Seat No.: _____   Enrollment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– 1st / 2nd EXAMINATION (NEW SYLLABUS) – SUMMER 2016

Subject Code: 2110004   **Date:06/06/2016**
Subject Name: Elements of Civil Engineering
Time:02:30 PM to 5:00 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.**

Mark

Q.1 (a) Attempt Following Questions.   **(07)**
1. The infrastructural sector covers a wide range of service of _____
   (a) Transportation, (b) Water Resources Project, (c) Power sector, (d) All above
2. Which of the following scale is the smallest one?
   (a) 1cm = 5m, (b) R.F. = 1/5000, (c) 1cm = 5km, (d) 1:10000
3. The method of plane surveying can be used when the extent of area is less than _____
   (a) 250 sq. km, (b) 250 sq. m, (c) 2500 sq. km, (d) 250 sq. cm
4. 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°
5. If the back bearing of a line is S 30°W, its fore bearing is _____
   (a) N 30°E, (b) S 210°W, (c) S 75°W, (d) N 30°W
6. The Satellite constellation of GPS consists of _____
   (a) 4 satellites, (b) 6 satellites, (c) 18 satellites, (d) 24 satellites
7. Marble is a form of _____.
   (a) Igneous, (b) Sedimentary, (c) Metamorphic, (d) None of above

(b) Attempt Following Questions.   **(07)**
1. If the depth of foundation is equal to or less than its width is known as _____.
   (a) Deep foundation, (b) Shallow foundation,
   (c) Combined foundation, (d) None of above
2. The room which receives light and air from particular direction is called the _____
   (a) Prospect, (b) Aspect, (c) Privacy, (d) Roominess
3. The link between the various rooms and floors of a building is known is _____
   (a) Prospect, (b) grouping, (c) Privacy, (d) Circulation
4. The earth water circulatory system is known as _____
   (a) water cycle, (b) Monsoon cycle, (c) Hydrological cycle, (d) Environmental cycle
5. The surface water sources are _____
   (a) Streams & rivers, (b) Rainfall, (c) Wells, (d) None of above
6. The basic function of foundation is _____
   (a) To transmit the loads to the sub soil, (b) To provide stability,
   (c) To check the settlement of a building, (d) all above
7. The permanent, immovable and untransferable load of a structure is known as _____
   (a) Dead load, (b) Live load, (c) Wind load, (d) Snow load

Q.2 **(a)** Enlist the various branches of Civil Engineering. **(03)**
(b) Define the Representative Fraction scale with suitable example. **(04)**
(c) Explain the classification of surveying based on its purpose. **(07)**

Q.3 **(a)** Write the function of given building component. **(03)**
1. Plinth, 2. Lintel, 3. Wall
(b) Explain the direct ranging with the use of Line Ranger. **(04)**
(c) The distance between two stations was measured with a 20 m chain **(07)**
and found to be 1350 m. the same distance was measured with a 30
m chain and found to be 1342 m. If the 20 m chain was 5 cm too
short, what was the error in the 30m chain?

Q.4 **(a)** Explain Key Plan. **(03)**
(b) Give the difference between whole circle bearing and reduced **(04)**
bearing method.
(c) The following are the bearings observed in closed traverse ABCD **(07)**
with a compass. Calculate the interior angles of the traverse and
correct them if necessary.

Line	Fore bearing	Back Bearing
AB	120°30'	300°30'
BC	50°	230°
CD	300°15'	120°15'
DA	200°45'	20°45'

Q.5 **(a)** Explain the temporary adjustment of Dumpy Level **(03)**
(b) Define the term Contour. Write the uses of Contour Map. **(04)**
(c) The following consecutive reading ware taken with a level and 5m **(07)**
leveling staff on continuously sloping ground at a common interval
of 20m. 0.385, 1.125, 1.83, 2.945, 3.74, 4.965, 0.675, 2.85, 3.255,
4.45. The reduce level of the first point was 500 m. The position of
instrument was changed after sixth reading. Calculate the reduced
levels of the points by Height of Instrument method, also the
gradient of the line joining the first and last point.

Q.6 **(a)** Calculate the area of a figure from the following reading by a **(03)**
planimeter with anchor point outside the figure.
Initial reading = 3.586, Final Reading = 7.675, M = 100cm^2,
C = 23.521, & Zero mark of the dial passes index once in a
clockwise direction.
(b) Explain the types of building based upon occupancy. **(04)**
(c) Enlist the material used in construction. Explain the requirement **(07)**
and properties of concrete.

Q.7 **(a)** Explain Check Dam. **(03)**
(b) Explain the Rockfill Dam with sketch. **(04)**
(c) Explain the Classification of roads by Nagpur Road Plan. **(07)**

****