[HKCD-25]

CERTIFICATE/DIPLOMA EXAMINATION 2025

Post Graduate Certificate in Geoinformatics

Fundamentals of GIS

[GI 01]

Full Marks: 70 *Time:* 3 hours

The figures in the margin indicate full marks for the questions

(1) Answer any five from the following questions :(each in around 50 words) 2x5=10

(a) What are the major areas of application of geoinformatics.

(b) Define ITRF.

(c) Define flattening of an ellipsoid. Illustrate with an example.

(d) What do you mean by geospatial?

(e) Write two functions of a DBMS

(f) Mention the properties of the Geo TIFF and the GPX file formats.

(2) Answer any four from the following questions (each within 120 words) 3x4=12

(a) Explain the significance of map-making.

(b) Write the properties of Bonne's Conical Projection.

(c) Write three different ways in which geodatabase can be created in geoinformatics.

(d) Discuss the useful file formats of Vector data used in GIS

(e) Differentiate the DTM and the DSM

(3) Answer any four from the following questions (each within 200 words) 6x4=24

(a) Write about the basicS of GNSS.

(b) Discuss the map projections in GIS that are used for hemisphere mapping. Explain with the help of a diagram.

(c) How are the components of GNSS interrlated to each other. Explain with a suitable diagram.

(d) Discuss the role of TIN model in GIS.

(e) Discuss the process of data input and data output in GIS

(4) Answer any three from the following questions (each in around 300 words) 8x3=24

(a) Give a comprehensive idea on present day significance of maps.

(b) Explain the planar coordinate system in detail.

(c) How is GIS useful in social and infrastructural context. Explain

(d) Discuss the methods of obtaining a DEM.

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[HKCD-25]

CERTIFICATE/DIPLOMA EXAMINATION 2025

Post Graduate Certificate in Geoinformatics

Basics of Remote Sensing and Global Navigation Salellite

[GI 02]

Full Marks: 70 *Time:* 3 hours

The figures in the margin indicate full marks for the questions

(1) Answer any five from the following questions : (each in around 50 words) 2x5=10

(a) What do you mean by ALBEDO?

(b) What are the types of remote sensing platforms?

(c) Define spatial Resolution.

(d) Define Thermal remote sensing.

(e) Mention any two applications of Microwave remote sensing.

(f) Write the full form of 'GNSS'.

(2) Answer any four from the following questions: (each within 100 words) 3x4=12

(a) Mention atleast three advantages of GPS surveying over conventional surveying method.

(b) Explain the spectral resolution of a sensor.

(c) Define Hyperspectral remote sensing. Mention any two applications of Hyperspectral remote sensing.

(d) Define 'Black body' with suitable examples.

(e) Write a short note on the application of thermal remote sensing.

(3) Answer any four from the following questions: (each within 200 words) 6x4=24

(a) Explain the vertical aerial photographs and oblique aerial photographs.

(b) Explain the factors affecting the accuracy of GPS DATA.

(c) Explain spatial resolution, spectral resolution, Temporal Resolution in Remote sensing with examples.

(d) Write a note on image enhancement techniques.

(e) Write a note on 'LANDSAT' programme.

(4) Answer any three from the following questions (each in around 300 words) 8x3=24

(a) Define GPS. Explain the segments of GPS in detail

(b) Explain the elements of visual image interpretation with examples.

(c) Define remote sensing platforms. Discuss the characteristics of different platforms used in remote sensing.

(d) Write an explanatory note on India's remote sensing programme.

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[HKCD-25]

CERTIFICATE/DIPLOMA EXAMINATION 2025

Post Graduate Certificate in Geo-informatics

Spatial Analysis and Application in Geo-information

[GI 03]

Full Marks: 70 *Time:* 3 hours

The figures in the margin indicate full marks for the questions

(1) Answer any five from the following questions :(each in around 50 words) 2x5=10

(a) What are some common sources of spatial data?

(b) What does 'Surface Significant Points' refer to?

(c) What is spatial buffering?

(d) Define the term analytical modelling.

(e) What are the two processes of Geometric Corrections?

(f) How can the error in geo-referencing be reduced?

(2) Answer any four from the following questions (each within 100 words) 3x4=12

(a) Discuss the role of spatial data structures in enhancing GIS performance.

(b) What are the primary applications of raster overlay in geoprocessing?

(c) Explain the two common image classification methods.

(d) Explain the various types of accuracies in image classification.

(d) Describe the role of geoinformatics in land use and land cover classification.

(3) Answer any four from the following questions (each within 200 words) 6x4=24

(a) Discuss the two types of conditional overlay in Raster data structure.

(b) Describe the importance of human process modelling in GIS applications.

(c) Describe the concept of spatial resolution in digital images and how it affects the quality of image analysis.

(d) Discuss the concept of band ratio in remote sensing and its utility in analyzing spectral data.

(e) Describe the importance of early warning systems for disasters and hazards in the context of geoinformatics.

(4) Answer any three from the following questions (each in around 300 words) 8x3=24

(a) Explain how union and intersection operations can be utilized in land use planning and management.

(b) Describe the process of unsupervised classification and the types of algorithms commonly used in this approach.

(c) Discuss the importance of accuracy assessment in the context of image classifications and its implications for real-world applications.

(d) Discuss the role of geoinformatics in water resource management.

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