



**Techno India NJR Institute of Technology**

**Course File**

**Basic Civil Engineering (2FY3- 09)**

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**Department of CE**

# UNIVERSITY SYLLABUS

## 1FY3-09/ 2FY3-09: Basic Civil Engineering

SN	CONTENTS
1	<b>Introduction to objective, scope and outcome the subject</b>
2	<b>Introduction:</b> Scope and Specialization of Civil Engineering, Role of civil Engineer in Society, Impact of infrastructural development on economy of country.
3	<b>Surveying:</b> Object, Principles & Types of Surveying; Site Plans, Plans& Maps; Scales & Unit of different Measurements. Linear Measurements: Instruments used. Linear Measurement by Tape, Ranging out Survey Lines and overcoming Obstructions; Measurements on sloping ground; Tape corrections, conventional symbols. Angular Measurements: Instruments used; Introduction to Compass Surveying, Bearings and Longitude & Latitude of a Line, Introduction to total station. Levelling: Instrument used, Object of levelling, Methods of levelling in brief, Contour maps.
4	<b>Buildings:</b> Selection of site for Buildings, Layout of Building Plan, Types of buildings, Plinth area, carpet area, floor space index, Introduction to building byelaws, concept of sun light and ventilation. Components of Buildings & their functions, Basic concept of R.C.C., Introduction to types of foundation.
5	<b>Transportation:</b> Introduction to Transportation Engineering; Traffic and Road Safety: Types and Characteristics of Various Modes of Transportation; Various Road Traffic Signs, Causes of Accidents and Road Safety Measures.
6	<b>Environmental Engineering:</b> Environmental Pollution, Environmental Acts and Regulations, Functional Concepts of Ecology, Basics of Species, Biodiversity, Ecosystem, Hydrological Cycle; Chemical Cycles: Carbon, Nitrogen& Phosphorus; Energy Flow in Eco-systems. Water Pollution: Water Quality standards, Introduction to Treatment & Disposal of Waste Water. Reuse and Saving of Water, Rain Water Harvesting. Solid Waste Management: Classification of Solid Waste, Collection, Transportation and Disposal of Solid. Recycling of Solid Waste: Energy Recovery, Sanitary Land fill, On-Site Sanitation.
	Air& Noise Pollution: Primary and Secondary air pollutants, Harmful effects of Air Pollution, Control of Air Pollution. Noise Pollution, Harmful Effects of noise pollution, control of noise pollution, Global warming& Climate Change, Ozone depletion, Green House effect
<b>TOTAL</b>	

## Course Overview:

Basic Civil Engineering is an introductory course designed for Bachelor Students pursuing a degree in Engineering. The course provides a broad overview of the fundamentals of Civil Engineering, including the concepts and principals involved in design, construction, and maintenance of civil infrastructure.

Course Objectives includes:

- To introduce students to the field of Civil Engineering and the different sub-disciplines of Civil Engineering.
- To teach students the basic principles of surveying, soil mechanics, mechanics of materials, and structural analysis.
- To develop students' understanding of engineering materials, their properties, and their applications in civil engineering.
- To provide students with an introduction to the principles of engineering design, including the planning, design, and construction of infrastructure projects.
- To develop students' skills in problem-solving and critical thinking in the context of civil engineering problems.

## Course Outcome:

2FY309	Cognitive Level	Basic Civil Engineering Year of study: 2022-23
1	Application	Students will be able to write the scope and specialization in civil engineering.
2	Application	Students will be able to describe the surveying and concepts related to it.
3	Application	Students will be able to memorize different types of buildings and laws associated with it.
4	Analyze	Students will be able to interpret different modes of transportation system used.
5	Remember	Students will be able to define the problems related to environment and concepts its conservation also.

## Prerequisites:

1. Student should be familiar with the basic physics and mathematics terminologies.
2. Students should be familiar with different operators for the arithmetic operations.

## Mapping COs, POs and PSOs:

Basic Civil Engineering Year of study: 2022-23															
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO12FY309.1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1
CO12FY309.2	3	3	3	2	2	1	1	1	3	2	2	2	1	2	3
CO12FY309.3	1	1	1	1	1	1	1	1	1	1	1	3	1	1	2
CO12FY309.4	1	1	1	1	1	1	1	1	1	1	1	3	1	1	2
CO12FY309.5	1	2	2	2	1	3	3	2	2	2	1	3	2	2	1

## Course Coverage Module Wise:

Lect. No.	Unit	Outcome
1.	1	Scope and Specialization of Civil Engineering.
2.	1	Role of civil Engineer in Society.
3.	1	Impact of infrastructural development on economy of country.
4.	2	Object, Principles Of Surveying.
5.	2	Types of Surveying.
6.	2	Site Plans, Plans & Maps.
7.	2	Scales & Numericals on it.
8.	2	Scales & Numericals on it.
9.	2	Unit of different Measurements.
10.	2	Linear Measurements: Instruments used.
11.	2	Linear Measurement by Tape.
12.	2	Ranging out Survey Lines and overcoming Obstructions.
13.	2	Measurements on sloping ground; Tape corrections, conventional symbols
14.	2	Angular Measurements: Instruments used; Introduction to Compass Surveying.
15.	2	Bearings and Longitude & Latitude of a Line.
16.	2	Introduction to total station.
17.	2	Levelling: Instrument used, Object of levelling.
18.	2	Methods of levelling in brief, Contour maps.
19.	3	Buildings: Selection of site for Buildings, Layout of Building Plan.
20.	3	Types of buildings.
21.	3	Plinth area, carpet area, floor space index.
22.	3	Introduction to building byelaws, concept of sun light and ventilation.
23.	3	Components of Buildings & their functions.
24.	3	Basic concept of R.C.C.
25.	3	Introduction to types of foundation.
26.	4	Introduction to Transportation Engineering.
27.	4	Types and Characteristics of Various Modes of Transportation.
28.	4	Types and Characteristics of Various Modes of Transportation.
29.	4	Traffic and Road Safety.
30.	4	Various Road Traffic Signs, Causes of Accidents and Road Safety Measures.
31.	5	Environmental Pollution, Environmental Acts and Regulations.
32.	5	Concepts of Ecology, Basics of Species, Biodiversity, Ecosystem,

33.	5	Hydrological Cycle; Chemical Cycles: Carbon, Nitrogen & Phosphorus; Energy Flow in Ecosystems.
34.	5	Water Pollution: Water Quality standards, Introduction to Treatment.
35.	5	Disposal of Waste Water. Reuse and Saving of Water, Rain Water Harvesting.
36.	5	Solid Waste Management: Classification of Solid Waste, Collection.
37.	5	Transportation and Disposal of Solid.
38.	5	Recycling of Solid Waste: Energy Recovery, Sanitary Land fill, On-Site Sanitation.
39.	5	Air & Noise Pollution: Primary and Secondary air pollutants, Harmful effects.
40.	5	Control of Air Pollution. Noise Pollution.
41.	5	Harmful Effects of noise pollution, control of noise pollution.
42.	5	Global warming & Climate Change.
43.	5	Ozone depletion, Green House effect.
44.	5	Air & Noise Pollution: Primary and Secondary air pollutants.
45.	5	Harmful effects of Air Pollution, Control of Air Pollution. Noise Pollution.

### Course Level Problems (Test Items):

CO.NO.	Problem description
1	A. Write Scope of Civil Engineering in Society. B. Write the role of civil engineer in society.
2	A. Write the principles of Surveying. B. Explain the maps & Scale.
3	A. Write what is levelling and Explain Rise and Fall Method. B. Write what are the types of Bearing and its system used in compass surveying.
4	A. Write the types of buildings. B. What are Building by laws.
5	A. Write an essay on Air Pollution and Water Pollution. B. Write what is Solid Waste Management in detail.

### Assessment Methodology:

1. Online quiz on google forms after every unit completion.
2. Practical assessment in labs after explaining the practical.
3. One assignments from each unit.
4. Midterm subjective paper where they have to write solutions to questions asked as per syllabus. (Twice during the semester)
5. Final paper at the end of the semester subjective.

## **Teaching and Learning resources unit-wise:**

### **Unit-1**

#### **Tutorials**

1. <https://youtu.be/O43-WxCsZxY>
2. <https://www.youtube.com/@jituchoubisa5579/videos>
3. <https://www.youtube.com/watch?v=GNMfnwFfYHM>

#### **NPTEL Course:**

<https://nptel.ac.in/courses/105106201>

## Unit-2

### Tutorial:

1. <https://www.youtube.com/watch?v=1TdkNBw42fw>
2. <https://www.youtube.com/watch?v=SPCewaAfqPA>
3. <https://www.youtube.com/watch?v=ZGx37X7KXvc>

### NPTEL Course:

<https://nptel.ac.in/courses/105106201>

### **Unit-3**

#### **Tutorials:**

1. <https://www.youtube.com/watch?v=ecTk6szWBkg>
2. [https://www.youtube.com/watch?v=CSr\\_vlG\\_lnM](https://www.youtube.com/watch?v=CSr_vlG_lnM)

#### **NPTEL Course:**

<https://nptel.ac.in/courses/105106201>



## Unit-4

### Tutorials:

1. <https://www.youtube.com/watch?v=IYZA06kRktw>
2. <https://www.youtube.com/watch?v=Y7Q9kbutKPQ>

### NPTEL Course:

<https://nptel.ac.in/courses/105106201>

## Unit-V

### Tutorials:

1. <https://www.youtube.com/watch?v=P4NsZLNGJ7w>
2. <https://www.youtube.com/watch?v=cZP9n2jlPB4>
3. <https://www.youtube.com/watch?v=YzUb5EICy9w>

### NPTEL Course:

<https://nptel.ac.in/courses/105106201>

Previous Year Question Papers:

<b>1E2409</b>	Roll No. _____	[Total No. of Pages : 2]
	<b>1E2409</b>	<b>B.Tech. I semester (Main) Examination, Dec. - 2018</b> <b>ESC</b> <b>1FY3-09 Basic Civil Engg.</b>

Time : 3 Hours

Maximum Marks : 80

**Instructions to Candidates:**

*Attempt all five questions from Part A, selecting four questions from Part B and two from Part C. (Schematic diagrams must be shown wherever necessary). Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

**Part - A**

(Short answer questions up to 25 words ). All question are **compulsory**.

(5×2=10)

1. Discuss scope of civil engineering and give any two objects of civil engineering.
2. Write down the formula for tape correction due to - temperature and tape correction for sag. <http://www.rtuonline.com>
3. Write down the different units of measurements.
4. Explain in brief the term R.C.C.
5. Define levelling and any one objects of levelling.

**Part - B**

(Analytical/Problem Solving Questions). Attempt any **four** question. (4×10=40)

1. Convert the following whole circle Bearing of lines in to quadrantal Bearing system as :
  - i) 35°
  - ii) 115°
  - iii) 210°
  - iv) 315°

2. The following readings were observed with a 4 metre levelling staff and a dumpy level. Calculate the reduced level by Height of Instrument (H.I.) method. Also apply a arithmetical check. The reading given in table as :

STATION	B.S.	I.S	F.S	H.I.	R.L	REMARK
A	3.25				210.00	B.M.
B		3.15				
C		3.25				
D		2.95				
E			2.85			

3. Explain Fundamental principles of surveying upon which the various methods of surveying is based? Explain how will you fix a point C in the field in relation to two points 'A' and 'B' which is already fixed in the field.
4. What are the various safety measures will you take during accidents, in civil construction and in Traffic. <http://www.rtuonline.com>
5. Describe impact of Infrastructural development on economy of country and role of civil engineer in society.
6. Explain Hydrological cycle with neat sketch.

#### Part - C

(Descriptive/Analytical/Problem Solving/Design Question). Attempt any **two** question. **(2×15=30)**

1. Explain various components of buildings along with their functions.
2. State Building Bye laws. Explain various types of buildings along with their functions.
3. Describe Reuse and saving of water. Also explain Rain water harvesting with neat sketch.

<b>1E2409</b>	Roll No. _____	Total No of Pages: <b>3</b>
	<b>1E2409</b> <b>B. Tech. I - Sem. (Main/Back) Exam., Dec. 2019</b> <b>ESC</b> <b>2FY3-09 Basic Civil Engineering</b>	

**Time: 2 Hours** **Maximum Marks: 80**  
**Min. Passing Marks: 28**

*Instructions to Candidates:*

*Attempt all five questions from Part A, four questions out of six questions from Part B and two questions out of three from Part C.*

*Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.*

*Use of following supporting material is permitted during examination.  
(Mentioned in form No. 205)*

1. NIL 2. NIL

**PART – A**

**(Answer should be given up to 25 words only)**

**[5×2=10]**

**All questions are compulsory**

- Q.1 What do you understand by floor space index.
- Q.2 What is local attraction? How is it detected?
- Q.3 What is R.C.C? Where it is used?
- Q.4 What are road signs? Enumerate there categories of road signs.
- Q.5 What is rain water harvesting?

**PART – B**

**(Analytical/Problem solving questions)**

**[4×10=40]**

**Attempt any four questions**

- Q.1 What is the impact of infrastructural development on economy of country? Discuss various branches of civil engineering.
- Q.2 What are the basic sources of errors in linear measurements? Describe types of errors in taking linear measurements?
- Q.3 What is the basic criteria of selection of site for buildings? Discuss various components of buildings along with their functions.
- Q.4 Discuss the concept of Ecological pyramid. Describe various ecological pyramids with neat sketches.
- Q.5 Explain the flow of nitrogen nutrient in environment cycle with neat sketch.
- Q.6 What is 'PCU'? State the PCU Value for Vehicles. Enumerate various factors affecting PCU.

**PART – C**

**(Descriptive/Analytical/Problem Solving/Design Questions)**

**[2×15=30]**

**Attempt any two questions**

- Q.1 Discuss various modes of transportation. Discuss Nagpur plan along with its Salient features.

<http://www.rtuonline.com>

Q.2 The following bearings were observed in a compass surveying:

Line	Corrected F.B	Corrected B.B
AB	45°00'	226°00'
BC	123°30'	303°00'
CD	181°00'	1°00'
DA	289°30'	110°00'

Calculate the correct included angles and correct magnetic bearings. Also calculate the true bearings if the magnetic declination is 2°30' East.

Q.3 Enlist Water Quality Standards. What is Water Pollution? What are its sources and effects?

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**1E3109****1E3109**

**B.Tech. I Sem. (Main) Examination, April/May - 2022  
1FY3-09 Basic Civil Engineering**

**Time : 3 Hours****Maximum Marks : 70****Instructions to Candidates:**

*Attempt all ten questions From Part A, five Questions out seven questions from Part B and three questions out of five questions from Part C .*

*Schematic diagram must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

*Use of following supporting material is permitted during examination.  
(Mentioned in form No.205)*

**PART - A****(Answers should be given up to 25 words only)****All questions are compulsory.****(10×2=20)**

1. What is the role of Civil Engineers in Transportation Engineering?
2. Explain relevance of Civil Engineering in the overall infrastructural development of the country.
3. Write any two characteristics of good scale.
4. What do you mean by 'Geodetic Surveying'?
5. What are the advantages of 'total station'?
6. A teacher wants to construct a double storied bungalow on a plot of 15m×20m. Front margin is 4.5 m. Rear margin is 3m. what will be the total built - up area? Also calculate FSI.
7. What is National Building Code?
8. What remedial actions should be taken while designing highway to avoid crash?
9. What do you mean by 'Ozone Depletion'?
10. What is the necessity of grit chamber in sewage treatment?

1E3109 /2022

(1)

[Contd....



**PART - B**

**(Analytical/Problem solving questions)**

**(5×4=20)**

**Attempt any five questions:**

1. Enlist with brief description, the corrections to be applied to measurements made with steel tape.
2. Describe the characteristics of contour lines.
3. What is site plan? Which are the information to be included in a site plan?
4. Briefly explain the different components of building with neat figure.
5. Draw any five traffic signs and explain the meaning of each.
6. Explain different audiological, physiological and psychological effects of noise pollution.
7. Write short note on 'Sanitary Landfills'.

**PART - C**

**(Descriptive/Analytical/Problem solving/Design Questions)**

**(3×10=30)**

**Attempt any three questions.**

1. a) Draw and label the different parts of 'Dumpy Level'.  
b) Define the following terms:
  - i) Axis of the telescope.
  - ii) Change point
  - iii) Parallax.
  - iv) Datum.
  - v) Height of instrument.
2. The bearings of the sides of a traverse ABCDE are as follows:

Side	Fore bearing	Back bearing
AB	107°15'	287°15'
BC	22°0'	202°0'
CD	281°30'	101°30'
DE	189°15'	9°15'
EA	124°45'	304°45'

Compute the interior angles of the traverse. Draw the sketch. Check the answer.

3. Differentiate between
- i) Load bearing structure and Framed structure. (4)
  - ii) Educational buildings and institutional buildings. (3)
  - iii) Sub-structure and super structure. (3)
4. Discuss in details the various modes of transport, their characteristics and criteria for choice of a particular mode of transport.
5. a) How is ecological balance disturbed due to human activities? (4)
- b) Write short note on
- i) Nitrogen cycle
  - ii) Rain water harvesting. (6)
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## **BASIC CIVIL ENGINEERING (2FY3-09)**

### **ASSIGNMENT NO. 1**

*Note: Answer the questions in 100 words*

**Q.1: Explain the Branches of Civil Engineering?**

**Q.2: Explain the impact of infrastructural development on the economy of a country.**

**Q.3: State the roles of civil engineer.**

**Q.4: Explain what surveying is?**



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## **BASIC CIVIL ENGINEERING (2FY3-09)**

### **ASSIGNMENT NO. 2**

*Note: Answer the questions in 100 words*

**Q.1: Explain the principles of surveying?**

**Q.2: Explain the types of Ranging.**

**Q.3: State what is Floor Space Index?**

**Q.4: Write the factors affecting the site selection for a building?**

# **TECHNO INDIA NJR INSTITUTE OF TECHNOLOGY UDAIPUR**

**BASIC SCIENCE DEPARTMENT**

**B. TECH I-YEAR (II SEM)**

**SUBJECT 1FY3-29**

**Basic Civil Engineering LAB**

## **VIVA**

1. What is surveying?
2. What is Levelling?
3. Objective and Uses of Surveying?
4. Methods of Surveying?
  - a. Triangulation
  - b. Traversing
5. Explain:
  - a. Topographic Map
  - b. Cadastral Map
  - c. Engineering Map
  - d. Military Map
  - e. Contour Map
  - f. Geological Map
  - g. Archaeological Map
6. General Principle of Surveying?
7. What is chaining?
8. Instruments used in Chain Surveying?
9. How many links are in 30m Metric Chain? Length of each link?
10. Reciprocal Ranging?
11. What are Corrections?
12. How many ranging rods required for
  - a. Direct Ranging
  - b. Indirect or Reciprocal Ranging
13. Principle of Chain Surveying?
14. What is well-conditioned triangle?
15. What is Reconnaissance Survey?

16. What is Index Sketch?
17. How to set Perpendicular Offsets? (900)
18. What is Field Book?
19. Principle of Compass Surveying?
20. Explain:
  - a. True Meridian
  - b. Magnetic Meridian
  - c. Arbitrary Meridian
  - d. Magnetic Bearing
    - i. Whole Circle Bearing (WCB)
    - ii. Quadrantal Bearing (QB)
    - iii. Reduced Bearing (RB)
  - e. Fore Bearing
  - f. Back Bearing
  - g. Magnetic Declination
  - h. Dip of the magnetic needle
  - i. Local Attraction
20. What is traversing?
  - a. Close Traverse?
  - b. Open Traverse?
21. Check on Closed Traverse
  - a. Sum of exterior angles?
  - b. Sum of interior angles?
22. Check on Open Traverse
23. How to adjust Closing Error?

# TECHNO INDIA NJR INSTITUTE OF TECHNOLOGY UDAIPUR

BASIC SCIENCE DEPARTMENT

**B. TECH I-YEAR (II SEM)**

SUBJECT 1FY3-29

**Basic Civil Engineering LAB**

## QUIZ

1. What is surveying?

- a) Surveying is used to find the elevations of given points with respect to given or assumed datum
- b) Surveying shows the relative positions of the objects on the surface of the earth
- c) Surveying is to find the elevation of points having the same contour interval
- d) All of the mentioned

Answer: b

Explanation: Surveying is defined as determining the relative positions of points above or beneath the surface of the earth by means of direct or indirect measurements of distance and direction and elevation.

2. Which of the following is the first principle of surveying?

- a) Whole to whole
- b) Part to part
- c) Part to whole
- d) Whole to part

Answer: d

Explanation: The first principle of surveying is to work from whole to part. Before starting the actual survey measurements, the surveying is to work from around the area to fix the best positions of survey lines and survey stations.

3. Which of the following type of surveying is used for exploring mineral wealth?

- a) Military surveying
- b) Mine surveying
- c) Topographic surveying

d) Engineering surveying

Answer: b

Explanation: For exploring mineral wealth mine surveying is used. Determining points of strategic importance is military surveying.

4. In which of the following type of surveying only linear measurements are made?

- a) Dumpy level
- b) Theodolite surveying
- c) Chain surveying
- d) Contouring

Answer: c

Explanation: Chain surveying is the type of surveying in which only linear measurements are made in the field. This type of surveying is suitable for surveys of small extent on open take simple details.

5. Which of the following classification in surveying is based on the instrument used?

- a) Traverse surveying
- b) Cadastral surveying
- c) Topographic surveying
- d) Hydrographic surveying

Answer: a

Explanation: Topographic surveying, Hydrographic surveying, Cadastral surveying classification is based on the nature of field survey. Traverse surveying, chain surveying is classified based on the type of instrument used.

6. In which of the following areas does compass surveying is not recommended?

- a) Large areas
- b) Undulating areas
- c) Crowded with many details
- d) Local attraction suspected areas



Answer: d

Explanation: Compass surveying is not recommended for areas where the local attraction is suspected due to the presence of a magnetic substance.

7. In which of the following cases compass surveying is recommended?

- a) When area is small, undulating and not details are crowded
- b) When area is large, undulating and crowded with many details
- c) When area is small, even and crowded with many details
- d) When area is large, even and crowded with many details

Answer: b

Explanation: Compass surveying is recommended when the area is large, undulating and crowded with many details. It is not recommended for areas where the local attraction is suspected due to the presence of a magnetic substance.

8. Which of the following is not required for chain surveying?

- a) Dumpy level
- b) Pegs
- c) Arrows
- d) 20 m chain

Answer: a

Explanation: Dumpy level is used in levelling not in chain surveying. 20 m chain, arrows, pegs etc are mandatory for chain surveying.

9. Which of the following is the last step in chain surveying?

- a) Fixing
- b) Reconnaissance
- c) Running survey lines
- d) Marking

Answer: c

Explanation: After having completed the preliminary work, the chaining may be started from the base line. The work in running a survey line is twofold, to chain the line and to locate the adjacent details.

10. Which of the following cannot be done with the help of theodolite in surveying?

- a) Measuring horizontal distances
- b) Prolonging survey lines
- c) Laying off horizontal angles
- d) Locating points on lines

Answer: a

Explanation: Theodolite is the most precise instrument designed for the measurement of horizontal and vertical angles. It has wide applicability in surveying such as laying off horizontal angles, locating points on line, prolonging survey lines, establishing grades etc.

11. Which of the following is an indirect method of surveying?

- a) Contouring
- b) Chain surveying
- c) Tachometry
- d) All of the mentioned

Answer: c

Explanation: Generally, horizontal distances are measured by direct methods, i.e. laying of chains or tapes on the ground. These methods are not always convenient if the ground is undulating, rough, difficult and inaccessible. Under these circumstances, indirect methods are used to obtain distances. One such method is "Tachometry".

12. Which of the following branch of surveying is used to find the elevations of given points with respect to given or assumed datum?

- a) Plane table surveying
- b) Traversing
- c) Contouring
- d) Levelling

Answer: d

Explanation: Levelling is a branch of surveying is used to find the elevations of given points with respect to given or assumed datum.

13. Which of the following is the principles of surveying?

- a) Covering the entire area
- b) Working from whole to part
- c) Taking measurements
- d) Determining the elevation differences

Answer: b

Explanation: By working from whole to part, it is possible to eliminate the errors and to localise the errors. Otherwise, it might expand in magnitude.

14. Which of the following surveying methods is meant to be having high precision?

- a) Terrestrial photogrammetry
- b) Traverse surveying
- c) Aerial photogrammetry
- d) Theodolite surveying

Answer: c

Explanation: Though terrestrial photogrammetry is having accuracy in the obtained values, aerial photogrammetry is capable of producing precise output when compared to the remaining methods. This accuracy makes it different from the remaining methods and is recommended when high quality works are conducted.

15. Which of the following doesn't describe the use of hydrographic surveying?

- a) Nautical charts for navigation
- b) Establishing mean sea level
- c) Laying an Alignment
- d) Making underground investigations

Answer: b

Explanation: Hydrographic surveying can find its use in making nautical charts for navigation, making underground investigations for construction, establishing mean sea level, determining shore line etc.

16. Which of the following type of ranging is done if both ends of surveying lines are visible?

- a) Indirect
- b) Reciprocal
- c) Unable to do
- d) Direct

Answer: d

Explanation: Direct ranging is done if both ends of surveying lines are visible. Indirect ranging is done when both ends are not intervisible.

17. Which of the following is not a method of levelling?

- a) Spirit levelling
- b) Traverse levelling
- c) Barometric levelling
- d) Trigonometric levelling

Answer: b

Explanation: Three principal methods are used for determining a difference in elevation, namely, barometric levelling, trigonometric levelling and spirit levelling. Traversing is that type of surveying in which a number of connected survey lines form the framework.

18. In which of the following type of surveying in the mean surface of the earth is considered as a plane and the spheroidal shape is neglected?

- a) Plane Surveying
- b) Geodetic Surveying
- c) Hydrographic Surveying
- d) Topographic Surveying

Answer: a

Explanation: The type of surveying in which the mean surface of the earth is considered as a plane and the spheroidal shape is neglected is plane surveying.

19. Which of the following doesn't involve the method of traversing?

- a) Plane Table surveying
- b) Tachometric surveying
- c) Chain surveying

d) Theodolite surveying

Answer: b

Explanation: Depending on the instruments used in determining the relative directions of the traverse lines. The principal methods adopted are Chain traversing, Compass traversing, Transit tape traversing, Plane-table traversing. Tachometric surveying involves a lot of instrumental work rather than ground work.

20. Which of the following is not a method of plane table surveying?

- a) Trisection
- b) Intersection
- c) Resection
- d) Radiation

Answer: a

Explanation: The methods which are adopted in case of plane table surveying involve radiation, Intersection, resection and traversing, which are used based on the type of output required.

21. While taking Observations for the height and distances, which of the following method of surveying is used?

- a) Plane surveying
- b) Geodetic surveying
- c) Chain surveying
- d) Compass surveying

Answer: b

Explanation: Geodetic surveying is used because it is assumed that the distances between the points observed are not large so that either the effect of curvature and refraction may be neglected or proper corrections may be applied linearly.

22. Which of the following type of surveying can be employed in a magnetic area?

- a) Compass surveying
- b) Traverse surveying
- c) Plane table surveying
- d) Theodolite surveying

Answer: c

Explanation: Other than plane table surveying, remaining methods need a compass for initiating the work in which it is not possible to access compass in a magnetic area. Plane table surveying can be employed there as it can be done without usage of compass.

23. Which of the following survey deals with bodies of water for the purpose of navigation, water supply, harbour works or for the determination of mean sea level?

- a) City surveying
- b) Cadastral surveying
- c) Topographic surveying
- d) Hydrographic surveying

Answer: d

Explanation: Survey which deals with bodies of water for the purpose of navigation, water supply, harbour works or for the determination of mean sea level is hydrographic surveying.

24. Determining points of strategic importance are called \_\_\_\_\_

- a) Traverse surveying
- b) Military surveying
- c) City surveying
- d) Topographic surveying

Answer: b

Explanation: Determining points of strategic importance is military surveying. City surveying is made in connection with the construction of streets, water supply systems and sewers.

25. Which of the following is not a natural error in compass surveying?

- a) Local attraction due to the proximity of local attraction forces
- b) Pivot being bent
- c) Magnetic changes in the atmosphere due to clouds and Strom's
- d) Variation in declination

Answer: b

Explanation: Instrumental errors are those which arise due to the faulty adjustment of the instrument e.g. pivot being bent, blunt pivot point, etc. Variation in declination, magnetic changes in the atmosphere due to clouds and Strom's etc also comes under natural errors in compass surveying.

26. Which of the following processes has more accuracy in its output?

- a) Plane table surveying
- b) Chain surveying
- c) Compass surveying
- d) Total station

Answer: d

Explanation: Plane table surveying is a rough process conducted in order to have an idea of the land and its condition for construction. Due to this, it is not capable of producing accurate output in its recording.

27. Marine surveying is a necessary in case of boat designing.

- a) False
- b) True

Answer: b

Explanation: Marine survey involves certain features which are capable of determining the boat functioning and its capabilities. The main purpose of marine surveying includes the processing of an errorless functioning boat, which can be used while underground surveying.

28. Which of the following will not come under the marine surveying category?

- a) Water survey
- b) Yacht survey
- c) Machinery survey
- d) Cargo survey

Answer: a

Explanation: Marine surveying involves certain classifications which can be given as yacht survey, machinery survey and cargo survey. All these are under the roof of marine surveying, which done to improve the benefit of the instrument or object used.

29. Which of the following is having the same principle as that of photo-theodolite?

- a) Theodolite surveying
- b) Plane-table surveying
- c) Traverse surveying
- d) Compass surveying

Answer: b

Explanation: Photo-theodolite involves the direction of same objects in the photograph by which base is measured is known and positions are located with extremities. It is the same as that of plane table surveying which indicates both are having same principle.

30. In which of the following cases the method of deflection distances is used?

- a) Land surveys
- b) Road survey
- c) Town survey
- d) Railway planning survey

Answer: b

Explanation: The deflection distances method is having at most priority in case of road surveys as the curvature for joining parallel straights is to be done without any error