Previous SEM Examinations Dec 2022

Program: Civil Engineering *(J.Y, M, Tech* Duration: 3hr

Course Code: PC-BTC601   Maximum Points: 100

Course Name: Construction Engineering and Management _____ 26/12/22

Semester: VI

Instructions:

1. **Attempt any five questions.**
2. Neat diagrams must be drawn wherever necessary.
3. Assume Suitable data if necessary and state it clearly.

Q. No.		Questions	Points	CO	BL	PI
1	a	Discuss the process of post tender planning for a Highway construction project.	6	CO1 CO3	BL3	1.4.1
	b	Discuss the characteristics of a construction project.	8	CO1	BL3	1.3.1
	c	Draw work breakdown structure for construction of a high rise residential building.	6	CO2	BL1	1.4.1
2	a	Discuss the role of Client and contractor as stakeholder management side in a construction project.	6	CO1	BL2	1.4.1
	b	What is an accident? Suggest the types of personal protective equipment (PPE) to be used to minimize accidents in construction project.	8	CO2	BL2	1.4.1
	c	Discuss the purpose of EVM and state the significance of SV, CV, SPI, CPI, TSPI.	6	CO2	BL2	2.1.1
3	a	Discuss the causes of time and cost overruns in construction project	8	CO1	BL3	2.1.1
	b	Draw typical project life cycle along and brief about different stages in a project	5	CO1	BL2	1.3.1
	c	Derive expression for EOQ and it importance in Materials management in construction	7	CO4	BL2	1.3.1
4	a	Explain in details Hybrid Annuity model (HAM).	5	CO4	BL2	1.3.1
	b	Discuss the need of mechanization in the context of highway construction project. Also list out the equipment required for highway construction project.	5	CO1	BL2	2.1.2
	c	For the data given find total float, free float, independent float and interfering float for each activity.	10	CO2	BL3	4.1.1

Determine critical path and its duration

Activity	Duration (days)	Activity Immediately Preceding	Activity Immediately Following
A	4	1	2
B	12	1	3
C	10	1	4
D	8	2	4
E	6	2	5
F	8	3	6
G	10	4	6
H	10	5	7
I	0	6	7
J	8	6	8
K	10	7	8
L	6	8	9

5	a	Define organization and draw a typical line and staff organization structure along with its advantages.	6	CO1	BL1	2.1.1
	b	You are assigned responsibility as a site manager of Flyover construction project, which records you will maintain on site.	8	CO2	BL3	3.1.2
	c	Define lean construction and discuss forms of waste in construction.	6	CO2	BL1	1.3.1

6	a	For the data given draw AON diagram Also determine critical path and total duration for the project	8	CO4	BL2	2.1.2

Activity	Immediate Predecessor(s)	Durations in (Days)
A	-	5
B	A	4
C	A	7
D	A	8
E	B,C	6
F	C,D	3
G	D	10
H	E,F,G	4

	b	Discuss resource in construction project along with resource leveling and resource smoothing.	7	CO3	BL4	2.3.1
	c	Discuss line of balance technique.	5	CO4	BL2	1.3.1

7	a	Time estimates in Days for the activities of a PERT network are given below. i) Draw the project network and identify critical path. ii) Determine the expected project length, standard deviation and variance of project length. iii) What is the probability that the project will be finished in 36 days.	9	CO4	BL2	1.3.1

Activity	Time estimates (Days)		
	Optimistic	Most Likely	Pessimistic
1-2	3	5	7
1-3	1	2	3
2-5	6	8	12
3-4	8	12	17
4-5	0	0	0
4-6	6	9	12
4-7	3	6	8
5-8	5	7	9
6-9	1	2	3
8-9	3	6	8
7-10	8	15	20
9-10	2	4	6

b	Discuss time cost tradeoff in construction	7	CO3	BL4	2.3.1
c	Discuss the importance of equipment management in highway construction project.	4	CO2	BL6	2.3.1

Previous semester Exam – December 2022 Examinations

Program: B.Tech –Civil Engineering   Duration: 3 Hour

Course Code: PC-BTC602   Maximum Points: 100

Course Name: Design Of Steel Structures   Semester: VI

Notes:

1. Assume any missing data and state the same clearly
2. Use of IS 800-2007 and steel table is allowed
3. Draw neat sketches to illustrate your answers
4. For all steel plates and angles, fy = 250MPa, fu= 410MPa

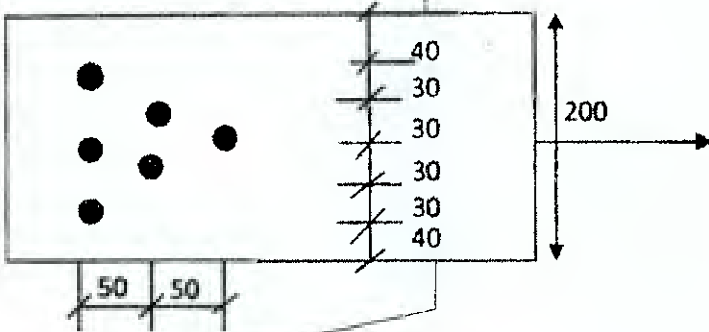| Q.No.	Questions	Points	CO	BL	PI
1.a)	The member of a roof truss carries the following design loads DL = 100kN (Tensile) LL = 125kN (Tensile) WL = 100kN (Compressive) Calculate the loads as per all possible load combinations according to IS800-2007 and specify the design loads to be used	03	1,2	3,4	3.1. 3.1.
1.b)	Design a tension member to carry an axial factored load of 250kN. Use a single angle rolled steel section connected (at site) to each side of a gusset plate of 10mm thick using 20mm diameter bolts of grade 8.8.	12	1,2	3,4	3.1. 3.1.
1.c)	Calculate the number of bolts required to connect two plates of 125mm x 10mm size in lap joint, to transmit a factored load of 150 KN. Use 12 mm bolts of grade Fe 410	05	1,2	3,4	3.1. 3.1.
2.a)	A single angle strut (loaded through single leg) has the following design forces acting DL = 100kN, LL = 25kN, both forces being compressive in nature. The length of member between centres of intersection is 2.1m.Design the section as per IS 800:2007. *Assume the connection to be hinged with two bolts at each end*	10	1,2	3	3.1. 3.1.
2.b)	A column carries a design axial load of 1400kN. Design the column section using rolled steel section when *both ends are restrained against rotation and translation.* Length of member is 3.5m	07	1,2	3	3.1. 3.1.

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Previous semester Exam – December 2022 Examinations

2.c)	Calculate live load on truss if the angle of slope of roof is 45°.	03	1	1,2	1.4. 2.1.
3.	Design a built up laced column to carry 1300kN design axial load using two channels facing back to back. Also design lacing and its connection using 4.6grade bolts. The column is fixed at both ends and the length is 6.5m. Draw neat sketch showing all the details	20	1,2	3	3.1. 3.1.
4.a)	Design a simply supported beam of span 6m carrying an RC floor capable of providing lateral restraint to the top compression flange. The design UDL is made up of 20-kN/m imposed load and 12 kN/m dead load. Provide all checks.	14	1,2	3,4	3.1. 3.1.
4.b)	State the merits and demerits of using steel as a structural material	06	2	1,2	1.4. 2.1.
5.a)	Design a framed connection for an ISMB 300*(secondary beam)* to transfer 150kN factored reaction to ISMB 450*(main beam)* using 4.6grade bolts. Draw neat sketch to show connection details	10	1,2	3	3.1. 3.1.
5.b)	Briefly describe the types of column bases used in steel structures	05	1	1,2	1.4. 2.1.
5.c)	Explain the advantages and disadvantages of bolting	05	1	1,2	1.4. 2.1.
6.a)	A roof truss shed is to be built in Chennai for an industry The size of shed is 25mx10m.The height of building is 9m at the eaves. Determine the basic wind pressure.	04	1	3	3.1. 3.1.
6.b)	Design a welded connection for a single angle tension member ISA 100x100x10. The angle is subjected to an axial force of 150kN.	10	1	3	3.1. 3.1.
6.c)	Explain the classification of sections : plastic, compact, semi-compact and slender based on moment – rotation characteristics	06	1	1,2	1.4. 2.1.
7.a)	Determine the design tensile strength of the plate 200 x 10mm with the holes as shown below. M20 bolts and 12mm thick plates are used.	10	1	1,2	1.4. 2.1.

7.b)	A simply supported beam ISMB 350@ 52.4kg/m has been used over a span of 4.5m to carry a design load of 19.5kN/m. check the safety of the beam in *shear, flexure and deflection* when the beam is *laterally unsupported*	10	1,2	3	3.1. 3.1.

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Previous Semester Examination

December 2022

Program: UG Civil *7.Y. B.Tech (Civil) Sem VI VI*

Duration: 3 Hours

Course Code: PC-BTC603

Maximum Points: 100

Course Name: Foundation Engg.

Semester: VI

Notes:

- **Question 1 is compulsory**. Attempt any 4 out of remaining questions
- Assume **suitable data** if necessary and state it clearly
- Clearly write units everywhere. Points will be deducted in each place units are missing
- Figure on right indicate **maximum points** for the given question, **course outcomes attained, and Bloom's Taxonomy Level**

Q. No.			Points	CO	BL
1	a	Differentiate between active and passive earth pressure. How is it different from pressure at rest?	5	1	4
	b	Explain the conditions when local shear failure is possible under shallow foundation.	5	2	2
	c	A rigid water pipe of diameter 2.5 m is to be laid in a ditch which is 3.5 m wide at the top of the pipe. It is to be covered with 3 m of clayey backfill having unit weight of 19 kN/ m^3. Calculate the load on the pipe if $C_d = 3.5$. What will be the load if this pipe is flexible?	5	4	4
	d	Calculate the efficiency of a 3x4 pile group with 300 mm diameter piles, 15 m long and spaced at 3d constructed in clayey soil. Can the efficiency of piles in clay be considered as 1?	5	3	4
2	a	Classify pile foundations as per IS: 2911 – Part 1 (2010).	5	3	4
	b	What are conduits? Explain what a positive projecting conduit is and illustrate with a neat sketch.	5	4	2
	c	A wall footing is resting on soil with c=16 kN/m², $\phi=30°$, $\gamma=18.4$ kN/m³. Determine the net ultimate bearing capacity for a 1.2 m wide footing placed at 1 m below the ground surface if the ground water table is 2.5 m below ground surface. Use IS	10	2	6

		code recommendations and assume depth factors = 1.0. See Figure 1.			
3	**a**	State the limitations of pile driving formulae	**5**	**3**	**2**
	b	Differentiate between shallow and deep foundations	**5**	**2,3**	**5**
	c	A smooth backed vertical wall is 6.3 m high and retains a soil with a bulk unit weight of 18 kN/m^3 and $\phi = 18°$. The top of the soil is level with the top of the wall and is horizontal. If the soil surface carries a uniformly distributed load of 4.5 kN/m^2, determine the total active thrust on the wall per metre of the wall and its point of application.	**10**	**1**	**5**
4	**a**	Explain how the results from a plate load test are extrapolated. Discuss the limitations of the test.	**10**	**2**	**2**
	b	A 300 mm diameter pile is driven into a deposit of sand having ϕ=32°, γ_b=1.80 g/cc, γ_{sat}=1.95 g/cc, ktanδ = 1.2 and N_q=34. The pile is driven to a length of 11.5 m and water table is located at 3 m below GL. Take critical depth of pile as 15d. Find the safe load the pile can carry if factor of safety is 2.50.	**10**	**3**	**6**
5	**a**	A contractor at a site is refusing to put adequate drainage behind a retaining wall. Convince him why an appropriate drainage system is necessary	**5**	**1**	**5**
	b	What is a CPRF? Explain with a sketch and state its main advantage.	**5**	**4**	**2**
	c	Design a cantilever sheet pile wall retaining cohesionless soil of height 5 m, with drained friction angle of 32°, unit weight of 18.9 kN/m^3, and GWT 12.5 m below the top of the wall. The wall may be assumed to be smooth and simplified method may be adopted. Draw a neat sketch of the same.	**10**	**1**	**3,6**
6	**a**	What is negative skin friction? How can it be accounted for in pile design?	**5**	**3**	**2**

	b	Explain the Housel method for determining the bearing capacity of soil using two plate load test data.	5	2	2
	c	Show the major components of a reinforced earth wall with a neat sketch.	5	4	2,3
	d	In a two layered cohesive soil, bored piles of 450 mm are installed. The top layer has a thickness of 5 m and lower layer has considerable depth. The cohesion of top layer is 22 kPa while that of bottom is 50 kPa. Design the pile length to carry a load of 380 kN by assuming adhesion value as 0.5 and factor of safety as 2.	5	3	6

IS 6403 : 1981

TABLE 1 BEARING CAPACITY FACTORS
(Clause 5.1.1)

ϕ (Degrees)	N_c	N_q	N_γ
0	5.14	1.00	0.00
5	6.49	1.57	0.45
10	8.35	2.47	1.22
15	10.98	3.94	2.65
20	14.83	6.40	5.39
25	20.72	10.66	10.88
30	30.14	18.40	22.40
35	46.12	33.30	48.03
40	75.31	64.20	109.41
45	138.88	134.88	271.76
50	266.89	319.07	762.89

Note — For obtaining values of N'_c, N'_q and N'_γ, calculate $\phi' = \tan^{-1}$ (0.67 tan ϕ). Read N_c, N_q and N_γ from the Table corresponding to the value of ϕ' instead of ϕ which are values of N'_c, N'_q, N'_γ respectively.

5.1.2 The ultimate net bearing capacity obtained in 5.1.1 for strip footing shall be modified to take into account, the shape of the footing, inclination of loading, depth of embedment and effect of water table. The modified bearing capacity formulae are given as under:

a) In case of general shear failure q_u $$\left. \right\} = cN_c s_c d_c i_c + q(N_q - 1) s_q d_q i_q + \tfrac{1}{2} B\gamma N_\gamma s_\gamma d_\gamma i_\gamma W'$$

b) In case of local shear failure q'_u $$\left. \right\} = \tfrac{2}{3} cN'_c s_c d_c i_c + q(N'_q - 1) s_q d_q i_q + \tfrac{1}{2} B\gamma N'_\gamma s_\gamma d_\gamma i_\gamma W'$$

5.1.2.1 The shape factors shall be as given in Table 2.

TABLE 2 SHAPE FACTORS

Sl. No.	Shape of Base	Shape Factor		
		s_c	s_q	s_γ
i)	Continuous strip	1.00	1.00	1.00
ii)	Rectangle	$1+0.2\,B/L$	$1+0.2\,B/L$	$1-0.4\,B/L$
iii)	Square	1.3	1.2	0.8
iv)	Circle	1.3	1.2	0.8

Use B as the diameter in the bearing capacity formula.

Figure 1: IS 6403 – 1981 relevant clauses

T. Y. B. Tech Civil 30/11/22
sem VI

Program: Civil Engineering   **Duration:3 hrs**

Course Code: PC-BTC604   **Maximum Points: 100**

Course Name: Design of RCC Elements   **Semester: VI**

Notes:

1) Attempt any five questions.
2) Draw reinforcement details wherever necessary.
3) Use of IS 456:2000 is permitted.

Q.No.		Questions	Points	CO	BL	PI
Q1	a)	What do you mean by Limit State. State and explain the assumptions made in LIMIT State of collapse(Flexure).	05	1	2	2.3.2
	b)	Derive design stress block parameters for singly RC sections for LSM of design subjected to flexure.	05	1	1,2	1.2.1, 1.3.1
	c)	When is it required to design a doubly reinforced beam?	05	1	2	1.2.1, 1.3.1
	d)	How much minimum and maximum reinforcement is provided in RC column section? What is the purpose of column ties?	05	1	2	1.2.1, 1.3.1
Q2	a)	RC section 300mmx700mm depth overall and reinforced with 3-20mm dia is used as simply supported beam over an effective span of 4.5m. Determine the maximum udl beam can carry safely.Use M 35 and Fe-500D	08	1	3	2.1.3
	b)	Design RC beam of size 300x500 mm and span 4m subjected to service udl of 120kN/m .Use M-35 and Fe 500D	12	1,2	6	2.4.1
Q3	a)	An isolated TEE beam section has an effective depth of 750mm ,effective flange width of 1000mm ,rib width of 300mm ,slab depth of 125mm .Design the beam to carry ultimate moment of 1800kN-m Use M-30and Fe-500D.	12	1	3	2.3.1
	b)	Design one way slab panel of a common passage of RCC residential building having dimensions 2.5mx 6m. Give appropriate checks. Use M30and Fe 500D..Draw reinforcement details	08	1,2	6	2.4.1
Q4	a)	Design a RC slab for an interior panel of a balcony of a residential building. The size of panel is 4mx 5m .,Draw bottom reinforcement plan and section along short span. Give	20	1,2	6	2.1.3

		appropriate checks. Use M35 and Fe 500D				
Q5	a)	What are the functions of distribution steel in one way slab?	05	1	2	1.4.1
	b)	Design short helically reinforced column to resist service load of 1600kN.Use M35 and Fe500D.Draw reinforcement details	15	1,2	6	3.1.6
Q6	a)	A column of dimension 500mmx500mm is subjected to axial load of 1800kN.Design isolated footing for column assuming SBC as 225kN/m2.Use M35 and Fe 500D.	15	1,2	6	3.1.6
	b)	Calculate load carrying capacity of column of size 500mmx600mm comprising of 8-32mm dia. Use M-30 and Fe-500.	05	1	2	1.3.1
Q7	a)	A rectangular beam 300mm x500mm effective depth is reinforced with 4 bars of 20mm dia in tension zone .The beam is subjected to udl of 70kN/m over span of 5m.Design shear reinforcement. Use M30 and Fe500D	10	1,2	6	3.1.6
	b)	Determine ultimate load carrying capacity of column (300 x500)mm subjected to uniaxial bending reinforced with 4 bars of 20mm dia(each in one corner).Take xu /D= 1.1 .Assume fsc=0.87fy and fc=0.446fck.Assume C1= 0.385 and C2= 0.443.Use M30 and Fe 415.Also find eccentricity of the load.	10	1,2	4	2.4.1

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End Semester December 2022 Examinations (Previous Semesters)

Program: B. Tech. Civil Engineering F.Y. B. Tech (Civil) Sem VI   **Duration: 3hrs.**

Course Code: PE-BTC622   **Maximum Points: 100**

Course Name: GIS Science & Applications   **Semester: VI**

Notes:

1. There are **TOTAL SEVEN MAIN** questions, each of 20 points.
2. **QUESTION 1 and 7 is COMPULSORY.**
3. From the remaining Five Questions Solve ANY THREE.
4. Assume suitable data, wherever necessary and State it clearly.
5. Write answer to each question on a new page.
6. Answers to be accompanied with appropriate sketches/facts & figures/table or chart/graph/diagram/flowchart wherever necessary or required.

Q.No.	Questions	Points	CO	BL	PI
1.	a) State at least four applications of GIS in Civil Engineering. (2) b) Explain in detail any one application of GIS in Civil engineering. (3) c) With proper reasons, explain the growing trend of use of GIS in the data analytics and artificial intelligence industry. (5) a) Explain in short: i. Earth ellipsoids (5) ii. Spatial and non-spatial resources (5)	20	1,2,3,4	1,2	5.1.1
2.	a) State different types of maps that can be prepared by spatial analysis in a GIS. (5) b) Explain how geo-referencing is important in any spatial work in a GIS. (7) c) State different types of spatial projections available in a GIS. (2) d) With proper sketch explain any two spatial projections with its application. (6)	20	3,4	3,4	5.1.3
3.	a) State the difference between ground remote sensing and space remote sensing. (6) b) State the working principle of Global positioning System (GPS). (6) c) With a proper example, explain the use of remote sensing data and GPS data in GIS. (8)	20	3,4	3,4	5.1.2
4.	a) Give the difference between raster and vector data model. (5) b) State the file formats available to represent raster data. (4) c) Explain any two file formats in detail. (6) d) Explain the shapefile (.shp) format of representing the vector data. (5)	20			5.1.2
5.	a) Explain what is meant by spatial analysis in a GIS. (2) b) Explain the following spatial operations with a proper example: (3 points each) i. Buffer	20	3	1,2	5.1.3

		ii. Proximity
		iii. Clip
		iv. Dissolve
		c) Explain (which and how) the spatial analysis tools would you use to:
		    i. Create a joggers track around a lake (3)
		    ii. Find a suitable house near your work area (3)				

6		Explain the importance of building topology in a vector data. (2) State different types of building topology for a vector data structure in GIS and give example of each type. (12) Explain the Quadtree data structure representation with a proper example. (6)	20	2,3	3,4	5.1.2

7		Write a note on:
		    i. Early development of GIS (5)
		    ii. Universal Transverse Mercator (UTM) (5)
		    iii. WebGIS and its uses (5)
		    iv. Relational database management system (RDBMS) in GIS (5)
			20	3	1,2	5.1.2

----- The End -----

SARDAR PATEL COLLEGE OF ENGINEERING

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Munshi Nagar, Andheri (W) Mumbai - 400058

Previous semester Exam Dec -2022

Program: Civil Engineering Duration:3 hr.

Course Code: PE-BTC 651 Maximum Points: 100

Course Name: SOLID & HAZARDOUS WASTE MANAGEMENT Semester: VI

Notes:

1. Q.1 is compulsory & attempt any four from remaining six
2. Illustrate answer with neat sketches wherever required.
3. Make suitable assumptions where necessary and state them clearly.

Q.No.	Questions	Points	BL	CO	Module
1	Write as short note on: (Any four) 1. Define solid waste and solid waste management. 2. Segregation of solid waste. 3. Municipal solid waste condition in Indian cities. 4. Incineration process for solid waste disposal 5. List the sources of generation of E- waste.	20	1	2,3	1-7
2	1. Explain the major provisions in Municipal Solid Waste Management Rules 2016. 2. Design a solid waste collection system to service area having 1500 dwellings. Assume that 2 Person collector crew will be used, -Avg. no. of residents per service=3.0 -SW generation per capita= 2.0lb/capita/day -Density of solid wastes at containers= 250lb/yd3 -Containers per service= two 30 gal containers -Types of service = 50% rear of house, 50% alley system -Collection frequency = 1/week -Collection vehicle= rear loaded compactor -Compaction ratio= 2 &Round trip haul distance =15mi -Length of workday= 8h & Trips per day= 2 -Off route factor = 0.15 -Constants for estimating haul time=a =0.016h/trip, b = 0.018mi/h & At site time /trip= 0.10h/trip	20	2	1,2,3	2,3
3	1. Explain the modern thermal and biological technologies involved in solid waste management. 2. Explain briefly collection services and systems employed in solid waste management system.	20	2	1,2,3	1,6,7
4	Write a short note on: 1. Sampling of solid wastes 2. Characterization of solid wastes 3. Composition of solid waste. 4. Chemical characteristics of solid waste.	20	2	1,2,3	1,6,7

5	1. Explain the methods of treatment & disposal of Bio-medical waste in detail. 2. Enlist and explain methods of composting.	20	2	1,2,3	1,6,7
6	1. Explain importance of Construction waste management. 2. Explain the Handlers/operators requirement while handling hazardous waste	20	2	1,2,3	1,6,7
7	1. Explain the effect of solid waste on environment. 2. Explain characteristics of hazardous waste as per hazardous waste management rules, 2016.	20	2	1,2,3	6,7

KT- EXAMINATION JAN - 2023

Program:T. Y. B. Tech. Civil *Jun VI*

Duration: 3 hours
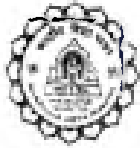
Course Code: PE – BTC – 663

Maximum Points: 100

Course Name: Traffic Engineering & Control (Elective)

Semester: VI

(i) Assume suitable data if required

Q.No.	Questions	Points
Q.1.		
(a)	Discuss Importance of statistics in traffic planning	06
(b)	Discuss manual method for traffic volume study	06
(c)	Discuss the advantage and disadvantage of Traffic signals.	08
Q.2.		
(a)	Origin – Destination Study	05
(b)	Least Square Method for Regression analysis	05
(c)	At uncontrolled T Junction past experience indicates that probability of vehicles arrive on side of road during 15 second interval and turning right in main road is 1/4. Find the probability that in a period of 1 minute there will be 0, 1, 2, 3 and 4 vehicles arriving and turning right.	10
Q.3.		
(a)	Explain various methods of trip distribution.	05
(b)	Define spot speed. Enlist the methods of measurement of spot speed.	05
(c)	Table – II shows the observations related to spot speed are taken using radar meter. Calculate the following (i) Space mean speed (ii) Time mean speed (iii) Variance and Standard Deviation	10
Q.4.		
(a)	Derive the fundamental equation of traffic flow (Traffic Volume). Also, discuss all the terms required for the derivation of fundamental equation of traffic flow.	10

(b)	ABCD is a street running N – S. The details of the observations by moving car method are given in Table – II Calculate the Traffic flow in each section for both direction	10
Q.5.		
(a)	Discuss the factors governing trip generation.	06
(b)	Explain the different types of road markings.	06
(c)	Discuss Home Interview method for Origin – Destination Study	08
Q.6.		
(a)	Discuss the Term (a) One tail test and two tail test (b) Null Hypothesis and Alternate Hypothesis	10
(b)	In the research study of maintenance policy for the pavement. The condition state of road was decided based on surface area of pot hole and depth of rutting per kilometer length. The condition survey was carried out for 250 road section and data analyzed. The relation between speed of vehicle on the road and condition state is shown in table below; Develop a regression equation for (i) Determining condition state of pavement from speed (ii) Determining speed of vehicle from condition state.	10
Q.7.		
(a)	Explain the balanced and unbalanced transportation problem with an example	08
(b)	A company has three plants A. B and C which supply two warehouses D, E, F and G. monthly plan capacity are 1500, 2500, 500 units respectively. Monthly warehouse requirements are 500, 1500, 1500, 1000 units respectively. Unit transportation costs are given in Table -IV. Obtain initial feasible solution by (i) N- W Corner Method (ii) Least Cost Method	12

Q.3. Table - I.

| 20	36	37.5	29.5	20	28.5	50	72.5	76.5	74.5
22	29	49	40.5	50.50	23	28	26.5	29.5	30.5
36.5	72	45	72	70.5	71.5	70.5	79.5	44.5	36
39	48	49.5	19.5	19.5	16	39.5	60.5	69	42.5

Q.4. Table - II.

Direction of Traverse	Section	Time Taken to Traverse	Vehicles met with in opposite direction	Vehicles in same direction	
				Overtaking	Overtaken
Towards North	AB	152	25	4	3
	BC	172	31	2	2
	CD	138	28	3	4
Towards South	DC	132	50	2	1
	CB	160	55	3	4
	BA	145	45	1	1

Q.6. Table - III.

Condition state	1	2	3	4	5	6
Speed Km/hr	55	48	33	28	22	15

Q.7. Table - IV

	D	E	F	G	Supply
A	5	8	6	6	1500
B	4	7	7	6	2500
C	8	4	6	6	500
Demand	500	1500	1500	1000	
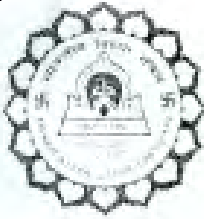
Sardar Patel College of Engineering

(A Government Aided Autonomous Institute)
Munshi Nagar, Andheri (West), Mumbai – 400058

Previous SEM Examinations December 2022

Program: Civil Engineering   Duration: 3hr

Course Code: (OE-BTC 613)   Maximum Points: 100

Course Name: Watershed Development & Management   Semester: VI

Instructions:

1. **Attempt any five questions**.
2. Neat diagrams must be drawn wherever necessary.
3. Assume Suitable data if necessary and state it clearly.

Q. No.		Questions	Points	CO	BL	PI
1	a	What are the causes of watershed deterioration? Explain in detail.	6	CO2	BL2	1.4.1
	b	Explain in detail Characteristics of Watershed.	6	CO1	BL1	1.2.1
	c	Discuss in detail the process of wind erosion in a watershed.	8	CO1	BL2	1.4.1
2	a	Discuss engineering measures for soil conservation	6	CO2	BL2	1.3.1
	b	Explain the factors affecting infiltration in a watershed.	6	CO1	BL2	2.1.1
	c	Discuss the effects of land use changes on hydrological cycle components.	8	CO2	BL3	1.4.1
3	a	Discuss the classification of watershed on the basis of land use.	8	CO1	BL1	1.3.1
	b	Discuss the watershed development component of PMKSY along with the objectives of PMKSY.	6	CO1	BL1	2.1.2
	c	Discuss the importance of soil erosion studies in watershed management process.	6	CO1	BL3	2.1.1
4	a	Discuss the types of Bench Terraces along with sketches.	6	CO2	BL3	1.4.1
	b	What are the salient features of integrated watershed management Program?	7	CO2	BL4	1.3.1
	c	It is proposed to design RWH system for SPCE academic building, brief about the steps in rainwater harvesting system.	7	CO1	BL1	2.1.2

5	a	Discuss the criteria for site selection of check dam and also brief about the design criteria of a check dam.	6	CO2	BL4	1.3.1
	b	You have been assigned as a responsibility for the development of a particular watershed; discuss the steps involved in the watershed development project.	8	CO2	BL4	3.1.2
	c	Discuss the factors affecting soil erosion.	6	CO1	BL1	1.3.1
6	a	Draw neat labeled diagram of first flush lock and sand bed filter.	6	CO2	BL2	2.1.2
	b	Discuss the criteria for selection of land for watershed management programme.	8	CO2	BL2	2.1.2
	c	Discuss the process of delineation of watershed.	6	CO2	BL2	2.1.2
7	a	What are the roles and responsibilities of Watershed development team (WDT)?	6	CO2	BL2	3.1.2
	b	Discuss the scheme such as Rajeev Gandhi Watershed development mission.	6	CO1	BL1	2.3.2
	c	Discuss the applications of Remote sensing and GIS in watershed management.	8	CO2	BL2	2.1.2

Previous Semester Exam-Dec 2022

Program: Civil Engineering   *T. Y. B. Tech*   Duration:3 hr.

Course Code: MC-102   *(Civil)*   Maximum Points: 100

Course Name: Environmental Studies   *Sem*   Semester: VI

Notes: *VI*

1. Attempt any five out of seven questions
2. Illustrate answer with neat sketches wherever required.
3. Make suitable assumptions where necessary and state them clearly.

Q.No.	Questions	Points	BL	CO	Module
1.	Explain the Noise & soil pollution with following points, 1. Definition 2. Pollutants 3. Sources 4. Effect on environment 5. Control measures	20	1	1,2,3	3
2	1. Explain the concept of ecology & Loss of Bio-Diversity 2. Explain Water Act,1974.	20	2	1,2	1,2,5
3	1. Explain Carbon & Nitrogen cycle with diagram. 2. Draw & explain flow sheet of wastewater treatment plant.	20	2	1,2,3	2,4
4	1. What do you mean by Green building? Explain the function of GRIHA & its rating system. 2. Write a short note on solid waste disposal mechanisms.	20	2	1,2	5
5	Explain Air & Thermal Pollution with following points, 1. Definition 2. Causes or sources 3. Effect on environment 4. Control measures	20	2	1,2,3	3
6	Write a short note on: 1. E-waste management rules, 2016 2. CRZ.	20	2	1,2	5
7	Write a short note on: 1. EIA 2. Social & Economic aspects of sustainable development	20	2	1,2,3	5