



Shri Shankaracharya Institute of Professional Management & Technology

Department of Civil Engineering

Class Test – I Session: July – Dec, 2021 Month – October

Semester – 7th Subject – QSCE, Code – 320734 (20)

Time Allowed: 2 hrs Max Marks: 40

Note: - Question (a) is compulsory. Attempt any two from b, c and d form Part I and Part II.

| Q. No. | Questions | Marks | Levels of Bloom's taxonomy | COs |
|-----------------|--|-------|----------------------------|-----|
| Part- I | | | | |
| (a) | Calculate the extra length of following bars. (a) Straight Bars (b) Bent up Bars 45 Degree | [4] | Apply | CO2 |
| (b) | Calculate Quantity Materials of RCC Beam of 6 m clear span and 30 cm x 70 cm section. Work out the quantity of steel and RCC in Beam and also prepare BBS. | [8] | Apply | CO2 |
| (c) | Road Embankment is 20 m wide with side slope 2: 1. The Ground is level transvers direction to the center line. Calculate the volume contained in the length of 350 m. The central height at 5 m interval being 2, 3.5, 3.4, 4.5, 3.0, 3.5 and 4 m respectively. | [8] | Apply | CO2 |
| (d) | Estimate the following items of work for a single room 6 m x 4 m building cross section of wall and foundation given. (i) Earthwork (ii) Concrete in Foundation (iii) Brickwork in Plinth and Foundation (iv) Brick work in super structure. | [8] | Apply | CO2 |
| Part- II | | | | |
| (a) | Explain the Following Terms : 1. Mortgage 2. Depreciation 3. Obsolescence 4. Scrap Value | [4] | Understand | CO5 |
| (b) | Classify different methods of valuation. | [8] | Understand | CO5 |
| (c) | Describe Different type's method of depreciation with suitable example. | [8] | Understand | CO5 |
| (d) | A person has purchase a plot of costing Rs. 80,000 and has constructed a building there on at a total cost of 1,20,000 including water supply, sanitary and electrical installation etc. Allowing a net return @7 percent on the cost of construction and @5 percent net return on the land, workout the standard rent. 1. Sinking fund @6% for the 75 years 2. Annual Maintenance 1.5% of cost of construction 3. Municipal Taxes 28.55 of net rent 4. Scrap Value 10%. | [8] | Understand | CO5 |



Shri Shankaracharya Institute of Professional Management & Technology

Department of Civil Engineering

Online Class Test – I Session: July-December, 2021 Month – November

Semester – 7th Subject – TE Code – 320750(20)

Time Allowed: 2 hrs. Max Marks: 40

Note: - In Part I & II, Question A is compulsory and attempt any two from B, C & D.

| Q. No. | Questions | Marks | Levels of Bloom's taxonomy | CO's |
|----------------|---|-------|----------------------------|------|
| Part I | | | | |
| A. | What is mixed traffic flow? | [4] | Understand | CO1 |
| B. | Explain the function of traffic engineering. | [8] | Understand | CO1 |
| C. | What are the factors on which PCU depends. | [8] | Understand | CO1 |
| D. | Discuss the various traffic study and their importance | [8] | Understand | CO1 |
| Part II | | | | |
| A. | Describe various vehicular characteristics considered in Traffic engineering. | [4] | Understand | CO2 |
| B. | Explain various types of Parking with neat sketches. | [8] | Understand | CO2 |
| C. | Explain Speed and Delay study with methods. | [8] | Understand | CO2 |
| D. | Explain Origin and Destination study with methods. | [8] | Understand | CO2 |



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Department of Civil Engineering

Online Class Test – I Session: July-December, 2021 Month – November

Semester – 7th Subject – TE Code – 320750(20)

Time Allowed: 2 hrs. Max Marks: 40

Note: - In Part I & II, Question A is compulsory and attempt any two from B, C & D.

| Q. No. | Questions | Marks | Levels of Bloom's taxonomy | CO's |
|----------------|---|-------|----------------------------|------|
| Part I | | | | |
| A. | What is mixed traffic flow? | [4] | Understand | CO1 |
| B. | Explain the function of traffic engineering. | [8] | Understand | CO1 |
| C. | What are the factors on which PCU depends. | [8] | Understand | CO1 |
| D. | Discuss the various traffic study and their importance | [8] | Understand | CO1 |
| Part II | | | | |
| A. | Describe various vehicular characteristics considered in Traffic engineering. | [4] | Understand | CO2 |
| B. | Explain various types of Parking with neat sketches. | [8] | Understand | CO2 |
| C. | Explain Speed and Delay study with methods. | [8] | Understand | CO2 |
| D. | Explain Origin and Destination study with methods. | [8] | Understand | CO2 |

Note: -Part A is compulsory in each section. Attempt any two from part B, C and D. Assume suitable data, if required, and mention it clearly.

| Q. No. | Questions | Marks | Levels of Bloom's taxonomy | CO's |
|-------------------|---|-------|----------------------------|------|
| Section I | | | | |
| A | Define duty and delta. How duty of water can be improved? | 4 | Understand | CO1 |
| B | What do you mean by surface and subsurface irrigation? Discuss the various techniques used for irrigation. | 8 | Understand | CO1 |
| C | In order to determine the quantity of water at head of the canal knowing the quantity of water at the root of the soil, what are the different efficiency which are to be taken into account explain in sequence. | 8 | Understand | CO1 |
| D | Write short notes on 1. Lift irrigation 2. Drip irrigation 3. Ill effect of irrigation | 8 | Understand | CO1 |
| Section II | | | | |
| A | 10 cumecs of water is delivered to a 32 hectares field for 4 hours. Soil probing after the irrigation indicates that 0.3 meter of water has been stored in the root zone. Compute water application efficiency. | 4 | Analyze | CO1 |
| B | Determine head discharge of the canal to command a GCA of 75000 hectares with following irrigation statics. CCA is 80%. Intensity of irrigation- for Kharif crop is 40% and that for Rabi crop is 60%. Outlet factor for kharif crop 1,400 hectares/cumecs and that for rabi crop is 2100 hectares/cumecs. Take conveyance loss of canal 18%. | 8 | Analyze | CO1 |
| C | After how many days will you supply water to soil in order to insure sufficient irrigation in the given crop if i. Field capacity of soil = 27% ii. Permanent wilting point = 14% | 8 | Analyze | CO1 |

- iii. Dry density of soil = 1.5 gm/cm^3
- iv. Depth of root zone = 75 cm
- v. Daily consumptive use of water for the given crop = 11 mm

Table given below gives the necessary data about the crop their duty and the area under each crop, commanded by a canal taking off from a storage tank. Taking a time factor for the canal to be 13/20. Calculate the discharge required at the head of the canal. If the capacity factor is 0.8, determine the design discharge.

| Crop | Base period (days) | Area (hectares) | Duty at the head of the canal (hectare/cumecs) |
|--|--------------------|-----------------|--|
| Sugar-cane | 320 | 850 | 580 |
| Overlap for sugar cane for hot weather | 90 | 120 | 580 |
| Wheat (rabi) | 120 | 600 | 1600 |
| Bajra (Monsoon) | 120 | 500 | 2000 |
| Vegetables (hot weather) | 120 | 360 | 600 |

D

8

Analyze

CO1



Shri Shankaracharya Institute of Professional Management & Technology

Department of Civil Engineering

Class Test –I (July-Dec 2021)

Semester – 7th Subject – Structural Engineering Design III Code – 320731(20)

Time Allowed: 2 hrs Max Marks: 40

Note: - In part I & II, Question A is compulsory and attempt any two from B, & C.

Use of IS 800:2007 and steel table permitted

| Q. No. | Questions | Marks | Levels of Bloom's taxonomy | COs |
|----------------|---|-------|----------------------------|-----|
| Part-1 | | | | |
| A. | (i) State formulae for economical depth of plate girder and optimum thickness of web (ii) List the components of plate girder | 6 | Understand | COI |
| B. | Design a welded plate girder 20m in span and laterally supported throughout it has to support a uniform load of 80 kN/m throughout the span exclusive of self weight. Design the plate girder without intermediate vertical stiffener, assume steel of grade Fe-410, design connection also. | 14 | Create | COI |
| C. | Design a welded plate girder 20m in span and laterally supported throughout it has to support a uniform load of 80 kN/m throughout the span exclusive of self weight. Design the plate girder with intermediate vertical stiffener, assume steel of grade Fe-410, design connection also. | 14 | Create | COI |
| PART-II | | | | |
| A. | Explain member subjected to combined forces with suitable examples. | 6 | Remember | CO2 |
| B. | A non-sway column in a building frame with flexible joints is 4-m high and subjected to the following load and moment: Factored axial load = 500 kN Factored moment M_z at top = 27.0 kNm at bottom = 45.0 kNm design a suitable beam column assuming $f_y = 250\text{N/mm}^2$. Take the effective length of the column as 0.8L along both the axes. | 14 | Create | CO2 |
| C. | Design a laterally supported beam of effective span 6 m for the following data. Grade of steel: Fe 410 Maximum bending moment : $M = 150\text{ kNm}$ Maximum shear force : $V = 210\text{ kN}$ Check for deflection is not required. | 14 | Create | CO2 |

| Q. No. | Questions | Marks | Levels of Bloom's taxonomy | CO's |
|----------------|--|-------|----------------------------|------|
| Part I | | | | |
| A. | What are Manholes? Mention the conditions under which Manholes are constructed. | [4] | Understand | CO1 |
| B. | Derive the hydraulic elements of a Circular Sewer | [8] | Apply | CO1 |
| C. | Design a sewer to serve a population of 36000, the daily per capita allowance being 135 liters of which 80% finds its way into the sewer. The slope available for the sewer to be laid is 1 in 625. The sewer should be designed to carry four times dry weather flow when running full. Also calculate the velocity when the sewer is running full. Assume $N = 0.012$ in Manning's formula | [8] | Analyze | CO1 |
| D. | A main sewer is to be designed to carry the combined flow of waste water and storm water of a township spread over an area of 15 sq. Km with an average population of 350 persons per hectare. The average rate of sewage flow can be taken as 220 lpcd and the maximum flow is 120% in excess of average together with the rainfall equivalent of 10 mm in 24 hrs. Calculate the discharge for which the sewer is to be designed and also find the diameter of the sewer when running half-full. Take $N = 0.012$ and the slope as 1 in 1000. | [8] | Apply | CO1 |
| Part II | | | | |
| A. | Discuss the importance of the chemical properties of waste water in brief with proper explanations. | [4] | Understand | CO1 |
| B. | Explain the procedure of the determination of total solids, suspended solids and settleable solids for a wastewater sample. How one can determine the organic and inorganic part of these solids? | [8] | Analyze | CO1 |
| C. | Derive the first stage BOD equation curve and explain all the segments involved in that curve. Also explain the significance of BOD in wastewater sample. | [8] | Analyze | CO1 |
| D. | A 2% solution of sewage sample is incubated for 5 days at 20°C . The depletion of oxygen was found to be 4mg/L. Determine the BOD of the sewage. What will be the 3-day BOD of this sewage if the temperature is 37°C ? Take BOD rate constant (base 10) as 0.1 per day at 20°C . What will be the Ultimate BOD of the sample? | [8] | Apply | CO1 |