III/IV B.Tech. DEGREE EXAMINATION

Second Semester

Geo-Informatics Engineering

ARTIFICIAL INTELLIGENCE

(Effective from the admitted batch 2019-20)

Time: 3 hours

Maximum: 70 marks

Answer any FIVE questions.

Question 1 is compulsory.

All Questions carry equal marks.

1. (a) Define Artificial Intelligence
   (b) Define backward chaining
   (c) what are quantifiers and its types
   (d) List the various search strategies.
   (e) Define planning
   (f) Backtracking
   (g) Define Unification

2. (a) Mention some applications that fall within the scope of AI and sub areas of AI.

   (b) Write the chief characteristics of production system. Discuss in detail.

3. (a) What is the significance of knowledge representation and what are its issues.

   (b) What is meant by script? Write a script for restaurant problem.

4. (a) Explain about rules for conceptual dependencies.

   (b) Write detailed notes on Boyesian networks.

5. (a) Explain how iteration and recursion is done in LISP with examples.

(b) What are the features of prolog? Discuss the bases the basics elements of prolog.

6. (a) Explain constraint satisfaction with the help of crypt arithmetic problem.

(b) Discuss the following in detail

   i. Hill Climbing

   ii. Best first search

7. (a) Briefly explain the architecture of expert systems.

(b) What is hierarchical planning? Explain with relevant examples?

8. (a) What is natural language processing? Explain the steps in process.

   (b) Explain pragmatic processing in AI.

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III/IV B.Tech DEGREE EXAMINATION

Second Semester

Geo-Informatics Engineering

DIGITAL IMAGE PROCESSING-I

(Effective from the admitted batch 2019-20)

Time: 3 hours

Maximum: 70 marks

Question 1 is compulsory.
Answer any FOUR from remaining questions.
Answer the parts of any question at one place.
All Questions carry equal marks.

1) a) What is an Image Histogram?
   b) Define BIP.
   c) What are the measures of Central Tendency?
   d) What is Automatic Contrast Enhancement?
   e) What is Training Dataset?
   f) List out various Geometric Distortions.
   g) What is the effect of atmosphere on radiation?
2) a) What is a Digital Image? Give its charactertics and data sources.
   b) Define various components and system considerations for Digital Image Processing.
3) a) Define Histogram Matching. Explain Density Slicing with neat sketches.
   b) What is the difference between contrast modification and contrast stretching with figures?
4) a) List out the sources of Radiometric Corrections.
   b) Explain the corrections for Geometric Corrections.
5) a) Define the process of Image Registration
   b) What is Unsupervised Classification?
6) a) Define various Interpolation Techniques.
   b) Give an account of various Univariate and Multivariate statistics.
7) a) What is Sampling? What are the different methods in Sampling?
   b) What are the approaches and different forms of imagery for image interpretation?
8) a) Define Histogram Equalisation and explain the uses and anomalies.
   b) What is the difference between a census and a sample? Explain with conceptual model.

Pranaya

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III/IV B.Tech. DEGREE EXAMINATION

Second Semester

Geo-Informatics Engineering

Elective-I: GEOINFORMATICS FOR OCEAN RESOURCE EVALUATION

(Effective from the admitted batch 2019-20)

Time: 3 hours

Maximum: 70 marks

Answer any FIVE questions. Question 1 is compulsory.

All Questions carry equal marks.

1. (a) What is Up-welling Enradiance?
   (b) Define Attenuation Co-efficient.
   (c) Define Stephan Boltzman's law.
   (d) Define Dielectric Constant
   (e) What are Benthos?
   (f) What is Scatterometer ?
   (g) Write about Jerlov water types.

2. (a) Define wave particle quality and interaction of EMR with ocean water.

   (b) Give an account of procedures for computation of aerosol optical thickness

3. (a) Write a short note on Rayleighscattering and Atmospheric absorption

   (b) Write a note on suspended sediment concentration

4. (a) Give an account on principle of passive microwave radiometer

   (b) Explain the microwave properties of sea water.

5. (a) Explain the applications of remote sensing for study of coastal methods, coral reefs and marine ecology.

   (b) Describe methodology to monitor coastal ecosystem using Remote Sensing.

6. (a) Give a detailed account of marine GIS.

   (b) Write a note on Radar altimeter

7. (a)Briefly explain about various ocean observing systems.

   (b) Discuss various material and methods for ocean state forecasting

8. (a) What is the impact of sea level change on coastal Estuary/Lagoonal system.

   (b) Write about the applications of RS data for pigment mapping & productivity estimation.

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III/IV B.Tech. DEGREE EXAMINATION

Second Semester

Geo-Informatics Engineering

GEODESY AND GPS

(Effective from the admitted batch 2019-20)

Time: 3 hours Maximum: 70 marks

Answer any FIVE questions. Question 1 is compulsory.

All Questions carry equal marks.

1. (a) What is Triangulation?
   (b) Define Mean sea level.
   (c) What is WGS 84
   (d) Define Ellipsoidal Earth
   (e) What is GPS Time ?
   (f) Write about Astronomical position
   (g) How Tidal Datum is computed?

2. (a) Give an account of basic principles of geodesy.

   (b) Write an account of geodetic survey systems.

3. (a) What is Geodetic datum? Explain vertical and horizontal datums.

   (b) Explain WGS 84 and Tidal datums.

4. (a) Write an account of satellite Geodesy.

   (b) Describe the principle of radar altimeter.

5. (a) Explain the role of different segments of the Global Positioning System.

   (b) What are the different error sources and their handling procedures in GPS.

6. (a) Give an account of application of GPS in Defence.

   (b) Explain various types of GPS receivers.

7. (a) Give an account of Geodetic and Cartesian coordinate system.

   (b) Explain the principles of coordinate transformation.

8. (a) Define GPS and describe the observation principles of GPS.

(b) Write a short on GPS error handling procedures.

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(MODEL PAPER)

Geo-Informatics Engineering

III/IV B.Tech. DEGREE EXAMINATION

Geo-Informatics Engineering

Second Semester

GEOLOGICAL ENGINEERING

(Effective from the admitted batch of 2019-2020)

Time: 3 Hours

Max. Marks: 70

Question no.1 is compulsory.
Answer any FOUR from remaining.
All questions carry equal marks.
Answer all parts of any question at one place

1. Define the following
   a. Palaeontology
   b. Fault, Fold and joints
   c. Hydrothermal and sedimentary ores
   d. Unconformities & Lineation
   e. Ore dressing and Mineral economics
   f. Isotope geochemistry
   g. Superposed folding

2. a. Define Coal. What are the important physical properties of the coal? Explain
   b. Write an essay on the origin of the world coal deposits.

3. a. Discuss briefly about the role of trace elements in the magma evolutionary processes.
   b. Define metamorphism. Explain briefly about factors controlling metamorphism.

4. a. Discuss briefly about the stress and strain diagram of materials with a neat sketch?
   b. Write an essay on the primary and secondary structures of the rock formations.

5. Define palaeontology. Write about the classification of invertebrates. Add a note their significance in the geological time scale.

6. a. Discuss about the utility of different ocean resources by human beings.
   b. What is ore reserve, Explain? How do you estimate ore reserve of the geological formation?

7. a. Write a detail note on the taconites and their significance.
   b. Explain the Carbon geochemical Cycle.

8. Give an account of elements of Geochemical Thermodynamics and importance of Trace elements.

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(MODEL PAPER)

III/IV B.Tech. DEGREE EXAMINATION

Geo-Informatics Engineering

Second Semester

GEOGRAPHIC INFORMATION SYSTEM-II

(Effective from the admitted batch of 2019-2020)

Time: 3 Hours

Max. Marks: 70

Question no.1 is compulsory.
Answer any FOUR from remaining.
All questions carry equal marks.
Answer all parts of any question at one place

1. Answer the Following
   a. Explain Change in Dimensionality.
   b. Define Non-Spatial Data Analysis.
   c. Explain Dissolve, Merge and Clip of Polygons.
   d. Define Spatial Modeling.
   e. Define Spatial Resolution, Thematic Resolution and Temporal Resolution.
   f. Explain the Rubber Sheeting, Tin Sheeting.
   g. Define Network Analysis with suitable example.
2. a. Write briefly about line intersection with polygons
   b. Explain in detail about union and intersection of polygons
3. a. Write a brief note on Local operators in GIS data Analysis
   b. Explain the uses of buffer zones and zonal operations with neat diagrams in GIS
4. Explain in detail about GIS applications in Water Resource Management of Visakhapatnam City.
5. a. Write briefly about Data Quality in GIS
   b. Explain Spatial Accuracy and Temporal Accuracy
6. a. Explain Multi Criteria Evaluation in GIS with a Suitable example
   b. Explain the recent trends and advanced applications in GIS.
7. Define Spatial modeling and explain the external and Internal models in GIS.
8. Explain what are the components of data quality in Spatial Data Transfer Standard (SDTS).

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