

CBCS SCHEME

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18MN43

Fourth Semester B.E. Degree Examination, July/August 2022 Mine Surveying – II

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain the statutory requirements of mine plans and section. (10 Marks)
b. List the requirements and functions of a transition curve. (10 Marks)

OR

- 2 a. List the types of linear and angular methods of settling out simple curves. A circular curve of 250m radius is to be set out between two straights having deflection angle of $45^{\circ}20'$ right and the chainage of the point of intersection as 112 + 10. Calculate the necessary data for settling out the curve by the method of offsets from the chords produced taking the peg interval as 20m. (12 Marks)
b. Explain the duties and responsibilities of mine surveyor. (08 Marks)

Module-2

- 3 a. Define triangulation. Explain the various classification of triangulation. (10 Marks)
b. A staff was held vertically at a distance of 46.2m and 117.6m from the centre of a theodolite fitted with stadia hairs and the staff intercept with telescope horizontal were 0.45 and 1.15m respectively. The instrument was then set over a station 'P' of R.L = 150m, the height of instrument axis being 1.39m. The stadia hair, readings on a staff held vertically at a station 'G' were 1.2m, 1.93m, 2.65m respectively, while the vertical angle was $-9^{\circ}30'$. Find the distance between 'PQ' and R.L of Q. (10 Marks)

OR

- 4 a. Explain the procedures for angles and base line measurement in reconnaissance survey. (10 Marks)
b. Following observations refer to a tachometric traverse conducted with a tachometer fitted with an anallactic lens.

Inst station	Staff point	Readings			H.I	V.A
		r_1	r	r_2		
P	Q	0.660	1.750	2.840	1.6	0°
Q	P	0.715	1.810	2.905	1.54	0°
Q	R	1.845	2.520	3.195	1.56	$13^{\circ}30'$

If the R.L of station is 587.75m determine :

- i) Lengths PQ and QR
ii) R.L of Q and R.L of R. Assume dual due staff is held vertically and $K = 100$. (10 Marks)

Module-3

- 5 a. In a Weisbach triangle the Azimuth of a plumb plane marked by the wires A and B is $115^{\circ}23'49''$ and C is a theodolite station and the south side of the eastern prolongation of AB. Given the following data calculate the Azimuth of line CD, illustrate your answer by a sketch $AB = 3.48\text{m}$; $BC = 2.674$, $CA = 6.155\text{m}$, $\angle ACD = 179^{\circ} 14' 33''$, $\angle BCD = 179^{\circ} 10' 17''$. (10 Marks)
- b. Describe a method of connecting the surface base line to underground when one shaft and a incline available. (10 Marks)

OR

- 6 The following are the details of observations made with correlation by Weisback triangle method A and B are the two plumb lines suspended from the pit top of the pit. D and E are the stations in the underground traverse survey which is required to be connected with the surface survey bearing of AB as found from the surface is $40^{\circ}40'00''$ and the length of $AB = 2.286\text{m}$, $BC = 2.621\text{m}$, $AC = 4.907\text{m}$, $CD = 18.348\text{m}$, $DE = 30.480\text{m}$ $\angle BCD = 181^{\circ}0'0''$, $CDE = 96^{\circ}$ and the Weisback Angle $\angle ACB = 0^{\circ} 1' 40''$. Find the bearing of underground drift DE. (20 Marks)

Module-4

- 7 a. Explain the method of stope surveying for narrow ore bodies which is not steeply dipping. (10 Marks)
- b. Explain the method of determining subsidence in underground mine. (10 Marks)

OR

- 8 a. Explain the method of stope surveying open stopes considering any shape of the ore body. (10 Marks)
- b. Explain Geodetic and remote sensing method of slope monitoring in open cast mines. (10 Marks)

Module-5

- 9 a. List the various application of remote sensing in surveying. (10 Marks)
- b. Explain the principle of GPS. (10 Marks)

OR

- 10 a. Example the developments in satellite based Navigation system. (10 Marks)
- b. Explain the application of GIS and remote sensing in surveying. (10 Marks)
