Year - April 2024

TYBSC-IT

SEM - VI

No. of pages - 11

Paper / Subject Code: 88704 / Principles of Geographic Information Systems

TYBSC - IT - Sem VI

TIME: 2½ Hours **Total Marks: 75**

N. B.: (1) **All** questions are **compulsory**.
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
(3) Answers to the **same question** must be **written together**.
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat labeled diagrams** wherever **necessary**.
(6) Use of **Non-programmable** calculators is **allowed**.

1. Attempt any three of the following: **15**

a. What is topology? Explain spatial relationships with the help of suitable diagram.
b. What is GIS? Give any five GIS applications of real life.
c. What is map? Explain how modelling helps in representing real world?
d. Write short note on i) Spatial databases and spatial analysis, ii) Data types and values
e. Explain regular tessellation with the help of diagrams.
f. State and explain the a set of rules defines the topological consistency for simplex of that space with the help of suitable diagrams.

2. Attempt any three of the following: **15**

a. Distinguish between Vector data and Raster Data.
b. Explain Raster encoding with the help of example.
c. Explain the functional components in GIS architecture and functionality with the help of suitable diagram.
d. Write short note on:
i) Spatial data capture and preparation ii) Spatial data storage and maintenance
e. Explain the linking GIS and DBMS.
f. Explain the relational data model using suitable example.

3. Attempt any three of the following: **15**

a. Explain 2D geographic coordinate system using suitable example.
b. Explain Root Mean Square used to mean location accuracy.
c. Write short notes on i) Vectorization ii) Lineage
d. Explain Geoid and ellipsoid with suitable diagram.
e. What is Kriging? Explain.
f. Explain the Map projection with it's types with the help of diagrams.

4. Attempt any three of the following: **15**

a. Explain the various Neighbourhood functions.
b. Perform the raster overlay operation to find:
R1:=CON((A="F")AND(B<5), 1, 0)
R2:=CON((A="F")XOR(B<5), 1, 0)

A=

F	F	F		F
F	F	F		
	F	F		F
	F	F	F	F
F			F	F

B=

7	6	7	7	4
7	7	6	7	4
4	4	6	4	4
6	6	4	4	4
6	7	6	6	7

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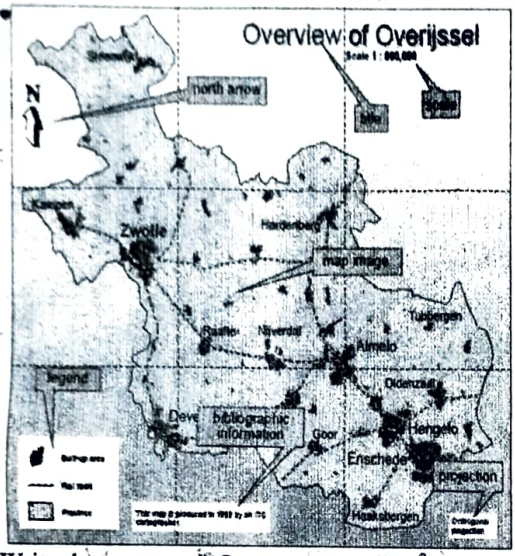
c. List any five examples where advanced computations on continuous fields are required.
d. Explain using example how Raster overlay operation can be performed using decision table?
e. Explain vector overlay operations using suitable diagram.
f. Lists any five common sources of error introduced into GIS analyses.

5. Attempt <u>any three</u> of the following:

a. Explain Bertin's six categories of visual variables.
b. Write short note on i) Topographic map, ii) Thematic map
c. What is cartography? Explain visualization process.
d. Explain the map terrain elevation.
e. Describe the cosmetics shown in map given below.



f. Write short note on i) On screen map, ii) Multimedia map, iii) Static map

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TYBSC - IT - sem VI

TIME: 2½ Hours **Total Marks: 75**

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(5) Draw **neat labeled diagrams** wherever **necessary**.
(6) Use of **Non-programmable** calculators is **allowed**.

1. **Attempt *any three* of the following:** **15**

a. Describe three Ds of security in context of your own home and organization.

b. Comment on "The defender has the impossible job of protection than the job of attacker."

c. Give the significance of a defense model – Onion model

d. Explain the following: E-mail worms, Trojans.

e. List and brief the different form of Man-in the- middle attacks (MITM).

f. Discuss three aspects of CIA triad.

2. **Attempt *any three* of the following:** **15**

a. What is the concept of zoning in the fundamental storage infrastructure? Explain.

b. Explain the Certificate based mechanism of Authentication.

c. Describe the asymmetric and symmetric key encryption.

d. Discuss the concepts of different Database backups.

e. Explain the following terms: Hijacking, Phishing

f. Summarize the steps of the authentication process of Smart card implementation.

3. **Attempt *any three* of the following:** **15**

a. Explain the following terms: NAT, PAT.

b. Write a short note on the Cisco Hierarchical Internetworking model.

c. Describe the concepts of Network hardening.

d. What are the mandatory features of Firewall? Explain.

e. Explain switches and Hubs.

f. Which are the different form of wireless attacks? Explain.

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4. **Attempt *any three* of the following:**

a. Give the significance of IDS. 15

b. List and explain the steps of successful IPS deployment plan.

c. Describe the evolution of modern VoIP Communication with its components.

d. Explain Network Protocol Attacks.

e. What are the types of classic security models? Explain.

f. Write a short note on Access Control List.

5. **Attempt *any three* of the following:** 15

a. Explain the classification of corporate physical assets.

b. Which factors have to be considered in physical security while choosing a site location? Explain.

c. Write a short note on Custom Remote Administration.

d. Describe the different phases of Secure Development Life cycle (SSDL).

e. Give the benefits of Cloud Computing Security services.

f. What are the general types of attacks in web applications? Explain.

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T4BSC IT Sem-VI

Paper / Subject Code: 88701 / Quality Assurance

(2½ Hours)

[Total Marks: 75]

N.B. (1) **All** questions are **compulsory**
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(3) Answers to the **same question** must be **written together**
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(5) Draw **neat labeled diagrams** wherever **necessary**.
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1. Attempt *any three* of the following: 15

a Explain the term 'Quality' with its different views.
b Write a short note on Total Quality Management.
c Differentiate between continual and continuous improvement cycles.
d Explain the product requirements.
e Write a short note on pillars of the quality management system.
f How do Tools vary from Techniques?

2. Attempt *any three* of the following: 15

a Differentiate between regression testing and retesting.
b Write a short note on Principles of Software Testing.
c Explain the fundamental test process.
d Write a short note on White box testing.
e Differentiate between error, defect and mistake in software.
f What are the various skills required by a good tester?

3. Attempt *any three* of the following: 15

a Create equivalence classes for login form.
b Explain Boundary Value Analysis technique with the help of an example.
c Explain the following terms and write the steps to identify du and dc paths.
i)Defining Node ii) Usage Node iii) Definition Use Path iv) Definition Clear Path
d Demonstrate the steps to create a cause-and-effect graph with the help of an example.
e Explain Decision table technique with the help of an example.
f Explain Equivalence classes along with Single fault assumption and Multiple fault assumption.

4. Attempt *any three* of the following: 15

a Define and explain verification with its advantages and disadvantages.
b Explain V Test model along with its pros and cons.
c Differentiate between Self review and Peer review.
d Explain the Phases of a formal review in brief.
e Write a short note on Levels of Validation.
f Explain the differences between beta and alpha testing

5. Attempt *any three* of the following: 15

a Write a short note on Requirement testing.
b Explain Big bang integration testing with its advantages and disadvantages.
c Describe Security testing in detail.
d Describe the benefits and drawbacks of GUI testing.
e Differentiate between Load and Stress testing.
f What role does usability testing play? Explain.

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Paper / Subject Code: 88704 Principles of Geographic Information Systems

TYBSc IT - Sem VI

(2 Hours)

[Total Marks: 75]

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(4) Numbers to the **right** indicate **marks**
(5) Draw **neat labeled diagrams** wherever **necessary**
(6) Use of **Non-programmable** calculators is **allowed**

1. **Attempt *any three* of the following:** 15
a Write a short note on Regular and Irregular tessellations.
b Explain the following terms
Model, Database, Map
c Explain the temporal dimension using suitable example.
d Define GIS. Explain its four set of capabilities.
e What is geo-spatial and geo-information.
f Explain about topology and spatial representation of geographic objects.

2. **Attempt *any three* of the following:** 15
a. Explain GIS architecture and functionality using suitable diagram.
b. Write a short note on Relational Model.
c. What is difference between vector data & Raster data.
d. Explain the linking of GIS with database.
e. Write a short note on Spatial data Infrastructure.
f. Explain spatial database Querying using suitable example.

3. **Attempt *any three* of the following:** 15
a. Write a short note on Root mean square error.
b. What is datum transformation? Explain its types.
c. Explain 3D Geocentric coordinates and 2D Polar coordinates.
d. What is satellite Based positioning? Explain types of positioning.
e. Explain the following interpolating technique for continuous data:
Trend surface fitting, Triangulation, Krigging
f. Explain the following positioning technologies:
GPS, GLONASS, Galileo and IRNSS.

4. **Attempt *any three* of the following:** 15
a Explain classification of analytical GIS capabilities.
b Explain Raster Overlay operators with its types.
c Write a short note on neighborhood function.
d Explain Network Analysis with its functions.
e How error propagates in spatial data processing.
f Explain the spatial selection queries.

5. **Attempt *any three* of the following:** 15
a. Write a short note on visualization process.
b. Write a short note on map cosmetics.
c. Explain Map Dissemination.
d. How to map Qualitative and Quantitative data?
e. Explain the different types of data.
f. Explain how to map the terrain elevation.

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Paper / Subject Code: 88702 / Security in Computing

(2½ Hours)

[Total Marks: 75]

N. B. (1) **All** questions are **compulsory**
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
(3) Answers to the **same question** must be **written together**
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat labeled diagrams** wherever **necessary**
(6) Use of **Non-programmable** calculators is **allowed**.

1. Attempt *any three* of the following: **15**

a. Explain the components of a security program.
b. Describe the CIA Triad of computer security.
c. List various types of worms. Explain any two of them.
d. Explain the onion model of defence.
e. Explain different types of viruses.
f. Explain malicious mobile code and open access models.

2. Attempt *any three* of the following: **15**

a. Explain CHAP and MS-CHAP.
b. Explain SSL and TLS.
c. Explain CA hierarchy and certificate templates and enrolment.
d. Explain importance of database backups? Explain various types of it
e. Explain One Time Passwords (OTP) systems.
f. What are ciphers? Explain "Transposition Cipher" VS "Substitution Cipher".

3. Attempt *any three* of the following: **15**

a. Write a short note on DMZ networks.
b. List the various techniques for network hardening. Explain any two.
c. Explain different types of ICMP messages.
d. What is spread spectrum technique? List the two techniques to spread the bandwidth.
e. Write a short note on Access Control Lists (ACLs).
f. Write a short note on the features of a firewall.

4. Attempt *any three* of the following: **15**

a. List the various VoIP components. Explain any two.
b. What are IDS types? Explain.
c. What is PBX? What are its features? Explain common attacks on PBX. How to secure it?
d. What is SIEM? What are its features?
e. Explain different classic security model.
f. Write a short note on Microsoft's Trustworthy Computing initiative.

5. Attempt *any three* of the following: **15**

a. What is hypervisor? How to protect the hypervisor?
b. Explain any two confidentiality risks associated with cloud computing and their remediation.
c. Write a short note on Secure Development Lifecycle (SDL).
d. List and explain any three Client Application Security issues. How to resolve them?
e. Explain the reasons for remote administration security What are its advantages and disadvantage?
f. Explain any five criteria for choosing site location for security?

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(3)

TYBSC - Sem VI : Ethical hacking

(2 ½ Hours) [Total Marks: 75]

N.B 1) All questions are compulsory.
2) Figures to the right indicate marks.
3) Illustrations, in-depth answers and diagrams will be appreciated.
4) Mixing of sub-questions is not allowed.

Q. 1 Attempt ANY FOUR from the following: **(20M)**

(a) Explain the Types of Ethical Hacking
(b) Explain Hacking Technology and its types in detail
(c) Define Hacktivism and explain ways to manifest it
(d) Explain any 5 Hacker Classes
(e) What are the ways to conduct Ethical Hacking
(f) Write a short note on foot printing

Q. 2 Attempt ANY FOUR from the following: **(20M)**

(a) Ex[plain Active and Passive Sniffing
(b) Explain ARP Poisoning in Detail
(c) Explain DNS Spoofing Techniques in detail
(d) Explain the working of DOS attack in detail
(e) Explain Smurf attack in detail
(f) Explain types of Session Hijacking

Q. 3 Attempt ANY FOUR from the following: **(20M)**

(a) Explain methods involved in Google Hacking
(b) Define the term Authentication and its types
(c) Define SQL injection and names its types
(d) Explain Buffer –Overflow and its types.
(e) Explain WEP in detail
(f) Explain the working of wireless sniffing

Q. 4 Attempt ANY FIVE from the following: **(15M)**

(a) Explain the methods to perform information Gathering
(b) Define Password and its types
(c) Explain Mutation Techniques
(d) Define the terms (i)Scanning (ii)Enumeration
(e) What is Web Server Hardening?
(f) Write a short note on Rogue Access Point

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(3½ Hours) (Total Marks: 75)

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(4) Numbers to the **right** indicate **marks**
(5) Draw **neat labeled diagrams** wherever **necessary**
(6) Use of **Non programmable** calculators is **allowed**

1. Attempt *any three* of the following: 15
a. Explain Data, Information and Knowledge with an example
b. Explain with the help of a diagram explain the Cycle of a Business Intelligence analysis
c. Explain the Business Intelligence architectures with the help of a diagram
d. Explain the various phases of decision making process
e. Explain Unstructured decision with an example
f. Explain absolute rationality and bounded rationality approaches to decision making process

2. Attempt *any three* of the following: 15
a. Explain the deterministic and dynamic mathematical models
b. Explain pattern recognition and learning models with an example
c. List and explain any two attributes that represents input data with an example
d. Describe the exploratory analysis and attribute selection phase in generic data mining process.
e. Explain the main factors that may prove unsatisfactory to the quality of input data.
f. Write a short note on Data Reduction.

3. Attempt *any three* of the following: 15
a. Explain the training phase and testing phase in the development of Classification model.
b. What do you understand by separation model and regression model in taxonomy of classification methods?
c. Explain Support Vector machine in detail with an example.
d. Explain K-means algorithm for clustering.
e. What do you mean by Affinity measures in Clustering models.
f. Write a short note on Divisive hierarchical methods.

4. Attempt *any three* of the following: 15
A Explain the Components of a Relational Marketing Analysis.
B Write a short note on Web mining.
C Explain Tactical Planning in Optimization models for logistic planning.
D Explain Decision process in revenue management.
E Explain Dual of the Charnes-Cooper-Rhodes (CCR) in detail.
F Explain Cross-efficiency analysis in order to identify good operating practice.

5. Attempt *any three* of the following: 15
a. What do you mean by tacit knowledge? Explain.
b. Explain the Knowledge Management Cycle with the help of a diagram.
c. What are the various roles of people in knowledge management?
d. Explain the various new applications of an Expert System.
e. Describe the five major activities in Knowledge engineering.
f. Write a short note on Inferencing.

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Paper / Subject Code: 88 0 / Cyber Laws

(10)

(2 Hours)

TYBSC - IT - Sem VI [Total Marks: 75]

N.B. (1) All questions are compulsory
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(3) Answers to the same question must be written together
(4) Numbers to the right indicate marks
(5) Draw neat, labeled diagrams wherever necessary
(6) Use of Non-programmable calculators is allowed

1. **Attempt *any three* of the following:** **15**
a. Explain the necessity of arrest without warrant from any place, public or otherwise.
b. As per Section 80 of the IT Act, 2000 Arrest for "About to Commit" An offence under the IT Act . A Tribute to Draco. Explain and justify with suitable examples.
c. Explain cognizable and non-cognizable offence? Differentiate between cognizable and non-cognizable offence.
d. What do you understand from cybercrime? Discuss various types of cybercrimes
e. Discuss the nature of cyber criminality and strategies to tackle cybercrime and trends.
f. State the criminal justice in India and its implications on cybercrime.

2. **Attempt *any three* of the following:** **15**
a. What are Click Wrap and Shrink-Wrap contracts as per Indian contract act, 1872.
b. Discuss contract formation words and expressions under the Indian Contract Act 1972.
c. What are the challenges available under the new law of arbitration.
d. Broadly explain the classification of Civil Law of jurisdiction in India.
e. Discuss legal principles on jurisdiction in United States of America.
f. Discuss jurisdictional disputes w.r.t the internet in USA.

3. **Attempt *any three* of the following:** **15**
a. Discuss the battle between freedom and control on the internet.
b. What do you understand from copyright ownership and assignment? Discuss.
c. Discuss the battle between freedom and control on the internet.
d. What is meta tagging?
e. What is copyright infringement? Does downloading the content for viewing on the internet amounts to copyright Infringement?
f. Discuss the problem of computer software piracy and the strategies adopted in India which has resulted in the decline of software piracy.

4. **Attempt *any three* of the following:** **15**
a Discuss the Concept of 'Permanent Establishment' and taxation policy with respect to Indian resident and non resident.
b Can web servers serve as PE (Permanent Establishment"?
c Explain the United Nations Model Tax Treaty.
d Write down the functions of Controller of Certifying Authorities.
e What is Digital Signature? Discuss creation and verification of Digital Signatures.
f "E-Governance in India-A warning to Babudom". Discuss.

5. **Attempt *any three* of the following:** **15**
a. Discuss the status of electronic records as evidence.
b. Explain section 65 B of the Indian Evidence Act relating to admissibility of electronic records.

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c. Briefly explain amendments to the bankers books evidence Act, 1891and Reserve Bank of India Act 1934.

d. Who are cyber consumers? Are cyber consumers covered under The Consumer protection Act?

e. Define Goods and services as per Consumer Protection Act.

f. How Consumer Protection Act is applicable to manufacturers, distributors, retailers and service providers based in foreign lands whose goods are sold or services are provided to a consumer in India?

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