B.TECH. SEM -I (2007 COURSE) (ALL BRANCHES) : WINTER - 2017

SUBJECT : ELEMENTS OF CIVIL ENGINEERING

Day : **Thursday**
Date : **18/01/2018**

W-2017-2345

Time **10.00 AM TO 01.00 PM**
Max. Marks : 80

N.B.

1) Q.1 and Q.5 are **COMPULSORY.** Out of the remaining attempt any **TWO** questions from each section.
2) Figures to the right indicate **FULL** marks.
3) Answers to both the sections should be written in **SEPARATE** answer book.
4) Use of non-programmable calculator is allowed.
5) Assume suitable data if necessary.

SECTION – I

Q.1 **a)** What is the role of Civil Engineer in construction project? Explain. **(05)**
b) Explain the terms dip and declination. **(05)**
c) Define a contour line and state uses of contour maps. **(04)**

Q.2 **a)** Differentiate between plane and Geodetic Surveying and explain in detail classification of surveying. **(06)**
b) List out the various instruments used for linear measurements and state functions of each instrument. **(07)**

Q.3 **a)** Define the following terms: **(06)**
i) Fore bearing **ii)** Back bearing **iii)** Magnetic meridian **iv)** Magnetic bearing **v)** True bearing **vi)** Arbitrary bearing.
b) A closed compass traverse was run along a square ABCD in a anti clock wise direction. The fore bearing of line AB was observed to be $85^0\ 30'$. Calculate the bearings of remaining lines of the square. **(07)**

Q.4 **a)** Explain temporary adjustments of a dumpy level. **(05)**
b) Following readings were taken with a level and 4 m staff. **(08)**
0.540, 1.115, 2.650, 0.815, 1.910, 3.625, 2.945.
The instrument was shifted after 4^{th} reading. The reduced level of first staff station was known to be 100.00m. Rule out the page of level field book and calculate the reduced levels of all staff stations by collimation plane method. Apply usual arithmetical checks.

SECTION – II

Q.5 **a)** Define the following terms: **(04)**
i) F.S.I. **ii)** Building line **iii)** Control line **iv)** Built up area
b) Define bearing capacity of soil and explain any one method to determine bearing capacity. **(05)**
c) What is meant by super elevation? What is the necessity of providing super elevation? **(05)**

Q.6 **a)** Explain the following principles of building planning. **(06)**
i) Elegance **ii)** Circulation
b) State important points to be considered while selecting a site for a residential building. **(07)**

Q.7 **a)** State the conditions when pile foundations are provided. Explain classification of piles. **(07)**
b) Explain causes of earthquakes and state any four precautions to be taken while planning buildings to prevent damages due to earthquakes. **(06)**

Q.8 **a)** Draw a neat labeled cross section of a road in embankment and state functions of each component. **(07)**
b) Explain the types of roads based on materials of construction. **(06)**

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