

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Winter 2022

Course: B. Tech. Branch : Civil Engineering Semester :7th Sem

Subject Code & Name: BTCVC 702_ Infrastructure Engineering

Max Marks: 60

Date:30.01.2023

Duration: 3 Hr.

Instructions to the Students:

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

(Level/ Marks
CO)

Q. 1 Solve any two of the following.

- | | | |
|---|-------------|----------|
| A) Define permanent way and explain the components of a permanent way with sketch. | CO 1 | 6 |
| B) Define rail. State its functions and Explain types of rails with suitable diagram. | CO 1 | 6 |
| C) Define Airport and Airport Engineering. Explain components of airport. | CO 2 | 6 |

Q.2 Solve any two of the following.

- | | | |
|---|-------------|----------|
| A) Define the following terms:
a) Coning of wheel
b)Adzing of sleeper
c) Tilting of Rails
d)Station
e) Gauge
f) Ballast | CO 1 | 6 |
| B) Draw layout for simple turnout and explain any four components of Turnout. | CO 4 | 6 |
| C) Explain types of railways crossing with neat labelled diagram. | CO 1 | 6 |

Q. 3 Solve any two of the following.

- | | | |
|--|-------------|----------|
| A) Describe the full-face method of Tunneling in hard rock with neat labelled diagram. | CO 3 | 6 |
| B) Sketch the various types of tunnels cross-section. State under what conditions each is adopted. | CO 3 | 6 |

- C) Define the following terms related with tunnel Engineering CO 1 6
a) Crown b) Drift c) Invert
d) Heading e) Portal f) Spring line

Q.4 Solve any two of the following.

- A) Define : a) Docks b) Harbour .State factors affecting on site selection for docks and harbour. CO 1 6
- B) Draw a sketch showing components of harbour. Define any two of them. CO 3 6
- C) Explain any six components of bridge. CO 2 6

Q. 5 Solve any two of the following.

- A) Define tide. Explain types of tide and state uses of tides. CO 2 6
- B) State requirements of good harbour and explain classification of harbour based on utility and location. CO 1 6
- C) What is Airport and explain the characteristics of Aircraft and Explain types of runways with sketches. CO 2 6

***** End *****

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Winter Examination – 2022

Course: B. Tech.

Branch : Civil

Semester : VII

Subject Code & Name:BTCVC703&Water Resources Engineering

Max Marks: 60

Date:01/02/2023

Duration: 3 Hr.

Instructions to the Students:

1. All the questions are compulsory.
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(Level/CO) Marks

Q.1 Solve Any Two of the following.

12

- A) Write the Necessity and ill effects of Irrigation CO 1 6
- B) Explain with neat sketch Hydrological Cycle CO 1 6
- C) Compute the depth and frequency of irrigation required for a certain CO 2 6

crop with the data given below.

Root zone depth = 100cm

Field capacity = 22%

Wilting point = 12%

Dry unit weight of soil = 14.78 kN/m³

Consumptive use = 25mm/day

Efficiency of irrigation = 50%

Assume 50% depletion on available moisture before application of irrigation water at field capacity.

Q.2 Solve Any Two of the following.

12

- A) Write the design criteria for Gravity Dam CO 3 6
- B) Write the different modes of failure of Earthen Dam CO 2 6
- C) Define duty and delta and Relation between Duty and Delta. CO 1 6

Q.3 Solve Any Two of the following.

12

- A) Write the Necessity and Different Types spillway in details CO 2 6
- B) The isohyetal map for 24 hours storm gave area enclosed between CO 1 6
different isohyets as follows

Isohyets in mm	21	20	19	18	17	16	15	14	13	12
Enclosed Area sq km	543	1345	2030	2545	2955	3280	3535	3710	3880	3915

Determine the average depth of rainfall over the basin

C)	The following are rates of rainfall for successive 20 minutes period of 140 minutes storm 2.5, 2.5, 10.0, 7.5, 1.25, 1.25, 5.0 cm/hr taking the value of Phi Index as 3.2 cm / hr find out net runoff in cm the total rainfall and value of W index	CO 1	6
Q.4	Solve Any Two of the following.		12
A)	Write a note on 1) Unit Hydrograph 2) S hydrograph	CO 2	6
B)	Explain with neat sketch different types of Tube well	CO 3	6
C)	Explain Bligh's Creep Theory and Limitations of Bligh's Creep Theory	CO 3	6
Q. 5	Solve Any Two of the following.		12
A)	What are the different causes of Water Logging also suggest their Preventive measures.	CO 1	6
B)	Explain with neat sketch Various components and their design principles of Lift irrigation schemes	CO 2	6
C)	Write the different techniques for Rain water Harvesting	CO 3	6

***** End *****

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CO) Marks

Q. 1 Solve Any Two of the following.

12

- | | | |
|---|-----|---|
| A) Illustrate Purposes of estimating and types of estimates. | CO1 | 6 |
| B) Discuss administrative approval process for construction of overhead water tank. | CO1 | 6 |
| C) Explain significance of estimating on a project. | CO1 | 6 |

Q.2 Solve Any Two of the following.

12

- | | | |
|---|-----|---|
| A) Explain specifications for general items of work. | CO1 | 6 |
| B) Differentiate between long wall- short wall method and center line method. | CO1 | 6 |
| C) Explain various deductions in measurement of quantities. | CO1 | 6 |

Q. 3 Solve Any Two of the following.

12

- | | | |
|---|-----|---|
| A) Enlist Items of work from the shown data in fig. 3A along with the specifications. | CO2 | 6 |
|---|-----|---|

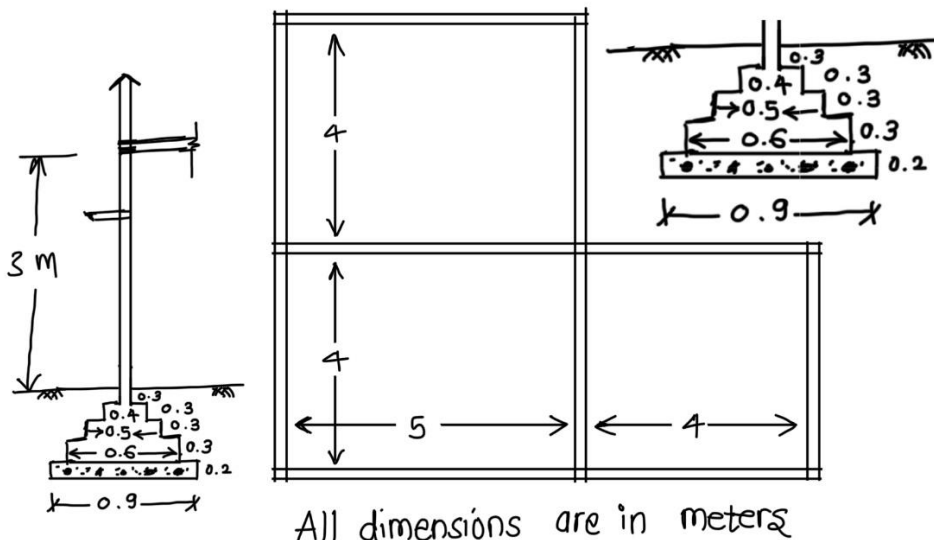


Fig. 3A

- | | | |
|---|-----|---|
| B) Calculate the following quantities from fig. 3A. Take wall thickness as 0.3 meters | CO2 | 6 |
| 1. Earthwork in excavation 2. PCC in foundation, 3. Brickwork in foundation and Superstructure (Do not consider the deductions) | | |

C) Prepare abstract sheet for data calculated in Q 3B and carry out rate analysis. CO2 6
Assume appropriate/suitable rates per unit.

Q.4 Solve Any Two of the following. 12

A) Discuss tendering in detail. CO3 6

B) Explain BOT and similar forms of execution. CO3 6

C) Illustrate various types of contracts. CO3 6

Q. 5 Solve Any Two of the following. 12

A) Explain arbitration and functions of arbitrator. CO3 6

B) Illustrate various purposes of valuation. CO4 6

C) Explain various methods of valuation. CO4 6

***** End *****

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(Level/CO) Marks

Q. 1 Solve Any Two of the following.

- A) Explain the operations involved in the planning of new project. (CO2) 6
- B) Differentiate between the wheel and track mounted tractor. (CO1) 6
- C) What is bulldozer? State the operation carried out by bulldozer and factors affecting the selection of bulldozer. (CO1) 6

Q.2 Solve Any Two of the following.

- A) Define explosives and explain the types of explosives. (CO2) 6
- B) Explain various drills based on the application of mechanical energy used in excavation. (CO2) 6
- C) Discuss the necessity of drainage in excavation. (CO2) 6

Q. 3 Solve Any Two of the following.

- A) Explain the operations involved in RMC plant. (CO2) 6
- B) Illustrate the types of concrete mixer. (CO1) 6
- C) Write the short note on grouting. (CO2) 6

Q.4 Solve Any Two of the following.

- A) State the advantages and disadvantages of prefabricated construction. (CO2) 6
- B) Illustrate the types of tower cranes. (CO1) 6
- C) Explain the operations involved in hot mix plan with layout. (CO1) 6

Q. 5 Solve Any Two of the following.

- A) Explain factors affecting the site selection for bridge construction. (CO1) 6
- B) Illustrate diaphragm wall. (CO2) 6
- C) Describe safety measures in construction. (CO2) 6