GUJARAT TECHNOLOGICAL UNIVERSITY
B.E. Sem-II [All Branch] examination June 2009

Subject code: 110004
Subject Name: Elements of Civil Engineering
Date: 11/06/2009   **Time: 10:30am-1:00pm**
Total Marks: 70
Instructions:
    1. Attempt all questions.
    2. Make suitable assumptions wherever necessary.
    3. Figures to the right indicate full marks.

Q.1

    (a) Explain the importance of planning, scheduling and construction management in construction activities. — **05**

    (b) What is 'Surveying'? What are its objects and applications? Explain briefly its primary divisions. — **04**

    (c) Classify the buildings based upon occupancy and structure. List the common building components and state their functions. — **05**

Q.2

    (a) What is the role of transportation in national development? Classify the different ways of transportation and state their importance. — **07**

    (b) Explain the water requirements for different uses. Also, discuss about the conservation of water. — **07**

OR

    (b) Enlist various instruments used in chaining and describe with sketch any two of them. — **07**

Q.3

    (a) Explain with sketch the open cross staff and its use for setting out the right angle to a chain line. — **05**

    (b) Describe the procedure of temporary adjustment of a prismatic compass. Also, differentiate between prismatic compass and surveyor's compass. — **05**

    (c) A survey line AB intersects a pond as an obstacle. A and B are on the either side. To continue the line passing this obstacle, station M and N are taken such that M, B and N are on the same straight line. Distances AM, MB, BN and AN are measured to be 150m, 100m, 120m and 200m respectively. Find the length of line AB. — **04**

OR

Q.3

    (a) Define the following terms used in compass survey: (i) True bearing, (ii) Whole circle bearing, (iii) Quadrantal bearing, (iv) Magnetic declination. — **04**

    (b) Explain the procedure followed in field work and plotting work for the chain and compass traversing. How would you balance the closed traverse by graphical method? — **05**

(c) The following bearings were observed with a compass for the closed **05** traverse ABCDA.

Line	F. B.	B. B.
AB	120°	300°
BC	200°	20°
CD	310°	131°
DA	30°	209°

Where do you suspect the local attraction? Find the included angles and corrected bearings of the lines.

Q.4

(a) Explain with sketch temporary adjustment of a dumpy level. **04**

(b) Describe with a sketch, the planimeter and explain how will you **05** determine the area of irregular figure using it.

(c) The following readings were taken with a dumpy level and 4m **05** leveling staff. The instrument was shifted after 3rd and 6th readings. The readings are: 2.665, 3.225, 2.905, 1.850, 0.980, 2.620, 1.585, 0.960, 0.425m. Enter the above readings in a page of level book and calculate the RL of points, if the first reading was taken with a staff held on a benchmark of 240m. Use rise and fall method. Apply arithmetic check also.
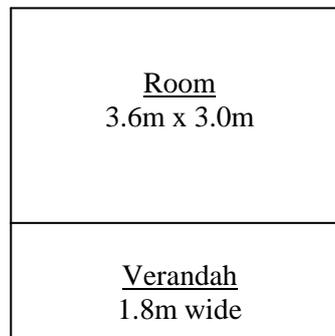
OR

Q. 4

(a) Explain the requirements, types and uses of bricks. **04**

(b) Draw detailed sketch showing various components of typical highway **05** cross section in embankment. List various types of materials used in highway construction and explain any one of them in detail.

(c) Explain general principles of building planning. **05**

Q.5

(a) Draw detailed plan and sectional elevation of building from the **06** following line sketch. Take brick wall thickness = 30cm and plinth height = 45cm. Suitably place the door, windows and cupboard.

Room
3.6m x 3.0m

Verandah
1.8m wide

(b) Draw detailed sketch of cross-section of stem of an exogenous tree. **04** Also, discuss about various types of industrial timbers and their uses.

(c) What is hydrology? What are its applications? **04**

OR

Q.5

(a) Discuss about working principle, special features and applications of **05** 'Total Station'.

(b) Describe different types of loads acting on a building. **04**

(c) List various types of traffic control devices and explain with sketch **05** any two of them

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