



B.L.D.E Association's
VACHANA PITAMAHA DR.P.G.HALAKATTI
COLLEGE OF ENGINEERING AND TECHNOLOGY ,VIJAYPUR

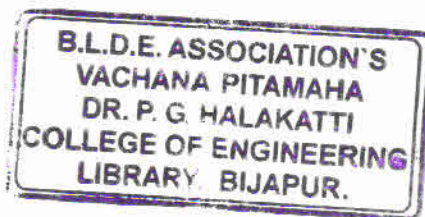
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QUESTION PAPERS

1st,2nd 3rd,4th & 5th SEMESTER

MCA

JUNE/JULY 2019



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First Semester MCA Degree Examination, June/July 2019

UNIX and Shell Programming

Max. Marks: 100

Time: 3 hrs.

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. With a neat diagram, explain the architecture of UNIX operating system. (10 Marks)
b. Explain who, uname, date, cal, echo commands with examples. (10 Marks)

OR

- 2 a. With syntax, explain different forms of 'if' statement used in shell. (06 Marks)
b. Differentiate while and until loops. Give suitable examples. (06 Marks)
c. Write a shell script which accepts valid login names as arguments and print their corresponding home directories. If no arguments are specified, print a suitable error message. (08 Marks)

Module-2

- 3 a. What is a file? Discuss different categories of files. (06 Marks)
b. Explain absolute and relative pathnames. (06 Marks)
c. Explain pwd, mkdir, rmdir, cd commands with examples. (08 Marks)

OR

- 4 a. What is 'ls' command? Explain in detail the ls -l command. (10 Marks)
b. Differentiate hard links and symbolic links with example. (06 Marks)
c. Explain chown and chgrp commands. (04 Marks)

Module-3

- 5 a. Explain the following commands:
i) head
ii) tail
iii) paste
iv) sort
v) tr (10 Marks)
b. What does sed command do? How sed command be used for line addressing and context addressing? (10 Marks)

OR

- 6 a. With example, explain grep command with its options. (10 Marks)
b. Explain substitution in sed with example. (05 Marks)
c. Write a short note on IRE. (05 Marks)

Module-4

- 7 a. Explain built-in variables and built-in functions of awk. (10 Marks)
b. Write an awk script to delete duplicate lines from a text file. The order of the original lines must be remain unchanged. (06 Marks)
c. Demonstrate logical and relational operators in awk with suitable examples. (04 Marks)

OR

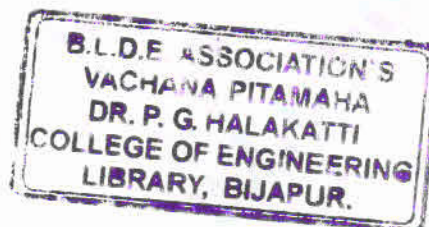
- 8 a. Discuss the concept of conditional parameters substitution in shell programs. (10 Marks)
b. Explain with example, how to export shell variables. (06 Marks)
c. Explain eval, exec with examples. (04 Marks)

Module-5

- 9 a. Who is super user? Explain privileges of super user. (10 Marks)
b. Explain UNIX start up and shut down process. (06 Marks)
c. Write a note on tar command. (04 Marks)

OR

- 10 a. Differentiate between:
b. At and batch commands
c. Internal and external commands (06 Marks)
What is process? Explain the mechanism of process creation. (06 Marks)
(04 Marks)



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16/17MCA15

First Semester MCA Degree Examination, June/July 2019
Discrete Mathematical Structures

Time: 3 hrs.

Max. Marks: 80

Note: Answer FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Prove that, for any propositions p, q, r the compound proposition $[(p \vee q) \wedge \{(p \rightarrow r) \wedge (q \rightarrow r)\}] \rightarrow r$ is a tautology. (05 Marks)
- b. Simplify the compound proposition using the laws of logic: $(p \vee q) \wedge [\neg \{(\neg p) \wedge q\}]$. (05 Marks)
- c. Find whether the following argument is valid. If a triangle is isosceles, then it has two equal angles. The triangle ABC does not have two equal angles. Therefore ABC does not have two equal angles. (06 Marks)

OR

- 2 a. Test the validity of the argument below. I will get grade A in this course or I will not graduate. If I do not graduate, I will join the army. I got grade A. Therefore I will not join the army. (05 Marks)
- b. Write the statement in symbolic form and find its negation. If k, m, n are any integers where $(k-m)$ and $(m-n)$ are odd, then $(k-n)$ is even. (06 Marks)
- c. Prove that if m is an even integer, then $m + 7$ an off integer by direct proof method. (05 Marks)

Module-2

- 3 a. Let $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$, $A = \{1, 2, 4, 6, 8\}$, $B = \{2, 4, 5, 9\}$, $C = \{x/x \text{ is a positive integer and } x^2 < 16\}$. Compute the following: i) $A \cup (B - C)$ ii) $(A - B) - C$. (04 Marks)
- b. The functions $f: \mathbb{R} \rightarrow \mathbb{R}$ and $g: \mathbb{R} \rightarrow \mathbb{R}$ are defined by $f(x) = 3x + 7$ for all $x \in \mathbb{R}$, $g(x) = x(x^3 - 1)$ for all $x \in \mathbb{R}$. Verify that f is one-to-one but g is not one-to-one. (05 Marks)
- c. For a fixed integer $n > 1$, prove that the relation "Congruent modulo n " is an equivalence relation on the set of all integers \mathbb{Z} . (07 Marks)

OR

- 4 a. For any two sets A and B , prove the following:
 - i) $A - B = A \cap \overline{B}$ ii) $\overline{A - B} = \overline{A} \cup (A \cap B)$. (05 Marks)
- b. Let $A = \{1, 2, 3, 4, 6\}$ and R be a relation on A defined by aRb iff ' a is a multiple of b '. Represent the relation R as a matrix and draw its diagraph. Find its indegree and outdegree. (06 Marks)
- c. Draw the Hasse diagram representing the positive division of 36. (05 Marks)

Module-3

- 5 a. State Pigeon hole principle. Let ABC is an equilateral triangle whose sides are of length 1cm each. If we select 5 points inside the triangle, prove that at least two of these points are such that the distance between them PS less than $1/2$ cm. (05 Marks)

- b. A woman has 11 close relatives and she wishes to invite 5 of them to dinner. In how many ways can she invite them in the following situations
- There is no restriction on the choice ;
 - Two particular person will not attend separately
 - Two particular person will not attend together. (06 Marks)
- c. A group of friends are comparing their preferences in music. There are five who like country music, four who like classical and seven who like rock music. There are two people who like classical and rock, two people who like country and classical and one person who likes country and rock. Only one person likes all three genres. How many friends are in the group? (05 Marks)

OR

- 6 a. How many positive integers n can we form using the digits 3, 4, 4, 5, 5, 6, 7 if we want n to exceed 5,000,000? (05 Marks)
- b. Find the coefficient of
- $x^9 y^3$ in the expansion $(2x-3y)^{12}$
 - x^{12} in the expansion $x^3 (1-2x)^{10}$ (06 Marks)
- c. The number of virus affected files in a system is 1000 and this increases 250% every two hours. Use a recurrence relation to determine the number of virus affected files in the system after one day. (05 Marks)

Module-4

- 7 a. Define conditional probability. Find the probability that a single toss of a die will result in a number less than 4 if
- No other information is given
 - It is given that the toss resulted in an odd number. (06 Marks)
- b. Two cards are drawn from a well-shuffled ordinary deck of 52 cards. Find the probability that they are both aces if the first card is i) replaced ii) not replaced. (05 Marks)
- c. Out of 30 students in a hostel, 15 study history 8 study economics and 6 study geography. It is known that 3 students study all these subjects. Show that 7 or more students study none of these. (05 Marks)

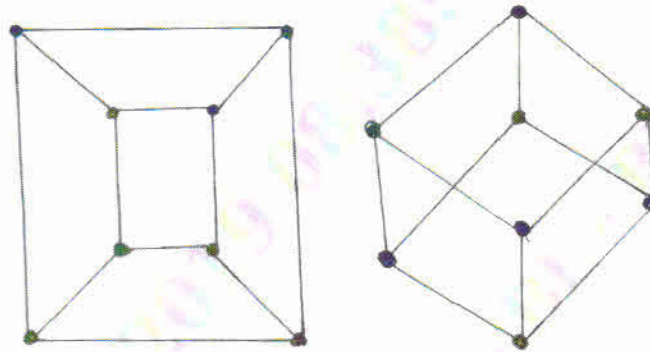
OR

- 8 a. Define probability of an event. Find the probability of a 5 turning up at least once in two tosses of a fair die. (06 Marks)
- b. A box contains 5 red and 4 white marbles. Two marbles are drawn successively from the box without replacement and it is noted that the second one is white. What is the probability that the first is also white? (03 Marks)
- c. How many integers between 1 and 300 (inclusive) are
- divisible by atleast one of 5, 6, 8?
 - divisible by none of 5, 6, 8. (07 Marks)

Module-5

- 9 a. Define complete graph, regular graph and complete bipartite graph with on example each. (06 Marks)

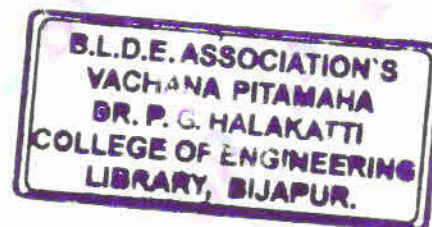
- b. Define isomorphism of graphs. Verify that the two graphs shown below are isomorphic. (05 Marks)



- c. Show that the complete graph K_5 is a non-planar graph. (05 Marks)

OR

- 10 a. Define connected graph, complement of a simple graph and Hamilton graph with one example for each. (06 Marks)
 b. Explain Konigsberg bridge problem. (05 Marks)
 c. Find the chromatic polynomial for the cycle C_4 . Using decomposition theorem. (05 Marks)



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First Semester MCA Degree Examination, June/July 2019
Computer Organization

Time: 3 hrs.

Max. Marks: 100

Note: Answer FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Convert the decimal number 250.5 to binary, octal and hexadecimal. (05 Marks)
- b. Convert the following numbers from the given base to the base indicated. (04 Marks)
 - i) Binary 11010111.110 to decimal, octal and hexadecimal. (04 Marks)
 - ii) Octal 623.77 to decimal, binary and hexadecimal. (04 Marks)
- c. Obtain 1's and 2's complement of the binary numbers 1010101, 0111000 and 10000. (03 Marks)
- d. Perform the subtraction of the following binary numbers using 2's complement and 1's complement. (04 Marks)
 - i) 11010 - 1101 ii) 10010 - 10011

OR

- 2 a. State axiomatic definition of Boolean algebra. (05 Marks)
- b. Express the Boolean function $F = A + B'C$ in sum of minterms and product of maxterms. (05 Marks)
- c. Simplify the following Boolean function using map method. (04 Marks)
 - i) $F(x, y, z) = \sum(0, 2, 4, 5, 6)$
 - ii) $F(w, x, y, z) = \sum(0, 1, 2, 4, 5, 6, 8, 9, 12, 13, 14)$
- d. Implement the function $F(x, y, z) = \sum(0, 6)$ using i) NAND gates and ii) NOR gates. (06 Marks)

Module-2

- 3 a. With a neat block diagram, explain half adder and full adder. (06 Marks)
- b. Explain 4 bit binary parallel adder with look ahead carry generator. (06 Marks)
- c. With a logic diagram, explain magnitude comparator. (04 Marks)
- d. What is demultiplexer? Explain briefly. (04 Marks)

OR

- 4 a. Implement the function $F(A, B, C, D) = \sum(0, 1, 3, 4, 8, 9, 15)$ with a multiplexer. (04 Marks)
- b. With a neat logic diagram, explain clocked RS flip flop. (06 Marks)
- c. Explain JK flip flop. (06 Marks)
- d. With an example explain Booth algorithm. (04 Marks)

Module-3

- 5 a. With a neat block diagram, explain the functional units of a computer. (06 Marks)
- b. With an example explain basic instruction types. (06 Marks)
- c. With an example explain branching. (08 Marks)

OR

- 6 a. With an example explain the, different addressing modes. (12 Marks)
b. Write a brief note on the following:
i) Assembler directive
ii) Basic input / output operations. (08 Marks)

Module-4

- 7 a. What is an interrupt? Briefly explain. (05 Marks)
b. Write a brief note on the following:
i) Exceptions
ii) Direct memory access
iii) Bus arbitration. (15 Marks)

OR

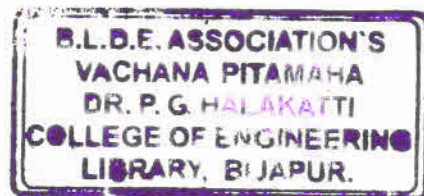
- 8 Write a brief note on the following:
a. Accessing I/O devices
b. Interrupt Nesting
c. Synchronous bus
d. Asynchronous bus. (20 Marks)

Module-5

- 9 a. With a neat diagram, explain the internal organization of memory chips. (07 Marks)
b. With a block diagram, explain CMOS memory cell. (07 Marks)
c. With a neat diagram, explain dynamic RAM. (06 Marks)

OR

- 10 Write a brief note on the following :
a. Read only memory
b. Speed, size and cost of memories
c. Cache memories
d. Virtual memories. (20 Marks)



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First Semester MCA Degree Examination, June/July 2019

Web Technologies

Time: 3 hrs.

Max. Marks: 100

Note: Answer FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Discuss the HTTP request and response phases. (10 Marks)
 b. Write a short note on: i) Web browser ii) MIME iii) Web server. (10 Marks)

OR

- 2 a. Explain the following with reference to XHTML: i) Heading tag ii) Image tag (08 Marks)
 iii) Rowspan iv) Colspan.
 b. Explain the various types of link that can be used in a XHTML document with example. (08 Marks)
 c. List out syntactic difference between HTML and XHTML. (04 Marks)

Module-2

- 3 a. Explain different selector forms. (10 Marks)
 b. What is CSS? Describe the different levels of style sheet and their precedence. (10 Marks)

OR

- 4 a. With an example explain briefly any 5 HTML5 input elements. (10 Marks)
 b. Explain briefly HTML5 document structure. (06 Marks)
 c. Write a simple program to illustrate HTML5 document structure. (04 Marks)

Module-3

- 5 a. Define javascript array. Explain briefly two different ways to create array in javascript. (08 Marks)
 b. Explain any 6 array methods used in javascript. (12 Marks)

OR

- 6 a. Write XHTML and DOM tree structure for below table:

Morning	Afternoon
7	3
8	4

- (06 Marks)
- b. Develop and demonstrate, a XHTML document that collect the USN (the valid format is : A digit from 1 to 4 followed by two upper-case characters followed by two digits followed by three upper-case characters followed by two digits, (no embedded spaces are allowed) from the user. Use javascript that validate the content of the document. Suitable message should be display in the alert if errors are detected in the input data. (08 Marks)
- c. Write a javascript program to have five radio buttons, labeled red, blue, green, yellow and orange. The event handlers for these button must produce message stating the chosen favourite color. The event handler must be implemented as function, whose name must be assigned to the on-click attribute of the radio button elements. The chosen color must be send to the event handler as a parameter. (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

Module-4

- 7 a. With an example, explain briefly absolute position and relative position. (10 Marks)
b. Develop and demonstrate using javascript, a XHTML document that contains three short paragraphs of text, stacked on top of each other, with only enough of each showing so that the mouse cursor can be placed over some part of them. When the cursor is placed over the exposed part of any paragraph, it should rise to top to become completely visible. (10 Marks)

OR

- 8 a. What is XML? What is the difference between XML and HTML? Mention the rules of a well formed XML document. (10 Marks)
b. What are DTD and XML schema? Explain how to declare elements, attributes and entities in DTD, give example. (10 Marks)

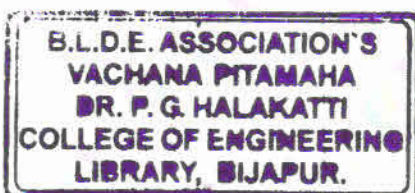
Module-5

- 9 a. What is JQuery? Explain briefly properties, utilities and methods of JQuery with a suitable example. (10 Marks)
b. Explain briefly document ready handler of JQuery. (06 Marks)
c. Write a JQuery program to disable/enable the form submit button based on checkbox. (04 Marks)

OR

- 10 a. Write a short note on: i) fadeIn() ii) fadeOut() iii) slideDown() iv) slideUp(). (10 Marks)
b. Write a JQuery program to illustrate fade in and fade out all division elements. (05 Marks)
c. Write a JQuery program to illustrate animate an element, by changing in heights and width. (05 Marks)

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First Semester MCA Degree Examination, June/July 2019
Object Oriented Programming with C++

Time: 3 hrs.

Max. Marks: 100

Note: Answer FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. What is object oriented programming? Discuss the following :
 i) object ii) class iii) polymorphism. (10 Marks)
- b. What is function templates? Give suitable example. (05 Marks)
- c. What is reference variable? Give suitable example. (05 Marks)

OR

- 2 a. Write the general structure of C++ program. Explain. (05 Marks)
- b. What is inline function? Demonstrate with example. (08 Marks)
- c. Discuss the needs and benefits of OOP. (07 Marks)

Module-2

- 3 a. Explain the general form of a class with an example. (04 Marks)
- b. What are constructors and destructors? Give suitable examples. (10 Marks)
- c. Write a C++ program to compute simple interest defining the member function outside the class. (06 Marks)

OR

- 4 a. Explain the operators i) NEW ii) DELETE with suitable example. (06 Marks)
- b. What are the static data members and static member functions? Explain with examples. (10 Marks)
- c. What is scope resolution operator? Discuss. (04 Marks)

Module-3

- 5 a. How to overload stream insertion and stream extraction operator? (06 Marks)
- b. Write a C++ program to overload unary operator using friend function. (08 Marks)
- c. What is friend function? Why we need to overload the friend function. (06 Marks)

OR

- 6 a. Write a C++ program to inherit a base class as protected. Explain. (08 Marks)
- b. What is the use of virtual based class? Explain with suitable example. (08 Marks)
- c. What are restriction on operator overloading? (04 Marks)

Module-4

- 7 a. What are virtual functions? with example demonstrate calling virtual function through base-class reference. (10 Marks)
- b. What is pure virtual functions? Explain with a suitable example. (10 Marks)

OR

- 8 a. What is C++ streams? Discuss the C++ stream classes? (06 Marks)
b. How to setting the format flags and clearing format flags? Explain with examples. (08 Marks)
c. Differentiate between early binding and late binding. (06 Marks)

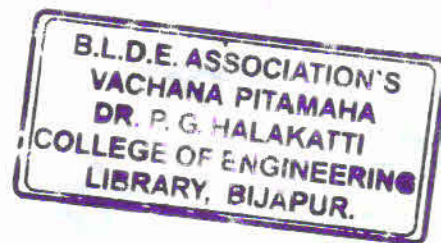
Module-5

- 9 a. What is exception? How exceptions are handled in C++. (08 Marks)
b. Discuss how to handle the Derived – class exceptions? Give suitable example. (08 Marks)
c. Discuss the following functions : i) terminate() ii) unExPected(). (04 Marks)

OR

- 10 a. Discuss the following with suitable examples :
i) Restricting Exceptions (10 Marks)
ii) Rethrowing an Exception. (10 Marks)
b. What is STL? List and explain the three types of container in STL. (10 Marks)

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First Semester MCA Degree Examination, June/July 2019
Software Engineering

Time: 3 hrs.

Max. Marks: 100

Note: Answer FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. What is software engineering? Explain various diversities in software engineering. (10 Marks)
 b. Explain the professional responsibilities of a software engineer. (05 Marks)
 c. List and explain the attributes of good software. (05 Marks)

OR

- 2 a. Explain waterfall and incremental software process models with a neat diagram. (10 Marks)
 b. Explain extreme programming practices. (10 Marks)

Module-2

- 3 a. Describe requirement engineering process with neat diagram. (10 Marks)
 b. Explain notations used for writing system requirements specification. (10 Marks)

OR

- 4 a. Define component. Describe CBSE process with neat diagram. (10 Marks)
 b. Explain the characteristics of a component. (10 Marks)

Module-3

- 5 a. Describe the interaction model in detail with suitable example. (10 Marks)
 b. Briefly explain the three architecture views. (10 Marks)

OR

- 6 a. Explain system models with suitable example. (10 Marks)
 b. Describe the component and connector view architecture styles in detail. (10 Marks)

Module-4

- 7 a. Describe coupling and cohesion design concepts. (10 Marks)
 b. Explain briefly function oriented design. (10 Marks)

OR

- 8 a. Explain the design issues to be considered in distributed system. (10 Marks)
 b. Explain the following architecture patterns i) Client – server architecture ii) Peer – to peer architecture. (10 Marks)

Module-5

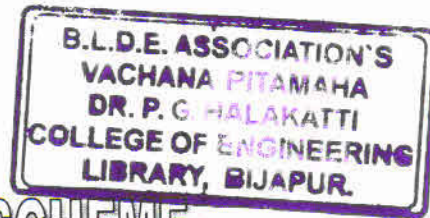
- 9 a. Explain project scheduling and staffing. (10 Marks)
 b. Describe risk management process with neat diagram. (10 Marks)

OR

- 10 a. Write the differences between black box and white box testing. (10 Marks)
 b. What is risk management? Briefly explain the risk management activities. (10 Marks)

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CBCS SCHEME



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18MCA24

Second Semester MCA Degree Examination, June/July 2019
Computer Networks

Time: 3 hrs.

Max. Marks: 100

Note: Answer FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain OSI network architecture, with neat diagram. (10 Marks)
b. Describe links, nodes and clouds with help of diagram. (06 Marks)
c. Explain working of FDM, with its limitations. (04 Marks)

OR

- 2 a. Briefly explain applications of computer networks. (06 Marks)
b. Explain following ideas with respect to network architecture: layering, protocol, encapsulation, multiplexing and demultiplexing. (10 Marks)
c. Consider a point-to-point link 50km in length. At what bandwidth would propagation delay (at a speed of 2×10^8 m/sec) equal transmit delay for 100 byte packets. (04 Marks)

Module-2

- 3 a. Apply NRZ, NRZI, Manchester encoding to the following bit stream
1 0 0 1 1 1 0 0 1 0 1 0 0 (06 Marks)
b. Explain Byte-oriented framing protocols. (08 Marks)
c. Explain the feature of WiFi. (06 Marks)

OR

- 4 a. Suppose we want to transmit the message 1 1 0 0 1 0 0 1 and protect it from errors using CRC8 polynomial : $x^3 + 1$
i) Use polynomial long division to determine the message that should be transmitted.
ii) Suppose the left most bit is inverted due to the noise on transmission link for the above message. What is the result of receiver's CRC calculation? How does the receiver know that an error has occurred? (10 Marks)
b. Explain the concept of stop and wait protocol with necessary diagrams for different scenarios. (10 Marks)

Module-3

- 5 a. Explain the working of virtual circuit with the help of VC table. (10 Marks)
b. Define spanning tree algorithm and explain how it works. (10 Marks)

OR

- 6 a. Explain IPv4 packet headers format with neat diagram. (08 Marks)
b. Describe ARP protocol with its working. (06 Marks)
c. What is CIDR? How does it overcome the problem of classful addressing? (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg. $42+8=50$, will be treated as malpractice.

Module-4

- 7 a. What are key characteristics of UDP? (05 Marks)
b. Explain UDP datagram format. (05 Marks)
c. Explain three-way hand shakes for connection establishment and termination respectively for TCP with diagram. (10 Marks)

OR

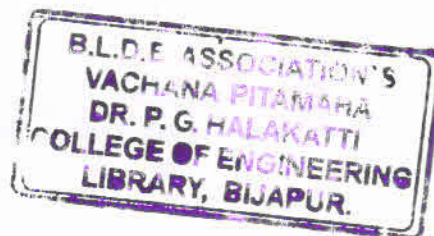
- 8 a. Briefly explain the mechanisms used for TCP congestion control. (10 Marks)
b. Explain source-based congestion avoidance mechanism. (10 Marks)

Module-5

- 9 a. Explain Ciphers, symmetric-key ciphers and public-key ciphers with respect to cryptographic security. (10 Marks)
b. What are firewalls? Explain strengths and Weaknesses of firewalls. (10 Marks)

OR

- 10 a. Explain SMTP along with message format. (10 Marks)
b. Write a brief note on Domain Name System (DNS). (10 Marks)



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Second Semester MCA Degree Examination, June/July 2019
Operating Systems

Max. Marks: 100

Time: 3 hrs.

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain any two I/O communication techniques with flowchart. (10 Marks)
 b. Describe in detail about the components of operating system and its responsibilities. (10 Marks)

OR

- 2 a. Classify the types of system calls. How does system call work? Discuss with neat diagram. (10 Marks)
 b. Explain the following type of OS : i) Real time ii) Clustered system. (10 Marks)

Module-2

- 3 a. Explain the five state process with transition diagram. (10 Marks)
 b. List the benefits of multithread and explain user level and kernel level threads. (10 Marks)

OR

- 4 a. Consider the following set of processes with given length of CPU burst.

Processes	P ₁	P ₂	P ₃	P ₄	P ₅
Bursts time	6	2	8	3	4
Arrival time	2	5	1	0	4

Draw Gantt Chart for SJF(Preemptive) and SJF(Non-preemptive). Find the average waiting time, for each scheduling algorithm. (10 Marks)

- b. What is critical section? Explain reader's writer's problem and write the solution using semaphore. (10 Marks)

Module-3

- 5 a. How can deadlock be prevented? Describe them. (10 Marks)
 b. What is demand paging? Explain how TLB improves the performance of demand paging with neat diagram. (10 Marks)

OR

- 6 a. Write short notes about : i) Fragmentation ii) Thrashing. (10 Marks)
 b. Write and explain Banker's algorithm for deadlock avoidance. (10 Marks)

Module-4

- 7 a. Explain various file allocation methods in detail. (10 Marks)
 b. What are the disk scheduling methods available? Explain any four in detail with example. (10 Marks)

OR

- 8 a. Explain various file operations. (10 Marks)
 b. Discuss dictionary implementation using : i) Linear list ii) Hash table. (10 Marks)

Module-5

- 9 a. Explain the components of LINUX OS. (10 Marks)
 b. What are the different file system types in LINUX OS? (10 Marks)

OR

- 10 a. Discuss about the process management in LINUX OS. (10 Marks)
 b. Define inter process communication and explain how it is handled in LINUX OS. (10 Marks)

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Second Semester MCA Degree Examination, June/July 2019
Data Structures using C++

Max. Marks: 100

Time: 3 hrs.

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. What are data structures? Explain the classification of data structures, with neat diagram. (10 Marks)
 b. Write an ADT for Array. (04 Marks)
 c. Define stack. Write an ADT for stack. (06 Marks)

OR

- 2 a. Write an algorithm to convert an infix expression to postfix. Trace the algorithm for following infix expression $((A - (B + C)) * D) / (E + F)$. (10 Marks)
 b. Write an algorithm to evaluate a postfix expression. Trace the algorithm for following postfix expression showing contents of stack: $6\ 2\ 3\ +\ -\ 3\ 8\ 2\ /\ +\ * \ 2\ 5\ 3\ +$ (10 Marks)

Module-2

- 3 a. Define recursion. Write an algorithm to find factorial of a given number n. Trace the same for $n = 4$ by showing contents of stack. (10 Marks)
 b. Write a C++ program to solve tower of Hanoi problem. Trace the same for $n = 3$ disks. (10 Marks)

OR

- 4 a. What is queue? Write algorithms for the primitive operations performed on a queue. (10 Marks)
 b. Write a C++ program to implement circular queue. (10 Marks)

Module-3

- 5 a. Write algorithms to implement following operations on singly linked list: (10 Marks)
 i) Insert a node at end of list
 ii) Insert a node at any specified position.
 b. Explain linked implementation of stacks with suitable diagrams. Also write algorithms to implement stack push and pop operations using singly linked list. (10 Marks)

OR

- 6 a. Discuss implementation of queue operations using doubly linked lists. Suggest algorithms to implement 'insert' and 'delete' operations of queue using doubly linked list. (10 Marks)
 b. Write algorithms for performing following operations on circular linked lists: (10 Marks)
 i) Search a 'key' element in the circular list.
 ii) Merge two circular linked lists.

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. 2. Any revealing of identification, appeal to evaluator and/or equations written eg, $42+8=50$, will be treated as malpractice.

Module-4

- 7 a. Explain following with an example to each:
 i) Binary tree ii) Strictly binary tree iii) Complete binary tree (10 Marks)
 iv) Skewed tree v) Level of a tree
- b. Write a C++ program to traverse a given binary tree in preorder, inorder and postorder. (10 Marks)

OR

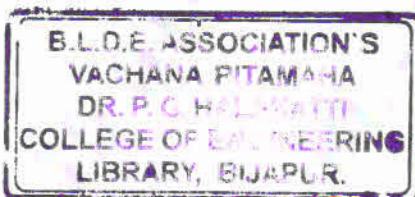
- 8 a. What is Binary Search Tree (BST)? Construct BST for the following data and traverse the tree in inorder, preorder and postorder
 66, 45, 25, 90, 68, 85, 92, 54, 48 (10 Marks)
- b. Write algorithms for : (i) inserting a node in BST (ii) Deleting a node from a BST.
 Explain with suitable examples. (10 Marks)

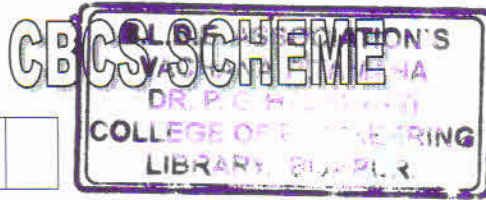
Module-5

- 9 a. Write an algorithm for selection sort. Trace the algorithm for the following set of values.
 42, 85, 22, 98, 55, 15 (10 Marks)
- b. Write a C++ program for quick sort. (10 Marks)

OR

- 10 a. Write a C++ program for binary search. (10 Marks)
- b. Briefly explain different hash collision resolution techniques. (10 Marks)





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18MCA21

Second Semester MCA Degree Examination, June/July 2019
Programming using Java

Time: 3 hrs.

Max. Marks: 100

Note: Answer FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain the key attributes of object oriented principles. (06 Marks)
b. What is narrowing and widening? Explain with an example. (06 Marks)
c. Explain the use of break as a form of 'goto' with an example. (08 Marks)

OR

- 2 a. How arrays are defined and initialized in Java? Explain with an example. (08 Marks)
b. Write a short note on : i) finalize() ii) this. (08 Marks)
c. Explain enhanced for loop with an example. (04 Marks)

Module-2

- 3 a. What is string? Explain any four string comparison methods with an example. (10 Marks)
b. Explain the following :
i) Searching string() ii) Modifying string() iii) toCharArray() (10 Marks)

OR

- 4 a. What is method overloading and method overriding? Explain with an example. (10 Marks)
b. What is constructor? Explain constructor overloading with an example. (10 Marks)

Module-3

- 5 a. Define interface. How to implement multiple interfaces in Java. (06 Marks)
b. Explain the following : i) Dynamic method dispatch ii) Abstract class. (10 Marks)
c. What do you mean by static import? (04 Marks)

OR

- 6 a. How super class constructor and members are called in Java? Explain with an example. (10 Marks)
b. Define package. Explain the creation of package and importing package with an example. (10 Marks)

Module-4

- 7 a. What is an exception? Explain the exception handling mechanism with suitable example. (10 Marks)
b. Explain how to create your own exceptions. Give an example. (10 Marks)

OR

- 8 a. Define thread and multi-threading. What are the two ways of creating threads? (10 Marks)
b. Write a Java program using synchronized threads, which demonstrate producer consumer. (10 Marks)

Module-5

- 9 a. What is enumeration? Explain values() and valuesOf() methods with example. (08 Marks)
b. Explain AutoBoxing in Java. (04 Marks)
c. Define Annotation. Explain any four built-in annotations in Java. (08 Marks)

OR

- 10 a. Explain ArrayList class and LinkedList class with an example. (10 Marks)
b. Write a short note on : i) URL connection ii) Collection interfaces. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
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18MCA23

Second Semester MCA Degree Examination, June/July 2019
Discrete Mathematical Structures and Statistics

Time: 3 hrs.

Max. Marks: 100

Note: Answer FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Prove the following conditional is a tautology.
 $[(p \leftrightarrow q) \wedge (q \leftrightarrow r) \wedge (r \leftrightarrow p)] \leftrightarrow [(p \rightarrow q) \wedge (q \rightarrow r) \wedge (r \rightarrow p)]$ (07 Marks)
- b. Given the following proposition, write
 i) Direct proof ii) Indirect-proof
 "If n is an odd integer, then $(n+1) -$ is an even integer." (07 Marks)
- c. Using the laws of logic prove the following conditional expression:
 $[(p \vee q) \wedge (p \vee \sim q)] \vee q \Leftrightarrow p \vee q$ (06 Marks)

OR

- 2 a. Prove the following argument is valid :
- $$\begin{array}{l} p \rightarrow q \\ r \rightarrow s \\ \hline p \vee s \\ \therefore q \vee s \end{array}$$
- (07 Marks)
- b. Negate and simplify the following:
 i) $\exists x, [p(x) \vee g(x)]$ ii) $[\exists x, [p(x) \vee q(x)]] \rightarrow r(x)$ (07 Marks)
- c. Summarize the laws of logic. (06 Marks)

Module-2

- 3 a. Determine sets A and B, given that:
 $A - B = \{1, 2, 4\}$, $B - A = \{7, 8\}$ and $A \cup B = \{1, 2, 4, 5, 7, 8, 9\}$. (07 Marks)
- b. For any three sets A, B, C prove that
 i) $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$
 ii) $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$ (07 Marks)
- c. State and prove the addition theory in probability. (06 Marks)

OR

- 4 a. A problem is given to four students A, B, C, D whose chances of solving it are $1/2, 1/3, 1/4, 1/5$ respectively. Find the probability that the problem is solved. (07 Marks)
- b. The probabilities that three persons x, y, z hit a target in one attempt are $1/6, 1/4$ and $1/3$ respectively. If each of these shoots once at a target-find:
 i) The probability that the target is hit
 ii) The probability that the target is hit by exactly one person. (07 Marks)
- c. Prove the Demorgan laws, for any two sets:
 i) $\overline{A \cup B} = \overline{A} \cap \overline{B}$ ii) $\overline{A \cap B} = \overline{A} \cup \overline{B}$ (06 Marks)

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Module-3

- 5 a. Find the number of permutations of the letters of the word 'INSTITUTION'
- How many of these begin with I?
 - How many of these begin with I and end with N?
 - In how many the 3 T's are together? (07 Marks)
- b. Prove the following by using Mathematical induction for every positive integer n:
- $$1^2 + 2^2 + 3^2 + \dots + n^2 = \frac{1}{6} n(n+1)(2n+1) \quad (07 \text{ Marks})$$
- c. Given the recurrence relation $a_n = a_{n-1} + 4$ with $a_1 = 2$ obtain an explicit formula for the given sequence. (06 Marks)

OR

- 6 a. Find the coefficient of x^4 – in the expansion of $\left(2x^2 - \frac{3}{x}\right)^8$. (07 Marks)
- b. A man has 7-relatives, 4-of them are ladies and 3-gentlemen. His wife has also 7-relatives 3-of them are ladies and 4-gentlemen. In how many ways can they invite a dinner party of 3-ladies and 3-gentlemen so that there are 3 – of the man's relative and 3 – of the wife's relatives? (07 Marks)
- c. The Fibonacci numbers are defined by $F_0 = 1, F_1 = 1$ and $F_n = F_{n-1} + F_{n-2}$ for $n \geq 2$. Evaluate F_2 to F_{10} . (06 Marks)

Module-4

- 7 a. The probability distribution of a finite random variable – X – is given by
- | | | | | | | |
|--------|-----|----|-----|----|-----|---|
| X : | -2 | -1 | 0 | 1 | 2 | 3 |
| P(X) : | 0.1 | K | 0.2 | 2K | 0.3 | K |
- Find: i) The value of K ii) Mean iii) Variance and standard deviation. (07 Marks)
- b. In a certain town the duration of the shower is exponentially distributed with a mean 5-min. What is the probability that a shower will last for
- 10-min or more
 - less than 10-min
 - Between 10 and 12 min. (07 Marks)
- c. The weekly wages of workers in a company are normally distributed with mean of Rs.700 and standard deviation of Rs.50. Find the probability that the weekly wage of a randomly chosen worker is
- Between Rs.650/- and Rs.750
 - More than Rs.750/- (06 Marks)

OR

- 8 a. Obtain the mean and standard deviation of the Poisson distribution. (07 Marks)
- b. The probability density function of a variate X – is given by the following table:
- | | | | | | | | |
|--------|---|----|----|----|----|-----|-----|
| X : | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| P(X) : | K | 3K | 5K | 7K | 9K | 11K | 13K |
- Find: i) The value of K ii) $P(X < 4), P(X \geq 5)$. (07 Marks)
- c. The number of telephone lines busy at an instant of time is a binomial variate with $P = 0.2$. If at an instant 10 lines are chosen at random what is the probability that
- 5-lines are busy
 - At most 2-lines are busy. (06 Marks)

Module-5

- 9 a. By the method of least squares, find the straight line that fits the following data: ($y = ax + b$)

x:	1	2	3	4	5
y:	14	27	40	55	68

(07 Marks)

- b. Find the correlation coefficient for the two groups,

x :	92	89	87	86	83	77	71	63	53	50
y :	86	83	91	77	68	85	52	82	37	57

(07 Marks)

- c. Define the terms

- i) Coefficient of correlation
- ii) Regression
- iii) Principle of least squares.

(06 Marks)

OR

- 10 a. Find the correlation coefficient 'r' and the equations of the lines of regression for the following values of x and y

x :	1	2	3	4	5
y :	2	5	3	8	7

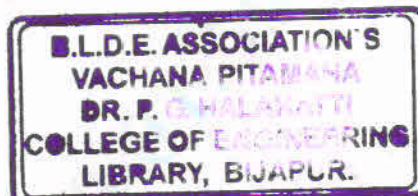
(10 Marks)

- b. Fit a curve of the form $y = ae^{bx}$, to the following data:

x:	5	15	20	30	35	40
y:	10	14	25	40	50	62

(10 Marks)

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Third Semester MCA Degree Examination, June/July 2019

Java Programming

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. Explain the key attributes of object oriented programming? (08 Marks)
- b. Explain the parameterized constructor with an example. (08 Marks)

- 2 a. What is the use of StringBuffer? Explain StringBuffer class with a suitable example. (08 Marks)
- b. Write the syntax of for loop, enhanced for loop, while loop, do-while, with suitable example. (08 Marks)

Module-2

- 3 a. Explain : (i) Method overloading (ii) Constructor overloading. (08 Marks)
- b. Briefly explain 'Varargs' with suitable example. (08 Marks)

- 4 a. Write short notes on : (08 Marks)
- (i) Abstract class (ii) Final.
- b. Define Inheritance. Write a Java program to demonstrate inheritance. (08 Marks)

Module-3

- 5 a. Define Interface. Explain how it is implemented in Java with suitable example. (08 Marks)
- b. What is an Exception? Explain exception handling mechanism with an example. (08 Marks)

- 6 a. What are packages in Java? Why is it required package java program? (08 Marks)
- b. Write the following java program to create package and import it in other program: (08 Marks)
- (i) Create a package called shape
- (ii) Write a class called Triangle.java in shape package. Triangle.java should calculate the area of a triangle.
- (iii) Compile and import shape. (08 Marks)

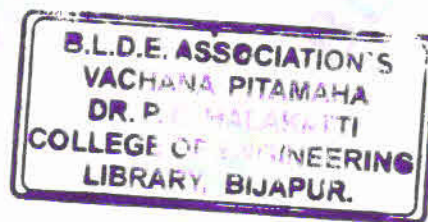
Module-4

- 7 a. What is multithreading? Write a Java program to create multiple threads in Java by implementing runnable interface. (08 Marks)
- b. What is Enumeration? Explain value() and valueOf() methods. (08 Marks)

- 8 a. Explain synchronization in multithread programming. (08 Marks)
- b. Write short notes on : (i) Auto Boxing (ii) Auto unboxing. (08 Marks)

Module-5

- 9 a. Define Applet. Give a complete applet skeleton. (08 Marks)
b. Explain about URL connection class. Give suitable example. (08 Marks)
- 10 a. With an example explain the LinkedList collection class. (08 Marks)
b. What is TCP/IP client socket? Explain the two constructs used to create client sockets. (08 Marks)



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16/17MCA33

Third Semester MCA Degree Examination, June/July 2019

Analysis Design of Algorithms

Time: 3 hrs.

Max. Marks: 80

Note: Answer FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. If $t_1(n) \in O(g_1(n))$ and $t_2(n) \in O(g_2(n))$ then prove that $t_1(n) + t_2(n) \in O(\max\{g_1(n), g_2(n)\})$. (08 Marks)
- b. Define an algorithm and analyze the fundamentals of algorithmic problem solving. (08 Marks)

OR

- 2 a. Demonstrate the asymptotic notations and explain with an examples. (08 Marks)
- b. Algorithm Enigma ($A[0 \dots n-1, 0 \dots n-1]$)
//Input : A matrix ($A[0 \dots n-1, 0 \dots n-1]$) of real numbers
for $i \in 0$ to $n-2$ do
for $j \in i+1$ to $n-1$ do
if $A[i, j] > A[j, i]$ swap ($a[i, j]$, $a[j, i]$)
return false
Evaluate the following:
i) What is the input size?
ii) What is the basic operation?
iii) What is the basic algorithm compute?
iv) What is the efficiency class of this algorithm? (08 Marks)

Module-2

- 3 a. Analyze the time complexity of Bubble sort algorithm for the following numbers: (08 Marks)
189, 345, 468, 190, 290, 342, 171, 420
- b. Write an algorithm for brute force string matching and give an example. (08 Marks)

OR

- 4 a. Write quick sort algorithm to sort the given numbers in ascending order. Explain how the following numbers are sorted: (09 Marks)
12, 19, 13, 79, 75, 14, 23, 54. Find the time complexity of the same. (07 Marks)
- b. Binary tree traversals and related properties.

Module-3

- 5 a. Explain Depth First Search (DFS) and write its applications. Give the DFS tree for the following graph and prove that graph's connected or not (starting node to be considered is 5). (08 Marks)

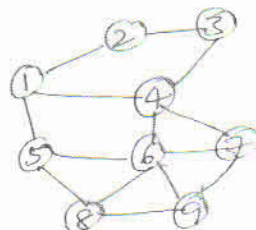


Fig.Q.5(a)

- b. Write Prim's algorithm and for the following graph find the minimum cost spanning tree. (08 Marks)

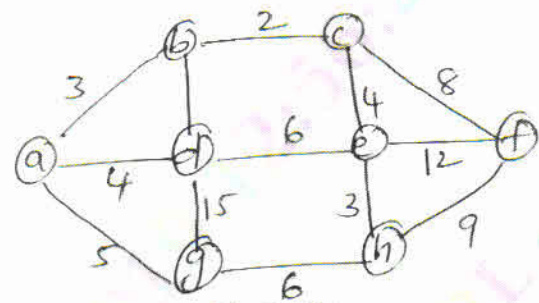


Fig.Q.5(b)

OR

- 6 a. Write Shonson's-Trotter's algorithm for generating permutations. Apply the same for $n = 3$. (06 Marks)

- b. Solve the following Huffman code for the following:

Character	A	B	C	D	-
Probability	0.35	0.1	0.2	0.2	0.15

- i) Encoder the text DAD (10 Marks)
 ii) Decode the numbers 10011011011101

Module-4

- 7 a. Write Horspools algorithm for string matching. Explain it with following inputs:
 Text: JIM_SAW_ME_IN_A_BARBERSHOP
 Pattern: BARBER (09 Marks)
- b. Write an algorithm for sorting by counting and apply the same for the following numbers:
 62, 31, 84, 96, 19, 47 (07 Marks)

OR

- 8 a. Explain binomial coefficient with an algorithm. (08 Marks)
 b. Write Warshalls algorithm and apply the same for the following graph. (08 Marks)

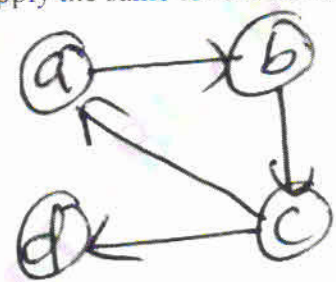


Fig.Q.8(b)

Module-5

- 9 a. Explain N, NP, NP complete problem. (06 Marks)
 b. Write short notes on decision trees. (05 Marks)
 c. Explain n-queen problem. (05 Marks)

OR

- 10 a. Solve the assignment problem for the following:

	Job1	Job2	Job3	Job4	
$C =$	9	2	7	8	person a
	6	4	3	7	person b
	5	8	1	8	person c
	7	6	9	4	person d

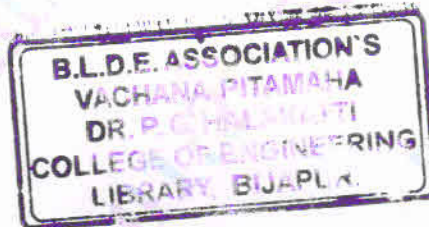
(08 Marks)

- b. Using branch-bound technique solve the knapsack problem.

Item	Weight	Value	Value/weight
1	4	\$40	10
2	7	\$42	6
3	5	\$25	5
4	3	\$12	4

The knap sack
Capacity $W = 10$

(08 Marks)



IVth Sem MCA

CBCS SCHEME



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16/17MCA453

Fourth Semester MCA Degree Examination, June/July 2019
Software Quality Management

Time: 3 hrs.

Max. Marks: 80

Note: Answer FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. What is Quality? Explain with a neat diagram, traditional water fall life cycle model. (08 Marks)
b. Explain McCall's criteria of quality. (08 Marks)

OR

- 2 a. Explain 7 criteria for a good Metric. (08 Marks)
b. Explain Goal Question Metric Approach. (08 Marks)

Module-2

- 3 a. What is SQA? Explain SQA Tasks. (08 Marks)
b. Explain software verification and software validation plan. (08 Marks)

OR

- 4 a. Explain Software design description in SQA. (08 Marks)
b. Briefly explain Reviews and Audits. (08 Marks)

Module-3

- 5 a. Explain any 4 types of Ishikawa's Basic tools with neat diagram. (08 Marks)
b. Explain Reliability Models. (08 Marks)

OR

- 6 a. Explain types of CASE Tools. (08 Marks)
b. Briefly explain Defect prevention and removal. (08 Marks)

Module-4

- 7 a. Explain Deming's and Crosby's steps for quality improvement. (08 Marks)
b. Explain Reliability growth models for QMS. (08 Marks)

OR

- 8 a. Explain any 2 types of Software Reliability growth model data. (08 Marks)
b. Explain Rayleigh Model Framework. (08 Marks)

Module-5

- 9 a. Explain ISO – 9001 series of Quality Management Standards. (08 Marks)
b. Explain with a neat diagram, schematic view of the Capability Maturity Model. (08 Marks)

OR

- 10 a. Explain with a neat diagram, Six Sigma concepts. (08 Marks)
b. Briefly explain ISO – 9002 series of QMS. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
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16/17MCA42

Fourth Semester MCA Degree Examination, June/July 2019
Advanced Web Programming

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. Explain jQuery features and advantages. (08 Marks)
- b. Discuss document Ready event and simple selector in jQuery with example. (08 Marks)

- 2 a. Explain with example width() and height() methods in displaying the dimensions of an element. (10 Marks)
- b. Explain with figure event propagation in DOM level 2 with phases. (06 Marks)

Module-2

- 3 a. Explain syntactic characteristics of PHP. (07 Marks)
- b. Explain following functions arrays in PHP with suitable examples:
 (i) array_keys (ii) array_values (iii) in_array (09 Marks)

- 4 a. Write a PHP program to demonstrate file handling PHP. (06 Marks)
- b. Explain the mechanisms available for handling xml in PHP. (10 Marks)

Module-3

- 5 a. Explain any three string methods in Ruby with suitable examples. (06 Marks)
- b. Explain following integrators in Ruby : times, each, upto, step, collect, with examples. (10 Marks)

- 6 a. Explain with figure directory structure of rails application. (06 Marks)
- b. Give an example how dynamic documents are generated in Ruby on Rails. (10 Marks)

Module-4

- 7 a. What is social networking? Briefly discuss about folksonomies. (08 Marks)
- b. Explain SaaS and multiple delivery channels in Web 2.0. (08 Marks)

- 8 a. What is JSON? Explain different types of literals used in JSON with examples. (08 Marks)
- b. Write short notes on SOAP, WSDL and REST services. (08 Marks)

Module-5

- 9 a. What is D3? List its advantages. (04 Marks)
- b. Illustrate with example graphing mean daily plaza traffic using dir tag for horizontal bar chart. (12 Marks)

- 10 a. What is SVG? Illustrate with example how to map data to pixels. (08 Marks)
- b. What are interactions? Explain with example how interactions are added. (08 Marks)

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16/17MCA41

Fourth Semester MCA Degree Examination, June/July 2019
Advanced Java Programming

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. Explain servlet life cycle. (04 Marks)
 b. Write a servlet program that handles form data. (08 Marks)
 c. Explain session tracking using session object. (08 Marks)

OR

- 2 a. Briefly explain any five HTTP status codes. (08 Marks)
 b. Briefly explain the different HTTP request headers. (08 Marks)

Module-2

- 3 a. Write a JSP code that adds two numbers entered through form (html form). (08 Marks)
 b. Explain JSP directives element. (08 Marks)

OR

- 4 a. With an example, describe the various tags or elements available in JSP. (08 Marks)
 b. Explain the following page directive attributes along with an example program :
 (i) Import (ii) errorPage and isErrorPage (iii) session (iv) buffer and auto flush. (08 Marks)

Module-3

- 5 a. Explain JARs in detail. (08 Marks)
 b. What are annotations? Explain built-in annotations. (08 Marks)

OR

- 6 a. Define Java Bean and explain the terms introspection and customizers. Write a sample code for Java Bean. (10 Marks)
 b. Write a note on Java Beans API. (06 Marks)

Module-4

- 7 a. Explain the steps in writing JDBC program with sample code. (08 Marks)
 b. Explain JDBC prepared statement object. (08 Marks)

OR

- 8 a. Briefly explain the different basic JDBC data types. (08 Marks)
 b. Write a Java program to insert data into student Database and retrieve information based on particular queries (for example update, delete, search etc.) (08 Marks)

Module-5

- 9 Briefly explain the following terms :
 (i) Message Driven Bean (ii) Dependency injection
 (iii) Interceptors (iv) Naming and object stores. (16 Marks)

OR

- 10 a. List the difference between stateless session bean and stateful session bean. (08 Marks)
 b. Explain the life cycle of Message Driven Bean. (08 Marks)

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16/17MCA443

Fourth Semester MCA Degree Examination, June/July 2019
Software Architecture

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define Software Architecture. Explain the common software architecture structure. (08 Marks)
 b. What makes a good architecture? Explain the rule of thumb. (08 Marks)

OR

- 2 a. Explain in detail project life-cycle context. (08 Marks)
 b. With neat diagram, explain the influence of stakeholder on the architect. (08 Marks)

Module-2

- 3 a. Explain the general scenario of the availability quality attribute. (08 Marks)
 b. Explain the tactics for the quality attribute interoperability. (08 Marks)

OR

- 4 a. Explain the general scenario of modifiability quality attribute. (08 Marks)
 b. Explain the tactics for the quality attribute testability. (08 Marks)

Module-3

- 5 a. Explain queuing model of performance for MVC. (08 Marks)
 b. Describe quality attribute check lists, through experiments and Back-of-the Envelope Analysis. (08 Marks)

OR

- 6 a. Explain gathering ASR from Requirement document. (08 Marks)
 b. Explain the categorization of business goals. (08 Marks)

Module-4

- 7 a. Explain the design strategy. (08 Marks)
 b. Explain the steps of ADD. (08 Marks)

OR

- 8 a. With neat diagram, explain view template. (08 Marks)
 b. Explain the test activities and architects role in testing. (08 Marks)

Module-5

- 9 a. Explain the categories of architectural pattern in detail. (08 Marks)
 b. Explain layered architectural pattern. (08 Marks)

OR

- 10 a. Explain Broker architecture pattern. (08 Marks)
 b. Explain Blackboard architecture pattern. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

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Fifth Semester MCA Degree Examination, June/July 2019
Web 2.0 and Rich Internet Applications

Time: 3 hrs.

Max. Marks: 80

Note: Answer FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. Explain with an example how is Ajax different from traditional web applications. (08 Marks)
 b. Describe the key principle of a good Ajax application. (08 Marks)

OR

- 2 a. How do you create and configure XMLHttpRequest object? Demonstrate the working of XMLHttpRequest object with an example program. (08 Marks)
 b. Explain with an example how to send data to the server using GET method. (08 Marks)

Module-2

- 3 a. How to handle multiple and concurrent request in Ajax? Explain in an example handling two XMLHttpRequest objects. (08 Marks)
 b. Explain how to connect to Google suggest and search for a term. (08 Marks)

OR

- 4 a. Write a program to download HTTP headers using XMLHttpRequest object. (08 Marks)
 b. What is inner function in Ajax? Explain with an example how to avoid conflicts between Ajax request using inner functions. (08 Marks)

Module-3

- 5 a. Explain how to access Document Element from XML document with programming example. (08 Marks)
 b. Explain with an example validation of the XML document. (08 Marks)

OR

- 6 a. Explain how to handle cross – Browser whitespace in Ajax. (08 Marks)
 b. How to access any XML element with an example. (08 Marks)

Module-4

- 7 a. Describe the file structure of Bootstrap with a neat diagram and explain the fluid grid system with an example. (08 Marks)
 b. Differentiate between Basic Grid HTML and fluid Grid system. (08 Marks)

OR

- 8 a. Explain the major form controls supports by Bootstrap. (08 Marks)
 b. What is Responsive Design? Briefly describe the layout supported by Bootstrap. How to include them for smaller and larger sites. (08 Marks)

Module-5

- 9 a. Explain Tabbable Navigation with an example. (08 Marks)
 b. Explain Pagination with an example. (08 Marks)

OR

- 10 a. Define modal. Explain the creation of a static modal window and how to involve the modal window. (08 Marks)
 b. Which plugin is used to add slider to site? Explain with code example implementation of this plugin. (08 Marks)

Vth Sem MCA

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Fifth Semester MCA Degree Examination, June/July 2019
Mobile Applications

Time: 3 hrs.

Max. Marks: 80

Note: Answer FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. What are the preliminary costs involved in mobile application development. (08 Marks)
b. Describe the effective use of screen real estate. (08 Marks)

OR

- 2 a. Briefly discuss the Gestalt's principles. (08 Marks)
b. Explain the various information design tools, of mobile interface design. (08 Marks)

Module-2

- 3 a. What is Android? Explain the android architecture with its features and diagram. (08 Marks)
b. Describe the anatomy of Android application. (08 Marks)

OR

- 4 a. What is an Activity? Explain the different app components of Android. (05 Marks)
b. What are notifications? Explain various types of notifications. (05 Marks)
c. Briefly discuss the fragments as user interface element of Android. (06 Marks)

Module-3

- 5 a. Discuss the basic views in Android with a suitable code snippet. (08 Marks)
b. Write a note on: i) TimePicker view ii) DatePicker view. (08 Marks)

OR

- 6 a. What are the different methods for getting location data? Explain. (08 Marks)
b. Discuss APK file deployment in detail. (08 Marks)

Module-4

- 7 a. Explain the procedure for sending an SMS through Android application with a code segment. (08 Marks)
b. Define service. How do you create your own service in Android? Explain with a snippet code. (08 Marks)

OR

- 8 a. Briefly discuss the concept of binding activities to services with suitable code snippet. (08 Marks)
b. Name the permissions you need to declare in your AndroidManifest.xml file for an HTTP connection. (04 Marks)
c. Write a note on Asynchronous calls in networking. (04 Marks)

Module-5

- 9 a. What is a program level in iOS? Discuss the various program levels available for an iOS developer. (08 Marks)
b. With a neat diagram, explain iOS project. (08 Marks)

OR

- 10 a. Describe the Anatomy of a windows phone 7 App. (08 Marks)
b. Write a note on other useful windows phone Thing. (08 Marks)

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16/17MCA52

Fifth Semester MCA Degree Examination, June/July 2019
Programming using C# and .Net

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

1. a. Explain the benefits and architecture of .NET framework. (08 Marks)
 b. What is an Assembly? Describe the information stored in assembly manifest by differentiating and multiple assemblies. (08 Marks)
2. a. With a neat diagram explain the workflow of .NET execution engine. (08 Marks)
 b. Bring out the difference between value types and reference types and also write a program for boxing and unboxing. (08 Marks)

Module-2

3. a. Discuss the different ways of enforcing encapsulation? Give examples for both the methods. (08 Marks)
 b. Explain indexers with suitable example. (08 Marks)
4. a. How do you prevent inheritance using sealed classes? Explain with an example. (08 Marks)
 b. Demonstrate operator overloading using C# program with syntax to overload the + and - operator. (08 Marks)

Module-3

5. a. What are delegates? Explain the concepts of multicast delegates with an example. (08 Marks)
 b. Explain how custom exceptions will be created in C# with suitable example. (08 Marks)
6. a. Describe the architecture of ADO.NET with a neat diagram. (08 Marks)
 b. Explain the procedure of getting connected to a database and running the following queries with relevant example:
 (i) Insert record to a table.
 (ii) Delete records from a table. (08 Marks)

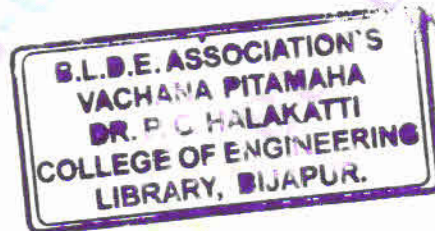
Module-4

7. a. Illustrate the working of checkBox, RadioButton, textBox and GroupBox controls with windows form application example. (08 Marks)
 b. Write short notes on MDI window forms and EventDriven GUI. (08 Marks)
8. a. What is GUI? List and explain basic controls of GUI. (08 Marks)
 b. Discuss the new features of WPF controls. (08 Marks)

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Module-5

- 9 a. Discuss in detail about multi-tier application architecture. (08 Marks)
b. Explain the session management in ASP.NET using controls. (08 Marks)
- 10 a. Explain the controls from AJAX control toolkit. (08 Marks)
b. Describe the different validation controls in ASP.NET. (08 Marks)



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16/17MCA554

**Fifth Semester MCA Degree Examination, June/July 2019
Software Project Management**

Time: 3 hrs.

Max. Marks: 80

Note: Answer FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. What are the activities covered by Software Project Management? Explain. (08 Marks)
b. Define a Project. Discuss some ways of categorizing software project. (08 Marks)

OR

- 2 a. What is a Management? Explain the management control. (08 Marks)
b. Write a note on : i) Project Success and Failure (08 Marks)
ii) Traditional Verses Modern Project Management.

Module-2

- 3 a. Discuss Cost – benefit evaluation techniques. (08 Marks)
b. Explain the various Project Risk Evaluation with example. (08 Marks)

OR

- 4 a. Explain different methods of evaluating individual projects. (08 Marks)
b. What is Financial Accounting? Explain the principles and standard. (08 Marks)

Module-3

- 5 a. Create a precedence activity network using the following details. Calculate the earliest and latest start and end dates and the float associated with each activity in the network and also identity the critical path. (08 Marks)

Activity	Duration	Precedents
A	6	-
B	4	-
C	3	A
D	4	B
E	3	B
F	10	-
G	3	E, F
H	2	C, D

- b. What are the different objectives of Activity planning? (08 Marks)

OR

- 6 a. List out the Activity on Arrow rules and conventions. (08 Marks)
b. Write a note on : i) Categories of Risk ii) Risk planning. (08 Marks)

Module-4

- 7 a. Explain the project control cycle with a neat diagram. (08 Marks)
b. Illustrate the two main strategies used to bring a project back on target. (08 Marks)

OR

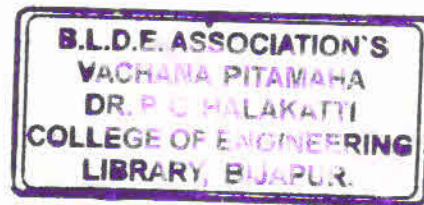
- 8 a. State the different factors to be considered for Review. (08 Marks)
b. What are the different methods of performing Earned Value analysis? (08 Marks)

Module-5

- 9 a. Explain the Oldham – Hackman Job characteristics model. (08 Marks)
b. Describe the process of selecting the right person for the Job. (08 Marks)

OR

- 10 a. Write a note on :
i) Organizational Behaviour ii) Instruction in the best methods. (08 Marks)
b. Explain the categories of decision. What are the obstacles to good decision making. (08 Marks)



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