GUJARAT TECHNOLOGICAL UNIVERSITY

BE-1 SEMESTER – OLD PAPER – S22 TO W24 – QUESTION BANK

Subject Name & Code:

Basic Civil Engineering- 3110004

Unit 1: INTRODUCTION TO CIVIL ENGINEERING AND CIVIL ENGINEERING MATERIALS

Repeated Questions:

1. **Explain the role of a Civil Engineer.**
   - Appeared in: S22 (Q1a, 03 marks), S24 (Q1a, 03 marks), W24 (Q1a, 03 marks)
2. **Discuss the properties of cement.**
   - Appeared in: W22 (Q4b, 04 marks), W24 (Q1b, 04 marks)
3. **Discuss the characteristics/properties of good bricks.**
   - Appeared in: S23 (Q1b, 04 marks), W23 (Q2b, 04 marks)
4. **What are the key components of GIS? Describe them briefly.**
   - Appeared in: S24 (Q1c, 07 marks), W24 (Q1c, 07 marks)
5. **Explain the fundamental principle of surveying.**
   - Appeared in: S23 (Q1c, 07 marks), W24 (Q2b, 04 marks)

Other Important Questions:

1. **Explain the important pillars of a smart city.** (S22 - Q1b, 04 marks)
2. **Write the physical characteristics of waste water.** (S23 - Q1a, 03 marks)
3. **List the types of cement and discuss any five in detail.** (S23 - Q3c, 07 marks)
4. **Do the unit conversion of followings. 1. 5 feet = _____ inches 2. 10 feet square = _____ meter square 3. 2000 centimeter cube = _____ liter** (S23 - Q3a, 03 marks)
5. **Discuss various grades of Concrete.** (S24 - Q1b, 04 marks)
6. **Discuss Branches of Civil Engineering.** (W22 - Q1a, 03 marks)
7. **Enlist different types of foundation and explain Open footing.** (W22 - Q1c, 07 marks)
8. **Explain physical and chemical properties of cement.** (W22 - Q4b, 04 marks)
9. **Convert (i) 2 miles to kilometer (ii) 10 acres to square meter of area (iii) Express one cubic meter to cubic feet of volume** (W23 - Q1a, 03 marks)
10. **Explain batching of concrete and how it can be done.** (W23 - Q1b, 04 marks)

11. **State the permissible limits of the following parameters in drinking water for the following parameters as per IS Codes (i) BOD (ii) pH (iii) lead** (W23 - Q2a, 03 marks)
12. **Compare the properties of conventional bricks with stones in respect of fire resistance, water absorbing capacity and strength.** (W23 - Q2b, 04 marks)
13. **Discuss in detail how total station is a multipurpose instrument and explain its benefits with respect to speed and accuracy.** (W23 - Q2c, 07 marks)
14. **Discuss the importance of remote sensing and GIS as modern Surveying tools.** (W23 - Q2c (OR), 07 marks)
15. **Compare the properties of fiber reinforced polymers and plastic and hence give the application and uses of FRP.** (W23 - Q5a (OR), 03 marks)
16. **Enlist different branches of civil engineering and explain any two.** (W24 - Q1a, 03 marks)
17. **Convert the following WCB in to RB: 1) 55°30' 2) 279°00' 3) 190°00'** (W24 - Q2a, 03 marks)

Unit 2: INTRODUCTION TO BUILDING AND TOWN PLANNING

Repeated Questions:

1. **Why is town planning essential and necessary? / Give necessity of town planning.**
   - Appeared in: S22 (Q2a, 03 marks), W22 (Q2a, 03 marks)
2. **Discuss aims and objectives of Town planning.**
   - Appeared in: S24 (Q3a, 03 marks), W24 (Q3a, 03 marks)
3. **Explain the principles of building planning. / Enlist principles of planning and describe any one in detail. / Enumerate various principles of planning and explain any two in detail.**
   - Appeared in: S22 (Q3c (OR), 07 marks), W22 (Q1b, 04 marks), S24 (Q3c, 07 marks), W24 (Q3c (OR), 07 marks)
4. **Write a short note on growth of towns. / List the methods for natural growth and discuss ribbon development with their drawbacks in detail.**
   - Appeared in: S22 (Q4b, 04 marks), S23 (Q2c, 07 marks)
5. **What is FSI / FAR? Write short note on it.**
   - Appeared in: S24 (Q4b, 04 marks), W22 (Q4b, 04 marks)
6. **Describe the important remedial measures to prevent slum formation. / Discuss the main reasons for the slum formation.**
   - Appeared in: S22 (Q5a, 03 marks), S23 (Q2c (OR), 07 marks), W24 (Q3c, 07 marks)

Other Important Questions:

1. **Draw line diagram for 2 BHK residential building.** (S23 - Q2b, 04 marks)
2. **Write the full name of following abbreviations. 1. R.C.C. 2. G.L. 3. F.S.I.** (S23 - Q3a, 03 marks)
3. **Describe principles of building planning related to elevation of building.** (S23 - Q3b, 04 marks)
4. **Discuss various construction techniques for low cost housing.** (S23 - Q3c (OR), 07 marks)
5. **Explain site plan and key plan.** (S24 - Q2b, 04 marks), (W24 - Q3b (OR), 04 marks)
6. **Describe the various principles of Zoning.** (S24 - Q3c (OR), 07 marks)
7. **Define zoning. Write objectives and principles of zoning.** (S22 - Q5b (OR), 04 marks)
8. **Discuss the concept of smart city.** (S22 - Q4b (OR), 04 marks)
9. **Discuss how the organic waste generated from kitchens for a small town should be managed and disposed off.** (W23 - Q3a (OR), 03 marks)
10. **Explain Floor Space Index and its importance in building planning.** (W23 - Q3b, 04 marks)
11. **Draw a proportionate line plan of a low-cost housing building having living room, bedroom, kitchen, washing platform and water closet. Mention sizes.** (W23 - Q3c, 07 marks)
12. **Describe pillars of smart city.** (W24 - Q3b, 04 marks)
13. **Discuss importance of zoning.** (W24 - Q4b, 04 marks)

Unit 3: BUILDING CONSTRUCTION AND BUILDING SERVICES

Repeated Questions:

1. **Explain the classification of buildings in detail. / Discuss classification of buildings based on structure.**
    - Appeared in: S22 (Q2c, 07 marks), W24 (Q2c, 07 marks)
2. **Differentiate between load bearing and framed structure.**
    - Appeared in: S23 (Q5c (OR), 07 marks), W24 (Q4c (OR), 07 marks)
3. **Enlist types of bonds in masonry. Draw a neat sketch of english bond and explain it. / Differentiate between Flemish bond and English bond. / Enlist different bonds of Brick and Describe English bond in detail.**
    - Appeared in: S22 (Q4c (OR), 07 marks), S23 (Q5c, 07 marks), W22 (Q4c (OR), 07 marks)
4. **What points are to be kept in mind while selecting the site for a residential building?** (S22 - Q3b, 04 marks)
5. **Draw the symbol for following material in section. 1. Earth 2. Concrete 3. Metal Section** (S23 - Q2a, 03 marks)

Other Important Questions:

1. **Discuss the types of traffic signs and draw traffic sign for speed limit, no-parking and cross road.** (S22 - Q3b (OR), 04 marks)
2. **State difference between intersection at grade and grade separated intersection with neat sketch.** (S23 - Q3b (OR), 04 marks)
3. **Discuss various pipes used in the house drainage plumbing system.** (S24 - Q2c, 07 marks)
4. **Draw a detailed sketch of a cross section of a wall showing the components of the building.** (S24 - Q2c (OR), 07 marks), (W22 - Q2c (OR), 07 marks)
5. **Enlist various building services and objectives of building services.** (W22 - Q2c, 07 marks)
6. **Draw traffic signals for (i) speed limit (ii) No parking.** (W22 - Q4a (OR), 03 marks)
7. **Draw sketch of RCC beam.** (W22 - Q4a, 03 marks)
8. **Taking tread width for a flight of stairs to be 30 cm and individual risers to be 15 cm calculate the number of risers and treads for the vertical separation between the floors as 3.3 meters. State the number of riser after which landing will be provided.** (W23 - Q3a, 03 marks)
9. **Draw cross section through door for a single wall for a residential building from foundation bottom to parapet top showing spread footing foundation for 30 cm thick wall. Label the components and provide dimensions.** (W23 - Q3c (OR), 07 marks)
10. **Give the nominal dimension of a door in a residential building, chair for a single person and a single bed cot.** (W23 - Q4a, 03 marks)
11. **Discuss how you will decide the plinth level of a building.** (W23 - Q4b, 04 marks)
12. **What are the various types of loads acting on building.** (W24 - Q4a, 03 marks)
13. **Write short note on HVAC.** (W24 - Q2c (OR), 07 marks)
14. **Draw elevation and section of framed and panelled door.** (S23 - Q5a, 03 marks)
15. **Draw a typical plan of drainage for small residential building.** (S23 - Q5b, 04 marks)

Unit 4: INTRODUCTION TO SURVEYING AND LEVELLING

Repeated Questions:

1. **Differentiate between plane survey and geodetic survey.**
   - Appeared in: S23 (Q4b, 04 marks), S24 (Q3b (OR), 04 marks), W22 (Q1c (OR), 04 marks)
2. **Differentiate between prismatic compass and surveyor compass.**
   - Appeared in: S23 (Q4b (OR), 04 marks), W22 (Q3a (OR), 03 marks), W24 (Q4b (OR), 04 marks)
3. **Differentiate between W.C.B and Q.B system. / What is whole circle bearing and quadrantal bearing?**
   - Appeared in: S24 (Q4a, 03 marks), W22 (Q3b, 04 marks)
4. **Explain the working principle of Line ranger.**
   - Appeared in: S24 (Q5b (OR), 04 marks), W24 (Q5b (OR), 04 marks)
5. **Explain various aids and devices used to control and regulate traffic.**
   - Appeared in: W22 (Q3c (OR), 07 marks), S24 (Q5c (OR), 07 marks)

Other Important Questions:

1. **A 20m chain was found to be 10 cm long at the end of day's work after measuring 5000m. If the chain was correct before the commencement of the work, find the correct length of the lines.** (S23 - Q4a, 03 marks)
2. **The following readings were taken with a level and 4m staff. Draw up a level book page and calculate the levels by height of instrument method. 0.578,0.933,1.768,2.450,3.005,0.567,1.181,1.888,3.679,0.612, 0.705 and 1.810. The instrument was shifted after 5th and 9th reading. The R.L. of first station is 58.250m.** (S23 - Q4c, 07 marks)
3. **The following bearings were observed with a compass for the closed traverse ABCDA. Where do you suspect the local attraction? Find the included angles.** (S23 - Q4c (OR), 07 marks)
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Line	FB	BB
AB	110°	290°
BC	190°	10°
CD	300°	121°
DA	20°	199°

4. **Draw a plane scale of 1 cm = 5 m and show the 20m on it.** (S23 - Q4a (OR), 03 marks)
5. **Define the following terms: a) Mean Sea Level b) Level Surface c) Bench Mark** (S24 - Q2a, 03 marks)
6. **Enlist Instruments used in chain surveying.** (S24 - Q4a (OR), 03 marks)
7. **Discuss different types of Bearings.** (S24 - Q5a, 03 marks)
8. **The following are the fore bearings of a closed traverse. Calculate back bearings and interior angles of the traverse.** (S24 - Q5c (OR), 07 marks)

Line	F. B
AB	N 45°30' E
BC	S 60°00' E
CD	S 10°30' W
DA	N 75°45' W

9. **The following consecutive readings were taken with a dumpy level and 4 m leveling staff on continuous sloping ground at 30 m intervals. 0.680, 1.455, 1.855, 2.330, 2.885, 3.380, 1.055, 1.860, 2.265, 3.540, 0.835, 0.945, 1.530 and 2.250. The RL of starting point was 80.750 m. Rule out page of a level book and enters the above readings. Find RL of other points by Rise and Fall method and apply necessary checks. Also determine gradient of a line joining first and last point.** (W22 - Q3c, 07 marks)
10. **Draw sketch of Dumpy level and show all parts.** (W22 - Q3b (OR), 04 marks)
11. **Describes characteristics of contour in brief.** (W22 - Q4c, 07 marks)
12. **The following consecutive readings were taken with a level and a 4meter levelling staff on a continuously sloping ground: 0.750, 1.535, 1.955, 2.430, 2.985, 3.480, 1.55 and 1.960. The reduced level of the first point was 100.750. The instrument was shifted after taking the sixth and the eighth staff reading. Calculate reduced level of all stations using the rise and fall method.** (W23 - Q4c, 07 marks)
13. **Convert the following whole circle bearings into quadrantal bearings: (i) 30° (ii) 120 ° (iii) 340 °** (W23 - Q4a (OR), 03 marks)
14. **Bearings of a four-sided closed traverse were observed as per the table below: Check for local attractions if any and calculate the internal angles.** (W23 - Q4c (OR), 07 marks)

Line	F.B.	B. B.
AB	120°00’	300° 00’
BC	40° 00’	220° 00’
CD	300° 15’	120°15’
DA	200° 45’	20° 45’

15. **Enlist the various instruments used in chaining.** (W24 - Q4a (OR), 03 marks)
16. **The following are bearings of a closed traverse ABCDA. Find out interior angles and correct them if necessary.** (W24 - Q5c, 07 marks)

LINE	FB	B.B
AB	45°00'	225°00'
BC	123°30'	303°30'
CD	181°00'	1°00'

LINE	FB	B.B
DA	289°00'	109°00'

17. **What are the uses of contour map?** (W24 - Q5a (OR), 03 marks)
18. **Describe various types of benchmarks.** (W24 - Q5b (OR), 04 marks)
19. **The following observations were taken with dumpy level and four-meter levelling staff. The instrument was shifted after 4th and 7th readings. The first reading was taken on a B.M whose RL is 15.575m, prepare a page of level book and calculate RLs of all the points. The observation was taken at every 30m interval. Also find the gradient between first and last point. The observations are:0.565, 1.250, 1.675, 3.695, 0.125, 2.345, 3.245, 0.500, 1.785, 2.535.** (W24 - Q5c (OR), 07 marks)

Unit 5: ADVANCEMENTS IN CIVIL ENGINEERING

Repeated Questions:

1. **Explain smart city and its features. / Describe pillars of smart city.**
   - Appeared in: W22 (Q5a, 03 marks), S22 (Q3c, 07 marks), S24 (Q4c (OR), 07 marks), W24 (Q3b, 04 marks)
2. **Write a short note on rain water harvesting systems. / Discuss rooftop rain water harvesting system with neat sketch.**
   - Appeared in: W22 (Q5b, 04 marks), W23 (Q1c, 07 marks), W24 (Q4c, 07 marks)
3. **What is the concept of BRTS? Discuss its advantages.**
   - Appeared in: W22 (Q5c (OR), 07 marks), S22 (Q5a (OR), 03 marks), W23 (Q5b (OR), 04 marks)
4. **Explain solid waste management system in brief.**
   - Appeared in: W22 (Q5a (OR), 03 marks), S22 (Q4a (OR), 03 marks)
5. **Discuss the general features of earthquake resistant buildings. / Discuss the structural measures taken which will make buildings less vulnerable to damage due to earthquakes.**
   - Appeared in: S23 (Q5a (OR), 03 marks), W23 (Q5c, 07 marks), W24 (Q4c (OR), 07 marks)

Other Important Questions:

1. **Describe mass transportation systems.** (W22 - Q5c, 07 marks)
2. **Explain Energy efficient Building.** (W22 - Q5b (OR), 04 marks)
3. **Draw a neat sketch of roof top rainwater harvesting system and explain how you will calculate the storage volume requirements.** (W23 - Q1c, 07 marks)
4. **Explain how proper orientation of a building can make it more energy efficient for the building located in tropical climate.** (W23 - Q3b (OR), 04 marks)
5. **Enlist three traditional building materials that were used in construction of historical heritage buildings of India.** (W23 - Q5a, 03 marks)
6. **Explain the concept and advantage of locally available materials in construction of green buildings.** (W23 - Q5b, 04 marks)
7. **Discuss the existing gaps and problems in conservation of heritage buildings in India.** (W23 - Q5c (OR), 07 marks)
8. **Discuss the conservation strategies of heritage buildings.** (S23 - Q5b (OR), 04 marks)
9. **What are the benefits of Energy efficient building?** (S24 - Q3b (OR), 04 marks)
10. **Describe water borne diseases with control measures.** (S24 - Q4c, 07 marks)
11. **Give full form of: a) MH b) FSL c) BBCC d) RCC** (S24 - Q4b (OR), 04 marks)
12. **Describe with sketches characteristics of contours.** (S24 - Q5a (OR), 03 marks)
13. **What are the temporary adjustments of Level? How are they done?** (S24 - Q5b (OR), 04 marks)
14. **Write the advantages and dis advantages of riverfront development.** (S22 - Q4a, 03 marks)
15. **Explain the impact of industrial development on the economy of the country.** (S22 - Q4c, 07 marks)
16. **Discuss in brief the scope of civil engineering according to field of work.** (S22 - Q5b, 04 marks)
17. **Explain with neat sketch key plan, site plan, and layout plan.** (S22 - Q5c, 07 marks)
18. **What are the properties of good bricks? Discuss the classification of bricks.** (S22 - Q5c (OR), 07 marks)
19. **Discuss traffic characteristics.** (W24 - Q3a (OR), 03 marks)

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