Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2014/2015

COURSE NAME	:	GEOMATIC ENGINEERING TECHNOLOGY
COURSE CODE	:	BNP 10503
PROGRAMME	:	2 BNC / 2 BNB / 2 BNC
EXAMINATION DATE	:	JUN 2015 / JULY 2015
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **FOUR (4)** QUESTIONS ONLY

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

Q1 (a) Define the term 'geomatics'.

(4 marks)

(b) State the meaning for the following terms :

(i) North Magnet
(ii) True Bearing
(iii) The Angle of Zenith

(6 marks)

(c) Describe the **THREE (3)** phases in a survey work process.

(7 marks)

(d) Recent developments in the field of geomatics are to determine the position with Global Positioning System (GPS) and mapping using Geographic Information System (GIS). Explain both fields of geomatics.

(8 marks)

Q2 An engineer conducts a leveling work form Bench Mark BMJ1234 (17.152m). **TABLE 2** shows, some of the Intermediate Sight (IS) is placed inverted underside of bridge.

(a) Illustrated the leveling using appropriate diagram.

(4 marks)

(b) Calculate the reduce level of point A, B, C, and D, using rise and fall method including arithmatic check.

(10 marks)

(c) Calculate the height of the bridge from the center of the road.

(6 marks)

(d) Describe a mistake in leveling work and give the example how we can minimized the errors.

(5 marks)

TABLE 2

BS	IS	FS	Remarks
2.790			BMJ1234 =17.152m
	1.632		A (Center of Road)
	-2.417		B (Underside of Bridge)
-1.963		-3.162	C (Underside of Wall)
3.082		2.369	D (Curve of Road)
		4.693	BMJ1234 =17.152m

Q3 (a) Traverse surveying in engineering purposes can be divided into two parts, the preparation of plan area and construction projects. Discuss **FOUR (4)** functions of survey traverse in preparation of the plan area.

(8 marks)

(b) **TABLE 3** shows the observed data using the traverse total station. If the coordinates of the station 1 was U5678.00 and T1234.00;
Calculate:

(i) Latitude and departure.

(5 marks)

(ii) Adjusted latitude and adjusted departure using Bowditch method.

(8 marks)

(iii) Coordinates all stations and the traverse area.

(4 marks)

TABLE 3

Station	Bearing	Distance
1	26 10	285.10
2	104 35	610.45
3	195 30	720.48
4	358 18	203.00
5	306 54	647.02

Q4 (a) Illustrate the concept of EDM tachometry using appropriate diagram.

(10 marks)

(b) Discuss why tacheometry stadia is only suitable for less than 50 m observation.

(5 marks)

(c) **TABLE 4** observations pertain to tacheometry stadia conducted with constant 100 and additive constant 0. Determine the distance of point A to point B and point B to point C, and reduced level of B and C. The given RL of A is 69.775m.

(10 marks)

TABLE 4

Point	To	Staff reading			Instrument Height	Vertical Angle
A	B	0.550	1.640	2.730	1.600	0° 00' 00"
B	A	0.605	1.700	2.795	1.560	0° 00' 00"
B	C	1.845	2.520	3.195	1.560	13° 56' 20"

Q5 (a) Countour characteristic is an important espect to produce topographical plan and project planning. Explain **TWO (2)** characteristics of contour with suitable diagram.

(10 marks)

(b) Simpson and trepizodial methods were used to calculate area. State the differences between them with suitable diagram.

(5 marks)

(c) The volume from spot heights is generally calculated using the grid elements as shown in **FIGURE Q5**. The grid size is given as 12m and the formation level as 9m level. Find the volume within the grid using triangle method.

(10 marks)

- END OF QUESTION -

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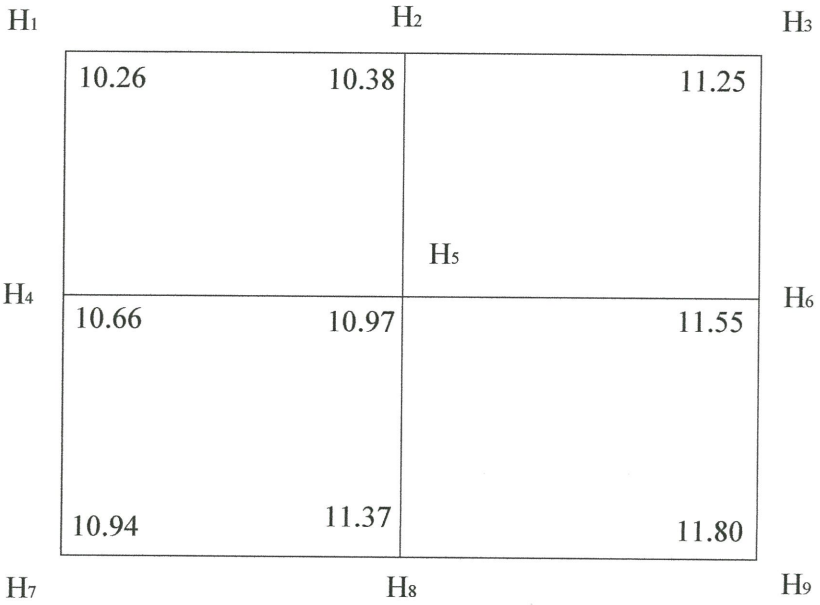

FIGURE Q5