THE HONG KONG POLYTECHNIC UNIVERSITY

DEPARTMENT OF LAND SURVEYING AND GEO-INFORMATICS

Programme	:	04001 MSc/PgD in Geomatics
Subject Title	:	Spatial Data Acquisition

Subject Code	:	LSGI522	**Session**	:	Semester 1, 2018/19
Date	:	11 December 2018	**Time**	:	19:00 – 22:00
Time Allowed	:	3 hours	**Subject Examiner(s)**	:	Dr Wenbin Xu (LSGI)

This question paper has a total of __6__ pages.
(Some pages may be intentionally omitted.)

Instructions to Candidates :	**This is an open-book exam.**
	This paper has **TWO** sections, A and B.
	Section A: **Multiple** Choice. Answer **ALL** questions.
	Section B: Answer **ALL** questions.
	Total marks = 100.

Available from Invigilator :	Nil

DO NOT TURN OVER THE PAGE UNTIL YOU ARE TOLD TO DO SO

Section A: Multiple choice (each question might have more than one correct answer).
                 Each question 2.5 marks, total marks 50.

They are all Multiple Choice questions.

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- END OF SECTION A -

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Section B: Answer **ALL** questions. **Each question 10 marks.**

Question 21

(a)   What is InSAR?   (2 marks)
(b)   How is it used to measure deformation of the surface of the Earth?   (3 marks)
(c)   What advantages does it have over traditional surveying/and or other space-based techniques
       for measuring deformation? Give at least one specific example.   (5 marks)

Question 22

Seattle and Brussels are on nearly the same line of latitude. That means that if you are heading east
on a straight line from Seattle, you'll reach Brussels. Checking carefully of the following two figures
and answer the following questions:
(a)   What does the scale of map mean?   (2 marks)
(b)   Which map projection does (A) use?   (2 marks)
(c)   What is the advantage of this map projection?   (2 marks)
(d)   Which red line shows the longer distance between these two cities in (A) and (B) in reality and
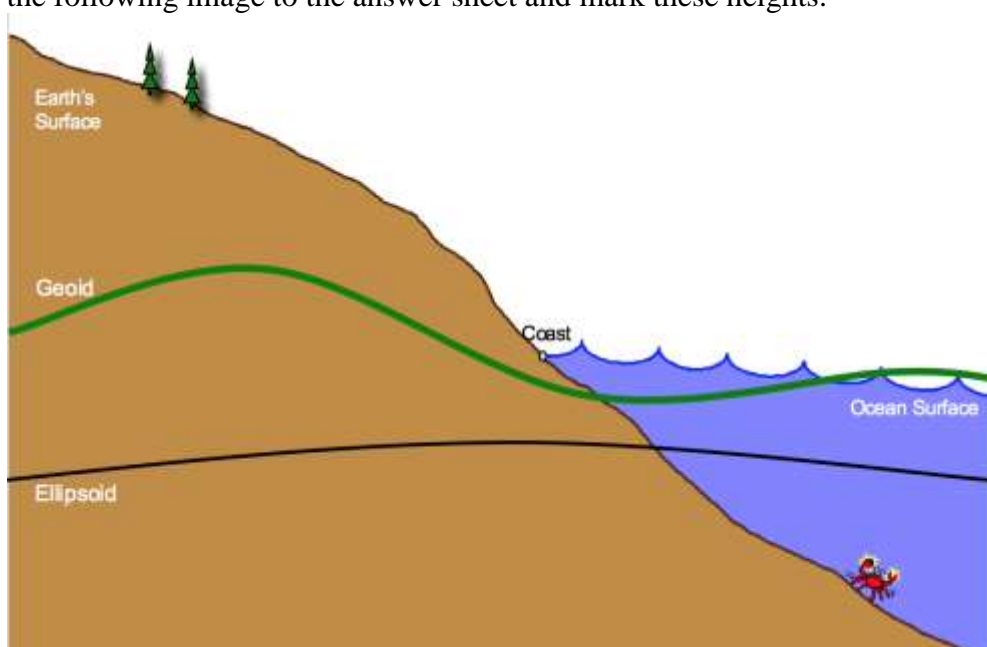   explain the reasons?   (4 marks)

(A)   (B)

Question 23

(a)   What heights do GPS, Leveling, Gravity and Satellite Altimetry measure?   (6 marks)
(b)   Copy the following image to the answer sheet and mark these heights.   (4 marks)

Question 24

(a) What are the three segments of GPS and what are their functions? (6 marks)
(b) Show how they interact with each other using a diagram. (4 marks)

Question 25

(a) Which of the following coordinates is more precise? Why? (4 marks)
A. 114.15769^0E, 22.28552^0N B. 114.16^0E, 22.29^0N

(b) Which of the following coordinates is more accurate? Why? (4 marks)
A. 114.15769^0E, 22.28552^0N B. 114.16^0E, 22.29^0N

(c) What is the standard deviation of the numbers 3, 8, 12, 17 and 25? (2 marks)

- END OF PAPER -