TIME: 03 HOURS   MAX MARKS:80

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

Q. 1. Solve **any four** out of five.   (4*5=20)

a. Explain the types of startups?
b. Which are the methods to initiate new venture?
c. Discuss human resource management.
d. Describe the benefits of digital technology adaption?
e. Write the benefits of ERP implementation.

Q. 2.
a) Discuss characteristics of successful Entrepreneur with the help of example?   (10)

b) Explain the criteria of evaluating new venture proposals.   (10)

Q. 3.
 a) Discuss in detail Entrepreneurial motivation.   (10)

 b) Explain business plan and its element in detail.   (10)

Q. 4.
a) Write short notes of following   (10)
i) Promoters and shareholders
ii)Customer Analysis

b) Explain in detail the following information systems,ESS,DSS,MIS,TPS.   (10)

Q. 5.
a) Prepare the business plan for starting the skill development training institute. (10)

b) Discuss characteristics of supply chain management.   (10)

Q. 6.
a) Explain in detail type of Ecommerce.   (10)

b) Discuss functional areas of CRM   (10)

Time:3hrs   Max. Marks:80

N.B.: 1. Question no. 1 is compulsory.

2. Attempt **any Three** from out of remaining **Five** questions.

3. Assume suitable data wherever necessary.

4. Figures at right indicates full marks.

Q 1	a	Discuss Query Optimization in brief.	5
	b	Explain CAP Theorem in NoSQL.	5
	c	Differentiate between Data mart and Data Ware house.	5
	d	Discuss various characteristics of Big Data	5
Q 2	a	Explain Discretionary Access Control (DAC) and the Grant Option in DAC. Illustrate with a suitable example how the grant option works.	10
	b	What is a Federated Data Warehouse? Discuss its architecture.	10
Q 3	a	Differentiate between Star Schema and Snowflake Schema in data warehousing. Also, design a Star Schema for an E-commerce System and briefly explain its components.	10
	b	Explain in detail the Key-Value Store and Document Store data architectural patterns in NoSQL databases. Discuss their characteristics and provide suitable real-world use cases for each.	10
Q 4	a	Explain the ETL (Extract, Transform, Load) process in detail. Describe each phase with its purpose, tools commonly used, and its importance in data warehousing and business intelligence.	10
	b	What are Business Intelligence (BI) tools? Explain the commonly used BI tools and their key features.	10
Q5	a	Explain MOLAP, ROLAP, and HOLAP in detail. Discuss their differences, advantages, and typical use cases.	10
	b	Explain the External Merge Sort algorithm with a suitable example. Also, calculate the required number of block transfers and seek costs involved in the process.	10
Q6	a	Write a short note on OLTP (Online Transaction Processing).	5
	b	Write a short note on Distributed Database and its usefulness.	5
	c	Write a short note on Spatial Databases, highlighting their key features and uses.	5
	d	Write a short note on Mobile Databases, highlighting their key features and uses.	5

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(3 hours)   **(Marks: 80)**

N.B.:   (1) Question No. 1 is compulsory.
           (2) Attempt any three out of the remaining five questions.
           (3) Assumptions made should be clearly stated.
           (4) Figures to the right indicate full marks

Q1. Answer the following. Attempt any 4.

(a) Write a note on optimal merge pattern.   5

(b) Differentiate between P and NP.   5

(c) Explain flow shop scheduling techniques   5

(d) Explain Dynamic programming with example.   5

(e) Discuss the Red-Black tree.   5

2. (a) Write an algorithm for Quick Sort and sort the following elements:
      10,80,30,90,40,50,70   10

  (b) Explain Job sequencing with deadlines. Let n = 4, (p1,p2,p3,p4) = (100,10,15,27) and
    (d1,d2,d3,d4)= (2,1,2,1). Find feasible solution.   10

3. (a) Find Longest Common Subsequence for Following strings: 10
     X = ababcde Y = bacadb

  (b) Find Minimum and Maximum elements of an array X[0 : 6] = (22, 14, 8, 17, 35, 3) using
    divide and conquer strategy.   10

4. (a) Obtain the solution to knapsack problem by Greedy method n=7, m=15 (p1, p2.....p7) =
    (10,5,15,7,6,18,3), (w1,w2,.....,w7) = (2,3,5,7,1,4,1).   10

(b) Explain in detail the Knatt-Morris-Pratt string matching Algorithm.   10

5. (a) Write a note on Genetic Algorithms   10

  (b) Build a max heap and min heap using the following data: 10
     7, 5, 6, 4, 2, 1, 3

6.(a) Explain Rabin Karp Algorithm with a suitable example.   10

  (b) What do you mean by space complexity and time complexity of an algorithm? How do you measure
    the time and space complexity of an algorithm? Explain with suitable example.   10

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Duration: 3 hours   **[Max Marks: 80]**

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.

			Marks
Q.1	a.	Explain the CIA triad .	5
	b.	Explain the structure and purpose of an X.509 digital certificate.	5
	c.	What is the purpose Trojan horse and backdoor.	5
	d.	Explain the working of a Virtual Private Network (VPN) and its security benefits.	5
Q.2.	a.	Given a 5x5 grid and the keyword "PLAYFAIR", encrypt the message "HIDE" using the Playfair cipher. Demonstrate the steps and the final ciphertext.	10
	b.	Explain the working of SHA-256 using suitable example.	10
Q.3.	a.	What is a SPAM? Explain different types of SPAMs.	10
	b.	What is the significance of IPSec? Explain the different modes of operation in IPSec?	10
Q.4.	a.	Explain the various use cases of NAC.	10
	b.	Explain the different types of IDS.	10
Q.5.	a.	What are the characteristics of a firewall?	10
	b.	What are the steps involved in implementing NAC solutions?	10
Q.6.		Write short notes on Any 4	20
	a.	HMAC and CMAC	
	b.	S/MIME	
	c.	RSA Algorithm	
	d.	Kerberos	
	e.	OSI Security Architecture	
	f.	HTTPS	

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(3 Hours) (Total Marks: 80)

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

Q1. a) Explain the difference between State and Props in React JS with an example. **(10)**

b) What is a REST API? Discuss its core principles and why they are important. **(10)**

Q2. a) Explain Buffers and Streams in Node.js.Provide an example where they are useful.
(10)

b) Discuss the different phases of the React component lifecycle. **(10)**

Q3. a) Discuss the differences between var, let, and const in ES6 with examples. **(10)**

b) Explain promises with an example. **(10)**

Q4. a) Explain File System module of Node.js in detail. **(10)**

b) What is Web Browser. Discuss working of Web Browser in detail. **(10)**

Q5. a) What is ExpressJS. Explain features of ExpressJS. **(10)**

b) Explain Flux architecture in detail. **(10)**

Q6. Short note on: **(Any 4)** **(20)**

a) ES5 vs ES6
b) JSX
c) JSON
d) URL vs. URI
e) Arrow Function

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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.(Each question carries 5 marks) (20)

(a) Explain the attributes of software and layered structure of software Engineering?

(b) Explain CMM Model in software development?

(C) Explain the User- interface design Principles?

(d) Explain 3 P's in software Project spectrum?

(e) Write a short note on Function point Estimation Technique?

(f) Explain importance of WBS in software Engineering with example?

Q2 (a) Explain about different types of software Prototypes? Discuss Prototype Model in detail? (10)

(b) Explain Characteristics of SRS? Also discuss general Format of Software requirement specification? (10)

Q3. (a) Explain Analysis Model elements? Draw class diagram and Swim lane diagram for online Food ordering System? (10)

(b). Explain the Design Principles and Concepts? Also explain difference between coupling and cohesion? (10)

Q4.(a). Explain about COCOMO II Model with example? (10)

(b). Explain the steps of Software quality assurance plan? (10)

Q5.(a) Explain about CPM and PERT Project scheduling technique in detail? (10)

(b). Explain steps of change control process in SCM in detail? (10)

Q6. (a). Write a note on Software Re-engineering and different types of software maintenance? (10)

(b). Write a note on Alpha Beta and White Box Testing? (10)

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