



SYMBIOSIS

INTERNATIONAL UNIVERSITY

Ph.D. Entrance Test 2017

Faculty of Computer studies

Syllabus & Questions for Entrance Test

❖ **Operating System**

Multiprogramming, multiprocessing, and multitasking, Virtual memory, paging, fragmentation, Mutual exclusion. Critical regions, lock and unlock, CPU scheduling, I/O scheduling, Resource scheduling, Deadlock and scheduling algorithms. UNIX System, Windows System.

❖ **Database Concepts**

Basic concepts, Database Modeling, The Relational Data Model, SQL, Integrity and Security, Relational Database Design, Object-Oriented Databases, Distributed and Cloud, Databases, Big Data.

❖ **Computer Networks**

The OSI model, TCP/IP model, Local area Networks (LAN), Metropolitan Area Networks (MAN), Wide Area Networks (WAN), Wireless Networks, Switch/Hub, Bridge, router, Gateways, Concatenated virtual circuits, Tunnelling, Fragmentation, Firewalls, Cryptography - public key, secret key. Domain Name System (DNS) - Electronic mail and World Wide Web (WWW). The DNS, Resource Records, Name Servers. E-mail architecture and Servers.

❖ **Data Warehouse**

Environment, Dimensional Modeling, Extract Transform and Load (ETL), Online Analytical Processing (OLAP), Business Intelligence (BI)

❖ **Data mining**

Knowledge Representation, Data preprocessing, Association rules, Classification, Clustering.

❖ **Geo informatics**

History of GIS, Components of GIS, Hardware, software, people, GIS functionality, Data input, data management and analysis, Applications of GIS, Geo referencing,

Data generation: Data sources, Data input, Digitization, On-screen digitization, Choice between raster and vector, Data editing, Errors and quality control. Data structures: Hierarchical Structure and relational, Raster data models, Grid data, tessellation data model, Topological data model, Overlay. Proximity analysis (buffering), Overlay analysis (Point-in-polygon, line-in-polygon,



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polygon overlay), Network analysis (Path finding, tracking, distribution analysis), Dynamic segmentation, route analysis, Type of Network dataset, Boolean Algebra

Definitions, Type of Remote Sensing, Sensors and platforms, Space remote sensing, Active and passive remote sensing, Satellite image Resolutions, Swath and width, Data generation : Data sources, Data input, Physical bases of Remote Sensing, Elements of satellite images, Georeferencing and mosaicing , Digital nature of satellite data, radiometric and geometric corrections, Image enhancements, , Negative Piece-wise linear transformation, Histogram processing, Histogram matching, Low contrast, Bright contrast, High contrast, Spatial enhancement, Radiometric enhancement, Spectral enhancement, Spatial enhancement.

Photogrammetry Terminologies, History, Types of Photogrammetry, Photogrammetric sensing systems Aerial photogrammetry, Stereoscopy, Interior Orientation, End Lap Side Lap and Flight Map, Geometry of Vertical Photograph, Aerial photo errors, Relief Displacement, X and Y Parallax, Vertical Exaggeration, Exterior Orientation, Aero Triangulation.



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Sample Questions

1. Which of the following is not an example of spatial data?
 - (a) Times of particular events.
 - (b) Points showing location of discrete objects.
 - (c) Polygons showing the area occupied by a particular land use or variable
 - (d) Lines showing the route of linear objects.

2. Which one of the following frequency regions is a part of sun's radiation?
 - (a) Infrared
 - (b) Ultraviolet
 - (c) Visible
 - (d) All of the above

3. The relief displacement of a minar 72 m high on photograph is 7.2 mm and its top appears 10 cm away from principal point. The flying height of the camera, is
 - (a) 1000 m
 - (b) 1500 m
 - (c) 500 m
 - (d) 2000 m

4. Which algorithm is used to find correlations among different attributes in a data set?
Associative algorithm
 - a. Association algorithm
 - b. Time Series algorithm
 - c. Series algorithm

5. A definition or a concept is----- if it classifies any examples as coming within the concept
 - a. Complete
 - b. Consistent
 - c. Constant
 - d. None of these