(Time: 3 hours)                                                                                    (Total Marks: 80)

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

**Q1**

a) Enlist security goals. Discuss their significance                                              ( 5 )

b) Compare and contrast DES and AES.                                                              ( 5 )

c) Explain the purpose of keylogger and rootkit                                                   ( 5 )

d) SHA provides better security than MD5 Justify                                                  ( 5 )

**Q2**

a) Encrypt "This is the final exam" with Play fair cipher,the key is 'Guidance'                   (10)

b) What is the significance of a digital signature on a certificate ?Justify                       (10)

**Q3**

a) How does IPSec help to achieve authentication and confidentiality?Justify the need of
   AH and ESP                                                                                      (10)

b) What Is PKI. Explain PKI architecture in detail                                                 (10)

**Q4**

a) Show how a Kerberos protocol can be used to achieve single sign on  in distributed
   systems                                                                                         (10)

b) What is network access control? Discuss the elements present in this context                   (10)

**Q5**

a) Explain different types of denial of service attacks                                           (10)

b) Explain network management security with respect to SNMP protocol                              (10)

**Q6**

a) Explain different methods of IDS? State capabilities and challenges in IDS                     (10)

b) Explain transposition ciphers with illustrative examples                                       (10)

*****************

(Time: 3 Hours)                                                      (Total 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 Solve any FOUR (each of 5 marks)**          **20**
  a) Write note on masters Theorem.
  b) Explain in details Red-Black tree.
  c) Write note on optimal merge pattern.
  d) Define & explain principal of optimality.
  e) Explain in detail Naïve string-matching Algorithm

**Q2 a)** What is complexity? Explain in detail asymptotic notation.  **10**
  **b)** Define B+ tree and explain in detail the insertion operation for the following
   sequence 51,52,53,54,55,56,57,58,59,60 and construct the B+ tree of order three. **10**

**Q3 a)** Write a recursive algorithm for quick sort & compute its complexity. **10**
  **b)** Given the program lengths L = {12, 34, 56, 73, 24, 11, 34, 56, 78, 91, 34, 91, 45}.
   Store them on three taps and minimize MRT.  **10**

**Q4 a)** What is the divide and conquer strategy? Write an algorithm for finding the
   maximum and minimum.  **10**
  **b)** Explain the 0/1 knapsack algorithm in detail.  **10**

**Q5 a)** Explain in detail Rabin Karp string matching Algorithm.  **10**
  **b)** Explain in detail Travelling sale person problem with its complexity.  **10**

**Q6 a)** Explain in detail Longest Common Subsequence (LCS) string matching algorithm
   with example.  **10**
  **b)** Explain in details P, NP, NP hard and NP complete problem.  **10**

*********

X692YC2C9EDX692YC2C9EDX692YC2C9EDX692YC2C9ED

**Time: 3 Hours**          **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 | Explain Factless fact table. | 05 |
| | b | Explain vertical fragmentation with example | 05 |
| | c | Explain Query processing in detail. | 05 |
| | d | Explain in brief the CAP Theorem | 05 |
| | | | |
| Q 2 | a | Explain external merge sort algorithm with proper example and required number of block transfer and seek cost.. | 10 |
| | b | Explain Significance of each step in ETL Process, also explain types of data extraction with examples. | 10 |
| | | | |
| Q 3 | a | What is mean by Distributed databases? List and explain types of distributed databases. | 10 |
| | b | Explain Discretionary Access Control, Mandatory Access Control and Role-Based Access Control in brief. | 10 |
| | | | |
| Q 4 | a | What is general purpose of data warehouse architecture? Explain in detail data warehouse architecture and draw star schema for hospital management system. | 10 |
| | b | What is big data? Explain in detail types and characteristics of big data. | 10 |
| | | | |
| Q5 | a | Explain in detail Key-value store and Document store data architectural patterns of NOSQL. | 10 |
| | b | Consider a data warehouse for hospital, where there are three dimensions i) Doctor    ii)Patient and    iii)Time and two measures i) Count   ii) Charge . For this example analyze the following OLAP operations 1) slice 2) dice 3) rollup 4) drill down 5) pivot. | 10 |
| | | | |
| Q6 | a | Differentiate between OLAP and OLTP | 05 |
| | b | Explain mobile and spatial databases. | 05 |
| | c | Explain query optimization approaches. | 05 |
| | d | Explain challenges in ETL functions. | 05 |

---

X692YF6CE62X692YF6CE62X692YF6CE62X692YF6CE62

TIME: 03 HRS                                                                                                          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. Compare acquisition and merger. Also give relevant examples.
b. Explain the role of Entrepreneur in the economic development of the country.
c. Explain the different types of E-business models.
d. Differentiate between Brick and Mortar business and Online business.
e. Define a Woman Entrepreneur and state the steps the government should take to encourage women entrepreneurs.

Q. 2.
a) Explain the different methods of financial motivation an employer can use to motivate his
   employees.                                                                                                        (10)
b) Explain the advantages of SWOT (Strength Weakness Opportunity Threat) analysis to
   prepare a business plan for starting a new business.                                                              (10)

Q. 3.
a) Explain the features of a good business plan that can prevent the failure of a new business.   (10)
a) State and explain with examples the features of a good marketing plan.                          (10)

Q. 4.
a) Explain the evolution of ERP. List the different features of ERP.                               (10)
b) "Advancement in Technology has increased the types of business activities". Comment on
   this statement. Justify your answer.                                                            (10)

Q. 5.
a) Explain how E-governance helps as an efficient tool for improving entrepreneurship.            (10)
b) Explain the advantages of Supply Chain Management (SCM) and enlist its characteristics.        (10)

Q. 6.
A) List and explain the different tenures of financing available for entrepreneurs.               (10)
b) Explain procurement and E-Procurement. Also describe the components of
   e-Procurement.                                                                                  (10)

------------------------------------

**67665**                                    **Page 1 of 1**

(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) Differentiate between HTML and XML.                                                    (5)

b) How to declare variables in ES6?                                                      (5)

c) What is React JSX?                                                                    (5)

d) Short Note on REPL.                                                                   (5)


Q2.     a) Write a ReactJS code for creating 2 components and render those components on
           webpage.                                                                              (10)
        b) What is NodeJS? Explain different types of NodeJS Modules.                             (10)


Q3.     a) Differentiate between MVC, Flux, Redux.                                                (10)

b) What is REST API? What are the principles of REST API.                                (10)

Q4.     a) How does routing work in ExpressJS? Provide a basic routing example.                  (10)

b) Explain promises with an example.                                                    (10)

Q5.     a) Explain features of Express JS. Write a program in ExpressJs to display Hello World on browser.
                                                                                                 (10)

b) What are Buffers and Streams in NodeJs? Explain with an example.                      (10)

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

a)  DNS
        b)  Arrow Function
        c)  NPM
        d)  JSON
        e)  ES5 vs. ES6


****************

(3 Hours) [Total Marks: 80]

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) Describe the characteristics, nature of software and explain the layered structure of software Engineering?
  (b) Explain Prototyping concept required in Spiral software Process Model?
  (c) Explain about Object based Estimation Technique?
  (d) Explain the Golden rules of User- interface design?
  (e) Discuss about Software Reengineering and Reverse Engineering?
  (f) Explain Mc Calls Quality factors?

Q2. (a) Explain Scrum Agile Development Model and Scrum Process in Detail? (10)
  (b) Explain what is a V-Model? And discuss any one type of Incremental process models? (10)

Q3. (a) Explain The Design Model, and draw deployment diagram, swim lane diagram for Online shopping ? (10)
  (b) Explain about refactoring, cohesion and coupling also benefits of high cohesion and low coupling? (10)

Q4. (a) Explain Earned value Analysis? Find project EAC, ETC, where AC is 15000, BAC is 22000, EV IS 13000,CPI is 0.8? (10)
  (b) Explain about COCOMO II Model with example? (10)

Q5. (a) Explain about Project scheduling and any one tracking Technique with example? (10)
  (b) Explain change control process in SCM in detail? (10)

Q6. (a) Explain what is a risk? Different types of risk? And describe RMMM in detail? (10)
  (c) Explain the principles of software testing? Discuss the in detail difference between black box and white box testing technique? (10)

---