

(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**.  
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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**

- What is business intelligence? Explain architecture of the business intelligence.
- Explain different phases in development business intelligence system.
- What is decision support system (DSS)? What are the factors that affect the degree of success of the DSS?
- Explain classification of decisions according to their nature and scope.
- Define system. Explain closed cycle and open cycle system with suitable example.
- Describe different phases in the development of a decision support systems(DSS).

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

- What are the phases in the development of mathematical models for decision making?
- Explain the divisions of mathematical models according to their characteristics, probabilistic nature, temporal dimension.
- What is data mining? List the real life applications of data mining.
- Explain categorical and numerical attributes with proper example.
- Differentiate between supervised and unsupervised learning.
- Explain the following normalization techniques:
  - Decimal scaling
  - Min-max

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

- What are the criteria used to evaluate classification methods?
- Explain top-down induction of decision tree. Examine the components of the top-down induction of decision trees procedure.
- Write a short note on Naïve Bayesian classifiers.
- Write k-means algorithm for clustering.
- Explain the 'Rosenblatt perceptron' form of neural network with diagram.
- Write a short note on confusion matrix.

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

- Write a short note on market basket analysis.
- What is use of web mining methods? What are the different purposes of web mining?
- Explain "tactical planning" optimization model for logistics planning.
- Explain the Charnes–Cooper–Rhodes (CCR) model.
- Write a short note on efficient frontier.
- What is relational marketing? What are the data mining applications in the field of relational marketing?

5. Attempt any three of the following:

15

- a. Define knowledge management. What are data, information and knowledge?
  - b. Describe the knowledge management system (KMS ) cycle.
  - c. Describe how AI and intelligent agents support knowledge management. Relate XML to knowledge management and knowledge portals.
  - d. List and explain characteristics of artificial intelligence.
  - e. What is knowledge engineering? Explain the process of knowledge engineering.
  - f. What are the areas for expert system applications?
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TYBSIT ~~IT~~ Sem

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11/05/2019

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1. Attempt any three of the following: 15

- Explain the difference between cognizable and non-cognizable offense.
- Discuss the 'Necessity of Arrest without warrant from any place'.
- Explain the end of Draco's law code.
- List of offences and the corresponding penalties in IT Act 2000.
- Explain defamation in India.
- What is cyber-crime? Explain different strategies to tackle cybercrimes and trends.

2. Attempt any three of the following: 15

- What is a contract? Explain seven essential elements of endorsable contract.
- Explain different types of electronic contracts.
- What is civil law? Explain jurisdiction of civil court in India.
- Define and explain foreign judgment in India.
- Explain the Status under the Indian Contract Act, 1872.
- Explain jurisdiction dispute w.r.t. the internet in the United States of America.

3. Attempt any three of the following: 15

- Write a short note on cyber squatters.
- Explain the battle between freedom and control on the internet.
- What is copyright? Explain copyright Act, 1957.
- Explain how does the copyright license work.
- Explain liability of ISPs for copyright violation in the cyber world.
- Explain computer software piracy with its different types.

4. Attempt any three of the following: 15

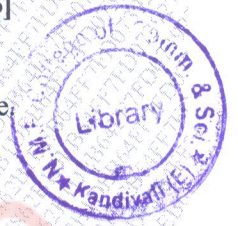
- Explain the concept of Permanent Establishment.
- Explain Income Tax Act 1961.
- Explain who is non-resident Indian? Explain non-resident Indian under Income Tax Act 1961.
- Explain section 80QQB-Royalty Income deduction under
- Explain digital signature certificate.
- Write a short note on A Warning to Babudom!

5. Attempt any three of the following: 15

- Discuss the Indian evidence act of 1872.
- Explain proof of electronic agreement in Indian evidence act.
- Explain bankers' books evidence act 1891.
- Explain unfair trade practices.
- Discuss the consumer terms under the consumer protection Act 1986.
- Explain Reserve bank of India Act, 1934

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1. **Attempt any three of the following:** 15  
a. Explain in detail Architectures for the enterprise.  
b. Discuss the PPDIIO phases in detail.  
c. Explain different layers of hierarchical Network design.  
d. What are different redundancy techniques ? Discuss in detail.  
e. Explain HSRP, VRRP and GLBP  
f. Explain in details different Network Audit Tools.
2. **Attempt any three of the following:** 15  
a. Compare and Contrast between Switches, Routers and Layer 3 switches  
b. What are data center foundation components?  
c. What are different types of Virtualization?  
d. Explain Spanning Tree Protocol.  
e. What is Campus LAN Design? What are the Best Practices for the same?  
f. Discuss different strategies for Load Balancing in the Data Center.
3. **Attempt any three of the following:** 15  
a. Write a short note on different WLAN Standards.  
b. Explain in detail WLAN Controller Components.  
c. Write Short notes on i) Frame Relay ii) Metro Ethernet  
d. Discuss WAN and Edge Design Methodologies  
e. What are the different methodologies for Optimizing Bandwidth Using QoS? Explain.  
f. Explain various DMZ Connectivity implementation techniques.
4. **Attempt any three of the following:** 15  
a. Explain IPV4 Header structure.  
b. Write short notes on i) BOOTP ii) DHCP  
c. Explain IPV6 Unicast Address, Anycast Address and Multicast Address  
d. Discuss IPV6 Address-Assignment Strategies.  
e. What are the techniques for IPv4-to-IPv6 Transition Mechanisms?  
f. What are Routing Protocol Metrics and Loop Prevention techniques?
5. **Attempt any three of the following:** 15  
a. What are different Network security threats?  
b. Explain Security Risks.  
c. Write short note on Risk assessment.  
d. Write short notes on i) RMON ii) NetFlow  
e. What are the techniques for Detecting and Mitigating Threats?  
f. Compare and contrast IPS and IDS .

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

15

- Define GIS. Briefly explain any two capabilities of GIS.
- What is GI System, GI Science and GIS Application? Explain.
- How modeling helps in representing real world? Explain.
- Define Geographic field. Explain its different data type and values.
- Write a note on Topology and spatial relationships.
- Explain the temporal dimension using suitable example.

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

15

- List the functional components of GIS. Explain any two of them in details.
- Explain the various reasons for using DBMS in GIS.
- Write a note on Spatial Data functionality.
- Explain the relational data model using suitable example.
- Differentiate between Vector data and Raster Data.
- Write a note on Spatial Data Infrastructure.

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

15

- What are the different classifications of Map Projections? Explain any two.
- Write a note on GPS.
- Explain 2D geographic coordinate system using suitable example.
- What is trend surface fitting? Explain.
- How Root Mean Square is used to mean location accuracy? Explain.
- Write a note on Krigging.

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

15

- List the four classifications of analytical functions of GIS. Explain any one in details.
- Write a note on automatic classification.
- Explain vector overlay operations using suitable diagram.
- Explain using example how Raster overlay operation can be performed using decision table?
- List any five examples where advanced computations on continuous fields are required.

[TURN OVER]

f Perform the raster overlay operation to find R3

$$R3 = \text{CON}( R1=3 \text{ AND } (R2 \geq 45 \text{ and } R2 \leq 60) , 1 , 0 )$$

R1 - Soil Type Raster

1	1	1	3	3	4	4	7	7
1	1	3	3	4	4	4	7	7
1	3	3	3	4	4	4	7	7
3	3	3	3	4	4	4	5	5
5	5	3	3	3	3	3	5	5
2	2	3	1	1	1	3	4	4
2	2	3	1	1	1	3	4	4
7	2	3	1	1	1	3	4	4
7	7	3	3	3	3	3	4	4

R2 - Rainfall Raster (mm)

70	70	70	70	60	60	60	60	50
70	70	70	70	80	80	80	50	50
50	50	50	80	80	80	50	50	50
50	50	90	90	90	60	60	50	50
50	35	35	35	50	45	60	60	70
35	35	35	50	50	45	60	60	70
45	35	35	50	45	45	60	60	60
45	35	45	45	45	60	60	70	70
45	45	45	45	60	60	70	70	70

5. Attempt any three of the following:

- What is the relationship between Map and GIS?
- Explain the visualization process in GIS.
- How to map terrain elevation? Explain.
- What are Bertin's six categories of visual variables?
- How to distinguish between three temporal cartographic techniques? Explain.
- Write a note on Map Cosmetics.

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1. **Attempt any three of the following:** 15  
 a. What are the importance of information protection? Explain with example.  
 b. Explain various components used to build a security program.  
 c. What are the three recognized variants of malicious mobile code? Explain.  
 d. Write a short note on Network-Layer Attack.  
 e. Explain the two most common approaches of security.  
 f. Explain the best practices for network defence.
2. **Attempt any three of the following:** 15  
 a. Define authentication. Explain two parts of authentication.  
 b. Explain the authorization systems.  
 c. Explain public key Cryptography.  
 d. What are the three primary categories of storage infrastructure in modern storage security? Discuss.  
 e. Write a short note on integrity risks.  
 f. Explain Database-Level Security.
3. **Attempt any three of the following:** 15  
 a. Explain the Cisco Hierarchical Internetworking model.  
 b. Explain network availability and security.  
 c. Write a short note on hubs and switches.  
 d. Explain the features of firewall.  
 e. Explain the five different types of wireless attacks.  
 f. What are the countermeasures against the possible abuse of wireless LAN?
4. **Attempt any three of the following:** 15  
 a. Explain intrusion Defense System types and detection models.  
 b. Write a short note on Security Information and Event Management.  
 c. What are components of Voice Over IP? Explain.  
 d. Write a short note on Private Bank Exchange.  
 e. Explain different classic security models.  
 f. Write a short note on trustworthy computing.
5. **Attempt any three of the following:** 15  
 a. Define virtual machine. How is hypervisor responsible for managing all guest OS installations on a VM server?  
 b. What is cloud computing? Explain the types of cloud services.  
 c. Explain the application security practices and decisions that appear in most secure development lifecycle.  
 d. Explain the reasons for remote administration security. What are advantages of web remote administration?  
 e. Explain the security considerations for choosing a secure site location.  
 f. Explain the different factors for securing the assets with physical security devices.

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1. **Attempt any three of the following:** 15
  - a. Define the term quality and elaborate different views on quality.
  - b. Explain the lifecycle of quality improvements
  - c. What are the quality principles of Total Quality Management (TQM)?
  - d. Explain the structure of quality management system.
  - e. How the quality and productivity are related with each other?
  - f. Write a short note on continual improvement cycle.
  
2. **Attempt any three of the following:** 15
  - a. Explain the lifecycle of software testing.
  - b. Write a note on requirement traceability matrix.
  - c. State and explain any 5 principles of software testing.
  - d. Explain the relationship between error, defect and failure with a proper example.
  - e. Discuss the challenges in software testing.
  - f. Describe the structure of a testing team.
  
3. **Attempt any three of the following:** 15
  - a. Explain boundary value testing and its guidelines.
  - b. Write a note on improved equivalence class testing.
  - c. Describe the decision table testing technique in detail.
  - d. Write a note on DD path testing.
  - e. Explain the concept and significance of cause and effect graphing technique.
  - f. Compare weak robust and strong robust equivalence class testing.
  
4. **Attempt any three of the following:** 15
  - a. Explain different methods of verification.
  - b. Explain the steps involved in management of verification and validation.
  - c. Describe the benefits of review technique.
  - d. List and explain how the formal review is carried out.
  - e. Explain the VV model of testing.
  - f. What are the roles and responsibilities of a reviewer
  
5. **Attempt any three of the following:** 15
  - a. What is integration testing? Explain the Big bang approach.
  - b. What is the need of a Security Testing?
  - c. What is performance testing? List different types of performance testing.
  - d. Explain the concept of inter system testing and its Importance.
  - e. Explain the significance of Usability testing.
  - f. Explain Commercial off-the-shelf software testing.