UNIVERSITY
OF
JOHANNESBURG

PROGRAM	:	**BACHELOR'S DEGREE MINE SURVEYING**
SUBJECT	:	**MINERAL RESERVE EVALUATION A2**
CODE	:	**MREMSA2**
DATE	:	SUPPLEMENTARY EXAMINATION 17 JULY 2018
DURATION	:	(SESSION1) 08:00 - 11:00
WEIGHT	:	40 : 60
TOTAL MARKS	:	100

ASSESSOR	:	M.MEYER
MODERATOR	:	D.WILSON
NUMBER OF PAGES	:	6 PAGES

INSTRUCTIONS :

1. ANY CALCULATOR IS ALLOWED.
2. SKETCHES ARE NOT DRAWN TO SCALE.
3. DRAWING INSTRUMENTS ARE ALLOWED.
4. SHOW ALL CHECKS

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INSTRUCTIONS TO CANDIDATES:

1. PLEASE ANSWER ALL THE QUESTIONS.
2. MARKS WILL BE ALLOCATED FOR NEATNESS AND CHECKS.
3. NUMBER THE QUESTIONS CLEARLY.

QUESTION 1

The following information reflects the values and widths of progressive sampling of a reef drive.

Location Of section	Section	RW cm	Ch.W cm	Ch.V g/t
0+0m	1	26.0	32.0	26.4
0+3m	2	17.0	30.0	17.8
0+6m	3	20.0	28.0	19.6
0+9m	4	23.0	33.0	29.3
0+12m	5	27.0	46.0	27.5
0+15m	6	24.0	40.0	14.0
0+18m	7	32.0	37.0	19.0
0+21m	8	39.0	39.0	12.0
0+24m	9	27.0	27.0	6.0
0+27m	10	17.0	17.0	Trace

Calculate:-

1.1 Average Reef and Channel Widths and Values for full stretch.
1.2 Average Reef and Channel Widths and Values for Sections 1 to 6, 2 to 9, 3 to 7, and 7 to 10.

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QUESTION 2

The following are the sampling values around the periphery of an ore reserve block :-

LOCATION	DISTANCE SAMPLED (m)	CHANNEL WIDTH (cm)	VALUE (cmg/t)
15Level reef drive	15.0	55.0	500
	15.0	70.0	800
	15.0	61.0	1000
	15.0	63.0	630
	30.0	50.0	600
16/1 East Face	30.0	70.0	600
	50.0	65.0	1000
16/2 West Face	50.0	60.0	900
	30.0	62.0	550
16 Level reef drive	20.0	66.0	750
	15.0	72.0	550

The estimated block width is based on Channel Width plus 40cm with a minimum of 102cm.

Calculate:-

2.1 The estimated Block Width
2.2 The unregressed Block Value
2.3 The regressed Block Value if the regression formulae is $y = 0.498\ x^{1.117}$ where y and x are the regressed and unregressed cmg/t values, respectively.

[20]

QUESTION 3

In order to ascertain the average density of a narrow gold bearing reef and of the external waste, samples were taken at irregular intervals along a stope face which is 34.0metres long. The widths were carefully measured and the density of each sample was obtained. The results of the sampling are shown in the tabulation.

Position of sample. Start +	Reef width (cm)	Reef density (t/m^3)	External waste width	Waste density (t/m^3)
3.0m	14.3	3.017	82.6	2.681
9.0m	17.5	2.986	88.1	2.703
14.0m	16.2	2.992	77.6	2.696
22.0m	14.7	3.043	82.4	2.710
27.0m	12.3	3.037	89.6	2.688
32.0m	13.6	3.024	91.7	2.699

Calculate:-

3.1 The average reef width and the average stope width.
3.2 The average reef density and the average stope density (correct to 0.001 t/m^3)

[20]

QUESTION 4

4.1 A reef drive has advanced 32m during the month. RW 24 cm RV = 19,7 g/t
Size of drive 3,0 m x 2,8 m. Dip of reef 16°
R.D. 2,83 t/m³ R.D. broken rock = 1,7 t/m³

NB. Reef is fully exposed on both sides of the drive.

Calculate the tons trammed if 30 cm of ballast are left behind for 30m of the drive. Also the gold content of the rock trammed, and the average value of the development rock.

(10)

4.2 The sampling results of three development ends worked during a month in a section . are shown below :-

DEV END	DISTANCE ADVANCED (m)	OVERALL			PAY			
		DIST SAMPLED (m)	AVE CHAN WIDTH (cm)	AVE CMG/T	DIST PAYABLE (m)	AVE CHAN WIDTH (cm)	AVE CMG/T	% PAY
1	31.0	30.0	21.23	1472	21.0	20.68	1987	70
2	24.0	22.0	8.68	1137	11.0	9.73	1897	50
3	15.0	16.0	12.72	1962	12.0	13.35	2632	75

Calculate:

4.2.1 The average overall cmg/t.
4.2.2 The average channel width and value.
4.2.3 The average pay cmg/t
4.2.4 The average pay channel width and channel value.
4.2.5 The percentage payability

(15)

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QUESTION 5

The information given below shows the results and sampling of four raises:-

	Raise A	Raise B	Raise C	Raise D
Advance (m) on reef	28.0	30.0	24.0	18.0
Advance (m) off reef	10.0	12.0	Nil	5.0
Metres sampled	26.0	32.0	20.0	15.0
Reef Width (cm)	60.0	69.0	50.0	40.0
Channel Width (cm)	90.0	100.0	60.0	40.0
Cmg/t	1000	1220	1350	950
Width (m)	1.8	1.7	1.6	2.0
Height (m)	2.0	1.9	1.5	1.6

RD = 2.75t/m³

Calculate:-

5.1) the average Reef width and value, Channel width and value as well as the cmg/t for all raises combined.

5.2) the reef and channel tons and gold contents for each raise.

5.3) the total tons broken and gold content.

5.4) the average value of the tonnage broken.

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TOTAL 100