Enrollment No……

Master of Computer Application
Third Semester Main Examination, Dec-2020
Computer Oriented Optimization Techniques [MCA301]

Time: 3:00 Hrs. Max Marks 70

Note : Attempt All questions. All question carry equal marks.

Q.1 What is the operation research? Disuses the significance and scope of operation research? Describe Kernel and Shell in Unix Operating System?

Q.2 Derive (M/M/1,N/FCFS) Model.

Q.3 Write and explain algorithm for processing n jobs through 3 or mok machines.

Q.4 Give the main difference between PERT and CPM with example?

Q.5 What is dynamic programming? Explain bellman's optimality principal?

Q.6 What do you mean by degeneracy in a transportation problem also explain how degeneracy transportation problem may be resolve?

Q.7 What is a assignment problem? Describe and give three applications?

Enrollment No……

Master of Computer Application
Third Semester Main Examination, Dec-2020
Software Engineering Methodologies [MCA302]

Time: 3:00 Hrs Max Marks 70

Note: Answer any five questions. All questions carry equal marks.

Q.1 What is software engineering? Write the characteristics of software Engineering?

Q.2 What is Feasibility? How many types of feasibility, explain in detail?

Q.3 What are four P's of software project management? What are main project planning objectives?

Q.4 What are the different steps of RAD Software development process model? When should you use this model? Write its Advantages and Disadvantages?

Q.5 Explain Use Case Diagram & Class Diagram, Sequence Diagram and State Chart Diagram with

suitable example.

Q.6 What do you understand by MIS and DSS? What are the types of MIS and DSS?

Q.7 What is Software Testing? Explain it.

Q.8 Briefly explain SQA? Define formal approaches to SQA.

Enrollment No……

Master of Computer Application
Third Semester Main Examination, Dec-2020
Object Oriented Methodology & C++ [MCA303]

Time: 3:00 Hrs **Max Marks 70**

Note: Answer any five questions. All questions carry equal marks.

Q.1 (a) Define Object oriented Programming in detail?
(b) What is Constructor and destructor function? Explain the purpose of constructor and destructor in a program.

Q.2 (a) Write a C++ program to find the factorial of a given number?
(b) What is Inheritance, discussed different type of inheritance with example.

Q.3 (a) What is friend Function? What are some advantage and disadvantage of using friend functions?
(b) What is the need of virtual function? Explain with the help of example?

Q.4 (a) Briefly explain Exception handling.
(b(What are tellg( ) and tellp( ) functions in c++?

Q.5 (a) Define following:
i) Abstract class
ii) Friend function
iii) Early binding and late binding.
(b) Compare abstraction and encapsulation. Give advantage & disadvantage of polymorphism in an object oriented system.

Q.6 (a) Explain the following terms with the help of an example
(i) Throw an except
(ii) Catching an exception
(iii) Try and catch block
(b(What is I/O system & formatted I/O explain with block diagram?

Q.7 (a) What is constructor? Explain different type of constructors.
(b) What is UML? Draw a UML diagram for a data processing and explain?

Q.8 (a) Explain term Polymorphism? How is Polymorphism achieved at :

(i) Compile Time (ii) Run Time

(b) Compare abstraction and encapsulation. Give advantage & disadvantage of polymorphism in an object oriented system.

Enrollment No……

Master of Computer Application
Third Semester Main Examination, Dec-2020
Theory of Computation [MCA304]

Time: 3:00 Hrs **Max Marks 70**

Note: Answer any five questions. All questions carry equal marks.

Q.1 (a) Define language and Grammar give an example.
(b) Explain Moore and Mealy machine-proof with example?

Q.2 (a) Define Regular Expression. List the operators of Regular Expressions.
(b) Explain Chomsky classification of Grammars.

Q.3 (a) Construct a minimal DFA, which accept set of all input strings over {0,1}, which when interpreted as a binary number is divisible by 3.
(b) Equivalence between Moore and Mealy machine-proof with example?

Q.4 (a) What is a context free grammar and explain closure properties of context free grammar?
(b) Give the English description of the language of the following regular expression.
(i) $(a+\epsilon)\ (aa^*\ b)^*\ a^*$ (ii) (a+ba)*b*

Q.5 (a) Demonstrate the working of your Turing Machine with example?
(b) Define a Deterministic Pushdown Automata for the string over {a,b} equal no. of a's & b's .

Q.6 (a) Explain with example Chomsky Normal form and Greibach Normal forms.
(b) Obtain an NFA for the regular expression $(a+b)^*aa\ (a+b)^*$.

Q.7 (a) Convert the regular expression r=(11+0)*(00+1)* to ϵ move.
(b) Explain in detail notes on Universal Turing Machine with example?

Q.8 Short note on: (Any three define with example)
(i) CFG
(ii) NP Complete NP hard problems
(iii) Hamiltonian path problem
(iv) Regular Sets and Regular Grammars

Enrollment No……

Master of Computer Application
Third Semester Main Examination, Dec-2020
Computer Networks [MCA305]

Time: 3:00 Hrs. **Max Marks 70**

Note: Answer any five questions. All questions carry equal marks.

Q.1 (a) What is a routing protocol? Explain in detail about the protocol data units? What is its Key Element?
(b) What is error control? Explain CRC with an example?

Q.2 (a) Discuss about the data communication networking in detail. Describe various Classifications of communication networks.
(b) Differentiate between Router & gateway on the base of their functionalities.

Q.3 (a) Explain Network security. Describe cryptography.
(b) Explain the following:
(i) Token bus & Token ring
(ii) FDDI Protocol
(iii) DQDB Protocol

Q.4 (a) Explain CSMA and CSMA/CD protocols? Also discuss channel allocation?
(b) What is the difference between pure ALOHA and slotted ALOHA? What is vulnerable time in pure ALOHA?

Q.5 (a) Explain the Bellman Ford algorithm for routing in network with an example.
(b) What is Hubs? Discuss different types of hubs.

Q.6 (a) Write short note:
(i) SNMP
(ii) Virtual Terminal protocol
(iii) Email
(iv) UDP
(b) Explain in detail about the layers of OSI model? Compare OSI & TCP/IP network Reference models.

Q.7 (a) Compare circuit &Virtual circuit based packet switching in respect of queuing & Forwarding delays.

(b) Differentiate between
(i) Frequency modulation Vs Amplitude modulation
(ii) PAM Vs PCM

Q.8 (a) Explain Dijkstra'salgorithm with an example.
(b) What is DNS? How resources records and maintained in DNS?