Roll No. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. /B. Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, NOV / DEC 2024

MINING ENGINEERING
V Semester
MI5504 – Mine Surveying
(Regulation 2019)

Time: 3hrs Max. Marks: 100

CO1	The students will have knowledge on methods of underground traversing.
CO2	The students will learn about alignment of survey and tachometry surveying.
CO3	The students will have knowledge about methods of stope and subsidence surveys. They will have a confident about preparation of mine plans and section.
CO4	The students will understand the methods of contouring and curve setting.
CO5	The students will have knowledge on EDM, GPS, DTM, Total station, etc.

BL – Bloom's Taxonomy Levels
(L1-Remembering, L2-Understanding, L3-Applying, L4-Analysing, L5-Evaluating, L6-Creating)

PART- A (10x2=20Marks)
(Answer all Questions)

Q. No.	Questions	Marks	CO	BL
1	Define Correlation Surveying. What is the importance of it?	2	1	1
2	Differentiate triangulation with trilateration.	2	1	2
3	Briefly state the relationship true dip and apparent dip.	2	2	2
4	State the principle of tachometry surveying,	2	2	1
5	What is joint surveying? When it is necessary?	2	3	1
6	How is the centre line or point of shaft located in sinking shaft?	2	3	2
7	Define contour line in surveying.	2	4	1
8	How is the water storage capacity of particular time is calculated>	2	4	2
9	Differentiate Total Station with Electronic Distance Measurement.	2	5	2
10	State the principle of GIS.	2	5	1

PART- B (5x 13=65Marks)
(Restrict to a maximum of 2 subdivisions)

<table>
<tr><th>Q. No.</th><th>Questions</th><th>Marks</th><th>CO</th><th>BL</th></tr>
<tr><td>11 (a)</td><td>Tabulate the difference between plane surveying and mine surveying.</td><td>13</td><td>1</td><td>3</td></tr>
<tr><td colspan="5">OR</td></tr>
<tr><td>11 (b)</td><td>Differentiate the assumed bearing method with Weissbach triangle method in detail.</td><td>13</td><td>1</td><td>3</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>12 (a)</td><td>The following notes refer to a traverse run by a tachometer fitted with an analytic lens. Find the length and bearing of EA.
<table>
<tr><th>Line</th><th>Bearing</th><th>Vertical Angle</th><th>Staff Intercept</th></tr>
<tr><td>AB</td><td>30° 24'</td><td>6 °05'</td><td>2.05 m</td></tr>
<tr><td>BC</td><td>300°48'</td><td>2 °58'</td><td>1.58 m</td></tr>
<tr><td>CD</td><td>226°12'</td><td>-3 °34'</td><td>1.78 m</td></tr>
<tr><td>DE</td><td>276°12'</td><td>-1 °14'</td><td>1.88 m</td></tr>
</table></td><td>13</td><td>2</td><td>4</td></tr>
<tr><td colspan="5">OR</td></tr>
</table>

12 (b)	The survey notes are given the below table. The coordinate of A (0, 0, 0) and B (1000, 1000, 100). Calculate the length, bearing and gradient of line FA.				**13**	2	4
	Line	Included Angle	Staff Intercept (S)	Vertical Angle (α)			
	BC	175°14'	1.5 m	-1° 43'			
	CD	75° 20'	3.6 m	2° 22'			
	DE	85° 36'	2.1 m	-2° 58'			
	EF	305°52'	0.6 m	0° 22'			
13 (a)	Discuss in detail duties and responsible of mine surveyor as per underground coal mine.				**13**	3	2
	OR						
13 (b)	i. What is stope surveying and state its importance? ii. Explain in detail guideline for subsidence monitoring stations.				**4** **9**	3	2
14 (a)	Discuss in detail various activities involved surveying aspect for the roadway making from hill bottom to hill top with neat figure(s).				**13**	4	3
	OR						
14 (b)	Set out the curve of curve of radius 120m with pegs at approximately 10m from Centre. The deflection angle is 80°.Draw up the data necessary for pegging out the curve by each of the following method. (i)Offsets from long bisection(iii)Offsets from tangent.				**13**	4	3
15 (a)	Discuss in Detail principle and functions of following i. Global Poisoning System (GPS). ii. Laser Scanning.				 **7** **6**	5	4
	OR						
15 (b)	Explain in detail the following i. Digital Terrain Modeling (DTM) application in mining ii. Ground Penetration Radar (GPR) in Mineral Industry.				 **7** **6**	5	4

PART- C (1x 15=15Marks)

(Q.No.16 is compulsory)

Q. No.	Questions	Marks	CO	BL
16.	Three vertical borehole A, B and C are put down to prove a coal seam which has been met at 245 m, 334 m and 310 m respectively from A, B and C. B is 400 m from A horizontally in the direction of N 55° W. C is 300 m from A horizontally in the direction of S 60 ° E. On the surface C is at the 10m higher than A and B at a level 26 m lower than C. Find the direction and amount of full dip of the seam.	**15**	1,2,4	5