Sr. No. 5055

MCA, First Semester Examination, Dec 2016

Web Technologies

Time: 3 Hours Max. Marks: 80

Note: Question No. 1 is compulsory. Attempt four more questions selecting one question from each unit.

1. 8x3=24

i) What is E-mail?

ii) What is Cookies?

iii) What is FTP?

iv) What is Text Properties?

v) What is <img> tag?

vi) What is Secure Servers?

vii) What is Virtual Host?

viii) What is href?

Unit – I

2. How web engineering play role in internet? What are characteristics of web applications? Explain in detail Web Servers and their features. 14

3. Explain the following:

a) Basic internet protocols 7

b) Web applications and conventional approach 7

Unit – II

4. Explain the following:

a) Table 4

b) XHTML 3

c) Frame 3

d) Forms 4

5. What is difference between Style sheet and CSS? How cascading style sheet work in web site? Explain CSS box model and Normal flow box. 14

P.T.O.

Unit – III

6. What do you mean by JAVA SCRIPT language? How java script play role in client side programming? Explain built in objects and debugger. 14

7. How server side programming different from client side programming? Explain Servlet architecture and Servlet and Concurrency. 14

Unit – IV

8. (a) What is displaying XML documents in browsers? Explain. 7

   (b) Create a XML File that stores information about five actor and five movies. 7

9. (a) What are different parser for XML? Explain the structure of XML data with example. 7

   (b) "Can XML is used as a data Storage element" Justify. 7

Sr. No. 8088

MCA, First Semester Examination, Dec 2016

Discrete Mathematical Structures

Time: 3 Hours Max. Marks: 80

Note: Question No. 1 is compulsory. Attempt four more questions selecting one question from each unit.

8x2=16

1.

i) How many edges are there in a graph with 10 vertices each of degree 5?

ii) What is cut-set?

iii) What is Venn diagream?

iv) What is Partial order?

v) What is Co-domain?

vi) What is Counting principle?

vii) What is Lattices?

viii) What is inverse relation?

Unit – I

2. (a) If A={2, 4, 6, 8, 10}, B={8, 10, 12, 14}, C={14, 16, 18, 20}
Find (I) AU(BUC) (ii) A∩(B∩C) 10

(b) What is Total order relation? Explain with example. 6

3. Prove De Morgan's Law:

(a) $(A \cup B)^c = A^c \cap B^c$ 8

(b) $(A \cap B)^c = A^c \cup B^c$ 8

Unit – II

4. (a) What do you mean by equivalence relation and equivalence class? Explain with the help of example. 10

(b) What is quantifier? Explain nested quantifier. 6

P.T.O.

5. Explain the following with example:
   (a) Predicates 5
   (b) Rules of Inference 5
   (c) Normal forms 6

Unit – III

6. (a) Solve the recurrence relation $a_n-7a_{n-1}+10a_{n-2}=3^n$, with $a_0=0$ and $a_1=1$. 10
   (b) What is Norm form? Explain. 6
7. Explain the following with example:
   (a) Equivalent circuit 5
   (b) Hasse Diagram 5
   (c) Divide and Conquer algorithm 6

Unit – IV

8. (a) How to use Prim's algorithm for finding Minimum Spanning Tree? Explain with example. 10
   (b) What is Euler and Hamiltonian? Explain with example. 6
9. Explain the following with example:
   (a) Isomorphism graph 5
   (b) Homomorphism graph 5
   (c) Bipartite graph 6

Sr. No. 8185

MCA, First Semester Examination, Dec 2016

Programming in C

Time: 3 Hours Max. Marks: 80

Note: Question No. 1 is compulsory. Attempt four more questions selecting one question from each unit.

1. 8x2=16

i) What is pre-defined and user defined header file?

ii) What is unformatted & formatted I/O function?

iii) What is get and getchar function?

iv) What is difference between break and continue statement?

v) Explain any three inbuilt string function.

vi) Differentiate between constant and variable?

vii) What are comments in C language? Explain.

viii) What is dynamic memory allocation?

Unit – I

2. (a) What are basic features of 'C' Language? Explain the data types with example. 8

(b) What is role of storage class in C language? Explain the different Storage Classes. 8

3. (a) What is differences between Local and Global Variables? Explain with example. 8

(b) What kind of operator are using in C language? Explain each with example. 8

Unit – II

4. (a) What do know by control statement? What are types? Explain with example. 6

(b) Write a'C' program to reverse the number. 4

(c) Write a 'C' program to check the input year is leap year or not. 6

P.T.O.

5. What is function? Explain the following with example:
   (a) User defined function 5
   (b) Inbuilt function 5
   (c) Function with parameter 6

Unit – III

6. (a) What is String? Why string important in C language? Explain with example. 8
   (b)Write a C program to concatenate two strings without using any library sting function. 8
7. Explain the following with example:
   (a) Pointer and arrays 5
   (b) Dynamic memory allocation 5
   (c) Pointer and string 6

Unit – IV

8. (a)What do you know by error handling during I/O operation? Explain with example. 7
   (b)Write a program to copy contents of one file to another. 5
   (c)Explain random access to file with example. 4
9. (a) What are differentiating between structure and union? What are roles of pointer in structures? 6
   (b) How to pass structure as parameter in function? Explain with example. 5
   (c) Explain preprocessor and macro definitions with example. 5

Sr. No. 8089

MCA, First Semester Examination, Dec 2016

Computer Oriented Numerical and Statistical Methods

Time: 3 Hours Max. Marks: 80

Note: Question No. 1 is compulsory. Attempt five questions in all, selecting one question from each unit.

2. 4x4=16

i) What is Gauss elimination method? Explain.

ii) What do you understand Time Series? Illustrate its use.

iii) What is Normal distribution? Explain.

iv) What is skewness? Illustrate.

Unit – I

2. Solve the system of equation by Gauss-Jordan method:

$X+2y+z=3$; $2x+3y+3z=10$; $3x-y+2z=13$. 16

3. Explain the following with example:

(a) Bisection Method 8

(b) Gauss-Seidal iterative method 8

Unit – II

4. (a) Use Euler's method to find $y(0.1)$ with $h=0.02$, given $dx/dy=x^2+y$ and $y(0)=1$ 10

(b) What is Simpson's rule? Explain. 6

5. Explain the following with example:

(a) Taylor-series method 8

(b) Runge-Kutta method 8

P.T.O.

Unit – III

6. Find out mean, median and mode for the following given data: 16

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	3	5	9	21	6	3	1

7. Explain the following with example:
   (a) Dispersion 5
   (b) Moments 5
   (c) Poisson 6

Unit – IV

8. What do mean by sample distribution? Explain Chi-square test T, and F test. 16
9. (a) What is measurement of trend? Explain seasonal fluctuations and cycle movement with example. 10
   (b) What is ANOVA? Explain. 6

Sr. No. 5052

MCA, First Semester Examination, Dec 2016
Programming with C

Time: 3 Hours Max. Marks: 80

Note: Attempt any five questions including question No. 1 which is compulsory. Select one question from each unit.

1. 8x3=24

a) List the various features of the C language.
b) Explain the function of register and static storage classes in C.
c) Differentiate between while do and do while loop.
d) What is recursion? Explain it.
e) What is array? Discuss different types of arrays.
f) What is dynamic memory allocation? Explain it.
g) Define macro and their use.
h) What is Union? Explain it.

Unit – I

2. (a) What are the differences between signed and unsigned data types? Also discuss the space requirement for variables of different data types. 8

(b) What do you mean by type conversion? Why is it necessary? 6

3. Explain the different types of operators available in C and also discuss their uses? 14

Unit – II

4. (a) Write a program to enter a character through keyboard. Use switch () case structure and print appropriate message. Recognize the entered character whether its is vowel, consonanats, or symbol? 8

(b) Why break statement is essential in switch () statement? Which other functions or keywords can be used in place of the break statement. 6

5. How do functions help to reduce the program size? Difference between library and the user defined functions. List any five-library functions and illustrate them with suitable examples. 14

Unit – III

6. (a) Write a program to display the numbers in increasing and decreasing order using infinite for loop. 7

(b) Write a program to enter a character and display its position on alphabetic. 7

7. (a) What is array? Can we store values and address in the same array. Explain. Mention the difference between the character array and integer array. Also write a program to read 10 integers in an array and find the largest and smallest number. 10

(b) What is array of pointer? Explain the relationship between an array and a pointer. 4

Unit – IV

8. What is a structure? How are structure elements stored in mempory? Explain the use of dot operator. 14

9. Explain the following:

a) I/O operations on files. 7
b) Error handling during I/O operation. 7

Sr. No. 8087

MCA, First Semester Examination, Dec 2016
Software Engineering

Time: 3 Hours Max. Marks: 80

Note: Attempt five questions in all. Q. No. 1 is compulsory. In addition to compulsory question attempt four more questions by selecting one question from each unit. All question carry equal marks.

Q.1 Differentiate between the following: 2 each

i) Software Product, Software Process and Software Project
ii) Correctness and Reliability
iii) Software Requirement Analysis and Specification
iv) Verification and Validation
v) Cohesion and Conpling
vi) Reverse Engineering and Re-Engineering
vii) Alpha testing and Beta testing
viii) Adaptive and Perfective Maintenance

UNIT – I

Q.2 (a) What is Software crisis? State its significance in reference to Software Engineering discipline. 8

(b) What is Software Engineering? Why do we need Software Engineering? What are the characteristics of Software Engineering Project? 8

Q.3 (a) What do you mean by Software Metrics? Discuss the role of Software Metrics in Software Engineering. 8

(b) How do you define Software Quality? Explain various Software Quality assurance standards. 8

UNIT – II

Q.4 What do you mean by Cost Estimation? How it helps in Software development? Describe two Cost Estimation models. 16

Q.5 (a) Why it is very difficult to produce a complete and consistent set of requirements? 6

(b) Explain Software Requirement Analysis process. How do we determine requirements? 10

UNIT - III

Q.6 (a) Explain the terms: Conpling and Cohesion 4

(b) Illustrate various types of conpling and cohesion. Also explain relationship between Conpling and Cohesion. 12

Q.7 (a) What are the major concepts that help in making a program mare readable? 8

(b) Should reliability take precedence over efficiency? If yes, then justify it with appropriate reasons. 8

UNIT - IV

Q.8 (a) Comment on the statement:- 6

"Testing plays a critical role in quality assurance for software systems".

(b) Describe the overall testing process required for testing a software system. 10

Q.9 (a) What is Static Testing? Explain various Static Testing Techniques. 10

(b) What is Software maintenance? Discuss various characteristics of Software maintenance. 6

Sr. No. 5051

MCA, First Semester Examination, Dec 2016
Soft Skills & Personality Development

Time: 3 Hours | Max. Marks: 80

Note: Attempt five questions in all. Question No. 1 is compulsory. Attempt four more questions selecting one question from each unit.

1. Answer the following questions briefly: 8x3=24
   i) What is need for Communication?
   ii) Discuss steps in preparing presentation.
   iii) Explain Listening skills.
   iv) Describe decision making skills.
   v) Explain self esteem briefly.
   vi) Discuss work conflict management.
   vii) Define trust.
   viii) What is report writing?

Unit – I

2. (a) What is Visual Communication? How is it useful and used? Discuss with examples. 7
   (b) Discuss uses and advantages of Verbal communication with an example. 7
3. Explain the following briefly with suitable examples:
   a) International Communication. 7
   b) Process of Communication. 7

Unit – II

4. (a) What are audio-visual aids? How these are useful and used? Explain with suitable examples. 7
   (b) Explain Synopsis writing in detail with an example. 7
5. Describe the following with example:
   a) Verbal and non-verbal cues. 7
   b) Steps in preparing a good resume. 7

Unit – III

6. Define Communication. What are barriers to communication? How these are overcome? Explain with suitable examples in details. 14
7. Explain the following with examples:
   a) Defferentiate between Postures and gestures 7
   b) Emotional IQ 7

Unit – IV

8. (a) What are technical and managerial skills? How these are useful and used? Discuss with suitable examples. 7
   (b) Explain Supervisory and conceptual skills with examples. 7
9. Explain the following with examples:
   a) Leadership skills 7
   b) Intrapersonal skills and their importance 7

Sr. No. 5054

MCA, First Semester Examination, Dec 2016
Computer Organization

Time: 3 Hours Max. Marks: 80

Note: Question No. 1 which is compulsory and carry 24 marks. Attempt one question from each unit. All questions from Unit 1 to 4 carry 14 marks.

1. Define the following:
   a) Booths multiplication
   b) Boolean algebra
   c) Substractors in Combinational Logic
   d) Decoders
   e) Associative memory in memory organization
   f) Cache Performance
   g) Instruction formats and Addressing modes.
   h) Interrupt structure

Unit – I

2. Explain the concept of K-maps and Quine McCluskey procedure. Also explain the concept of BCD codes.
3. Explain various digital logic gates in detail. Also explain fixed point and floating point representation of numbers.

Unit – II

4. Explain BCD to seven segment decoder in detail. Also explain the concept of multilevel NAND and NOR circuits.
5. Explain the following in detail:
   (a) XOR and XNOR functions encoder
   (b) BCD adder

Unit – III

6. What are flip flops? Explain the concept of shift registers and counters.
7. What is hierarchal memory system in memory organization? Explain the concept of replacing and writing data in cache memory.

Unit – IV

8. What are microprogramming concepts and micro program sequencer? Also explain the transfer of information between CPU and I/O devices.
9. What is Input Output Interface? Also explain the concept of processor organization in CPU organization.

Sr. No. 5053

MCA, First Semester Examination, Dec 2016
Software Engineering

Time: 3 Hours Max. Marks: 80

Note: Attempt five questions in all. Question No. 1 is compulsory. Attempt four more questions selecting one question from each unit.

1. Answer the following questions briefly: 8x3=24
   a) What is Six Sigma?
   b) Disucss Project Monitoring.
   c) Explain role of coupling in software design.
   d) Describe Mutation Testing and its uses.
   e) Explain performance testing briefly.
   f) Discuss fault avoidance with an example.
   g) What is Software Crisis problem?
   h) What are multivariate models?

Unit – I

2. (a) What is prototyping? How is it useful and used? Discuss with examples. 7
   (b) Discuss uses and advantages of Spiral model with an example. 7
3. Explain the following briefly with suitable examples:
   a) Information Flow Metrics. 7
   b) SEI-CMM. 7

Unit – II

4. (a) What is Risk Management? How is it useful and used? Explain with suitable examples. 7
   (b) Discuss COCOMO model with an examples. 7
5. Describe the following with example:
   a) Software requirements Specification document 7
   b) Software configuration Management 7

Unit – III

6. (a) What is software reliability? How is it used and useful? Explain JM reliability model with an example. 10
   (b) Discuss defensive programming and its advantages with examples. 4
7. Explain the following with examples:
   a) Function Oriented Design 7
   b) Software Design Principles 7

Unit – IV

8. (a) What is Reverse Engineering? How is it useful and used? Discuss with suitable examples. 7
   (b) Explain Static Testing Techniques with examples. 7
9. Explain the following with examples:
   a) Two Functional Testing Techniques 7
   b) Software maintenance and its types 7

Sr. No. 13023

MCA Second Semester Examination, July 2016

Organisational Behaviour

Time : 3 Hours

Max Marks : 80

Note : Question No. 1 is Compulsory. Attempt four more questions selecting one question from each unit.

Q.1 3x8=24

a) Discuss the scope of Organisational Behaviour.

b) Name determinants of personality

c) Explain the term "Perception".

d) Discuss the term "Behavioral Change".

e) Define Formal and Informal groups.

f) Write short note on organizational conflicts.

g) What do you understand by term " Tactics and Strategies".

h) Explain the term "Organisational Culture"?

Unit – I

Q.2 Discuss relevance to Organisational Effectiveness and Contemporaty Issues. 14

Q.3 Discuss various types of Personalities. Explain the process of personality Formation. 14

Unit – II

Q.4 What is effect of perception on individual decision making, attitude and behavior. 14

Q.5 Explore any one theory of motivation and its applications for behavioural change. 14

Unit – III

Q.6 What do you understand by term "Team"? Discuss Cross functional and Self Directed Teams. How the performance of team can be enhanced? 14

Q.7 Discuss the concept of Organisational Roles. How role conflicts affect the performance of an employee and orgnasation's output? 14

Unit – IV

Q.8 What do you understand by term " Leadership"? How are leaders differentiated from managers? What are various types of leaderships? Discuss various Contemporary issues in leadership. 14

Q.9 Explain the following: 7x2 =14

a) Organisational Change and Culture Environment

b) Process of Change and Organisational Development

Sr. No. 13024

MCA Second Semester Examination, July 2016

Computer Networks and Data Communication

Time : 3 Hours | Max Marks : 80

Note : Question No. 1 is Compulsory. Attempt four more questions selecting one question from each unit.

Q.1 3x8=24

a) Define Star and Bus Topology

b) Write short note on X.25 protocol

c) Explain the term Nyquist Bit Rate.

d) What do you understand by ADSL.

e) Discuss Slotted Aloha.

f) Write short note on CDMA.

g) Explain Flooding in terms of Network Routing.

h) What do you understand by term "Choke Packets"?

Unit – I

Q.2 Explain TCP / IP Reference Model 14

Q.3 Explain OSI Reference Model 14

Unit – II

Q.4 What is Optical Fibre? How is it advantageous over other guided media? Discuss various modes of transmission through Optical Fibre. 14

Q.5 a) Compare Circuit Switching and Packet Switching. 7

b) Explain Manchester and Differential Manchester Encoding Schemes. 7

Unit – III

Q.6 Discuss CSMA, CSMA-CD and CSMA – CA protocols. 14

Q.7 Explain IEEE 802.3, IEEE 802.4 and IEEE 802.5 protocols. 14

Unit – IV

Q.8 What is principle of Dijkstra's Algorithm? Discuss Dijkstra's Algorithm with help of example. 14

Q.9 Explain Leaky Bucket with Token scheme for Congestion Control. 14

Sr. No. 6226

MCA, Third Semester Examination, Dec 2016

Object Oriented Analysis and Design using UML

Time: 3 Hours Max. Marks: 80

Note: Question No. 1 is compulsory. Attempt five questions in all, selecting one question from each unit. All questions carry equal marks.

1. Attempt all the parts given below:
   i) What is component diagram?
   ii) What is a Class Diangram?
   iii) What is sequence model?
   iv) What is bridging gap explain it with a suitable example.

Unit – I

2. What are various class models?
3. Give various diagrams in UML.

Unit – II

4. What are the various onject oriented concepts used in UML.
5. Write note on the following:
   (a) Generalization and Inheritance
   (b) Links and Associations

Unit – III

6. What is the relation between Class and State Model?
7. What do you mean by Interaction Modelling? Explain a model which follows Interaction modeling in detail.

Unit – IV

8. What are boundary condition in system design how these condition are handled?
9. Give and explain Application Class Model.

Sr. No. 6228-A

MCA, Third Semester Examination, Dec 2016

Design and Analysis of Algorithms

Time: 3 Hours Max. Marks: 80

Note: Question No. 1 is compulsory. Attempt five questions in all, selecting one question from each unit.

1. 4x4=16

i) What are the uses of recurrence relation? Explain.

ii) What is Huffman code? Explain.

iii) What is Optimal binary search tree? Explain.

iv) What is independent set? Explain.

Unit – I

2. (a) What is quick sort Algorithm? Explain. 6

(b) Show how the quick sort algorithm sorts the following sets of keys: 10

(1, 1, 1,1, 1, 1, 1) and (5, 5, 8, 3, 4, 3, 2)

3. What is devide and conquer technique? Explain back substitution method, recursion tree method using this technique. 16

Unit – II

4. What is Dynamic Programming Technique? Explain and construction of optimal binary search trees with the help of an example. 16

5. Explain the following: 5+6+5

(a) Matrix chain multiplication

(b) What is longest common subsequence?

(c) Various operations on binary search tree

P.T.O.

Unit – III

6. (a) Analyze an single source shortest path algorithm with time and space complexity using greedy approach. 8

   (b) Discuss the Merge sort algorithm for the following data set to sort in ascending order in which data set do you think that merge sort is not advisable to use 8

   i) 12, 12, 12, 12, 12

   ii) 20, 15, 14, 11, 10

   iii) 10, 1, 12, 15, 7

7. (a) What is Dijikstra's algorithm? What are limitations of it? Explain. 8

   (b) What is all pairs shortest path? Explain the relation with matrix multiplication. 8

Unit – IV

8. What is NP-hard problem? How it is different from approximation algorithm? Explain Traveling Salesman Problem. 16

9. Explain the following: 5+5+6

   (a) Native string-matching algorithm

   (b) Polynomial time verification

   (c) NP-Complete

Sr. No. 9035

MCA, Third Semester Examination, Dec 2016

Object Oriented Analysis and Design with UML

Time: 3 Hours Max. Marks: 80

Note: Question No. 1 is compulsory. Attempt five questions in all selecting at least one question from each unit. All questions carry equal marks.

1. Explain the following in detail:
   i) UML Things
   ii) Reuse plan
   iii) Application class model
   iv) Selecting an Architect style
   v) Concurrency
   vi) Link Attributes
   vii) Encapsulation
   viii) Object diagram

Unit – I

2. (a) How does the object oriented approach differ from the traditional approach? Also explain how does object-oriented software development promote and improve reusability.
   (b) Explain the concept of UML Semantic rules in detail.
3. (a) Write detail note on Mechanisms in the UML.
   (b) What is UML? Is UML a programming language? Is it process dependent or independent? What is the role of UML in preparing the model?

Unit – II

4. (a) What is generalization? Give an example that implement single, multiple inheritance using generalization?
   (b) What are activity diagrams? Explain with the help of an example.
5. (a) What do you mean by class diagrams? Where it is used and also discusses the steps to draw the class diagram with any one example.

P.T.O.

(b) Write detail note on modelling as a design technique.

Unit – III

6. What do you mean by Interaction modelling? Explain use case models and use case relationship in detail.
7. Explain the following in detail:
   (a) State diagrams and nested state diagrams
   (b) Relationship between class and state models

Unit – IV

8. Explain the following in detail:
   (a) System Development stages and Domain class model
   (b) Designing Algorithms and Design optimization
8. (a) What is system design? Explain the concept of Allocation subsystems to processors and Tasks in detail
   (b) Write detail note on Handling global resources and Handling Boundary conditions in detail.

Sr. No. 6229-A

MCA, Third Semester Examination, Dec 2016

Database Management

Time: 3 Hours Max. Marks: 80

Note: Question No. 1 is compulsory. Attempt five questions in all, selecting one question from each unit. All questions carry equal marks.

1.

i) What are the disadvantages of DBMS?

ii) What is importance of data dictionary?

iii) Discuss the advantages and disadvantages of views.

iv) What is hierarchical data model?

v) Give definition of MVD.

vi) Name different stages of database design process.

vii) Give the lifecycle of a transaction.

viii) Define database security.

Unit – I

2. (a) Describe the complete architecture of a DBMS.

   (b) Describe how E-R scheme be reduced to tables.

3. (a) Explain the entity integrity and referential integrity constaints of relational model.

   (b) Describe various operators of relational algebra.

Unit – II

4. (a) Explain the function of each of the clauses in the SELECT statement. What restrictions are imposed on these clauses?

   (b) Discuss each of the clauses of the CREATE TABLE Statement.

P.T.O.

5. (a) Describe the storage organization in ORACLE.

   (b) Describe the logical database structure of Oracle.

Unit – III

6. (a) Describe the inputs and outputs of physical database design.

   (b) What is functional dependency? What are the objectives of normalization? How can normalization be done?

7. Explain notes on the following:

   (a) 4NF

   (b) 5NF

   (c) DKNF

   (d) BCNF

Unit – IV

8. (a) What is a transaction? Describe ACID properties of a transaction.

   (b) Discuss the difference between conflict serializebility and view serializebility.

9. (a) Discuss the difference between pessimistic and optimistic concurrency control.

   (b) Differentiate between deferred update and immediate update recovery protocols.

Sr. No. 9033

MCA, Third Semester Examination, Dec 2016

Staistical Methods and Optimization Techniques

Time: 3 Hours Max. Marks: 80

Note: Question No. 1 is compulsory. Attempt five questions in all selecting at least one question from each unit. All questions carry equal marks.

1. Explain the following in detail:
   - i) Regression Analysis
   - ii) Two variables case
   - iii) Sign Tests
   - iv) Modelling
   - v) Branch and Bound Method
   - vi) Integer programming Classification
   - vii) Seasonal Fluctuations
   - viii) Sampling and non-sampling Error's

Unit – I

2. Explain the following in detail:
   (a) Conditional Probability and Baye's Theorem
   (b) Statistical testing of hypothesis and errors
3. What do you mean by 'Sample Design'? What points should be taken into consideration by a researcher in sample design for any research project? Also explain sampling tests 'T' test and 'Z' test in detail.

Unit – II

4. Explain the following in detail:
   (a) Analysis of variance
   (b) Time Series Analysis
5. What is Chi-Square test? Explain it's the significance in statistical analysis of any research problem. Also explain Wilcoxon Signed rank test in detail.

P.T.O.

Unit – III

6. (a) What do you mean by simplex method and its flow chart? Explain Two-Phase simplex method in detail.
   (b) Write detail note on Development of Operation research in India.
7. (a) What do you mean by Operational Research? Also explain the application of operations research in detail.
   (b) What is Linear Programming? Explain the standard and matrix form of Linear programming problems in detail.

Unit – IV

8. Explain the following in detail:
   (a) Dual Simplex method and its flow chart in detail
   (b) Integer programming and its importance
9. What do you mean by Assignment models? Explain Hungarian Method for Assignment problems. Also explain Unbalanced and Assignment problems in detail.

Sr. No. 9036

MCA, Third Semester Examination, Dec 2016

Theory of Computation

Time: 3 Hours Max. Marks: 80

Note: Question No. 1 is compulsory. Attempt five questions in all.

1. 8x3=24

a) What do you mena by language paradigms?

b) Differentiate between control abstraction and data abstraction.

c) Explain Recursive and non-recursive enumerable languages.

d) Define regular languages and regular sets.

e) What is Ambiguity? How we remove ambiguity in an ambiguous language?

f) Find CFG's that generate regular language all strings without the substring aaa, over the alphabet $\sum=\{a, b\}$.

g) Define formal definition of Turing Machine.

h) What do you mena by Computational complexity?

2. What is data type? Explain different type of data type and its characteristics. 14

3. What do you mean by object oriented system? Define object oriented paradigms. 14

4. Explain DFA and NDGA? Explain the procedure to convert the NDFA into DFA with the help of suitable example. 14

5. What do you mean by pumping leema? Prove that $L=\{0^n1^n2^n|n,m\geq 0\}$ is not regular. 14

6. Identified and remove the unit productions from following grammar: $S\rightarrow A/bb$, $A\rightarrow B/b$, $B\rightarrow S/a$. 14

7. Design PDA for the language $L= \{w\ c\ w^r/w \sum \{a,b\}^*\}$. 14

8. What is universal Turing Machine? 14

9. Explain Linear Bound Automata and closure properties. 14

Sr. No. 9032

MCA, Third Semester Examination, Dec 2016

Database Management System

Time: 3 Hours Max. Marks: 80

Note: Question No. 1 is compulsory. Attempt five questions in all.

1. 8x3=24

a) What is DBMS? Explain characteristics of DBMS.

b) What is E-R Diagram?

c) Describe DDL, DML and DCL.

d) Explain the manipulation and storage organization of RDBMS.

e) What is Aggregate function in SQL?

f) What is Data based Recovery Techniques?

g) Explain the properties of transaction?

h) What is Granularity in data items?

2. Explain three tier schemas in data base system. 14

3. What is relational data model? Also explain the relational algebra and its basic operation. 14

4. Describe different type of data mode architecture? 14

5. Explain the concept and specification of views in SQL? How to implement and update in a view? 14

6. What are the functional dependencies? Explain Decomposition. 14

7. What do you mean by normal form? Explain different types of normal form with suitable example. 14

8. Characterizing the schedules based on serializability. What is view equivalence and view serializability? 14

9. How is privacy related to statistical data base security? What measures can be taken to ensure some degree of privacy in statistical data base? 14

Sr. No. 6230

MCA, Third Semester Examination, Dec 2016

Operating System

Time: 3 Hours Max. Marks: 80

Note: Question No. 1 is compulsory. Attempt five questions in all, selecting one question from each unit.

1. Attempt the following: 4x4=16

   i) Draw a neat labeled diagram of Process Control Block and explain it.

   ii) List types of Non-contiguous Memory Allocation. Explain any one in detail.

   iii) Explain Real Time Systems in detail.

   iv) What are the services supervised by kernel I/O Subsystem?

Unit – I

2. What is operating system? What are its functions? Explain various types of OS. 16

3. Explain the following: 5+5+6

   (a) Inter process communication

   (b) Multiple process scheduling

   (c) Operating system services

Unit – II

4. (a) What is concurrent process? How critical section problem is work? Explain. 8

   (b) What is Semaphore? What are different types of the Semaphores? 8

P.T.O.

5. (a) What is Deadlock? What are the necessary and sufficient condition for Deadlock occurs? Explain in brief. 12

(b) Write a note on Co-operating Processes. 4

Unit – III

6. What is swapping? Explain paging, segmentation and virtual memory with example? 16

7. Explain the following: 5+6+5

(a) Directory protection mechanism

(b) Disk scheduling

(c) File access and allocation

Unit – IV

8. What is distributed operating system? What are types of Network based OS? Explain network structure and Topologies. 16

9. How security is required for operating system? Explain security problem, threats and security tools. 16

Sr. No. 6228-A

MCA, Third Semester Examination, Dec 2016

Design and Analysis of Algorithms

Time: 3 Hours Max. Marks: 80

Note: Question No. 1 is compulsory. Attempt five questions in all, selecting one question from each unit.

1. 4x4=16

i) What are the uses of recurrence relation? Explain.

ii) What is Huffman code? Explain.

iii) What is Optimal binary search tree? Explain.

iv) What is independent set? Explain.

Unit – I

2. (a) What is quick sort Algorithm? Explain. 6

(b) Show how the quick sort algorithm sorts the following sets of keys: 10

(1, 1, 1,1, 1, 1, 1) and (5, 5, 8, 3, 4, 3, 2)

3. What is devide and conquer technique? Explain back substitution method, recursion tree method using this technique. 16

Unit – II

4. What is Dynamic Programming Technique? Explain and construction of optimal binary search trees with the help of an example. 16

5. Explain the following: 5+6+5

(a) Matrix chain multiplication

(b) What is longest common subsequence?

(c) Various operations on binary search tree

P.T.O.

Unit – III

6. (a) Analyze an single source shortest path algorithm with time and space complexity using greedy approach. 8

   (b) Discuss the Merge sort algorithm for the following data set to sort in ascending order in which data set do you think that merge sort is not advisable to use 8

   i) 12, 12, 12, 12, 12

   ii) 20, 15, 14, 11, 10

   iii) 10, 1, 12, 15, 7

7. (a) What is Dijikstra's algorithm? What are limitations of it? Explain. 8

   (b) What is all pairs shortest path? Explain the relation with matrix multiplication. 8

Unit – IV

8. What is NP-hard problem? How it is different from approximation algorithm? Explain Traveling Salesman Problem. 16

9. Explain the following: 5+5+6

   (a) Native string-matching algorithm

   (b) Polynomial time verification

   (c) NP-Complete

Sr. No. 6227-A

MCA, Third Semester Examination, Dec 2016

Computer Networks and Data Communication

Time: 3 Hours Max. Marks: 80

Note: Question No. 1 is compulsory. Attempt five questions in all, selecting one question from each unit.

1. 4x4=16

i) What is X.25? Explain.

ii) What is ISDN? Explain.

iii) What is Local loop? Explain.

iv) What is High speed LAN? Explain.

Unit – I

2. What is OSI model? How it different from TCP/IP model? Explain various layer of both model. 16

3. (a) What is ATM? How it is perform functions? 7

(b) What are design issues of layer? How these effect the performance of networks? 9

Unit – II

4. Explain the following differences between the: 5+5+6

(a) Digital and Analog data

(b) Internet over Cable

(c) ASDL over Cable

5. What do you understand by guided and non guided transmission media? Explain Satellite communication also.16

Unit – III

6. What are role of sliding window protocol in transmitting of packets? Explain Aloha, CSMA And MACA. 16

P.T.O.

Sr. No. 9045

MCA, Fifth Semester Examination, Dec 2016

Mobile Applications Development

Time: 3 Hours Max. Marks: 80

Note: Question No. 1 is compulsory. Attempt five questions in all. In addition to compulsory question, student will have to attempt four more questions at least one from each unit.

1. Explain the following:

i) Storing and Retrieving data

ii) Concurrency and Resource management

iii) Apple iPhone Platform

iv) iPhone OS

v) Native libraries and headers

vi) JDK and ADK

vii) Shadows Gradients

viii) Working with Map View and Map Activity

Unit – I

2. Explain the following in detail:
   (a) Mobile Software Engineering
   (b) Security and Hacking
3. (a) Define Mobile Applications. Explain characteristics and benefits of mobile applications in detail.
   (b) What are the features considered for a successful mobile application? Also explain the role of quality constraints in mobile applications.

Unit – II

4. (a) What do you mean by Android? Explain the Android application architecture in detail.
   (b) Write detail note on GUI and MVC Architecture.

P.T.O.

5. Explain the following in detail:
   (a) Handling database in android
   (b) API keys for Google Maps

Unit – III

6. What do you mean by User Interface (UI) Explain Blank UI, Folding and Unfolding a scalable UI in detail.
7. Explain the following in detail:
   (a) Building client server applications
   (b) Location and Mapping

Unit – IV

8. (a) What is QT? Explain the platforms supported by QT indetail?
   (b) Explain the concept of Modules and tools of QT in detail.
9. Explain the following in detail:
   (a) Unity engine for game development
   (b) Event handling and graphics services

Sr. No. 9043

MCA, Fifth Semester Examination, Dec 2016

Advanced Web Technology

Time: 3 Hours Max. Marks: 80

Note: Question No. 1 is compulsory. Attempt five questions in all selecting at least one from each unit. All questions carry equal marks.

1. Explain the following:

i) Selection of URL

ii) Page rank of Google

iii) Buffering

iv) DNS hijacking

v) Traffic generation

vi) Javascript

vii) Cookies

viii) Code Blocks

Unit – I

2. (a) What do you mean by search engines? Explain the Searching techniques used by search engines in detail

   (b) Explain the concept of DNS caching and prefetching in detail.

3. Explain the following in detail:

   (a) Pitfalls in Optimization

   (b) Search Engine Optimization for individual web pages

Unit – II

4. What do you mean by PHP? Explain the variables, data types, operators and expressions in PHP.

5. Explain the following in detail:

   (a) Control flow in PHP

   (b) Form processing and Session management

P.T.O.

Unit – III

6. (a) What do you mean by object oriented Java Script? Explain in detail.

   (b) What do you mean by JQuery? Explain the concept of listening to DOM events in detail.

7. Explain the following in detail:

   (a) MVC development

   (b) Traversing and working with DOM

Unit – IV

8. (a) What is Optimization? Explain the concept of Optimizing images and load balancers in detail.

   (b) What do you mean by query caching? Explain the concept of query execution and optimization in detail.

9. Explain the following in detail:

   (a) Session management and session hijacking

   (b) XSS attacks and cross-site request forgery

Sr. No. 9047

MCA, Fifth Semester Examination, Dec 2016

Cloud Computing

Time: 3 Hours Max. Marks: 80

Note: Question No. 1 is compulsory. Attempt five questions in all selecting at least one from each unit. All questions carry equal marks.

1. Explain the following:

i) Picloud package
ii) Higher order function
iii) Sets and Dictionaries
iv) Class
v) Multimedia cloud
vi) Analytics services
vii) Virtualization technologies
viii) Storage vitualization

Unit – I

2. (a) What is cloud comuting? Explain the advantages and disadvantages of cloud computing in detail.
   (b) Explain Cloud architecture in detail.
3. What is Virtualization? Explain the benefits & drawbacks of virtualization. Also explain the virtualization types in detail.

Unit – II

4. What do you mean by Cloud Services & Platforms? Explain Application services, Queuing services, E-mail services and notification services in detail.
5. Explain the following in detail:
   (a) Features of federation types
   (b) Layers enhancement of federation

P.T.O.

Unit – III

6. What is Python? Explain Data types, Control Flow statements and variables in detail.
7. Explain the following in detail:
   (a) Object-oriented programming
   (b) Input/output statements

Unit – IV

8. (a) What do you mean by Python in cloud computing? Explain Iterators and Generators in detail.
   (b) What do you mean by packages? Explain SMTPLib and JSON in detail.
9. Explain the following in detail:
   (a) Python for Google cloud platform
   (b) Cloud application development in python

Sr. No. 9044

MCA, Fifth Semester Examination, Dec 2016

Linux and Shell Programming

Time: 3 Hours Max. Marks: 80

Note: Question No. 1 is compulsory. Attempt five questions in all.

1. 10

i) How is inode number of a file accessed?

ii) What are the default permissions on a directory and file?

iii) Which init level is used to reboot the system?

iv) Which command is used to debug a script?

v) Write the default C language compiler.

vi) How do you check the connectivity of a host to a server?

vii) Which command is used to mount a file system?

viii) What is a shell?

ix) How to bring a process to background?

x) How to access last element of an array?

Unit – I

2. (a) What is the difference between various distributions of linux. Enlist the installation requirements of kernel and shell. 7

(b) How are files stored on disk? Write the system calls to access files. Take suitable examples. 7

3. (a) Describe zombie and orphan processes. What kernel support is required to manage process images? 7

(b) How are dependencies useful in makefiles? How is make command used to compile C programs. 7

Unit – II

4. (a) What is the necessity of a dynamic loader? Explain giving an example. 7

(b) Describe the options available with the C language compiler to assemble and link only and not compile. 7

P.T.O.

5. (a) What processes are used to start and shut down the system? 7

   (b) State with examples the commands used to partition the hard disk and list the partitions on the disk. 7

Unit – III

6. (a) Write the commands to add new users and their groups, delete and modify details of existing users. 7

   (b) How is ip address assigned to a host staticaly and dynamically? Give examples. 7

7. (a) What are environment variables? Write the command to change the prompt and mailbox of the owner. 7

   (b) What signal handlers are used to issue an alert for the user in casse an error occurs? 7

Unit – IV

8. (a) How to display the shells available in the system? What is the difference between various shells? 7

   (b) Describe the management and scheduling of processes. 7

9. (a) Write a shell script to create a simple calculator. 7

   (b) Write a shell script to automatically run a video file on system startup. 7

Sr. No. 9046

MCA, Fifth Semester Examination, Dec 2016

Theory of Computation

Time: 3 Hours Max. Marks: 80

Note: Question No. 1 is compulsory. Attempt five questions in all. All questions carry equal marks.

1.

i) What is Finite Automata?

ii) Explain Kleene's theorem.

iii) What is Parse Tree? Also list the application of Parse Tree.

iv) Write closure properties of context free language.

v) What is Cook Theorem?

vi) Differentiate between Recursive and recursive-enumerable language.

vii) What Halting problems in TM?

viii) Explain primitive recursive function.

2. Design a NFA with no more than five states for the set $\{abab^n:n\geq o\} \cup \{aba^n:n\geq 0\}$.
3. Design a Moore machine which count the occurrence of substring aab in input string.
4. Prove that language $L=\{0^n1^n|n\leq m\}$ is not regular.
5. Design CFG for the language $L=\{(0^n1^n/n\geq 0) \cup (1^n0^n/n\geq 0)\}$.
6. Design a Turing Machine for the regular expression $r=aa^*$.
7. What is post Correspondence problem?
8. Explain characteristics of computable Functions.
9. Prove that following function is computable

   $F(n)=n+2$

Sr. No. 9042

MCA, Fifth Semester Examination, Dec 2016

Compiler Design

Time: 3 Hours Max. Marks: 80

Note: Question No. 1 is compulsory. Attempt five questions in all.

2. 8x3=24

i) What is LEX?

j) Describe Bootstrapping.

k) Explain postfix notatin.

l) What is Semantic Error?

m) What do you mean by LL(K) and LR(K) parse.

n) What is YACC?

o) Define DAG.

p) What is Global Data Flow Analysis?

2. Differnetiate between single pass and multi pass compilers. 14

3. Explain the procedure to convert the NFA into DFA. 14

4. Describe data structure for symbol table. What is SDD? 14

5. What is type storage allocation scheme? Also describe the stack allocation and block structure allocation. 14

6. What is operator precedence parsing? Explain with the help of example. 14

7. Consider the following grammar 14

$E \rightarrow E+T|T$

$T \rightarrow T*F|F$

$F \rightarrow (E)|id$

Compute the first and follow and construct the M table.

8. What is Peephole optimization? Explain issue in the design of a code generator. 14

9. What is Code optimization? Explain the principle source of code optimization. 14