# UTHM
### Universiti Tun Hussein Onn Malaysia

# UNIVERSITI TUN HUSSEIN ONN MALAYSIA

## FINAL EXAMINATION
## SEMESTER II
## SESSION 2022/2023

| | | |
|---|---|---|
| COURSE NAME | : | APPLIED GEOMATIC |
| COURSE CODE | : | BFG 40703 |
| PROGRAMME CODE | : | BFF |
| EXAMINATION DATE | : | JULY/ AUGUST 2023 |
| DURATION | : | 3 HOURS |
| INSTRUCTIONS | 1. | ANSWER ALL QUESTIONS |
| | 2. | THIS FINAL EXAMINATION IS CONDUCTED VIA **CLOSED BOOK.** |
| | 3. | STUDENTS ARE **PROHIBITED** TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA·CLOSED BOOK |

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

TERBUKA

**Q1** (a) Briefly explain the following coordinates systems:

       (i)     Geodetic system
       (ii)    Cartesian System
       (iii)   Rectangular system
       (iv)   Polar System

(5 marks)

(b) With the help of appropriate diagrams, list the process of map projection.

(5 marks)

(c) A map projection property is an alteration of area, shape, distance, and direction of map projection. Describe the properties for facets of map projection that can either be held true, or be distorted.

(5 marks)

**Q2** (a) The tabulation of data required to setting out curve from chord. Radius of curve is 720m whose 2 straights ways connected with its tangent deflection angle is 12°13'14". The chainage of I, being 855.94m. Design the curve, with 20m subchord.

(15 marks)

(b) List out the purposes and reasons of curve ranging.

(5 marks)

**Q3** (a) From two stations A and B the clockwise horizontal angles to a station C were measured as ∠BAC = 259.393° and distance AC = 672.84m. The coordinates of two stations A, B, are E 31644.92m, N 8362.71m, E 30825.07m, N 7988.14m respectively. Determine the coordinates of C.

(10 marks)

(b) Setting out for controlling grading excavation generally occurs in drainage schemes where the trench, bedding material and pipes have to be laid to a specified design gradient. Manhole will need to set up every change of direction or at least every 100m on straights runs. Explain in detail the method should be implemented.

(10 marks)

TERBUKA

**Q4**    (a)    Using drones allow to solve the process of obtaining and collecting data. State the advantages of using drones for mapping.

(6 marks)

(b)    Light Detecting and Ranging (LiDAR) is used in a wide range of land management and planning efforts, including hazard assessment (including landslides, tsunamis, and floods), forestry, agriculture, geologic mapping, and watershed and river surveys. Why do drones with LIDAR sensor technology need to be completely integrated?

(6 marks)

(c)    Justified the different types of drones and uses.

(5 marks)

(d)    What is the purpose of Control Point other than to observe Ground Control Point.

(3 marks)

**Q5**    (a)    The GPS system can be broadly divided into three segments. Illustrate all segments with the help of appropriate diagrams.

(5 marks)

(b)    Humans have looked to the skies to find their way since ancient times. Nowadays we use satellites (GPS) around high above earth and can tell us exactly where we are. Explain, how the GPS work?

(5 marks)

(c)    GPS is a technology rely on to provide accurate and reliable data for client across a wide range of industries and applications. To collect the data the specifics GPS surveying techniques were used to acquire data. Describe **THREE (3)** primary methods of GPS measurement.

(10 marks)

TERBUKA

**Q6**   (a)   The length of a football field from goal post to goal post scales 41.20mm on a vertical image. Find the approximate dimensions (in meters) of a large rectangular building that also appears on this image and whose sides measure 20.6mm by 10.3mm. Football goal posts are 120m apart.

(5 marks)

(b)   With the help of **Figure Q6(c)**, explain the concept of remote sensing observation process.

(5 marks)

(c)   GIS and remote sensing techniques have become indispensable and potential tools for solving problems in civil engineering. Data from remote sensing mostly correlate spatial data to their attributes making them useful in this field. Explain remote sensing proved to be impactful when it comes to flood modelling.

(10 marks)

-   **END OF QUESTIONS**   -

## FINAL EXAMINATION

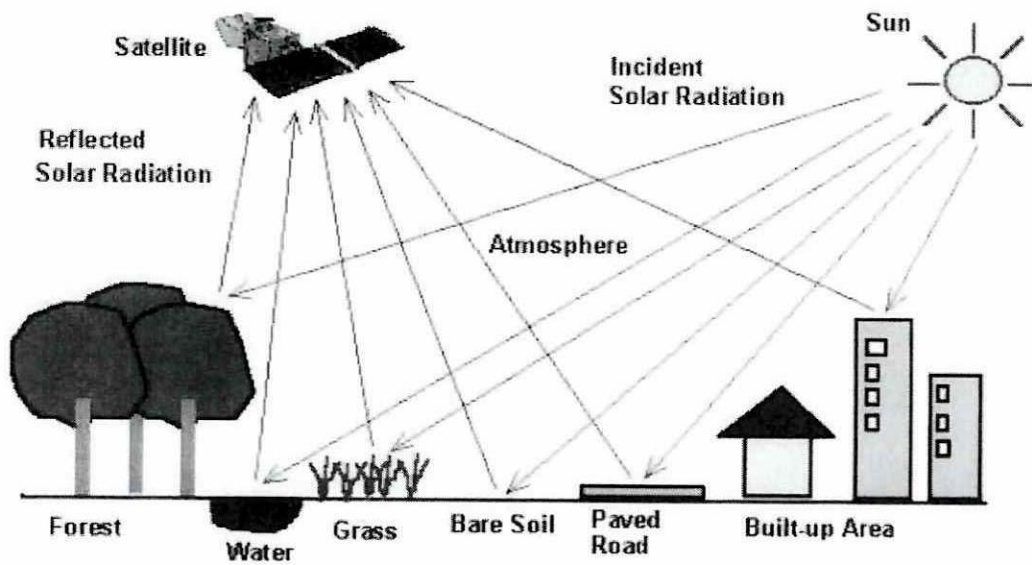| | | | |
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**Figure Q6c** : The remote sensing observation concept