

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

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Fourth Semester B.E. Degree Examination Mine Surveying - II

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	Two gallery's in an underground coal mine are meeting at apex point with chainage of 59+30 with an deviation angle of 45° , The radius of the curve to be subtended in between the gallery's found to be 10 chain. Calculate the necessary data to set a curve using ordinate from chord produced.	L3	10
	b	With a neat sketch illustrate the two straights are intersecting with an 1839.2m in an underground mine with an internal angle of $129^{\circ} 30'$ and radius of the curve found to be 15 chain (20m chain used with 100 links). Calculate the necessary data to set out curve using a) Radial and Perpendicular offset from an tangent from every 20m b) Offset from long chord with an interval of 20m	L3	10
OR				
Q.02	a	A left hand curve of 30m radius is set out between two underground roadways meeting at 1200. If the curve is set out by 5 equal chords, calculate: a) Length of each chord b) Tangent distance C) First and last setting out angles	L3	8
	b	With a neat sketch illustrate the two straights are intersecting with an 1190 in an underground mine with an internal angle of $150^{\circ} 30'$ and radius of the curve found to be 15 chain (20m chain used with 100 links). Calculate the necessary data to set out curve using Rankine's angular method with an interval of 20m	L2	10
	c	List any 3 types of plans required to be maintained as per CMR 2017.	L2	2
Module-2				
Q.03	a	A tape of 90m nominal length was standardized on the flat and its true length was found to be 90.005m at a temperature of 75°F . The tape was then used in catenary, in three equal spaces of 30m each to measure a level line, the apparent length of which was found to be 809.30m. The weight of the tape was 336 gm per 30m length and the pull used both during standardization and field measurement was 7.2kg. Assuming that mean temperature during the field measurement was 55°F and co-efficient of expansion = 0.0000062 per $^{\circ}\text{F}$, calculate correct length of the line.	L3	10
	b	The vertical angles to vanes fixed at 1m & 3m above the foot of the staff held vertical at station P were $+ 2^{\circ}30'$ & $5^{\circ}48'$ respectively. Find the horizontal distance & the reduced level of P. The height of instrument is 1m and the observation was made from a B.M of 438.556m.	L3	10
OR				
Q.04	a	It is proposed to adopt triangulation method for surveying the surface of a colliery. What are the points you would keep in mind while fixing position of stations for triangulation survey	L2	10
	b	The triangulation surveying of a colliery is in form of quadrilateral ABCD with AC and BD as the diagonals. The following mean value of included angles are observed: i) $BAC = 63^{\circ}35'43''$ ii) $ABD = 40^{\circ}53'38''$ iii) $CBD = 34^{\circ}29'53''$ iv) $BCA = 41^{\circ}00'28''$ v) $ACD = 45^{\circ}32'18''$ vi) $CDB = 58^{\circ}57'08''$ vii) $BDA = 37^{\circ}48'48''$ viii) $DAC = 37^{\circ}41'47''$. State the various adjustments to be made to angles so that the figure of quadrilateral is geometrically correct and then make any two adjustments to the	L3	10

		above angles.		
Module-3				
Q. 05	a	P and Q are two plumb lines hung in a vertical shaft. The azimuth of PQ is $353^{\circ}45'30''$, and the distance between the wires is 2.145m. A theodolite is set up at a point S, situated to the east of the southern prolongation of PQ; the angle PSQ is found to measure $0^{\circ}1'50''$, SP measures 2.262 m and SQ 4.407 m. Find the azimuth of the line QS	L4	10
	b	Describe a method of connecting the surface survey with the survey of underground workings of a mine when only one shaft is available for survey work with a neat sketch. Explain the precautions to be taken in work?	L3	10
OR				
Q. 06	a	The following are the details of observations made in connection with correlation by weisbach triangular method. P and Q are the two plumb lines suspended from the pit top of the pit. S and T are the stations in underground traverse survey which is required to be connected with the surface survey. Bearing of PQ as found from the surface is $40^{\circ}40'00''$ and the length of PQ is 2.286 m. The observations obtained in underground are: QR = 2.621m, PR = 4.907 m, RS=18.348m, ST = 30.480m. QRS = $181^{\circ}00'00''$, RST = $96^{\circ}00'00''$. Weisbach angle PRQ = $0^{\circ}1'40''$. Find the bearing of underground draft ST	L3	10
	b	Underground development work is under process in Mine A. The bearing of underground base line PQ was found to be $87^{\circ}00'00''$. The underground drive should advance in QR, RS and ST direction whose bearing are $353^{\circ}00'00''$, $300^{\circ}00'00''$ and $45^{\circ}00'00''$ respectively to reach the ore body. Determine the theodolite angles to be set at points Q, R and S to advance the drive in a desired direction. Illustrate your answer with neat sketch	L4	10
Module-4				
Q. 07	a	State the purpose of stope surveying	L1	4
	b	Explain the method of stope surveying to be adopted in case of steeply dipping ore body	L2	10
	c	Mention the classification of stope surveying methods and instruments used in stope surveying.	L1	6
OR				
Q. 08	a	Explain the process of Slope Stability Radar in Mining	L2	10
	b	Explain the process of subsidence monitoring due to underground activities	L2	10
Module-5				
Q. 09	a	What are the applications of remote sensing? Explain in brief	L1	4
	b	Explain the Principle of GPS	L2	6
	c	List the applications of GPS in Mine Surveying	L1	10
OR				
Q. 10	a	Explain the applications of GIS in Mining	L2	8
	b	Explain the causes of Error in Mining	L2	6
	c	Explain the importance of GDOP and Selective Availability of satellites in GPS	L2	6

*Bloom's Taxonomy Level: Indicate as L1, L2, L3, L4, etc. It is also desirable to indicate the COs and POs to be attained by every bit of questions.