B. ARCHITECTURE 2nd YEAR 1st SEMESTER EXAMINATION- 2019

(2nd Year, 1st Semester)

SURVEYING

Time: Three Hours

Full Marks 100

No. of questions	(Answer any four of the following questions.)	Marks (4 X 25=100)
1 (a)	Write short notes on: (i) Invar tape (ii) Reciprocal ranging (iii) Hypotenusal allowance (iv) Random error	[3x4=12]
(b)	Explain with sketch the method of Chaining on sloping ground	[5]
(c)	A line was measured with a steel tape which exactly 30m at 20°C and at a pull of 10kg, the measured length being 1650m. The temperature during measurement was 30°C and the pull applied was 15 kg. Find the true length of the line, if the cross-sectional area of the tape was 0.025cm^2. The coefficient of expansion of the material of the tape per °C = 3.5×10^{-6} and modulus of elasticity of the Material of the tape = 2.1×10^{6} kg/cm^2.	[8]
2 (a)	Explain the principle of chain surveying. Which type of area is best suited for chain survey and why?	[3+2]
(b)	Write short notes on: (i) Well conditioned triangle (ii) Oblique offsets. (iii) Base line (iii) Reconnaissance	[2.5x4 = 10]
(c)	When chaining if you come across a river, explain how you will continue the chain line with the help of a chain and tape only.	[5]
(d)	Find the maximum length of an offset so that displacement of a point on paper should not exceed 0.025cm, given that the offset was laid out 4° from its true direction and the scale was 25m to 1cm.	[5]
3 (a)	Define the following terms in connection with compass surveying: (i) True bearing (ii) Whole circle bearing (iii) Magnetic declination (iv) Isogonic lines	[1.5x4 = 6]
(b)	Convert the following reduced bearings to whole circle bearings: (i) $N\ 30^\circ15'\ E$ (ii) $S\ 37^\circ30'E$ (iii) $S\ 27^\circ45'W$) (iv) $N\ 46^\circ00'W$	[1.5x4 = 6]
(c)	Following bearings were recorded while traversing with a compass for a closed traverse: (i) Correct the bearing for local attraction, if any. (ii) Calculate the angles (iii) If the declination is 2°30′ West, calculate the true bearings.	[7+3+3]
4 (a)	Define the following terms in connection with levelling: (i) Bench mark (ii) Level Surface (iii) Horizontal surface (ii) Intermediate sight reading	[1.5x4 = 6]

Line	FB	BB
AB	16°45′	198°00′
BC	224°30′	47°30′
CD	207°15′	25°45′
DE	67°45′	247°30′
EA	155°15′	332°45′

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No. of questions	(Answer any four of the following questions.)	Marks (4 X 25=100)
(b)	The following staff readings were recorded for a certain work of leveling 3.460, 2.734, 2.161, 2.405, 3.512, 1.907, 0.720, 1.156, 3.210, 2.146, 1.786 and 2.768. First reading was taken on a B.M and the level was shifted after the 4th and 8th readings. If the RL of BM was given as 249.5, find the RLs of all other points using rise and fall method. If the distance between the BM and the last station is 1500m, what is the average slope between these points?	[7 + 2]
(c)	Write a short notes on: (i) Profile leveling (ii) Fly levelling	[5+5]
5 (a)	What are the accessories required for plane table survey? What do you understand by 'centering' operation in plane table survey?	[2+2]
(b)	What are the methods used for plane table survey? Explain the 'method of Intersection' with a neat sketch. What are the advantages of 'method of intersection' over other methods?	[2+6+2]
(c)	Define three point problem. Describe tracing paper method for the solution of three point problem with a neat sketch.	[2+6]
(d)	What are the sources of error in plane tabling?	[3]