Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

III SEMESTER B.TECH. (CIVIL) END SEMESTER EXAMINATIONS

FEBRUARY 2021

SUBJECT: SURVEYING [CIE 2154]

Date of Exam: Time of Exam: Max. Marks: **50**

Instructions to Candidates:

- Answer ALL the questions & missing data may be suitably assumed.

1A.	A and B are two points on the opposite sides of a pond. The surveyor establishes a line AC clear of the pond such that B is visible from C. He establishes another point D on the line CB produced so that the line AD is also clear of the pond. If the distances AC, CB, BD and DA are 300 m, 150 m, 175 m and 250 m respectively. Determine the distance AB.	**6**	**CO3**
1B.	Explain the methods of chaining adopted while there are obstacles such as building or river.	4	CO1
2A.	Find which stations are affected by local attraction and workout correct bearing of closed traverse ABCDEA. Line / FB / BB AB / $190^0 30'$ / $17^0 00'$ BC / $73^0 30'$ / $250^0 30'$ CD / $36^0 15'$ / $214^0 30'$ DE / $266^0 45'$ / $84^0 45'$ EA / $234^0 15'$ / $57^0 00'$	5	CO2
2B.	A 20 m steel tape was standardized on flat ground at a temperature of 20°C under a pull of 15 kg. The tape was used in catenary at a temperature of 30°C under a pull of 10 kg. The cross sectional area of the tape is 22 mm^2 and its total weight is 400 gm. The young's modulus and coefficient of thermal expansion for steel are 21000 kg/mm^2 and 11 x 10^{-6} / °C respectively. Find the correct distance.	5	CO3
3A.	The following readings were taken with a level (measured in meters): 3.865, 3.345, 2.930, 1.950, 0.855, 3.795, 2.640, 1.540, 1.935, 0.930, 0.665. The level was shifted after the fifth and eighth readings. The first reading was taken on the benchmark of R.L. 150.250 m. Calculate the R.L of all the points by using Rise and Fall method.	5	CO3
3B.	With a neat sketch, derive height and distance equations for a Double plane method when base of the object is inaccessible and write the equation to calculate the reduced level.	5	CO3
4A	Two cross-sections AP and BQ, each perpendicular to a base line AB, 220 m in length, are established to measure the velocity of flow of water in a stream. When the float was on the sections AP and PB, following angles were observed from a point C on the base line AB, 75 m from A. $\angle ACP = 62°24'00"$; $\angle OCB = 48°40'20"$	5	CO3

	If the time taken by the float to travel the distance PO is 2 minutes and 10 seconds, what is the velocity of water?		
4B	Define hydrographic surveying. What are various operations conducted in hydrographic surveying?	5	CO5
5A.	The images x and y of the base and top, respectively of a factory chimney 150 m high are observed in a truly vertical aerial photograph of scale 1 : 10000. Determine the position of x given that y is 70.0 mm from the principal point of the photograph. Take the focal length of the camera to be 125 mm and assume the chimney to be at datum level.	4	CO5
5B.	What is terrestrial photogrammetry? What is the basic principle of it? Explain the graphical method of obtaining horizontal and vertical angle measurements from terrestrial photographs.	4	CO5
5C	With neat sketch explain the use of "Weisbach triangle" in tunnel surveys	2	CO5