

Time: 3 Hrs

Max Marks: 80

- N.B. 1. Question No 1 is compulsory.  
2. Solve any **three** questions out of the remaining five questions.  
3. Assume suitable data if necessary.  
4. Figures to the right indicate marks.

- Q. 1. Solve any **four** out of five. **(4\*5=20)**
- a) How does an entrepreneur encourage the economic development of a country.
  - b) List the different types of e-business models.
  - c) Define a Woman Entrepreneur and state the steps the government should take to encourage women entrepreneurs.
  - d) Explain the need for motivation of employees.
  - e) Explain the term acquisition/merger.
- Q. 2. a) List the examples of Financial and Non-Financial methods of motivation for employees. **(10)**  
b) Write a detailed business report on starting a new Supply Chain Management business using SWOT (Strength Weakness Opportunity Threat) analysis **(10)**
- Q. 3. a) Explain briefly the different modules of ERP. **(10)**  
b) Enlist the salient features of a good Marketing Plan. **(10)**
- Q. 4. a) Explain the steps to setup an e commerce portal for selling Retail Products. **(10)**  
b) Compare Online and Brick and Mortar methods of Sales. **(10)**
- Q. 5. a) List and explain the different sources of Medium term Finance. **(10)**  
b) Explain procurement and E-Procurement. Also describe the components of e-Procurement. **(10)**
- Q. 6. a) Define E-commerce and explain different types of E-commerce. **(10)**  
b) Explain Supply Chain Management (SCM) and enlist its characteristics. **(10)**
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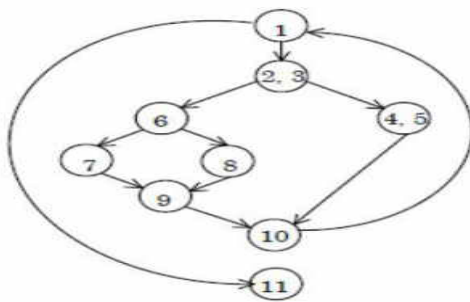
(3 Hours)

[Total: 80 Marks]

- Note : (1). Question number 1 is compulsory.  
(2). Attempt any three questions from the remaining.  
(3). Assume suitable data wherever necessary.

- Q1 Solve any Four out of Six
- a) What are major challenges in software engineering? 05
  - b) What is a Feasibility Study? 05
  - c) write about the Non Functional Requirements for “Online Pizza Ordering system”. 05  
It should contains following:
    - 1.Performance
    - 2.Availability
    - 3.Reliability
    - 4.Security
    - 5.Maintainability
  - d) Explain Evolutionary process model? 05
  - e) What is the difference between bug, error and defect explain with example. 05
  - f) Discuss Mc-Calls Quality factors? 05
- Q2a) Draw UML Use Case diagram and Class Diagram for “Smart Agriculture Monitoring System”. 10
- b) Explain COCOMO Model with example. 10
- Q3a) Explain Function Point Cost Estimation Technique with example. 10
- b) Draw UML Component Diagram and Deployment Diagram for “College Management System”. 10
- Q4a) Formal Technical Review (FTR) in details? 10
- b) Discuss the various types of design patterns. 10

- Q5a) Explain in detail the Software configuration Management Process and benefits of SCM. 10
- b) Explain Reengineering in details. 10
- Q6a) Explain what is a risk? Different types of risk? and describe RMMM in detail? 10
- b) Why is cyclomatic complexity important to testers? A Given flow graph F with entry node (1) and exit node (11) is shown below. Calculate the following 10
1. How many predicate nodes are there and what are their names?
  2. How many regions are there in flow graph F?
  3. What is the cyclomatic complexity of flowgraph F?
  4. How many nodes are there in the longest independent path?
  5. How many nodes are there in flow graph F?



Flowgraph F

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N.B.:

1. Question no. 1 is compulsory.
2. Attempt any Three out of remaining Five questions.
3. Assume suitable data wherever necessary.
4. Figures at right indicates full marks.

- Q.1**
- a. Differentiate between data warehouse and data mart. **05**
  - b. Explain CAP theorem. Compare and contrast ACID and BASE. **05**
  - c. Explain Query processing in detail. **05**
  - d. Write a note on Mandatory Access Control. **05**
- Q.2**
- a. Differentiate Homogenous and Heterogeneous database systems. Also Explain Design Issues in Distributed Databases **10**
  - b. Explain the concept immediate data extraction and deferred data extraction in ETL with suitable example. **10**
- Q.3**
- a. Consider a data warehouse storing sales details of various products sold at different stores, and the time of the sales. Using this example analyse the following OLAP operations 1)slice 2)dice 3)rollup 4)drill down 5)pivot. **10**
  - b. Explain techniques of data loading with examples. **10**
- Q.4**
- a. Discuss the Various Access Control mechanism. Also discuss Grant and Revoke operation with suitable examples. **10**
  - b. Enlist four NoSQL Architectural Patterns. Discuss any two Architectural pattern in detail. **10**
- Q.5**
- a. Differentiate between ROLAP, MOLAP and HOLAP Models. **10**
  - b. Discuss Nested loop join and block Nested loop join algorithm in detail. **10**
- Q.6** Write Short Note on:
- a. Snowflake schema with example **10**
  - b. Mobile and Spatial Database. **10**
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(3 Hours)

(Total Marks: 80)

- N.B.:**
- 1. Question No.1 is compulsory.**
  - 2. Answer any three out of the remaining questions.**
  - 3. Assume suitable data if necessary.**
  - 4. Figures to the right indicate full marks.**

- Q1.** a) Explain HTTP and HTTPS protocol (10)
- b) You have been tasked to develop software for Hotel management. How will you divide functionality between the front end, back end, and database (10)
- Q2.** a) Explain different types of components in React JS with an example. (10)
- b) Write a program in ReactJS to print “Hello World” on the browser. (10)
- Q3.** a) Explain the Event loop in Javascript (10)
- b) With an example demonstrate the use of promise. (10)
- Q4.** a) Write a Node JS program for following: (10)
- Create a new file and add data into it.
  - Append more data in the same file at the end of existing data.
  - Read the file data without getting the buffer data.
  - Rename the file.
  - Delete the file.
- b) Explain event handling in Nodejs (10)
- Q5.** a) Explain routing in Express JS along with an example. (10)
- b) Give a difference between XML and JSON (10)
- Q6.** Short note on: (Any 4) (20)
- REPL
  - React Props
  - JSX
  - Cookies
  - Session

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INSTRUCTIONS

- (1) Question 1 is compulsory.
- (2) Attempt any **three** from the remaining questions.
- (3) Draw neat diagrams wherever necessary.

**Q1**

**5 marks each**

- a) Distinguish between passive and active security attacks
- b) Differentiate between virus and worm
- c) Explain SSH protocol stack in brief
- d) Write short note on :Email Security

**Q2**

**10 marks each**

- a) Discuss classical encryption techniques with example
- b) Explain different types of denial of service attacks

**Q3**

**10 marks each**

- a) What are Block cipher modes. Describe any two in detail
- b) Given modulus  $n=221$  and public key  $e=7$  find the values of  $p,q,\phi(n)$  and  $d$  using RSA encrypt  $M=5$

**Q4**

**10 marks each**

- a) Discuss various NAC enforcement methods
- b) Design sample digital certificate and explain each field of it

**Q5**

**10 marks each**

- a) Show how a Kerberos protocol can be used to achieve single sign on in distributed systems
- b) Explain the different types of protocol offered by SSL

**Q6**

**10 marks each**

- a) Why there is a need of a firewall? Explain the different types of firewalls
- b) How does IPSec help to achieve authentication and confidentiality? Justify the need of AH and ESP

(3 Hours)

[Total Marks: 80]

- N.B.: (1) Question No. 1 is **compulsory**.  
(2) Solve any **three** questions out of remaining **five**.  
(3) Figures to **right** indicate **full** marks.  
(4) Assume suitable **data** where **necessary**.

1. (a) What are Phishing and Pharming techniques? [5]  
(b) What are the most common types of application attacks? [5]  
(c) Define hackers, crackers and Phreakers. [5]  
(d) Explain the need of IDS-Intrusion Detection System. [5]
  2. (a) What is the principle of Symmetric key cryptography? Differentiate AES and DES as symmetric key algorithms. [10]  
(b) What is ethical hacking? Describe scanning steps of ethical hacking and explore tools related to each step. [10]
  3. (a) What is lightweight cryptography? What are the various lightweight cryptographic algorithms? Explain any one algorithm. [10]  
(b) What is SSL? Describe the architecture of SSL in detail with neat diagrams. [10]
  4. (a) What is a firewall? Discuss its role in network security. Explain different types of firewalls with neat diagrams. [10]  
(b) Describe the various types of network monitoring techniques for data and evidence collection. [10]
  5. (a) Compare Denial of Service (DOS) attack with Distributed Denial of Service attack and explain TCP SYN flood attack with neat diagrams. [10]  
(b) What are the various tools for Network Security? Explain the use of Wireshark and Metasploit. [10]
  6. **Write short notes on (any 4)**  
(a) Guidelines for password selection. [5]  
(b) Active and Passive attacks [5]  
(c) VPN [5]  
(d) Cyber terrorism [5]  
(e) Sniffing tools [5]
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**N.B. : (1) Question No 1 is Compulsory.**

**(2) Attempt any three questions out of the remaining five.**

**(3) All questions carry equal marks.**

**(4) Assume suitable data, if required and state it clearly.**

- 1 Attempt any FOUR [20]
    - a Explain categories of embedded systems.
    - b Explain 8051 Microcontroller pin configuration.
    - c Explain 8255 PPI along with diagram.
    - d Differentiate CISC and RISC processor.
    - e Explain ARM 7 Architecture.
  
  - 2 a Explain Addressing Modes of 8051. [10]  
b Write an 8051 program to find one's and two's complement. Explain each instruction. [10]
  
  - 3 a Differentiate between general purpose OS and RTOS. [10]  
b Explain the various inter-process/task communication tools like pipe, mailbox. [10]
  
  - 4 a Write a sketch for the interface of DHT11 with Arduino. [10]  
b Explain exceptions and interrupts handling in ARM 7. [10]
  
  - 5 a Write a short note on Counter and Timers in 8051. [10]  
b Write Python program to interface push button to RaspberryPi GPIO. (By clicking Push Button led should glow) [10]
  
  - 6 a Explain Data Transfer process and Control Flow of ARM 7. [10]  
b Explain types of Interrupts in 8051 Microcontroller. [10]
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