TE/INFT/SEM-V/C-2019/NOV. 2023

Time : (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 features of React JS. Write a stepwise process to create an APP using React JS to print "Hello World" on browser. (10)

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

Q2. a) Explain different types of components in React JS with an example. (10)

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

Q3. a) Explain Hooks in React JS. (10)
b) What is DNS? Explain working of DNS. (10)

Q4. a) Write a Node JS program for following: (10)
i. Create a new file and add data into it.
ii. Append more data in the same file at the end of existing data.
iii. Read the file data without getting the buffer data.
iv. Rename the file.
v. Delete the file.
b) Explain promises with an example. (10)

Q5. a) Explain routing in Express JS along with an example. (10)
b) Differentiate between ES5 and ES6. (10)

Q6. Short note on: **(Any 4)** (20)
a) REPL
b) Arrow Function
c) JSX
d) JSON
e) HTML vs. XML

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Time (3 Hours) **[Total Marks 80]**

N. B:
1. Question No. 1 is Compulsory.
2. Solve any THREE from Question No. 2 to 6.
3. Draw neat well labelled diagram wherever necessary

Q.1 a) Describe RC5 algorithm with an example. (5)
b) Explain the purpose of keylogger and rootkit. (5)
c) Explain Playfair Cipher with an example. (5)
d) Explain how VPN can be used to encrypt your personal data. (5)

Q.2 a) Explain Public Key Cryptography and RSA algorithm. Given modulus n=91 and public key e=5, find the value of p, q, phi(n) and d using RSA. Encrypt M=25. (10)
b) List and explain all types of Malware in detail. Differentiate between Virus and Worms. (10)

Q.3 a) Explain Kerberos protocol in detail. Show how a Kerberos protocol can be used to achieve single sign-on in distributed systems. (10)
b) Explain the OSI Security Architecture and Network Security Model. (10)

Q.4 a) Explain Email security process. Explain how S/MIME can be used for Digital Signature and verification operations on email messages. (10)
b) Explain the implementation of Network Access Control with one use case. (10)

Q.5 a) Explain how Network Management security is implemented using SNMP v3. (10)
b) What is an Intruder Detection System? Explain its types in detail. (10)

Q.6 Write Short Notes on ANY 4: (20)
a) Firewall design principles
b) Block Cipher Modes of Operation
c) HMAC and CMAC
d) Steganography and its applications
e) SHA 256 and SHA 512
f) SSL Architecture

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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. List different methods of acquisition/merger.
b. Explain the role of Entrepreneur in the economic development of the country.
c. List the Government policies on SMEs.
d. Describe the challenges of e-business models.
e. Define a Woman Entrepreneur and state the steps the government should take to encourage women entrepreneurs.

Q. 2.
a) Compare Financial and Non-Financial methods of motivation for employees. (10)
b) Write a detailed business report on starting a new Electronic Components business using SWOT (Strength Weakness Opportunity Threat) analysis. (10)

Q. 3.
a) Enlist different factors that an entrepreneur should consider to make sure that the a new venture does not fail. (10)
b) State and explain with examples indicating the features of a good marketing plan. (10)

Q. 4.
a) Define an ERP. List the different features of ERP. (10)
b) "Technology adoption leads to Successful Business activity". Comment on this statement. Justify your answer. (10)

Q. 5.
a) Define E-commerce and explain different types of E-commerce. (10)
b) Explain Supply Chain Management (SCM) and enlist its characteristics. (10)

Q. 6.
A) List and explain the different sources of Long term Finance. (10)
b) Explain procurement and E-Procurement. Also describe the components of e-Procurement. (10)

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ation:3 Hours) (Total: 80 Marks)

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

olve any Four out of Six.(Each question carries 5 marks) (20)

) Explain what is software Engineering process and characteristics of a software?
) Explain the different ways to identify customer requirement for a software development by an organization?
) Discuss the various elements of Analysis Modelling in detail?
) Explain with example Earned Value Analysis?
) Explain the Golden rules of User- interface design?
) Explain FIX backlog and defective FIX in maintenance of Software Quality Metrics?

) Explain advantages of Agile Process and Extreme Programming methodology in detail? (10)
) Explain Evolutionary Process Model with example in detail (10)

) Explain SRS and use-case Modelling in detail? (10)
) Explain the Modularity in detail? (10)

) Explain in detail the Software configuration Management Process and benefits of SCM (10)
) Explain about COCOMO II Model with example? (10)

) Explain about Project scheduling and tracking Technique? (10)
) Explain Key concepts and elements of Six Sigma? (10)

) Explain what is a risk? Different types of risk? and describe RMMM in detail? (10)
) Explain the characteristics of good Test software and techniques involved in white box testing? (10)

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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 Solve any four (each of 5 marks) 20 Marks

(a) Give asymptotic upper bound for T(n) for the following recurrences; (5)

$$T(n) = T(n-1) + n$$

(b) Differentiate between greedy method and dynamic programming. (5)
(c) Find Longest Common Subsequence for the following: (5)
String x=ACBAED
String y=ABCADF

(d) Explain Divide and Conquer Strategy with the help of example. (5)
(e) Write note on optimal storage on tape (5)

Q2. (a)Consider the instance of knapsack problem where n=7, M=15, profits are (P1,P2,P3,P4,P5,P6,P7) =(5,10,15,7,8,9,4) and weights are (W1,W2,W3,W4,W5,W6,W7)
= (1,3,5,4,1,3,2). Find maximum profit using fractional Knapsack. (10)

Q2. (b) Define B-tree. Insert the keys 78, 52, 81, 40, 33, 90, 85, 20, and 38 in this order in an initially empty B-tree of order 3. (10)

Q3. (a) Write an algorithm for Quick Sort and sort the following elements: (10)
10,80,30,90,40,50,70

Q3. (b) Build a max heap and min heap using the following data: (10)

7, 5, 6, 4, 2, 1, 3

Q4. (a) Apply All Pair Shortest Algorithm on the graph given in figure 1 to find the shortest path. (10)

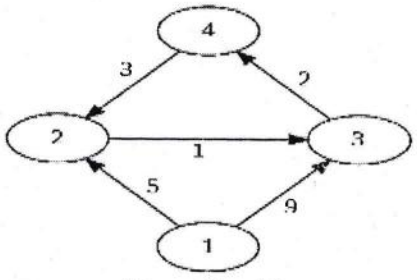

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Figure 1

Q4. (b) Solve the following recurrence relation using back substitution method: (10)

$$T(n)= 2\ T(n/2)+n$$

Q5. (a) Find Minimum and Maximum elements of an array X[0 : 6] = (22, 14, 8, 17, 35, 3) using divide and conquer strategy. (10)

Q5. (b) Explain Job Scheduling with Deadline. Given a set of 9 jobs (J1, J2, J3, J4, J5, J6, J7, J
J9) where each job has a deadline (5,4,3,3,4,5,2,3,7) and profit (85,25,16,40,55,19,92,80,15
associated to it. Each job takes 1 unit of time to complete and only one job can be scheduled at
time. We earn the profit if and only if the job is completed by its deadline. The task is to find th
maximum profit and the number of jobs done. (10)

Q6. Explain any Two: (20)

a) Rabin Karp Algorithm
b) Genetic Algorithm
c) NP Class, NP hard, NP Complete

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