21/5/19 (m)

K. J. Somaiya College of Engineering, Mumbai-77
(Autonomous College Affiliated to University of Mumbai)

End Semester Exam
May - June 2019

Max. Marks: 100 **Duration: 3 hrs.**
Class: SYBTech Semester: IV
Name of the Course: Data Communication and Networking Branch: IT
Course Code: UITC402

Instructions:
(1) All Questions are Compulsory
(2) Draw neat diagrams
(3) Assume suitable data if necessary

Question No.		Max. Marks
Q 1 (a)	Match the following to one or more layers of the OSI Model with explanation. 1. Transmission of bit stream across physical medium. 2. Define frames 3. Reliable process to-process message delivery 4. Route selection 5. Provide user services such as e-mail and file transfer.	10
Q 1 (b)	Explain Star and Mesh topology with following points 1. Diagram 2. Working 3. Advantages 4. Disadvantages **OR** Explain Virtual LAN with following points 1. Configuration 2. Methods for Communication between switches	10
Q2 (a)	What is Subnetting and Supernetting concept? A block of address is granted to a small organization.one of the addresses is 205.16.37.38/28 ,find following 1. First address in the block 2. Last address for the block 3. Number of addresses in the block	10
Q2 (b)	Explain IPV4 header in detail with diagram.	10
Q3 (a)	What is Random Access Control? Explain CSMA and CSMA/CD with proper diagram.	10

Q3 (b)	Explain Three way Handshaking in TCP protocol with proper diagram. **OR** Explain Stop and Wait Automatic Repeat Request in detail with diagram.	10
Q4 (a)	Explain Distance vector Routing Method in detail.	10
Q4 (b)	What is Congestion? How Congestion is handle in TCP. **OR** Explain the detail process of Error Detection and Correction considering Hamming Code with suitable example.	10
Q5	Write a short note on any four from following 1. TDMA versus FDMA 2. HDLC 3. PPP 4. Piggybacking 5. Slotted ALOHA 6. Token Bucket algorithms.	20

23.5.2019 (E)

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End Semester Examinations
May-June 2019

Max. Marks: 100 **Duration: 3 Hrs**
Class: SY-BTECH Semester: IV
Name of the Course: Analysis of Algorithms Branch: IT
Course Code: UITC 403

Instructions:
(1) All Questions are Compulsory
(2) Draw neat diagrams
(3) Assume suitable data if necessary

Question No.		Marks
Q 1 (a)	What is Asymptotic analysis? Define Asymptotic growth functions and then derive the best case and worst case complexity of Insertion sort.	10
Q 1 (b)	Explain the method proposed by Strassen for Matrix Multiplication using appropriate example. Derive its recurrence relation and solve the same using appropriate method. OR Explain the problem of Multiplying Long Integers. Which algorithm design is used to solve this problem? Explain the method with appropriate example and derive its complexity.	10
Q2 (a)	Find all the subsets of the given weight vector w = {5, 11, 13, 24} having required sum M = 29 using backtracking method.	10
Q2 (b)	Find Longest Common Subsequence for the following two strings. X= ABCBBACA Y= CABABA OR Solve the following 0/1 Knapsack problem using Dynamic Programming. n=5 P={ 18, 10, 9, 12, 5 } W = { 8, 5, 3, 3, 2 } Maximum sack capacity M = 17.	10
Q3 (a)	Write an algorithm for Heap sort. Show the stepwise working for sorting following elements using Heap sort. 25, 67, 39, 75, 58, 89, 20 OR Write an algorithm for Shell sort. Show the stepwise working for sorting following elements using Shell Sort. 54, 78, 39, 10, 85, 21, 40, 67, 17	10

<table>
<tr><td>Q3 (b)</td><td>Write an algorithm to find minimum cost spanning tree using Prim's Algorithm. Using the same method find the minimum cost spanning tree for the following graph.
<table>
<tr><th></th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th></tr>
<tr><td>1</td><td>0</td><td>55</td><td>40</td><td>∞</td><td>∞</td></tr>
<tr><td>2</td><td>55</td><td>0</td><td>20</td><td>∞</td><td>30</td></tr>
<tr><td>3</td><td>40</td><td>20</td><td>0</td><td>15</td><td>5</td></tr>
<tr><td>4</td><td>∞</td><td>∞</td><td>15</td><td>0</td><td>10</td></tr>
<tr><td>5</td><td>∞</td><td>30</td><td>5</td><td>10</td><td>0</td></tr>
</table></td><td>10</td></tr>
<tr><td>Q4 (a)</td><td>Write the algorithm for Job Sequencing with Deadlines. Solve the following problem.
No of Jobs = 7
Profit = {350, 250, 450, 300, 150, 400, 100}
Deadline = {4, 2, 4, 1, 5, 3, 3}</td><td>10</td></tr>
<tr><td>Q4 (b)</td><td>Write an algorithm for solving N Queens Problem. Show the detailed working for n =4. Also draw two final solutions for n=8.</td><td>10</td></tr>
<tr><td>Q5 (a)</td><td>What is optimal binary search tree? Derive the formula for optimal cost of the tree. Explain with example.

OR

Explain the process of solving "Travelling Salesperson Problem" using Branch and Bound method.</td><td>10</td></tr>
<tr><td>Q5 (b)</td><td>What are randomized algorithms? Explain their types with proper example.</td><td>10</td></tr>
</table>

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End Semester Exam
May-Jun 2019

Max. Marks: 100 Duration: 3 hours
Class: SY-BTech Semester: IV
Name of the Course: **Computer Organization and Architecture** Branch: IT
Course Code: **UITC404**

Instructions:
(1) **All Questions are Compulsory**
(2) Draw neat diagrams if necessary
(3) Assume suitable data if necessary

Q No		Max Marks
Q1	Draw the flowchart for Booth's multiplication and then multiply +12 and +14 using Booth's algorithm. Show all steps clearly. **---- OR ----** Draw the flowchart for binary restoring division, and divide +16 by +4.	20
Q2	(a) Two numbers are stored in registers X and Y in IEEE 32 bit format. Assume that there is an instruction ADD X, Y which does X+Y and stores the result back in X. Write the microcode sequence for the same. (b) "Microcode approach is more useful for CISC instruction set than RISC instruction set". Is this statement correct? If yes why, if no why not?	10 10
Q3(a)	Explain how DMA helps to improve CPU performance. Briefly describe different types of DMA. **---- OR ----** Explain what instructions, pins and signals are used by the CPU to differentiate memory from I/O devices.	10
Q3(b)	(a) Explain the term "pipeline hazard". (b) Give suitable examples for RAW and WAR hazards. **---- OR ----** Compare SIMD and MIMD architectures in terms of architectural differences and application areas.	5 5 10
Q4	(a) What is the Von Neumann model? (b) Do the following architectures belong to the Von Neumann model:- (i) No cache memory, only main memory. (ii) On-chip cache and main memory (iii) Multi-level cache and main memory (iv) Separate address and data cache and main memory. (v) No cache, but separate program and data memory. (c) Write the salient features of PCI bus architecture.	5 5 10

P.T.O.

.....page2

Q5	A computer system contains a 16KB 4-way set associative cache and a 2MB main memory. Cache line size (block size) is 32 bytes. Assume that the cache is initially empty. The following memory transactions are done by the CPU (in the given order): Main Memory Address(hex) — Transaction Type 0077FBH read 1077FBH read 0077FBH write 0177FBH write 0177F2H write 0177F4H read 0177EFH write 1077FBH write (a) For each transaction, (i) Write the initial and final value of Valid bit and Modified bit. (ii) Write the address tag value (b) Calculate the cache hit ratio: (cache hits) / (cache hits + cache misses)	20

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28·05·2019(E)

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End Semester Examinations
May-June 2019

Max. Marks: 100 **Duration: 3 hr**
Class: SY -BTech Semester: IV
Name of the Course: Web Programming-I
Branch: IT
Course Code: UITC405

Instructions:
(1) All Questions are Compulsory
(2) Draw neat diagrams
(3) Assume suitable data if necessary

Question No.		Marks
Q 1 (a)	Write a HTML code which includes Table, Hyperlink. Character formatting, ordered and unordered list to display your Resume.	10
Q 1 (b)	Explain benefits of AJAX using suitable example. OR Explain URL and DNS.	10 10
Q2 (a)	Explain Javascript built-in objects with method and description.	10
Q2 (b)	Explain frameset, frame, noframe, iframe tags, scrolling and frame border with example.	10
Q3 (a)	What are the options include in the HTTP method? Compare HTTP and FTP. OR Explain difference between Get and Post HTTP method.	10 10
Q3 (b)	Describe the steps involved in Planning a Website. OR Explain function of web server.	10 10
Q4 (a)	What is CSS and what do you understand by the term 'cascading' ?Explain different types of CSS. OR What are CSS? Write a CSS for a HTML page to i) Set background color ii) Left indent text iii) Set size of font iv) Set border around a text	10 10
Q4 (b)	Write Javascript to validate a Online Alumni Information form for your collegeconsisting of Name, Age, Address, Email id, Hobby (check-box), Gender (radio button), Branch (Drop down menu).	10
Q5 (a)	Write HTML code of your choice and validate the same using JQuery.	10
Q5 (b)	Explain XML and XSL with example.	10

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28.05.19(E)

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End Semester Examinations
May-June 2019

Max. Marks:100 Duration: 3hrs
Class: SY Semester: IV
Name of the Course: Web Programming-I(PWD) Branch: IT
Course Code: UITC405

Section B

Instructions:
(1) All Questions are Compulsory
(2) Draw neat diagrams
(3) Assume suitable data if necessary

Question No.		Max. Marks
Q4	(1)Compare and contrast Jquery and Javascript (6 marks). (2) Explain Domain Name System and Web Server OR (1) Explain the use of AJAX for Asynchronous communication(5marks) (2) Write short on XML (5marks)	10
Q5	(1) Write an XML file for Tours and Travels packages (4 marks) (2) Write an AJAX program to display the information of the above XML file.(6 marks) OR (1) Write XML file for Employee records(4 marks) (2) Write XSL file to display the information of the above XML file in ascending order of salary using XSLT. (06 marka)	10
Q6	(1)Which of the following type of variable is visible only within a function where it is defined? (1 mark) (a) Global variable (b) local variable (c) both a and b (2)Which of the following function of String object causes a string to be italic, as if it were in an <i> tag? (2 marks) (a) Fixed (b) Font color (c) Font size (d) italics (3) HTML tag used for writing Javascript is ---------- (1mark) (a) Script	10

(b) scripted
(c) js
(d) javascript

(4) Jquery is buit using javascript framework (1 mark)
(a) True
(b) false

(5) _____ is use for alternately expand and collapse a page element (2 marks)
(a) hover
(b) stop propagation
(c) toggle
(d) trigger

(6)Which of the following method is used to hide the selected elements? (1 mark)
(a) visible false
(b) hidden
(c) display none
(d) none of the above

What are the features of Ajax? (2 marks)
(a) live data binding
(b) client side template
(c) Asynchronous communication
(d) all of the above