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8E8091**8E8091**

B.Tech. VIII-Semester (Main & Back) Examination, April - 2019
Civil Engineering
8CE1A Water Resources Engineering-II

Time : 3 Hours**Maximum Marks : 80****Min. Passing Marks : 26****Instructions to Candidates:**

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. (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.

UNIT - I

1. a) Distinguish between the functions of distributary head regulator and cross regulator. **(08)**
- b) Explain how sarda type fall is more economical than notch fall and discuss about the important components in the design of sarda type fall. **(08)**

(OR)

1. Design a Sarda type fall for a channel with the following data: (Assume any data suitably) **(16)**

$$\text{Full supply discharge } \frac{u/s}{d/s} = 30 \text{ cumec}$$

$$\text{Full supply depth } \frac{u/s}{d/s} = 1.7 \text{ m}$$

$$\text{Full supply level } \frac{u/s}{d/s} = \frac{200}{198.50}$$

$$\text{Bed width } \frac{u/s}{d/s} = 25\text{m}$$

$$\text{Drop} = 1.5\text{m}$$

$$\text{Bed level } \frac{u/s}{d/s} = \frac{198.30}{196.80}$$

$$\text{Safe exit gradient} = 1/6$$

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UNIT - II

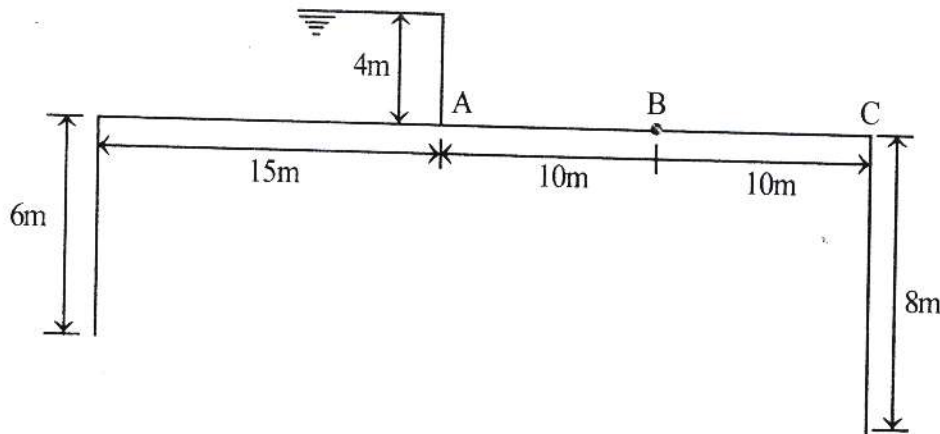
2. a) Discuss the relative advantages and disadvantages of weir and barrage and point out the features of ideal site for diversion head work. (08)
- b) What is the purpose of providing a fish ladder? Discuss the general consideration for its design. (08)

(OR)

2. a) Draw a sketch of the general layout of a diversion head work and explain the function of its various components. (10)

- b) Figure shows the hydraulic structure built on a fine sand ($c = 15$).

Determine uplift pressure at point A, B & C at a distance of 15, 25 and 35m from the upstream end. (06)



UNIT - III

3. a) What are the different modes of failure of a gravity dam? Drive the expression for the base width for
- i) Non-tension criterion
- ii) No sliding criterion (12)

- b) Discuss the effect of earthquake acceleration on the stability of gravity dam. (04)

(OR)

3. a) Discuss the Swedish circle method for checking the stability of downstream slope under steady seepage condition. (08)

- b) What are the use of flow net in an earthen dam and explain how it can be used in the determination of discharge through the dam. (08)

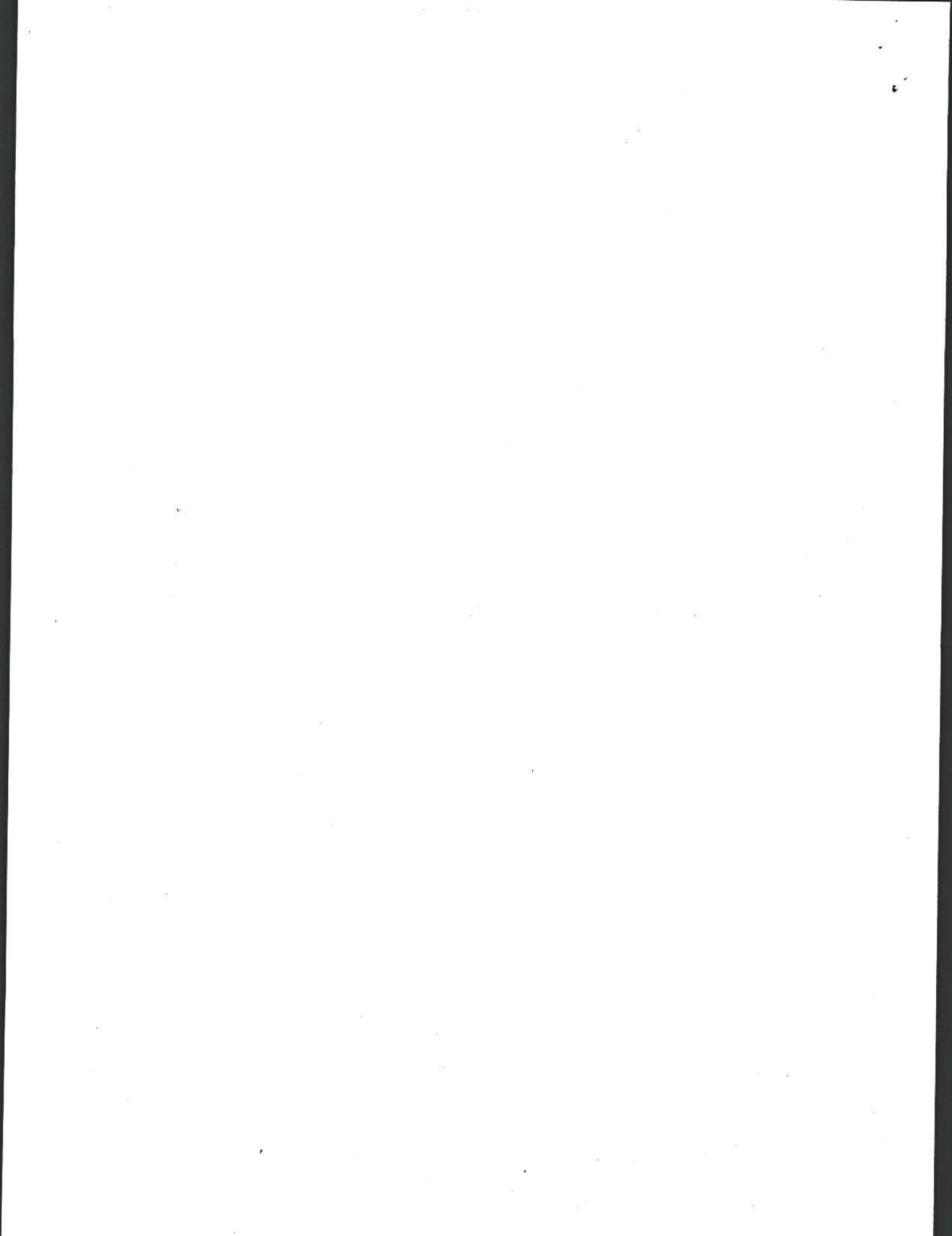
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UNIT - IV

4. a) Discuss the advantages of Syphon spillway over an ogee shaped spillway. (08)
- b) Write a short notes on :
- i) Hydraulic Jump
 - ii) Surge Tank (08)
- (OR)
4. a) Discuss the different types of Hydro power plant based on:
- i) Storage characteristics
 - ii) Plant capacity (08)
- b) A Hydro power plant has an installed capacity of 50 MW. The yearly output of the plant is 2.50×10^6 kWh. If the peak load is 4000kW, determine:
- i) Plant use factor
 - ii) Capacity factor (08)

UNIT- V

5. a) Discuss in brief the application of GIS and computer aided irrigation design. (08)
- b) What are the impacts of hydraulic structure on the river regime? (08)
- (OR)
5. a) Write a short note on :
- i) Reservoir sedimentation
 - ii) Use of GIS in irrigation project (08)
- b) Explain the optimization technique for the irrigation project. (08)
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8E 8092

B.Tech. VIII - Semester (Main & Back) Examination, April-2019
Civil Engineering
8CE2A Design of Steel Structures - II

Time : 3 Hours

Maximum Marks : 80

Min. Passing Marks : 26

Instructions to Candidates:

*Attempt any **Five** questions, selecting **One** question from **each** unit. All Questions carry **equal** marks. (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. I.S. 800 - 2007 | 2. I.S. 800 - 1984 |
| 3. I.S. 875 - Part 3 | 4. Railway bridge Rules |
| 5. Steel tables | 6. ISI Handbook for structural Engineers VOL-I |

Unit - I

1. Design a gantry girder to be used in a mill building to carry an E.O.T. Crane, having the following data. (Steel grade Fe 410) (16)
- | | | |
|--|---|---------|
| i) Crane capacity | : | 250 kN |
| ii) Weight of crane excluding trolley | : | 200 kN |
| iii) Self wt. of trolley, motor, hook etc. | : | 60 kN |
| iv) Wheel base | : | 3.4 m |
| v) Span crane between rails | : | 20 m |
| vi) Minimum hook approach | : | 1.1 m |
| vii) Span of gantry girder | : | 7 m |
| viii) Self weight of rail section | : | 300 N/m |
| ix) Diameter of crane wheels | : | 150 mm |

(OR)

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1. Design main rafter of a Fink type roof truss for an industrial building for the following data

- i) Overall length of building : 48 m
- ii) Overall width of building : 18 m
- iii) C/C spacing of roof trusses : 8 m
- iv) Rise of truss : 1/4 of span
- v) Self weight of Purlin : 318 N/m
- vi) Height of columns : 12 m
- vii) Roofing and side coverings : Asbestos cement sheets
(Dead wt. - 171 N/m²)

Location - Bhiwadi (Near Delhi) in open terrain Steel Grade - Fe410. (16)

Unit - II

2. Design a welded plate girder 26m in span and laterally restrained throughout. It carries a uniform load of 90 kN/m throughout the span exclusive of self weight. Design the girder using intermediate transverse stiffener (Steel grade Fe410). (16)

(OR)

- 2. a) Explain the Serviceability criterion and Compression flange buckling criterion for Minimum web thickness. (8)
- b) Explain stiff bearing length and outstand of web stiffeners with example. (4)
- c) Write the importance of Bearing stiffeners. (4)

Unit - III

3. Design a deck type plate girder railway bridge for single track B.G. main line loading for following data : (16)

- i) Effective span : 24 m
- ii) Spacing of plate Girders : 1.9 m C/C
- iii) Weight of guard rails : 260 N/m
- iv) Weight of Stock rails : 440 N/m
- v) Weight of fastening etc. : 280 N/m of track
- vi) Size of sleepers (timber) : 2.8 m × 0.25 m × 0.15 m @ 0.4 m C/C
- vii) Density of timber : 7.4 kN/m³

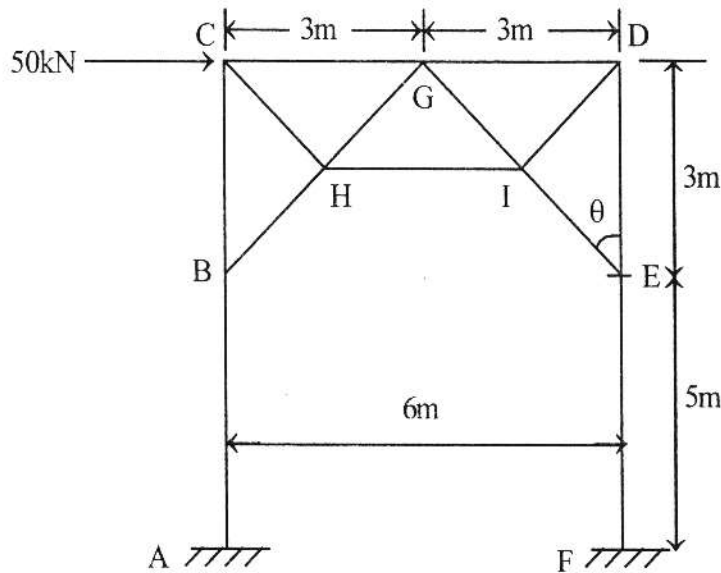
Take permissible stresses as per Railway Steel bridge Code

(OR)

3. a) Explain overturning effects due to wind load on plate girder bridge for railways. (8)
- b) Draw a neat diagram for arrangement for Deck type plate girder Bridge for railway and label their components (4)
- c) What are the IRC recommendations for bolting in plate girder bridge. (4)

Unit - IV

4. Analyse the portal boring of a truss girder bridge when it is subjected to a lateral force of 50 kN. (16)



(OR)

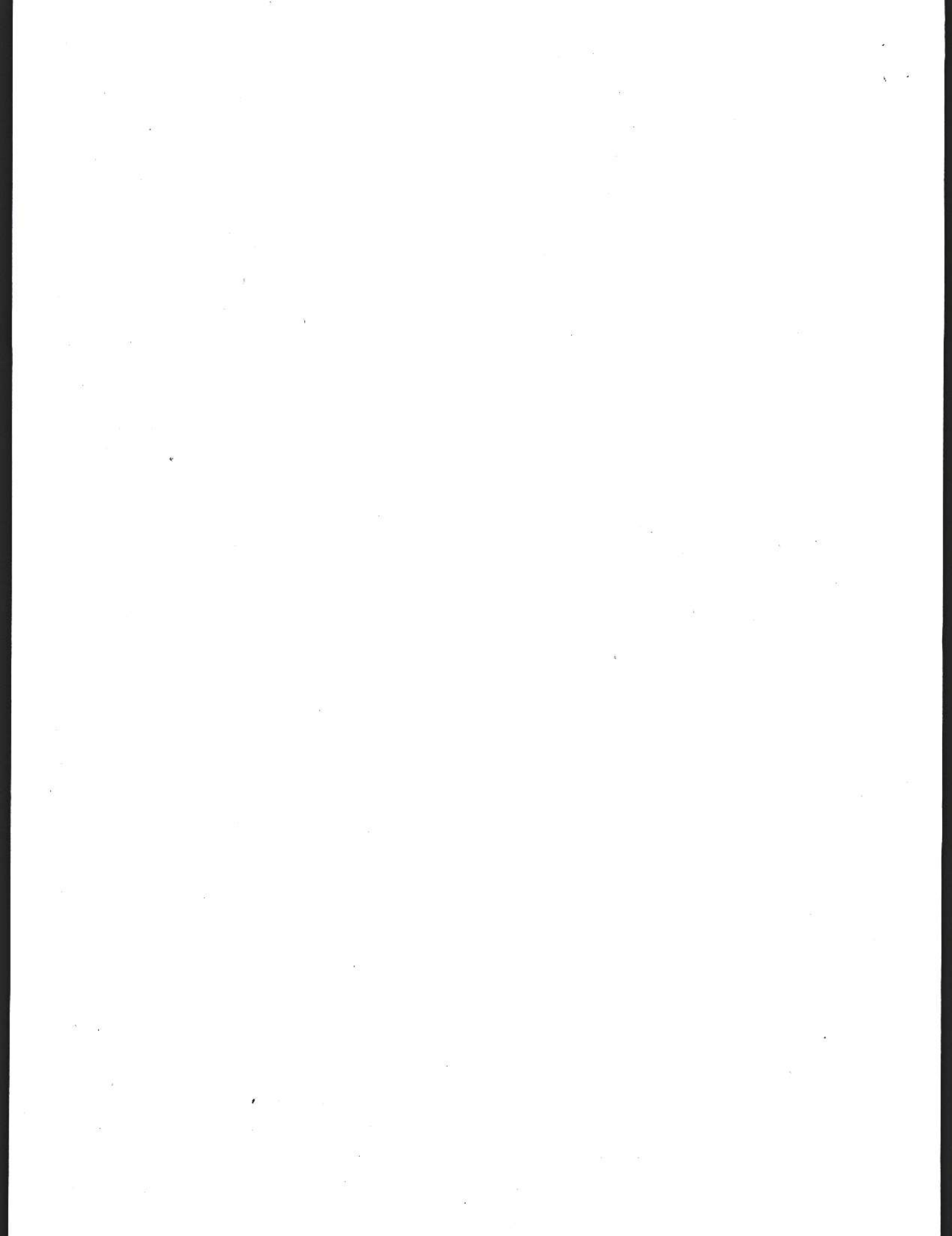
4. a) Draw a neat diagram of elevation of truss girder, top & bottom lateral bracings of a through type truss girder bridge. (10)
- b) Write a short note on economic proportions of truss Bridge with explaining inclination of diagonals and number of panels. (6)

Unit - V

5. Design an elevated Cylindrical steel tank with hemispherical bottom for 1,60,000 litres capacity. The ring beam of the tank is at a height of 10 m from the ground level. Tank has conical roof. The tank is to be built at Delhi ($f_y = 250 \text{ N/mm}^2$) (16)

(OR)

5. Design an overhead rectangular tank of 75,000 litres capacity. The height of columns of staging is 12 m. Take wind pressure intensity of 1.5 kN/m^2 . Staging and supporting beams need not to be designed. The tank may be assumed to be supported on 6 Numbers of Columns. (16)



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**B.Tech. VIII - Semester (Main & Back) Examination, April-2019
Civil Engineering
8CE3A Project Planning & Construction Management**

Time : 3 Hours

Maximum Marks : 80

Min. Passing Marks : 26

Instructions to Candidates:

*Attempt any **Five questions**, selecting **One question** from **each unit**. All Questions carry **equal marks**. (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.*

Unit - I

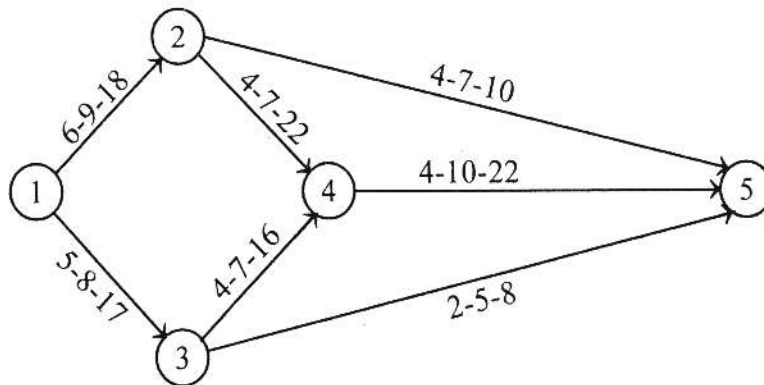
- 1. a) Discuss the techniques of decision making under risk and uncertainty. (8)
- b) Discuss the functions of Project Manager in construction project. (8)

(OR)

- 1. a) Write down the importance of project planning and enlist the stages involved in the project planning. (8)
- b) Explain different phases associated with project life cycle. (8)

Unit - II

- 2. For the network shown in the figure below, the time estimates for each activity are mentioned. (16)



- a) Find EST, EFT, LST, LFT for each activity.
- b) Determine the probability of completing the project in 35 days.

(OR)

2. a) Explain Gantt chart and write down the limitations of it, compare it with the Milestone chart. (8)
- b) Explain programme Evaluation and Review Technique and distinguish between positive slack, zero slack and negative slack. (8)

Unit - III

3. a) Explain resource updating and discuss how this process is implemented. (8)
- b) Write down the differences between Resource levelling and Resource smoothing. (8)

(OR)

3. A project has the following activities, duration, cost and precedence relationships.

Activity	Immediate Predecessor Activity	Normal Time (weeks)	Normal cost (Rs.)	Crast Time (weeks)	Crash cost (Rs.)
A	-	10	11,000	9	15,000
B	-	15	20,000	13	25,000
C	A	10	9,000	6	20,000
D	A	20	25,000	18	30,000
E	C	15	20,000	10	35,000
F	B	17	20,000	15	30,000
G	F	12	15,000	10	25,000
H	D, F	9	12,000	8	18,000
I	G, H	7	10,000	6	15,000

- a) Determine the critical path and the duration of completion of project.
- b) Crash the project to its minimum duration at the lowest cost. (16)

Unit - IV

4. a) Write down the rules for inviting and processing tenders and note down the documents required. (12)
- b) Explain project cost in details. (4)

(OR)

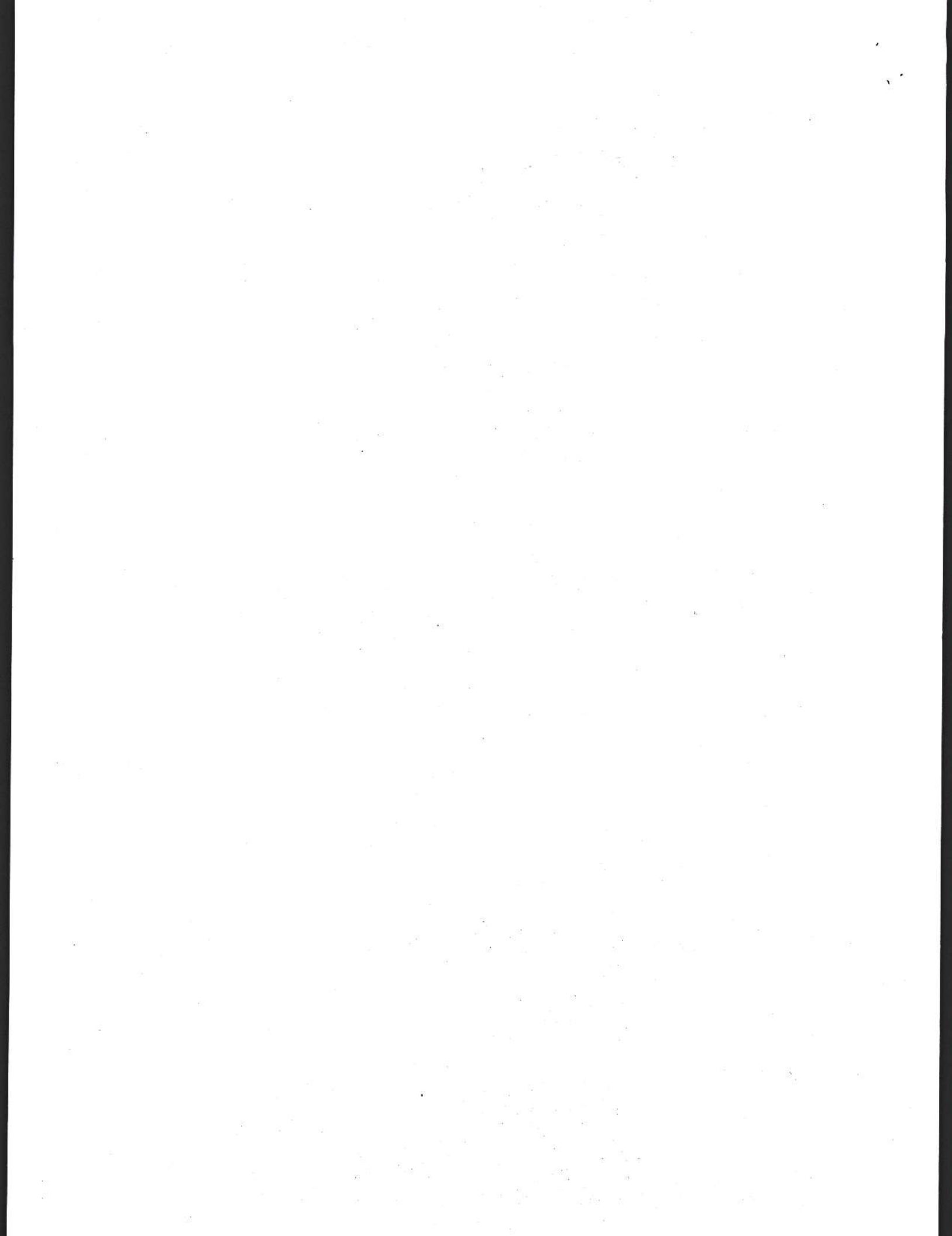
4. a) Discuss the different criteria by which a contract can be terminated. (8)
- b) Discuss the case study of unbalanced tenders. (8)

Unit - V

5. a) Explain the safety measures to be followed while handling explosive. (8)
- b) Discuss the social aspects of construction management. (8)

(OR)

5. a) Mention the safety measures for scaffoldings, Ladder framework. (8)
- b) Explain different features of Integrated Project Management Information system. (8)
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	<div style="border: 1px solid black; display: inline-block; padding: 5px; margin: 0 auto;">8E 8095</div> <p style="margin: 5px 0;">B.Tech.VIII-Semester (Main & Back) Examination, April-2019</p> <p style="margin: 5px 0;">Civil Engineering</p> <p style="margin: 5px 0;">8CE4.2A Advanced Foundation Engineering</p>	

Time : 3 Hours

Maximum Marks : 80
Min. Passing Marks : 26

Instructions to Candidates:

*Attempt any **Five questions**, selecting **One question** from **each unit**. All Questions carry **equal marks**. (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.*

Unit - I

1. A strip footing 2 m wide carries a load intensity of 400 kPa at a depth of 1.2 m in sand. The saturated unit weight of sand is 19.5 kN/m³ and unit weight above water table is 16.8 kN/m³. If $c = 0$ and $\phi = 35^\circ$, determine the factor of safety with respect to shear failure for the following locations of water table.
 - a) Water table is 4 m below Ground Level.
 - b) Water table is 1.2 m below Ground Level,
 - c) Water table is 2.5 m below Ground Level,
 - d) Water table is at Ground Level.

Using Terzaghi's equation, take $N_q = 41.4$ and $N_\gamma = 42.4$ (Feb 2005) **(16)**

(OR)

1. Derive Terzaghi's bearing capacity equation. Write the assumptions and limitation of this equation? **(16)**

Unit - II

2. Describe Plate Load Test, Standard Penetration Test and Cone Penetration Test. Write the advantage and disadvantage of Plate Load Test, Standard Penetration Test and Cone Penetration Test. **(16)**

(OR)

2. A $2\text{m} \times 2\text{m}$ footing carrying a load of 1600 kN rests on normally consolidated saturated clay layer 10m thick below which hard rock exists. The life span of the structure is 150 years. Time taken for the completion of primary consolidation of 20 mm thick laboratory specimen with double drainage facility is 20 minutes. Find the total settlement, if the soil properties are as follows: Soil modulus 20 MPa , Poisson's ratio 0.45 , Influence factor 0.9 , liquid limit 50% , Natural water content 25% , $G=2.7$, $\gamma_{\text{sat}} = 20\text{ kN/m}^3$ and coefficient of secondary compression is 0.001 . (16)

Unit - III

3. A group pile in clay is shown in figure - 1. Determine the consolidation settlement of the piles. All clays are normally consolidated. (16)

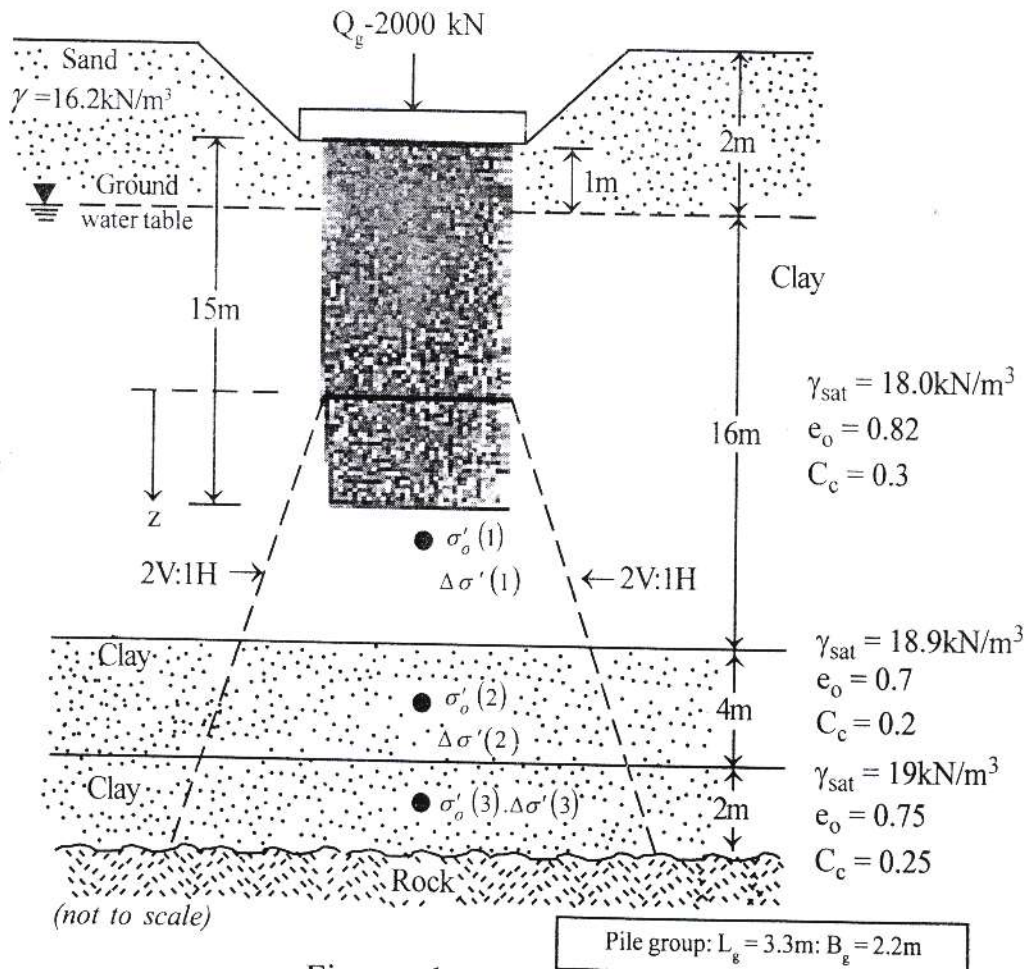


Figure - 1

(OR)

- 3. a) Explain Engineering News Formula. (6)
- b) What will be the penetration of square R.C. pile per blow which must be obtained in driving the pile with a 5 tonnes drop hammer falling through 1.2 metre. Allowable load is 30 tonnes. (10)

Unit - IV

- 4. What are the recommendations in building construction on expansive soils? How bored cast in situ under reamed pile foundation is useful for expansive soil? (16)

(OR)

- 4. What are sanitary fills? How will you estimate the settlement of fills? (16)

Unit - V

- 5. Determine the net allowable bearing capacity of a mat foundation with dimensions be of 6.5m×3.5m constructed over a saturated clay with $C_u = 35\text{kN/m}^2$, $\phi = 0^\circ$, $D_f = 3.5\text{m}$ & F.O.S = 2.5. (16)

(OR)

- 5. What will the net allowable bearing capacity of mat foundation with dimensions be of 4.5m×3m constructed over a sand deposit? Here $D_f = 2.5\text{m}$, allowable settlement = 1 mm and corrected average penetration number $N_{cor} = 10$. (16)
-

