Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur

Assignment-1

Semester/Session: B.Tech. I Sem / 2021-22 **Branch & Section:……..**

Subject: Basic Civil Engineering **Subject Code: 1FY3-09**

Date of issue…… **Date of Submission…..……**

Topics Covered:

Scope and specialization of civil engineering, role of civil engineer in society. Surveying: Linear measurements, angular measurements, and levelling.

PART-A

Q.1. Write down the different units of linear and angular measurement.

Q.2. Discuss the scope of civil engineering.

Q.3. Define ranging with neat sketch?

Q.4. Define representative factor with an example.

Q.5. Explain the principle of surveying.

Q.6. Write down the instruments used for linear measurement.

Q.7. Write the difference between PLAN & MAPS.

Q.8. What is Local Attraction? How is it detected?

Q.9. Discuss specialization of civil engineering.

Q.10. What are the errors in linear measurement?

PART-B

Q.1. Enlist differences between Prismatic compass and Surveyor compass?

Q.2. Convert the following:

(a) Reduced bearing in Whole circle bearing:

i) N 35° E ii) S 60° W iii) N 42° W iv) S 37° E

(b) Whole circle bearing to reduce bearing:

i) 235° ii) 140° iii) 48° iv) 318°

Q.3.What is the role of a civil engineer in infrastructure development?

Q.4.What is meant by Ranging? Describe direct ranging.

PART-C

Q.1.A **30 m** long tape was standardized at a temperature of **27ºC** and a pull of **20kg**. If measurment of one chain length is taken at **32ºC** at a pull of **36kg**. The area of the cross section of the tape is **0.3cm^2,** and coefficient of thermal expansion is **11.6x 10^{-6} per ºC**, and the weight of tape (w)is **30gm/m**. If the modulus of elasticity of tape material is **2.06x 10^5 N/mm^2**. Find the correction required due to temperature, pull and sag.

Q.2. A 20m long tape was standardized at a temperature of **18ºC** and pull of **19kg**. The tape was used to measure a survey line, and the distance was found to be **612.6m**. The pull applied at the field was **14 kg** and the mean temperature of the day was recorded as **32ºC**. The area of the cross-section of the tape is **0.0725cm^2** and cofficeint of thermal expansion is **9.4 x 10^{-6} per ºC**. For the first **300m**, the slope was **3º15'**; for the next **200m** distance, the slope was **2º6'**; for the remaining distance, the slope was **6º8'**. If the modulus of elasticity of tape material is **2.06x 10^5 N/mm^2**, find the actual distance of the survey line.

Q.3. In a closed traverse, the following bearings were observed with a compass. Calculate their interior angles and then compute the corrected magnetic bearings:

Line	Fore Bearing	Back Bearing
AB	46° 30'	226° 30'
BC	118° 30'	300° 15'
CD	210° 00'	28° 00'
DE	271° 15'	93° 15'
EA	313° 45'	132° 00'

Q.4. In a closed traverse, the following bearings were observed with a compass. Calculate their interior angles.

Line	Fore Bearing
AB	40°
BC	70°
CD	210°
DE	280°

Q.5. Following reading taken during a leveling exercise:- 0.665(BS), 0.825, 2.54, 0.385, 3.2, 1.4, 1.565, 2.0, 2.45(FS). RL of the first point is 100 m from MSL. The instrument's position was changed after the 4th and 6th reading. Calculate the last point's RL using the Height of Instrument method and apply the check.