Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

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

NOVEMBER

SUBJECT: BASICS OF SURVEYING (CIE 2104)

Date of Exam: **27/11/2018** Time of Exam: **9AM-12PM** Max. Marks: **50**

Instructions to Candidates:

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

Q. No.	Description	Marks	CO
1A.	To measure a base line of 250 m length, a steel tape of 30 m length, standardized at 15°C with a pull of 100 N is used. The temperature at the time of measurement has found to be 20°C and the pull extended is being 160 N. Given, area of cross section of the tape is 0.072 cm^2 and its weight is 1.8 kg. The co-efficient of thermal expansion is 3.5 x 10^{-6} /^{0}C. The tape is stretched over three equal spans. Determine the correction per tape length and the actual length of the base line. Given, E = 2x10^6 kg / cm^2.	**5**	**2**
1B.	A chain line ABC crosses a river, B and C being on the near and distant banks respectively. Points B and A are on the same bank and the distance between them is 20 m. Two perpendiculars AD = 25 m and BE = 16 m are constructed at A and B such that D, E and C are in one line. Determine BC, the width of the river.	**3**	**2**
1C.	Define i) Base line ii) Main survey line. Illustrate with a neat sketch.	**2**	**2**
2A.	A traverse was run with a compass and the lengths and bearings of the lines observed are given below. Check whether the traverse closes. If not, balance it using Bowditch's rule. Line / Length (m) / Bearing AB / 201.54 / N62^{0}42'E BC / 189.68 / S25^{0}6'E CD / 231.94 / S22^{0}32'W DE / 272.55 / N78^{0}16'W EA / 257.15 / N22^{0}15'E	**5**	**2**
2B.	The bearings of the lines of a closed traverse are given below. Check the traverse for any instrumental/observational errors. At what stations do you suspect local attraction? Correct the bearings for local attraction using interior angles. Line / Fore Bearing / Back Bearing PQ / 94^{0}30' / 276^{0}30' QR / 174^{0}30' / 353^{0}15' RS / 231^{0}00' / 51^{0}00' ST / 339^{0}30' / 158^{0}45' TP / 30^{0}40' / 210^{0}20'	**5**	**2**

3A.	Explain the various characteristics of a Contour line in a contour map. Illustrate with sketches wherever necessary.	**5**	**4**
3B.	Explain in detail how to locate position of station occupied by plane table on the plan by means of observations to two well defined points (two point problem).	**5**	**3**
4A.	The following readings are taken on continuously falling ground with staff of 4m; they are 0.400, 0.765, 1.270, 2.560, 3.220, 3.950, 0.390, 1.690, 3.500, 0.800, 1.920, 2.450, and 3.980. Enter the readings in the page of level book and calculate the RLs of all the points if the first reading was taken on benchmark of 100.00m. Also find the gradient between the line joining first and last point.	**5**	**4**
4B.	What is sensitiveness of bubble tube? How it is determined in the field? And with neat sketch derive the equation for the sensitiveness of bubble tube.	**5**	**4**
5A.	An instrument was set up at point A with line of collimation at 2002.8m the object P was sighted at an angle of depression $4^{o}42'$. The horizontal distance between the object and instrument station is 2000m. Determine the RL of P. Apply curvature and refraction corrections	**5**	**5**
5B.	With neat sketch derive a height and distance equation for Double plane method and write equation to calculate RL.	**5**	**5**