

# 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	$0^{\circ}$
Q	P	0.715	1.810	2.905	1.54	$0^{\circ}$
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 Weisbach 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 Weisbach 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)

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