

USN

--	--	--	--	--	--	--	--	--	--

10CV81

Eighth Semester B.E. Degree Examination, June/July 2019
Advanced Concrete Technology

Time: 3 hrs.

Max. Marks:100

**Note: 1. Answer any FIVE full questions, selecting
atleast TWO questions from each part.
2. Use of IS 10262-2009 is permitted.**

PART – A

- 1 a. Enumerate the importance of Bogue's compounds in ordinary Portland cement. (08 Marks)
b. Explain in brief, the factors affecting the strength and elasticity of concrete. (06 Marks)
c. Explain the Rheology of concrete in terms of Bingham's parameters. (06 Marks)
- 2 a. Explain with a sketch the mechanism of deflocculation of cement particles when plasticizer is used in making concrete. (08 Marks)
b. Explain the procedure adopted to determine the optimum dosage of superplasticizer. (06 Marks)
c. What is the effect of fly ash on the fresh and hardened properties of concrete? (06 Marks)
- 3 Using BIS 10262-2009, design a concrete mix of M25 grade. Given
(i) Minimum cement content : 300 kg/m³
(ii) Maximum cement content : 450 kg/m³
(iii) Maximum water/cement ratio : 0.5
(iv) Exposure condition : Moderate
(v) Workability : 100 mm slump
(vi) Admixture : Superplasticizer of G = 1.12
(vii) Quality control : Good
(viii) Assume any missing data required. (20 Marks)
- 4 a. Describe chlorine induced corrosion of steel in concrete. (08 Marks)
b. Explain Alkali-Aggregate reaction. (06 Marks)
c. List the factors affecting the Durability of concrete. (06 Marks)

PART – B

- 5 a. Mention the need, properties and applications of self-compacting concrete. (08 Marks)
b. What are the advantages of Ready Mix concrete? (06 Marks)
c. Explain under water concreting. (06 Marks)
- 6 a. List the different types of fibers. Explain any one type of fiber used in concrete. (08 Marks)
b. List and explain the various applications of Ferro-Cement. (06 Marks)
c. Explain the behaviour of Fiber Reinforced Concrete in compression and Tension. (06 Marks)
- 7 a. Explain High Density Concrete. (08 Marks)
b. Explain Light-Weight Concrete. (06 Marks)
c. What is High performance concrete? What are the properties of high performance concrete? (06 Marks)
- 8 a. List the non-destructive tests on hardened concrete. Why is it required? (08 Marks)
b. Explain with neat sketch Pulse Velocity test. (06 Marks)
c. Explain with neat sketch Rebound Hammer test. (06 Marks)

* * * * *

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

--	--	--	--	--	--	--	--	--	--

Eighth Semester B.E. Degree Examination, June/July 2019
Design and Drawing of Steel Structures

Time: 4 hrs.

Max. Marks: 100

- Note: 1. Answer any ONE full question, each from PART-A and PART-B.**
2. Use of IS-800: 2007, and steel tables SP(6) are permitted.
3. Missing Data, if any may be suitably assumed.

PART – A

- 1** a. A secondary beam ISLB 400 @ 558.2 N/m is connected to a main beam ISMB 600 @ 1202.7 N/m with the top of their flanges not at the same level. The framed connection has the following details :
 Connecting cleat Angles 2 ISA 90×90×8mm Six bolts of diameter of 20mm are used to connect angles to web of secondary beam. Draw to suitable scale.
- i) Sectional elevation (08 Marks)
 - ii) Side view showing all details. (07 Marks)
- b. Column splice connection is made between bottom column ISHB 400@ 0.774kN/m and top column section ISHB 350 @0.674 kN/m. The thickness of bearing plate is 32mm two filler plates each of 25mm thick are provided for top column. The thickness of splice plate is 10mm. 6 No of 20mm diameter bolts are provided in two rows for connection between bottom column flange and splice plate each. 8 No of 20mm diameter bolts are provided in two rows for connecting each of top column flange, filler plate and splice plate such that 6 bolts connect the flange, filler plate and splice plate and the remaining 2 bolts connect only flange and filler plate. Assume pitch of bolts as 70mm. Draw to a suitable scale :
- i) Elevation (08 Marks)
 - ii) Side view (07 Marks)
- 2** a. A built up column consisting of Two-ISM 350@ 421N/m are placed back to back as the distance of 200mm. The members of built up column are connected by batten of ISF 60 × 10mm with spacing of 300mm C/C. Use suitable length of batten so as to accommodate the weld length of 200mm, and weld size of 6mm (fillet weld) on each side of the ISM. Draw to a suitable scale :
- i) PLAN (06 Marks)
 - ii) Front elevation showing batten length (08 Marks)
- b. A Gusseted base for a column section ISHB 300@ is to be detailed with the following details :
- i) Base plate of size 800 × 800 × 20mm
 - ii) Web cleat 2 Nos ISA 80 × 80 × 8mm with 5mm fillet weld around
 - iii) Gusset plate – 2 Nos – 800 × 16mm
 - iv) Flange plate – 2Nos – 800 × 300 × 12mm
 - v) Flange cleat angles – 2 No's 150 × 115 × 15mm (150mm to connect gusset plate)
 - vi) Bolts of 10 No of 20mm diameter to connect angle, flange plate and gusset plate,
 Draw to a suitable scale
- i) FRONT VIEW (06 Marks)
 - ii) SIDE VIEW (05 Marks)
 - iii) TOP VIEW (05 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and/or equations written eg, 42+8 = 50, will be treated as malpractice.

PART – B

3 Design the top Chord member, bottom Chord member and Inner Chord member. Forces in the members under service load condition are presented in Table Q3 and in Fig Q3. Use class 4.6 bolts or diameter 16mm. Draw to suitable scale the following:

- i) Half elevation
- ii) Connection Details at L_0 t U_2

MEMBER	FORCES (MAX UNDER SERVICE LOADS)		
	DL (in KN)	LL (in KN)	WL (in KN)
Top Chord	-9.2	-8.2	37.0
Bottom Chord	+7.9	+7.0	-26.6
Inner Chord	+3.2	+2.8	-14.80

Table Q3

+ Ve Tension
- Ve compression

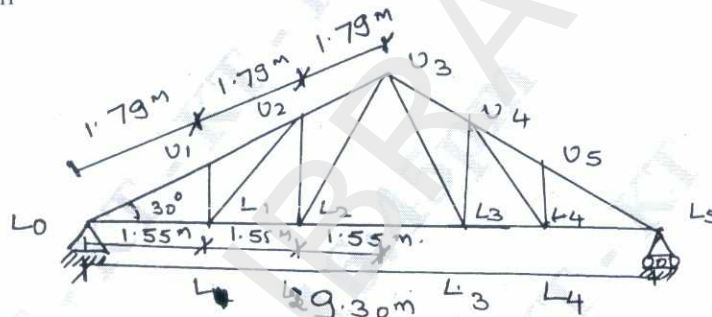


Fig Q3

- Design (40 Marks)
- Half elevation (20 Marks)
- Connection detail AT L_0 t U_2 (10 Marks)

4 Design a simply supported Gantry Girder for the following data. The Girder is electrically operated. Yield stress of steel 250N/m^2 . Use welded connection. (40 Marks)

- i) Span of crane girder (effective) = 20m
- ii) Effective span of Gantry Girder = 7m
- iii) Capacity of crane = 220kN
- iv) Self weight of crane excluding crab = 200kN
- v) Weight of crab = 60kW
- vi) Wheel base distance = 3.4m
- vii) Minimum hook approach = 1.1m

Draw to a suitable scale :

- a. The C/S of gantry girder and its attachment to supporting column of the bracket (details of the column and bracket to be assumed) (10 Marks)
- b. Plan details (arrangement of columns, crane, gantry) (10 Marks)
- c. Side elevation. (10 Marks)

USN

--	--	--	--	--	--	--	--	--	--

10CV835

Eighth Semester B.E. Degree Examination, June/July 2019
Industrial Wastewater Treatment

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART - A

- 1 a. Enumerate the effect of discharge of raw industrial wastewater into the municipal wastewater treatment plant. (10 Marks)
- b. What do you understand by stream standards and effluent standards? What are the advantages and disadvantages of stream standards? (10 Marks)
- 2 a. Enumerate in brief the stream sampling programme. (04 Marks)
- b. Discuss the process of self purification of rivers, with oxygen sag curve. (06 Marks)
- c. A City discharges 20000 m³/day of sewage into a river whose rate of flow is 0.7m³/sec. Determine D.O deficit at 20km and critical DO deficit from the following data :

River	Sewage effluent from STP
5 day BOD at 20 ⁰ C = 3.4 mg/L	5 day BOD at 20 ⁰ C = 45 mg/L
Temperature 23 ⁰ C	Temperature 26 ⁰ C
D.O = 8.2 mg/L	D.O = 2.0 mg/L

Take R' = 0.4 , K' = 0.23 and velocity of mix as 0.25 m/sec. (10 Marks)

- 3 a. Give the classification of wastewater generated in industries. Discuss how it will help in volume reduction of industrial wastewater. (10 Marks)
- b. Discuss with examples how by – product recovery helps in strength reduction of industrial wastewater generated. (10 Marks)
- 4 a. Discuss the importance of removal of dissolved organic matter from the industrial wastewater. Explain the biodegradable organics removal by activated sludge process. (10 Marks)
- b. Discuss the methods adopted for treatment and disposal of sludge solids of industrial wastewater treatment. (10 Marks)

PART - B

- 5 a. What are the options of disposal of industrial wastewater? Enumerate the advantages of joint treatment of industrial and municipal wastewater treatment. (10 Marks)
- b. Discuss the discharge guidelines of industrial effluents into public sewers. Give the BIS standards for the industrial effluent discharge into public sewers. (10 Marks)
- 6 a. With the help of process flow diagram, explain the sources of wastewater generated in cane sugar industries. (10 Marks)
- b. Justify the need for pulp and paper industrial process wastewater recycle and reuse. Give the typical characteristics of combined wastewater. (10 Marks)
- 7 a. Write the process flow diagram indicating the sources of wastewater in a dairy industry. Give the combined wastewater characteristics of a dairy industry. (10 Marks)
- b. Discuss the treatment alternatives for a fruit canning industry with the flow diagram and indicate the removal efficiency of each unit. (10 Marks)
- 8 a. Discuss the alternate treatment facilities of wastewater from a cotton textile mill, with the flow diagram. (10 Marks)
- b. Write the process flow diagram of penicillium antibiotic manufacturing and indicate the sources of waste generation. Also give the composition of combined wastewater. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

USN

--	--	--	--	--	--	--	--	--	--

10CV843

Eighth Semester B.E. Degree Examination, June/July 2019
Urban Transport Planning

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART - A

- 1 a. Explain the scope of Urban transport planning. (10 Marks)
 b. Define system approach and explain with a neat flow diagram system approach in urban transport planning. (10 Marks)
- 2 a. Draw a flow chart of stages in urban transport planning process. (12 Marks)
 b. Write short notes on : i) Trip distribution ii) Modal split. (08 Marks)
- 3 a. Define Zoning. Explain the points to keep in view when dividing the area into zones. (12 Marks)
 b. Explain how road side interview survey and registration number plate survey are carried out. (08 Marks)
- 4 a. Define Home – based trips and Non – Home based trips. Explain the factors governing trip generation and attraction rates. (10 Marks)
 b. Solve the below matrix by Frator's method. (10 Marks)

C	D	A	B	C	D
A		-	10	12	18
B		10	-	14	14
C		12	14	-	6
D		18	14	6	-
Present total		40	38	32	38
Estimated future Totals		80	114	48	38
Growth factor E		2	3	1.5	1

PART - B

- 5 a. Explain the phases involved in calibration of the gravity model. (10 Marks)
 b. The number of trips produced in an attracted to the three zones 1, 2 and 3 are tabulated below

Zone	1	2	3	Total
Trips produced	14	33	28	75
Trips attracted	33	28	14	75

The order of closeness of the zones is including by the following matrix.

O	D	1	2	3
1		1	2	3
1		2	1	3
3		2	3	4

The zonal L factors are given below :

Zone	L - factors
1	0.04
2	0.02
3	0.04

Distribute the trips between the zones.

(10 Marks)

- 6 a. With a flow chart, explain the modal split carried out after trip distribution with its advantages and disadvantages. (10 Marks)
b. Explain the recent developments in modal split analysis. (10 Marks)
- 7 a. Explain minimum path tree with Moore's algorithm. (10 Marks)
b. With a flow chart, explain features of Lowry model. (10 Marks)
- 8 Write a short notes on the following :
a. Quick response techniques. (05 Marks)
b. Diversion curves. (05 Marks)
c. Difficulties in transport planning. (05 Marks)
d. Applications of traffic assignment. (05 Marks)

USN

--	--	--	--	--	--	--	--	--	--

10CV847

Eighth Semester B.E. Degree Examination, June/July 2019
Environmental Impact Assessment

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART – A

- 1 a. What are the criterias to be considered among Ecological Factors for development activity? (12 Marks)
b. What is EIS? Explain its various types briefly. (08 Marks)
- 2 a. Briefly explain the step – by – step procedure for conducting an EIA. (12 Marks)
b. List the limitations of EIA and briefly explain them. (08 Marks)
- 3 a. Draw neatly the framework of EIA in the form of a flowchart. (10 Marks)
b. List the 8 techniques of EIA and explain any one of them briefly. (10 Marks)
- 4 a. Explain with a flowchart , Assessment and Prediction of impacts on Air. (12 Marks)
b. Briefly explain the '4' project categories in regards to socio – economic impact. (08 Marks)

PART – B

- 5 a. Distinguish between REIA and CEIA. (08 Marks)
b. Discuss the role of NEPA and CEQ in Impact studies. (12 Marks)
- 6 a. Highlight the merits and demerits of 'Public Participation' in EIA. (10 Marks)
b. What are the practical considerations in "Public Hearing" conducting an EIA and while drafting an EIS ; in the context of Public Participation? (10 Marks)
- 7 a. Depict a CHECKLIST representing Relationship between Developmental Activity and Environmental Parameters. (10 Marks)
b. Elucidate EIA guidelines for Thermal Power Plant. (10 Marks)
- 8 a. Extract the Environmental Impacts of a Coal Mining Project. (10 Marks)
b. List the environmental attributes in EIA for Highway Project. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg. 42+8 = 50, will be treated as malpractice.