

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– I & II (NEW) EXAMINATION – WINTER 2019

Subject Code: 2110004

Date: 08/01/2020

Subject Name: Elements of Civil Engineering

Time: 10:30 AM TO 01:00 PM

Total Marks: 70

Instructions:

1. Question No. 1 is compulsory. Attempt any four out of remaining Six questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q.1	Objective Question (MCQ)	Mark
(a)	<ol style="list-style-type: none"> 1. The W.C.B. of a line is 50°, its Q.B. is (a) $N50^\circ W$ (b) $N50^\circ E$ (c) $W50^\circ N$ (d) $E50^\circ N$ 2. Planimeter is useful to measure (a) length (b) area (c) volume (d) time 3. HI in leveling denotes (a) total height of staff (b) height of line of sight with respect to datum (c) height of line of sight with respect to MSL (d) total height of leveling instrument 4. If scale of a map is $1\text{cm} = 4\text{m}$, R.F. is (a) $1/4000$ (b) $1/400$ (c) $1/40$ (d) $1/4$ 5. Which one of the below is the most important ingredient in brick earth? a) Alumina b) Lime c) Silica d) Magnesia 6. Seasoning of timber is the process of: a) Burning timber b) Adding preservatives c) Removing water d) Adding glaze 7. In frame structure, what transfers load to columns? a) Foundation b) Beams c) Slabs d) Roofs 	07
(b)	<ol style="list-style-type: none"> 1. A triangle is said to be well-conditioned when its angle should lie between _____ (a) 15° and 115°, (b) 30° and 120°, (c) 55° and 115°, (d) 45° and 135° 2. Staff reading taken on a benchmark or change point is known as (a) Back sight (b) Intermediate sight (c) Fore sight (d) None of the above 3. How much does a bag of cement weigh? a) 1 kg b) 25 kg c) 50 kg d) 35 kg 4. Chain surveying uses the principle of: a) Traversing b) Chaining c) Ranging d) Triangulation 5. The minimum crushing strength of third class brick is: a) 3.5 N/mm^2 b) 7 N/mm^2 c) 10 N/mm^2 d) 20 N/mm^2 6. Which of the following adds quick-setting property to cement? a) Magnesium oxide b) Silicon dioxide c) Iron oxide d) Aluminium oxide 7. Contours can be found in a _____ map. a) Political b) Topographical c) Physical d) Thematic 	07
Q.2	<ol style="list-style-type: none"> (a) Write a short note on gravity dam. (b) Explain primary divisions of surveying. (c) Classify the various types of water sources. Discuss any two sources in detail. 	03 04 07

- Q.3** (a) Differentiate Load bearing and Framed structures **03**
 (b) Discuss the various types of loads acting on a building **04**
 (c) Enlist various types of foundation. Also write brief note on shallow foundation with neat sketches. **07**

- Q.4** (a) Explain various types of residential buildings. **03**
 (b) Mention the qualities of a good timber. **04**
 (c) Following are the bearings of a closed traverse. Find the included angles and draw the traverse. **07**

Line	F.B	B.B
AB	N 50°00' E	S 50°00' W
BC	S 60°00' E	N 60°00' W
CD	S 15°00' W	N 15°00' E
DA	N 70°30' W	N 70°30' E

- Q.5** (a) Draw neat sketch of a stair, showing all its components. **03**
 (b) Discuss about spread footing and combined footing with neat sketches. **04**
 (c) Name the various types of traffic signs used for traffic control. Describe any two categories of traffic signs in detail. **07**

- Q.6** (a) Draw neat sketch of any six traffic sign. **03**
 (b) Explain various types of concrete. **04**
 (c) Draw neat sketch of roof top rainwater harvesting system and then write benefits of rainwater harvesting. **07**

- Q.7** (a) Briefly discuss about Remote Sensing. **03**
 (b) Define the term Contour. Write the uses of Contour Map. **04**
 (c) The following staff readings were taken on a uneven ground with a 4m levelling staff. Calculate reduced levels of all the points by Height of instrument method and apply usual checks. The instrument was shifted after 3rd, 6th and 9th readings. The first reading was taken on a bench mark of 100m. Observation are:
 1.200, 2.650, 3.500, 2.400, 1.950, 0.900, 1.800, 3.700, 2.500, 0.850, 1.700
