

VI-SEM/CIVIL/2022(S)
TH-1 Land Survey-II

Full Marks: 80

Time: 3 Hours

Answer any FIVE Questions including Q No.1 & 2
Figure in the right hand margin indicates marks

1. Answer All the questions. 2 X 10

- a) Define the term 'Isogonic lines' and 'Agonic lines'.
- b) Define the term 'Photogrammetry'.
- c) Define the Multiplying constant and Additive constant of a tacheometer.
- d) Express the relation between the Radius and Degree of Curve.
- e) Define GIS.
- f) Express the horizontal distance when Line of Sight is inclined but staff is held vertically.
- g) What are the common elements of map which are used for reading of maps and interpretation?
- h) Define the term "Bar Scale" in map.
- i) Define Versed sine of a curve. Express it mathematically.
- j) Define the term 'Longitude and Latitude'.

2. Answer any SIX questions. 5 X 6

- a) Describe briefly the different elements of a Simple Circular Curve with neat sketch.
- b) Differentiate between Vertical aerial Photograph and Oblique Aerial Photograph.
- c) Determine the values of Stadia constants from the following observations.

Instrument Station	Staff Reading on	Distance (m)	Stadia Reading		
			Lower	Centre	Upper
O	A	200	1.255	1.785	2.780
	B	250	1.625	1.830	3.250
	C	300	0.780	2.980	3.855

- d) Explain the following terms in connection with the Map Nomenclature.
(i) UTM's (ii) Field Notes
- e) Explain briefly about 'Thematic Map'.
- f) Discussed the advantages & disadvantages of Photogrammetric Surveying.
- g) What is a Total Station? Why is it preferred in surveying these days?

3. Two tangents intersect at a chainage of 1530.0 m, the deflection angle is 60° . Calculate the following quantities for setting out of a curve of 500m radius. 10
- Length of curve
 - Tangent Length
 - Length of Long Chord
 - Mid-ordinate &
 - Apex distance
4. Define the term “DGPS”. What are the application/uses of DGPS in day-to-day life? 10
5. How an industrialist can makes feasibility study from maps before set up an industry at local? Give your views. 10
6. Write Short notes on : 10
- Ortho Image Generation
 - Magnetic Declination
 - Public Land Survey System
 - Open Series Map
7. The following observations were taken with a tacheometer fitted with an anallatic lens, the staff being held vertically, the constant of tacheometer is 100. 10

Inst. Station	Height of Instrument	Staff Station	Vertical angle	Staff Reading			Remark
				Lower	Centre	Upper	
P	1.320	BM	$-5^\circ 15'$	1.320	1.845	2.725	R.L of Bench Mark(B.M) =260.850m
P	1.320	A	$+7^\circ 30'$	0.860	1.625	2.780	
B	1.460	A	$-7^\circ 25'$	1.725	2.420	2.965	

Calculate the R.L of point ‘B’ and the horizontal distance between B.M & point B.

6TH SEM./CIVIL ENGG.//2022(S)
TH -2 Construction Management

Full Marks: 80

Time- 3 Hrs

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10
 - a. What is muster roll?
 - b. Define owning and operating cost.
 - c. What is equipment schedule?
 - d. What do you mean by invoice?
 - e. State the objective of preparing job layout.
 - f. What is line and staff organisation?
 - g. What is meant by “Dummy Activity”.
 - h. What do you mean by workmen’s compensation act?
 - i. What are the objectives of quality control in a construction project?
 - j. What do you mean by non destructive method of quality control?

2. Answer **Any Six** Questions 5 x 6
 - a. State the difference between CPM and PERT.
 - b. State the factors to be considered while selecting equipment.
 - c. What is construction management? State the objectives of construction management.
 - d. Write down the advantages and disadvantages of line organization.
 - e. What are the causes of conflicts?
 - f. What are the limitations of bar chart?
 - g. Describe briefly the features of network planning.

3. Describe the steps for inspection and testing of construction equipments. 10

4. Explain about the importance of owning and operating costs in making decisions for hiring and purchase of equipments. 10

5. Explain the causes of accident on a construction site. Describe the safety measures required in excavation and demolition work. 10

6. (a) Define motivation and mention different types of motivation. 5
(b) Describe methods of recording progress of work. 5

7. Describe the various stages of planning for construction. 10

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TH3 Advance Construction Techniques & Equipments

Full Marks: 80

Time- 3 Hrs

Answer any FIVE Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10
 - a. Define prefabrication.
 - b. What is artificial timber?
 - c. Define hot bitumen??
 - d. What is HDPE?
 - e. What is retrofitting of building?
 - f. What is earthing?
 - g. What are geo synthetics?
 - h. Define earthquake?
 - i. What is the instrument used to measure intensity of earth quake?
 - j. Define per capita demand?

2. Answer **Any Six** Questions 6 x 5
 - a. Write short notes on glass fibre?
 - b. Write pre fabrication and its necessity?
 - c. Write down about ground improvement techniques?
 - d. Write down the major effects of earthquake on RCC buildings?
 - e. Write down about artificial system of ventilation.
 - f. Write down about artificial seasoning of timber?
 - g. Write down about geo textiles and geogrids.

3. Explain the classification of retrofitting system. 10
4. Write down the process of cold water distribution in high rise buildings? 10
5. Explain horizontal bands used in building. 10
6. Write short notes on 10
 - a. Wall cladding
 - b. Acoustic material
7. Describe about excavating equipments. 10

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TH4 Concrete Technology

Full Marks: 80

Time- 3 Hrs

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10
 - a. Letter 'M' and number in grade "M25 "refers to what?
 - b. What do you mean by setting time of cement?
 - c. What is meant by retarder?
 - d. What is curing?
 - e. Give dimensions of slump cone?
 - f. What is gunnitting?
 - g. What do you mean by efflorescence?
 - h. Write composition of cement?
 - i. What is soundness of cement?
 - j. What is air entraining admixture?

2. Answer **Any Six** Questions 6 x 5
 - a. What do you mean by grading of aggregate?
 - b. What are important functions of admixtures?
 - c. Explain methods for compacting concrete?
 - d. What is silicafume concrete?
 - e. How cracks are repaired in concrete?
 - f. What are the factors responsible for variation in quality of concrete?
 - g. What are the preventive measures for concrete deterioration?

3. Define workability and its different tests to determine it? 10
4. Write down different tests of cement? 10
5. What is inspection and testing and durability requirement as per I S 456? 10
6. What the properties are of harden concrete? 10
7. Write short notes on: 10
 - (a)Ready mix concrete
 - (b)Accelerator

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TH-1 Land Survey-II

Full Marks: 80

Time- 3 Hrs

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10
 - a. Define additive and multiplying constant in tacheometry.
 - b. Differentiate between simple curve and compound curve.
 - c. Write down two uses of transition curve.
 - d. Define map and map scale.
 - e. Define Magnetic Declination.
 - f. What do you mean by 'field notes'.
 - g. What are the broad classification of photogrammetry?
 - h. Define Total Station.
 - i. What is the versed sine of a curve? Express it mathematically.
 - j. What is Contour?

2. Answer **Any Six** Questions 6 x 5
 - a. Two distances of 50 m and 75 m were accurately measured on a fairly level ground. The intercept on the staff held vertical were accurately measured on a fairly level ground. The intercept on the staff held vertical were 0.495 and 0.745 m respectively. Calculate the tacheometric constants of the instrument.
 - b. Write short note on
 - i. Political map.
 - ii. Climate map
 - c. Differentiate between Aerial Photogrammetry and Terrestrial Photogrammetry.
 - d. What are the advantages and disadvantages of total station.
 - e. List out components of GIS and write down their functions.
 - f. Explain Latitude and Longitude.
 - g. Explain the three views of information system.

- 3 A staff was held vertically at a distance of 100 m and 300 m from the centre of theodolite fitted with stadia hairs and the staff intercepts with the telescope horizontal were 0.990 and 3.000 respectively. The instrument was then set over a station A of RL 950.50 m and height of instrument was 1.42 m. The stadia hair readings of a staff held vertically at station B were 1.00, 1.83 and 2.67 m while the vertical angle was -10° . Find the distance AB and RL of B. 10
- 4 Two tangents intersect at a chainage of 1,250 m. The angle of intersection is 150° . Calculate all data necessary for setting out a curve of 250 m radius by the deflection angle method. The peg intervals may be taken as 20 m. Prepare a setting out table when the least count of the vernier is 20". Calculate the data for field checking. 10
- 5 Write short notes on: 10
- i. Focal Length
 - ii. Flying Height
- 6 Explain Obstacles in curve ranging when point of intersection is inaccessible with neat sketch. 10
- 7 Explain in details about the various processes in DGPS survey in respect of base station set up, rover set up and processing of GPS data. 10

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TH-2 Construction Management

Full Marks: 80

Time- 3 Hrs

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

- 1 Answer **All** questions. 2 x 10
- a. What is bin card?
- b. What do you mean by job layout.
- c. Define work breakdown structure.
- d. What is free float.
- e. What is muster roll?
- f. What is scheduling?
- g. What is epicentre.
- h. Define optimistic time.
- i. What do you mean by working drawing?
- j. What is meant by Dummy activity?
2. Answer **Any Six** Questions. 6 x 5
- a. Differentiate between PERT and CPM.
- b. Outline the advantages and disadvantages of line organization.
- c. Write down the objectives of construction management.
- d. State the advantages of Bar Chart.
- e. What are the objective of preparing job layout
- f. What are the rule for preparing indent and invoice .
- g Describe various non destructive methods of quality control.

3. A project has the following times schedule.

10

Activity	1-2	1-3	2-4	3-4	3-5	4-9	5-6	5-7	6-8	7-8	8-9	8-10	9-10
Time in weeks	4	1	1	1	6	5	4	8	1	2	1	8	7

Construct CPM Network and compute.

I. TE and TL for each event.

II. Float for each activity.

III. Critical path and its duration.

4. Describe different types of conflicts . 10

5. Write down the preparation of a job layout and prepare a job lay out for construction of a RCC framed building. 10

6. Describe different ways of equipment maintenance. 10

7. What are the types of labour incentives, elaborate. 10

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TH-3 Advance Construction Technique And equipment (ACTE)

Full Marks: 80

Time- 3 Hrs

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10
 - a. What is PVC?
 - b. What is Plinth Band? Write a use.
 - c. Define Seismic Retrofitting.
 - d. Why Fabrication is done and what are the types?
 - e. List out the types of Wiring.
 - f. Define Artificial Sand.
 - g. What do you mean by Geo-synthetics?
 - h. What is the instrument used to measure Magnitude of earthquake?
How it is measured?
 - i. Define Soil Reinforcing with proper example.
 - j. Define Slope Stabilization. Where it is used?

2. Answer **Any Six** Questions 6 x 5
 - a. What are the additional strengthening measures in masonry building?
 - b. Describe Fibre as a Construction Material.
 - c. What are the points to be considered while selection of wiring?
 - d. Write down the assumptions made in earthquake resistant design of structures.
 - e. Describe about ground improvement techniques in construction.
 - f. Describe Fuse and note down there types?
 - g. Write a brief note on Geo-textiles and Geo-grids.

3. Elaborate excavating equipments with neat sketch. 10
4. Write the methods and systems of ventilation. 10
5. Classify retrofitting techniques and their use. 10
6. Explain horizontal bands used in building with broad examples. 10
7. Explain Soil reinforcing in the field of construction. 10

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TH-4 Concrete Technology

Full Marks: 80

Time- 3 Hrs

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10
- a. What do you mean by nominal mix.
 - b. What is hydration of cement ?
 - c. Define fineness modulus ?
 - d. What do you mean by efflorescence ?
 - e. What are the types of deterioration ?
 - f. What is the effect of sulphate if present in concrete?
 - g. What do you mean by accelerator?
 - h. What is gunitting ?
 - i. Define creep and shrinkage of concrete?
 - j. What is workability of concrete?
2. Answer **Any Six** Questions 6 x 5
- a. Explain about types cement?
 - b. Write the short notes on shotcrete concrete and ready mix concrete.
 - c. Explain about different types of admixtures?
 - d. Write the difference between nominal and design mix concrete..
 - e. What are the types of formwork ?
 - f. What are various factors causing variation in quality of concrete?
 - g. How cracks are repaired in concrete?
3. Write down different tests of cement ? 10
4. Write the requirement of mix design and give a brief about I .S .code method of mix design. 10
5. What are the methods to determine workability of concrete? 10
6. Explain about deterioration of concrete and its prevention? 10
7. What is inspection and testing and durability requirement as per I S 456 ? 10