R22 Regulation *Subject code:4E3AA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech III Semester Supplementary Examinations, June 2026

SURVEYING

(CE)

Maximum Marks: 60 Date:18.06.2026 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X1M=10 Marks)		Marks	CO	BTL
1.a)	What is a prismatic compass?	1M	1	L1
b)	What is meant by geodetic surveying?	1M	1	L1
c)	What is temporary adjustment?	1M	2	L1
d)	Name any two characteristic of contours.	1M	2	L1
e)	What is trigonometrical levelling?	1M	3	L1
f)	What is the reiteration method?	1M	3	L1
g)	What is tangential tacheometry?	1M	4	L1
h)	What are sub-chords used for?	1M	4	L1
i)	What is reflectorless measurement?	1M	5	L1
j)	What is the principle of EDM?	1M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	a) What are the principles of surveying? Explain "Working from whole to part" with neat sketches. b) What is shrinkage of map? Explain the causes of shrinkage, methods to measure it, and its impacts on surveying.	5M 5M	1	L2
	OR			
3	a) Define fore bearing *and* back bearing. Explain how to convert between them. b) Explain ranging. Describe the methods of direct ranging and indirect ranging with diagrams.	5M 5M	1	L2
4	Describe the method of reciprocal levelling. Explain how it eliminates combined errors of curvature, refraction, and line of sight.	10M	2	L2
	OR			
5	Describe the computation of volume in two-level sections with and without transverse slopes.	10M	2	L2
6	Explain the construction and use of Gale's traverse table in computing and adjusting closed traverses.	10M	3	L2

	OR			
7	a) Describe the temporary adjustments of a transit theodolite. b) At a station, the level bubble was slightly off-center and the vertical circle reading was affected. After centering and leveling properly, the horizontal angle changed from 65° 15′ to 65° 20′. Explain: (a) Why leveling error affects vertical circle? (b) Why centering error affects horizontal angles? (c) Which adjustment is most critical	3M 7M	3	L2 L3
8	What is a compound curve? Explain its elements with neat sketches. Describe how compound curves are set out in the field.	10M	4	L2
	OR			
9	A compound curve is formed by two curves of radii 250 m and 400 m. The angle between tangents is 55°. The tangent length of the first curve is 120 m. Find: (a) Angle for each curve (b) Length of each curve (c) Total curve length.	10M	4	L3
10	Describe in detail the components of GPS: Space segment, Control segment, User segment and Explain their functions with neat diagrams.	10M	5	L2
	OR			
11	An EDM instrument uses an EM wave of 20 MHz frequency modulated with a basic wavelength of 15 m. The measured phase difference is 75°. a) Calculate the distance measured. b) Explain the ambiguity problem and how multiple modulations resolve it. c) Discuss how atmospheric refraction affects this distance.	10M	5	L3