Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
(ONLINE)
SEMESTER II
SESSION 2020/2021

COURSE NAME	:	GEOMATIC ENGINEERING
COURSE CODE	:	BFC 20703
PROGRAMME CODE	:	BFF
EXAMINATION DATE	:	JULY 2021
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS QUESTION PAPER CONSISTS OF **FIVE (5)** PAGES

Q1 (a) Explain the difference between plane survey and geodetic survey with respect to geomatic measurement.

(10 marks)

(b) Describe **TWO (2)** field of surveying works where consists measurement in accuracy and precision.

(10 marks)

Q2 (a) Levelling survey is a measurement technique to obtain height differences between two points. Explain in detail with appropriate examples of levelling survey field work procedures to establish a new temporary bench mark (TBM).

(5 marks)

(b) The data from a levelling survey are shown in **Table Q2**. Using the rise and fall method, calculate levelling measurement from **TBM1** to **TBM2**

(i) Calculate all reduce level and perform arithmetic checks to support your answer.

(10 marks)

(ii) Plot the long section profile along the chainage .

(5 marks)

Q3 (a) A traverse is a means of providing horizontal control in which the rectangular coordinates of the series of control points (traverse stations) located around a site are determined from a combination of angle and distance. Three types of traverse usually perform from a known datum, briefly explain the method of traverse and its application according to the type of construction works.

(8 marks)

(b) The coordinates of point A are E 311.617 m, N 447.245m, The distance from A to B = 57.916m and bearing from A to B = 37°11'20", distance A to C = 85.071 m and bearing A to C = 205°33'55".

(i) Calculate the coordinates AB and C.

(6 marks)

(i) Illustrate the positions of the point AB and C

(3 marks)

(ii) Find the distance and full circle bearing for BC.

(3 marks)

Q4 (a) Give **TWO (2)** methods of detail survey measurement except tacheometry and briefly explain in term of instrument and accuracy.

(6 marks)

(b) Tacheometry is used to determine the elevation of the reduce level at survey area (Point B). Name and illustrate the tacheometry stadia by reffering equation below,

$$R.L_{\ Point\ B} = R.L_{Stn\ A} + H.I - V - h$$

(5 marks)

(c) **Table Q4** is refer to tacheometry survey conducted with a K constant ,100 and the addition constant, C is 0.

(i) Determine the distance between point A - B, A – C and B – C

(6 marks)

(ii) Calculate reduced level B and C if reduce level A is given 40.775m.

(3 marks)

Q5 (a) Road's Superelevation help a safety road. Explain the purpose of providing superelevation curves in road design.

(5 marks)

(b) One circular curve with radius of 250 meter will build up for connected two straight road.The chainage of intersection point is **CH2942.00** and the deflection angle is **60°00'00".** The curve will be marked at every offset of 20 meter. Calculate the setting out data required to peg the curve with offset method from deflection angle.

(15 marks)

- END OF QUESTIONS -

FINAL EXAMINATION

SEMESTER/SESSION : SEM II / 2020/2021
COURSE NAME : GEOMATIC ENGINEERING
PROGRAMME CODE : BFF
COURSE CODE : BFC20703

Table Q2

Back-sight	Inter-mediate sight	Fore-sight	Reduce level (m)	Distance (m)	Chainage
0.771			41.00		0 (TBM 1)
0.802		1.552		80	40
	2.311				80
3.580		1.990		80	120
	1.220				160
	3.675				200
2.408		4.020		80	240
	0.339				280
		0.157	40.850	80	320 (TBM 2)

FINAL EXAMINATION

SEMESTER/SESSION : SEM II / 2020/2021
COURSE NAME : GEOMATIC ENGINEERING
PROGRAMME CODE : BFF
COURSE CODE : BFC20703

Table Q4

From	To	Reading			Instrument Height	Vertical Angle
		Upper	Middle	Lower		
A	B	3.770	2.597	1.424	1.453	+ 12° 00' 00"
	C	2.452	1.669	0.886		- 7° 00' 00"
	D	3.000	2.500	2.000		+10° 00' 00"