E (comp.) | sem-XI c·N·| R-19-c-scheme| 09/06/25

[Time: 3 Hours]

[Marks:80]

N.B

(1) Question no. 1 is compulsory.

(2) Attempt any 3 from the remaining questions.

(3) Assume suitable data if necessary.

(4) Figures to right indicate full marks.

Q.1 Attempt any four of the following

a) What are frames? Explain any 2 framing methods in detail.   5

b) Explain TCP Timers.   5

c) Explain the need of DNS? What are DNS name spaces?   5

d) Compare the OSI & TCP/IP reference models.   5

e) What is the use of checksum? Explain the CRC steps to calculate the checksum.   5

f) Compare Subnet and Supernet? A network on the Internet has a subnet mask of 255.255.192.0. What is the maximum number of hosts it can handle?   5

Q.2 Attempt the following

a) Compare and contrast coaxial cable & fiber optics cable? A 2 km long broadcast LAN uses CSMA has 10^9 bps bandwidth and uses CSMA/CD. The signal travels along the wire at 400000 km/s. What is the minimum packet size that can be used on this network?   10

b) Explain the open loop congestion control and closed loop congestion control policies in detail.   10

Q.3 Attempt the following

a) An ISP is granted a block of addresses starting with 190.100.0.0/16 (65,536 addresses). The ISP needs to distribute these addresses to three groups of customers as follows: 10

a. The first group has 64 customers: each need 256 addresses.

b. The second group has 128 customers: each need 128 addresses.

c. The third group has 128 customers: each need 64 addresses.

Design the subblocks and find out how many addresses are still available after these allocations

b) Explain the TCP connection establishment and Connection release.   10

Q.4 Attempt the following

a) Compare and Contrast TCP and UDP protocol? Explain the header format used at the transport layer by TCP protocol.   10

b) Enlist and elaborate the issues in designing the layered protocol architecture   10

Q.5 Attempt the following

a) Explain the concept of sliding protocol? Explain the selective repeat protocol with example? Compare the performance of Selective repeat & Go-back-N protocol.   10

b) Explain Distance vector routing? Also elaborate the count to infinity problem and its solution.   10

Q.6 Write a short note on

a. ARP & RARP   10

b. DNS   10

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O.P. Code :-
81286

Program Code :-
1T00735.

TE (comp.) / sem Ⅴ / R-19 c scheme / DWM / 11/6/25.

(3 Hours)　　　　　　　　　　　　　　　　　　　　　　　[80 Marks]

Note　(1). Question No.1 is compulsory.
　　　　(2). Out of the remaining attempt any three.
　　　　(3). Assume and mention suitable data wherever required.

Q.1　Solve any Four of the following.　(5 marks each)　　　　　　20
　　　A. What are the basic building blocks of Data Warehouse?
　　　B. What are the major issues in Data Mining?
　　　C. Differentiate supervised and unsupervised learning.
　　　D. Explain k-medoids algorithm.
　　　E. Explain Market Basket analysis with an example.
　　　F. Explain web-usage mining in detail.

Q.2 A) Explain different steps involved in data preprocessing.　　　　10

　　　B)　The college wants to record the marks for the courses completed by the students
　　　　　using the dimensions: a) Course, b) student, c) time and a measure aggregate
　　　　　marks.
　　　　　Create a cube and describe following operations:
　　　　　i) Roll up, ii) Drill down, iii) Slice and iv) Dice.　　　　10

Q.3 A) A database has five transactions. Let minimum support count = 2 and minimum
　　　　confidence = 60%. Find all frequent itemsets using Apriori algorithm. Also list
　　　　strong association rules.　　　　10

T ID	Items
100	1, 3, 4
200	2, 3, 5
300	1, 2, 3, 5
400	2, 5
500	1, 3, 5

　　　B) Explain the types of attributes and data visualization　　　　10

O.P. Code :-
82395

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1T00735.

Q.4 A) Explain K-means algorithm with diagram. Use k-means algorithm to create 3-clusters for given set of values : {2, 3, 6, 8, 9, 12, 15, 18, 22}   10

B) Explain ETL process in detail.   10

Q.5 A) What is web structure mining? Describe page ranking technique with the help of example.   10

B) Demonstrate Multidimensional and Multilevel Association Rule Mining with suitable example.   10

Q.6 A) What is classification? Explain any one classification algorithm with example.   10

B) Write short on the following.   (5 marks each)   10
   i) FP Tree
   ii) Fact Constellation Schema

COMP   SEM:V   SUB:-(IP)   R-2019-20 'C' SCHEME

DATE:- 13.06.25

Duration: 3hrs   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.

1   Attempt any FOUR   [20]
   a   What is the difference between PHP and Java Script?
   b   Design a basic registration form that contains fields such as First Name, Last name, Mobile No, Email Id and address. Write java script code for validation of the same?
   c   What are the characteristics of Rich Internet Application?
   d   Discuss any two validation functions in Java Script?
   e   What is React JS? Explain React components?

2   a   Explain the concept of AJAX and how it differs from traditional web development approaches?   [10]
   b   How does PHP handle session tracking and user authentication? Provide an example of a login system using PHP and MySQL?   [10]

3   a   Develop the CSS code to apply the following styles to the paragraph below the specified heading: [10]
         • Utilize a yellow text color
         • Set the font size to 25px
         • Apply a bold font style
   b   Examine the concept of JSON by inspecting its structure and function, and categorize its usage with an example that demonstrates how data is represented and exchanged in web applications?   [10]

4   a   Create an HTML page that displays the message "Responsive Design in Action." Write a media query that changes the background color to light blue when the browser window is 500px wide or less, and otherwise keeps the background color as white?   [10]
   b   What is the purpose of using regular expressions in JavaScript? How can regular expressions be utilized to validate email addresses, and how would you incorporate JSON in the process?   [10]

5   a   Explain the differences between the HTTP GET and POST methods and evaluate their appropriate usage scenarios with practical examples?   [10]
   b   Write a PHP program that tests whether an email address is input correctly. Test your program with both valid and invalid email addresses?   [10]

6   a   Construct a JavaScript function that returns the Fibonacci sequence up to a given number, utilizing memorization for optimized performance?   [10]
   b   Describe the role of JSX (JavaScript XML) in React. How does JSX help simplify the development of the user interface for your task management application?   [10]

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82865

TE. (COMP.) / Sem-I / R-19 / 'C' scheme   05.06.2025

Time: 3 hours   Max. Marks: 80

N.B. (1) Question one is Compulsory.
(2) Attempt any 3 questions out of the remaining.
(3) Assume suitable data if required.

Q. 1 Solve any Four out of the following (5 marks each)   20M

   a. Compare FTR and Walkthrough

   b. Explain the Requirements model.

   c. Explain the LOC.

   d. Different between Alpha and beta testing

   e. Compare Scrum and Kanban

Q.2 a) Explain Risk and its types? Explain the RMMM plan.   10 M

   b) Explain the different techniques in white box testing.   10 M

Q. 3 a) Explain steps in version and change control.   10M

   b) Explain the FP Estimation techniques in details.   10M

Q. 4 a) Explain cohesion and Coupling. Explain different types with detailed example.   10M

   b) Explain the Spiral model of software development   10 M

Q. 5 a) Explain the general format of SRS for Hospital Management system   10M

   b) Explain software Re-engineering in detail.   10M

Q. 6 Solve any Four   20M

   a. Explain the CMM model.

   b. What are the different types of maintenance?

   c. Explain the Scenario based model.

   d. Explain the tracking and scheduling.

   e. Discuss the different level of DFD

QP code: 82631

prog. code: IT00735

Correction in **Theoretical Computer Science**

Q.P. Code: **10083672**

Consider Following corrections in QP Code 83672 (TE Comp SEM VI TCS subject)

Q2 b. Please read 'i' instead of 'I' in the production rule set provided.

Correct production rules are:

S --> iCtS | iCtSeS | a, C --> b

Rest of the question is as it is.

Q3 b.
ii. Read Regular expression as
01((01)*+111*+0)*1

TE (comp.) Sem (V) R-19 C-scheme 03/06/25.

(3 hours) [80 marks]

NOTE:
1. Question No 1 is compulsory
2. Attempt any three questions from remaining.
3. Assume suitable data if necessary and state the same.

Q1. [20]

a) Difference between NFA & DFA

b) Design a Moore machine for binary adder. Clearly list all components that make up the machine.

c) Construct the right linear grammar corresponding to regular expression $R = (0+1)1^*(1+ (01)^*)$

d) Explain Pumping Lemma for CFG.

Q2.

a) Construct PDA accepting the language $L = \{a^{2m}b^n \mid n >= 0\}$ [10]

b) Consider the following grammar: $S \rightarrow ICtS \mid ICtSeS \mid a, C \rightarrow b$ [10]

   For the string 'ibtibtaea' find the following:

   i)   Is this a CFG? Explain your answer.
   ii) Leftmost derivation
   iii) Rightmost derivation
   iv) Parse tree for both of above
   v)   Check if the above grammar is ambiguous.

Q3.

a) Construct a DFA accepting a language generated by the left linear grammar given below

   $S \rightarrow Ca \mid Bb, C \rightarrow Bb, B \rightarrow Ba \mid b$ [10]

b) Construct the finite automata equivalent to the following regular sets

   i) $10+ (0+11)0^*1$

   ii) $01[((10)^*+111)^*+0]^*1$ [10]

Q4.

a) Design a TM to add two unary numbers [10]

b) Design a finite automata with output to check divisibility by 3 to binary number. [10]

Q5.

a) Write a short note on Pumping Lemma for regular language. Prove $L = \{a^{2n}b^{3n} \mid n>0\}$

   is not a regular language using pumping lemma. [10]

b) Construct PDA accepting the language $L = \{a^{2n}b^n \mid n>0\}$ [10]

Q6.

a) Explain Chomsky hierarchy [10]

b) Write a detail note on halting problem [10]

Q.P Code:-

Program Code:-

1T00735.