P P SAVANI UNIVERSITY

Second Semester of M.Plan. Examination

September 2022

SAUP 7051 Infrastructure and Transport Planning-II

16.09.2022, Friday **Time: 12:30 pm. To 2:30 p.m.** **Maximum Marks: 50**

Instructions:

1. Write main answer sheet no. in your block report under main supplementary.
2. Read instructions carefully before starting.
3. All construction lines must be clearly visible for drawing based answers.
4. Use proper intensity of lines in drawings. Neatness of drawing and lettering is important.
5. Assume suitable data where necessary.
6. Data given and assumed, in questions must be mentioned in the answers.

Q - 1 Answer the Following: (MCQ/Short Question/Fill in the Blanks) **[10]**

(i) As per SWM rules 2016, segregation of the waste to be done in _____ categories

(ii) _____ % of unaccounted flow of water is considered while calculating water demand for any city

(iii) Full form of WASMO

(iv) Legacy waste can be bio-mined
- (a) True
- (b) False

(v) Wet waste can be treated using bio methanation technology
- (a) True
- (b) False

(vi) Distance between two manholes is usually kept ____ m (c/c)
- (a) 30
- (b) 40
- (c) 50
- (d) 60

(vii) Design period for Sewerage Treatment Plant is _____ years
- (a) 15
- (b) 20
- (c) 30
- (d) 40

(viii) Solar panels are planned to be placed facing south direction
- (a) True
- (b) False

(ix) Soak pit is _____ type of wastewater system

(x) Write 5 components of Sewerage management system

Q - 2 Briefly explain the concept of Metro Lite and Metro Neo with one example **[10]**

OR

Q - 2 Mention the components of Solid waste management system and water supply system **[10]**

Q - 3 Explain the concept of TOD and at least 5 components of it, mention one example of TOD **[10]**

OR

Q - 3 Name at least 10 types of solid waste that exist in the city / generated by the citizens **[10]**

Q - 4 A city, is having a 6,00,000-population. They are currently using an old-style infrastructure system and now they want to upgrade three basic infrastructure facilities: water supply system, sewerage system and solid waste management system. [20]

A municipal corporation hired you as a chief urban planner for the city. After conducting a feasibility study, you are asked to give a land requirement statement to set up these infrastructure facilities within or nearby the area.

You did a preliminary study to identify the demand for these infrastructures on-campus after having several meetings with the executive engineer. Here are the outcomes from the meeting.

a) Water Supply Demand is 300 LPCD i.e roughly around 100 MLD in 24 hours
b) Waste Generation Rate is around 400g/capita i.e. around 200 TPD
c) Sewerage Generation is around 80% of Water Supply Demand i.e. around 80 MLD

Calculate
[A] Land and Storage Requirement for Water Supply System

1) Area required to establish Water Treatment Plant
2) Area required for Water Distribution Station premises 3) Total storage facility required (in lacs litres)
4) Total UG storage capacity required
5) Total ESR storage capacity required

[B] Land Requirement for Sewerage System

1) Area required for STP using SBR technology [1000 sq.m per MLD] 2) Total Area required for 2 pumping station/room

[C] Grand Total of the Land Requirement for both the infrastructure facilities in Sq.m which the city will require for setting up the infrastructure facilities.

OR

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[A] Land and Storage Requirement for Water Supply System

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2) Area required for Water Distribution Station premises 3) Total storage facility required (in lacs litres)

4) Total UG storage capacity required
5) Total ESR storage capacity required

[B] Land Requirement for Solid Waste Management Facilities

1) Min area required for Setting up Refuse Transfer Station to handle 200 TPD of waste

2) Min area required for setting up treatment plant of min 50 TPD

[C] Grand Total of the Land Requirement for both the infrastructure facilities in Sq.m which the city will require for setting up the infrastructure facilities.

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