Enrollment No……

Bachelor of Engineering
Fifth Semester Main Examination, Dec-2020
Data Communication [CS-501]
Branch: CSE

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

Note : 1. Attempt any five questions out of eight.
2. All question carry equal marks.

Q.1 (a) What is data communication? Define its components. Discuss Data transmission and modes.
(b) Explain why gateway is called protocol converter and also explain its working in detail?

Q.2 (a) Differentiate between an analog and a digital transmission methods.
(b)What is Multiplexing? In what situation multiplexing is used? Also distinguish between synchronous and statistical TDM?

Q.3 (a) Difference between circuit switching and packet switching.
(b) Discuss the various error detection and correction method.

Q.4 (a) What is CRC? Explain CRC with suitable example?
. (b) What is the purpose of multiplexing? Differentiate between time division multiplexing and frequency division multiplexing,

Q.5 (a) Explain the following:
i) Active Hubs ii) Passive Flubs iii) Repeater iv) Bridge
(b) Compare FDM, TDM and WDM?

Q.6 (a) What are Hamming Codes? Explain Redundancy check in short.
(b) What is data compression? Explain lossy and lossless techniques for data compression with suitable examples

Q.7 (a) Discuss the features and types of modem. Explain the various encoding schemes briefly.
(b) If the 7bit Hamming code word received by receiver is 1011011. Assuming the even parity, state whether the received code word is correct or wrong. If wrong code the bit in error:

Q.8 (a) Discuss the features and types of modem. Explain the various encoding schemes briefly.
(b) Explain how parity checking is used for error detection?

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Bachelor of Engineering
Fifth Semester Examination, December 2020
Operating System [CS-502]
Branch-CS

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

Note: (i) Attempt any five questions.
(ii) Answer should be precise & to be point only.
(iii) Assume suitable data if necessary & state them clearly.

Q.1 (a) What is operating system? Explain briefly about various types of operating system.
(b) Difference between -
i. Multitasking and Multi programming operating system
ii. Real time and time sharing operating system.

Q.2 (a) What is thread and what are the differences between user-level threads and kernel supported threads?
(b) Define spooling and for it explain its working with necessary diagram?

Q.3 (a) Discuss various free space management techniques. Explain them in detail with their advantages and disadvantages.
(b) What is distributed operating system? Discuss its types along with, design issues?

Q.4 (a) Explain different types of schedules along with the purpose of each.
(b) Write short notes:
i) Distributed shared memory
ii) Process management in LINUX

Q.5 (a) Discuss various security threats in file system of OS. What is fragmentation? Why it is needed?
(b) Write a Semaphore solution for dining philosopher's problem

Q.6 (a) Differentiate among the following:
i) Physical address and logical address
ii) Paging and segmentation
(b) What is Deadlock? What are the four necessary conditions for a deadlock occur?

Q.7 Write short notes on the following (any 3)
i) Worms and viruses
ii) Key features of windows file system
iii) Parallel operating system
iv) RPC

Q.8 (a) Briefly explain the following:
i) Mutual exclusion
ii) Critical section problem
(b) What is meant by thrashing? Explain various causes of thrashing.

Enrollment No……

Bachelor of Engineering
Fifth Semester Main Examination, Dec-2020
Data Base Management System [CS-503]
Branch-CS

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

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

Q.1 (a) What is DBMS? Explain basic operation of DBMS? Explain levels of database with the help of suitable example
(b) Briefly Explain the following:
(i) Functions of DBA (ii) Generalization, Aggregation and Specialization

Q.2 (a) Explain functional dependence with example. What is entity and attribute? Explain the entity types.
(b) What are different types of relational query languages? Explain select, Project, Join, and division operation with example

Q.3 (a) What is Key? What is the Primary key and super key, candidate key ?
(b) What are integrity constraints? Define the term primary key constraint and foreign key constraint. How are these constraints expressed in SQL?

Q.4 (a) What is serializability? Explain its types? What are aggregate functions of SQL?
(b) What is Normalization? Explain second normal form with the help of an example.

Q.5 (a) What is E-R model? What is the use of E-R model? Draw any E-R diagram of your choice. Specify different entities, their attributes, cardinalities and degrees of the relationships in the E-R model.
(b)What is serializability? Explain its types? What are aggregate functions of SQL?

Q.6 (a) Explain the advantages and disadvantages of distributed database?
(b) What do you mean by deadlock? How it can be removed?

Q.7 (a) What are the problems caused by data redundancies? Can data redundancy be completely eliminated when a database approach is used.
(b) Explain the following feature of ORACLE:
(i) Sequence (ii) Triggers (iii) SQL loader

Q.8 (a) Discuss the various disadvantages in the file system and explain how it can be overcome by the database system.

(b) Answer the following:
(i)What do you mean by check constraints
(ii)What is dangling tuple problem

Enrollment No……

Bachelor of Engineering
Fifth Semester Main Examination, Dec-2020
Computer Graphics & Multimedia [CS-504]
Branch-CSE

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

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

Q.1 Write short notes on (any two):
(i) Multimedia architecture
(ii) Z-buffer algorithm
(iii) HSV color modal
(iv) Audio components of an audio system

Q.2 Considered coordinates (-3, 3) and (4,-4). Determine the line management using generalized Bresenharn 's integer algorithm

Q.3 Write characteristics of a multimedia presentation

Q.4 What are the properties associated with curve? Explain significance of each of them.

Q.5 What are the advantages and disadvantages of lossless compression?

Q.6 Devise a method to reflect a 3D object about an arbitrary plane.

Q.7 Describe an illustrative example of procedural technique? Why are such techniques useful in computer animation'?

Q.8 Briefly describe the architecture of multimedia. Discuss its various components and elaborate them?

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Bachelor of Engineering
Fifth Semester Main Examination, Dec-2020
Theory of Computation [CS-505]
Branch: CSE

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

Note : 1. Attempt any five questions out of eight.
2. All question carry equal marks.

Q.1 (a) Define language and Grammar give an example.
(b) Proof the equivalence of NFA and DFA? Write an example, which proof the conversion from NFA to DFA?

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) $(1+\epsilon)\ (00^*\ 1)^*\ 0^*$ (ii)(0+10)*1*

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) Traveling salesman problem
(ii) NP Complete NP hard problems
(iii) Hamiltonian path problem
(iv) Regular Sets and Regular Grammars