

14. A). A simply supported beam of span 5m, carrying a point load of 5kN at a distance of 3m from the left end. Find (i) slope at the left support, (ii) deflection under the load and (iii) maximum deflection. Take $E=2 \times 10^5 \text{ N/mm}^2$ and $I= 1 \times 10^8 \text{ mm}^4$. 10M

OR

14. B). A cantilever of length 2 m carries a point load of 20 kN at the free end and another load of 20 kN at its centre. If $E = 10^5 \text{ N/mm}^2$ and $I = 10^8 \text{ mm}^4$ for the cantilever then determine by moment area method, the slope and deflection of the cantilever at the free end. 10M

15. A). The tensile stresses at a point across two mutually perpendicular planes are 120 N/mm^2 and 60 N/mm^2 . Determine the normal, tangential and resultant stresses on a plane inclined at 30° to the axis of the minor stress. 10M

OR

15. B). According to the theory of maximum shear stress, determine the diameter a of a bolt which is subjected to an axial pull of 9 kN together with a transverse shear force of a 4.5 kN. Elastic limit in tension is 225 N/mm^2 , factor of safety = 3 and Poisson's ratio = 0.3. 10M

H.T No:

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R22



**CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)**

Examination : B.Tech III Sem Regular & Supplementary Examinations December-2024
Course Name : Engineering Geology
Course Code : A401303
Branch : Civil Engineering
Date & Session : 21-12-2024 AN **Duration: 3 hours** **Max. Marks: 60**

(Note: Assume suitable data if necessary)

PART-A

**Answer all TEN questions
Each question carries ONE mark.**

10x1=10M

1. Define the term geology. 1 M
2. Define the term of weathering. 1 M
3. Write the mode of formation of minerals. 1 M
4. Define rock and mineral. 1 M
5. What is water table? 1 M
6. Define Strike and Out crop. 1 M
7. What are the principle in electrical methods. 1 M
8. Write applications of magnetic method. 1 M
9. What is the influence of geology for life of reservoirs? 1 M
10. What is meant by Over break? 1 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). What is the importance of geology in civil engineering? Explain. 10M
- OR**
11. B). Explain the process of physical, chemical and biological weathering. 10M
12. A). Explain how are the igneous rocks formed? Describe the various structures and textures present in the igneous rocks. 10M
- OR**
12. B). Describe the physical properties of minerals (i) Asbestos and (ii) Hematite. 10M
13. A). What are the parts of faults? Give their types of faults with sketches. 10M
- OR**
13. B). Classify and describe different types of joints in rock with neat sketches. 10M
14. A). Describe the seismic wave refraction method for two layer case with horizontal interface. 10M
- OR**
14. B). What are the types of earthquakes? Give their details. 10M
15. A). Explain the association of geological structures for successful tunneling. 10M
- OR**
15. B). Explain the Geological considerations for successful construction of Dams with sketch. 10M

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R22



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

Examination : B.Tech III Sem Regular & Supplementary Examinations December-2024
 Course Name : Surveying
 Course Code : A401304
 Branch : Civil Engineering
 Date & Session : 24-12-2024 AN Duration: 3 hours Max. Marks: 60

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions
Each question carries ONE mark.

10x1=10M

1. State the basic principles of surveying. 1 M
2. Specify the least count of prismatic compass. 1 M
3. List out any two natural Errors in leveling. 1 M
4. Mention the uses of Contours. 1 M
5. Enlist the types of Theodolite. 1 M
6. Write the formula to compute volume of earth work in cutting. 1 M
7. Identify the stadia systems in tacheometry. 1 M
8. Recall the methods of traversing. 1 M
9. Name the components of GPS. 1 M
10. Suggest the principle of Total station. 1 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). The following are the observe bearings of the line of a traverse ABCDEA with a compass in a place where local attractions were suspected. Calculate the included angles and apply the check. 10M

LINE	F.B	B.B
AB	191° 45'	13° 0'
BC	39° 30'	222° 30'
CD	22° 15'	200° 30'
DE	242° 45'	62° 45'
EA	330° 15'	147° 45'

OR

11. B). Illustrate the Objectives, Classification, Accessories and Phases of Surveying. 10M
12. A). The following readings were taken during a longitudinal section leveling survey at chainages of 0, 20, 40, 60, 80, 100, 120, 140, and 160 meters:
 Staff Readings (m): 1.105, 1.255, 1.370, 1.500, 1.620, 1.750, 1.890, 2.010, 2.150
 The reduced level (RL) at the starting point is 200.000 meters. Calculate the reduced levels at all chainage points and plot the longitudinal section. 10M

OR

12. B). Elaborate the Direct and Indirect methods of Contour Surveying. 10M

(P.T.O..)

13. A). A theodolite was set up at station P and horizontal angles were measured using the method of repetition. The angles between lines PA and PB were recorded six times as: 10M
 1st reading = $45^{\circ} 30'$
 2nd reading = $45^{\circ} 35'$,
 3rd reading = $45^{\circ} 32'$,
 4th reading = $45^{\circ} 33'$,
 5th reading = $45^{\circ} 34'$,
 6th reading = $45^{\circ} 31'$.
 Calculate the mean horizontal angle.

OR

13. B). A highway is to be constructed with a uniform embankment over a length of 1 km side slop of embankment is 1.5:1. The average width of the embankment is 12 m, and the heights at every 200 m are 1.5 m, 2.0 m, 2.5 m, 2.0 m, and 1.0 m. Calculate the total volume of earthwork using the Trapezoidal rule and Simpson's rule. 10M
14. A). What are the types of curves, elements of simple curve and their necessity. 10M

OR

14. B). To determine the multiplying constant of a tacheometer, the following observations were taken on a staff held vertically at a distance measured from the instrument. 10M

Obs.	Horizontal distance	Vertical angle	Staff intercept
1	50m	$3^{\circ} 48'$	0.500m
2	100m	$1^{\circ} 06'$	1.000m
3	150m	$0^{\circ} 36'$	1.500m

The focal length of the object glass is 20 cm and the distance from the object glass to the trunnion axis is 10 cm. The staff is held vertically at all these points. Find the multiplying constant.

15. A). Enumerate the principles and types of Electromagnetic distance measuring system. 10M

OR

15. B). Summarize the basic principle, classification and application of GPS. 10M

14. A). Derive an expression for the loss of head due to sudden enlargement of the pipe. 10M

OR

14. B). i) what is the significance of Reynolds's experiment? Explain how Reynolds's experiment is conducted. 5M

ii) Find the head lost due to friction in a pipe of diameter 350 mm and length 55 m, through which water is flowing at a velocity of 3.5 m/s using (a) Darcy formula 5M
(b) Chezy's formula for which $C = 60$.

15. A). i) Describe Von-Karman's momentum integral equation. What is the significance of it? 5M

ii) Explain what is meant by drag, lift and Magnus effect. 5M

OR

15. B). Derive an expression for the boundary layer thickness and displacement thickness. 10M
