between active and passive remote system. Describe various platforms used in remote sensing.
3. Describe electrical methods for the geophysical investigations of engineering projects.
4. Write a detailed note on classification of folds and their engineering considerations.
5. Give an account of formation and structures of sedimentary rocks.
