Model Question Paper-1 with effect from 2019-20 (CBCS Scheme)

USN | | | | | | | | | | |

Fourth Semester B.E. Degree Examination

Advanced Surveying

TIME: 03 Hours **Max. Marks: 100**

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

		Module -1	*Bloom's Taxonomy Level	Marks
Q.01	a	With the help of tabular column, explain the procedure of measuring horizontal angle by (i) Repetition method (ii) Reiteration method	L2	8
	b	List the fundamental lines of a theodolite. Summarize the desired relationship between them.	L2	6
	c	Define the following terms. i) Transiting ii) Swinging iii) Trunnion axis	L2	6
		OR		
Q.02	a	To find the elevation of the top(P) of a hill, a flag staff of height 1.5m was erected and the following observations were made from two stations A & B at considerably different elevations 156m apart. The angle of elevation from A to the top of the flag staff was $38^0$24' and that from B to the same point $26^0$12'. A vane 1.2m above the foot of a staff held on A was sighted from B and the angle of elevation was observed to be $9^0$54'. The height of the instrument axis at A was 1.494m and the R.L. of the instrument axis at B was 45.00m. Find the horizontal distance P from B and the R.L. of P.	L3	10
	b	Derive the expressions for the horizontal distance, vertical distance and the elevation of an object by double plane method, when the base is inaccessible.	L3	10
		Module-2		
Q. 03	a	Derive distance and elevation formulae for stadia tachometry, when staff held normal to the line of sight, for both an angle of elevation and angle of depression.	L3	10
	b	To find the gradient between two points A and B a tacheometer was set up to another station C and the following observations were made, keeping the staff vertical. **Staff at** | **Vertical angle** | **Staff readings (m)** A | + $4^0$20'00" | 1.300, 1.610, 1.920 B | + $0^0$10'40" | 1.100, 1.410, 1.720 If the horizontal angle ACB is $35^0$20', determine the average gradient between A and B. K = 100, C = 0	L3	10
		OR		
Q.04	a	List the various factors that are to be considered in the selection of site for baseline and station in triangulation survey.	L2	6
	b	Write a note on classification of triangulation system.	L2	6
	c	From a satellite station S, 5.8m from main triangulation station A, the following directions were observed. A | 0^0 | 0' | 0" B | 132^0 | 18' | 30" C | 232^0 | 24' | 6" D | 296^0 | 6' | 11" The lengths of AB AC and AD were computed to be 3265.5m, 4022.2m and 3086.4m respectively. Determine the directions of AB, AC and AD.	L3	8

		Module-3		
Q. 05	a	List the different methods of setting out simple circular curves. Explain the linear method of setting out simple curve by the method of offset from long chord.	L3	6
	b	A road bend which deflects 80^0 is to be designed for a maximum speed of 100km per hour, a maximum centrifugal ratio ¼ and a maximum rate to the change of acceleration of 30cm/sec^3, the curve consisting of a circular arc combined with two spirals. Calculate i) The radius of circular arc ii) The required length of transition iii) the total length of composite curve and iv) The chainages of the beginning and end of transition curve, and of the junctions of the transition curves with the circular arc, if the chainage of the point of intersection is 42862m.	L3	10
	c	With the help of a neat sketch of a simple circular curve, explain i) Tangent length ii) Length of long chord iii) Point of curve iv) Forward tangent	L2	4
		OR		
Q. 06	a	A compound curve consisting of two arcs of radius 350m and 550m connects two straights AB and BC, which are intersected by a line PQ. The angles APQ and BQP are $139^0$30' and $36^0$24' respectively. Determine the chainages of the tangent points if the chainage of the intersection point B is 5425.191m.	L3	8
	b	The first branch of a reverse curve has a radius of 200m. Find the radius of second branch so that the curve can connect parallel straights 18m apart. The distance between tangent points is to be 110m. Also calculate the length of two branches of the curve.	L3	8
	c	With a neat sketch, list any four vertical curves.	L2	4
		Module-4		
Q. 07	a	Define vertical photograph, tilted photograph and oblique photograph.	L2	6
	b	A vertical photograph was taken at an altitude of 1200m above the mean sea level. Determine the scale of photograph for terrain lying at elevation of 80m and 300m, if the focal length of camera is 15cm.	L3	8
	c	List the reasons for keeping overlap in photographs.	L2	6
		OR		
Q. 08	a	Derive the expression for relief displacement on a vertical photograph.	L3	8
	b	Explain the procedure for aerial survey.	L2	6
	c	Find the number of photographs (size 250 x 250mm) required to cover over a area of 20km x 16km, the longitudinal overlap is 60% and the side overlap is 30% scale of the photograph is 1cm = 150m.	L3	6
		Module-5		
Q. 09	a	Define remote sensing. Explain the stages of idealized remote sensing system.	L2	8
	b	With neat sketch, explain the electromagnetic spectrum.	L2	6
	c	Explain the components of GIS.	L2	6
		OR		
Q. 10	a	Mention the advantages of total station and also discuss the working principles of the same.	L2	8
	b	What are the advantages of LIDAR technology?	L2	4
	c	What is GPS? Explain the basic principles of GPS and its application in surveying.	L2	8