Enrollment No……

Bachelor of Engineering
Fourth Semester Main Examination, June-2021
Computer System Organization [CS225T]
Branch-CS

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

Note : (i) Attempt any five questions.
(ii) All question carry equal marks.

Q.1 (a) Discuss and differentiate multi computers and multi processors.
(b) What is an instruction code? Explain in detail various addressing modes?

Q.2 (a) Explain with example the implementation of register transfer?
(b) What are functional units? Discuss the basic functional units of a computer?

Q.3 (a) Explain various types of buses?
(b) Draw the Von-Neumann model of a digital computer .Explain its various subsystem.

Q.4 (a) What is associative memory? Explain the concept of address space and Memory space in virtual memory?
(b) Write down the Flynn's classification of computer?

Q.5 (a) Explain the operation of SIMD array processor
(b) Define interrupt? Explain the types of interrupts.

Q.6 (a) Explain the instruction cycle with a neat flow chart.
(b) Explain about DMA in detail. Explain about interrupt priorities.

Q.7 (a) Define vector processing. Explain the characteristics of vector processing.
(b) Define pipe lining? Explain the structure of pipe lining with an example.

Q.8 Write Short Notes on:
(a) Inter Process Arbitration. (b) Inter Process Communication
(c) Synchronization.

Enrollment No……

Bachelor of Engineering
Fourth Semester Main Examination, June-2021
Analog & Digital Communication [CS226T]
Branch-CS

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

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

Q.1 (a) Write the various techniques for amplitude modulation and demodulation of analog signals.
(b) Write short note on SSB and VSB.

Q.2 (a) Write short note on Impulse periodic impulse sine and cosine wave.
(b) Explain Fourier Transform and its properties.

Q.3 (a) Explain modulation techniques and its applications.
(b) Describe Time domain and frequency domain representation of signals.

Q.4 (a) Write Modulation equation and their relative phase.
(b) Explain Balance/Chopper modulator

Q.5 (a) Write short note on NBFM and WBFM
(b) Explain synchronous detection technique and errors in its.

Q.6 (a) Explain Bandwidth comparison of modulation techniques.
(b) Differentiate between Signal Sampling and Analog Pulse Communication.

Q.7 (a) What do you mean by modulation index frequency spectrum ?
(b) What do you mean by PPM and PDM? Explain?

Q.8 (a) Explain sampling theorem for low pass and Band pass signals?
(b) What do mean by Digital signal Quantization and what errors are raised during Quantization?

Enrollment No……

Bachelor of Engineering
Fourth Semester Main Examination, June-2021
Theory of Computation [CS227T]
Branch- CSE

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

Note : (i) Attempt any five questions.
(ii) All question carry equal marks.

1. (a) Proof the equivalence of NFA and DFA? Write an example, which proof the conversion from NFA to DFA?
(b) Equivalence between Moor and Mealy machine-proof with example?

2. (a) Explain deterministic and nondeterministic finite automata with example.
(b) Explain Chomsky classification of Grammars

3. (a) Explain with example Chomsky Normal form and Greibach Normal forms.
(b) What is Pumping lemma and what is the closure property of regular set.

4. (a) What is a context free grammar and explain closure properties of context free grammar?
(b) Explain in detail notes on Universal Turing Machine with example?

5. (a) Demonstrate the working of your Turing Machine with example?
(b) Explain Traveling salesman problem.

6 Define following (any 3)
(i) Pushdown Automata (ii) Deterministic Pushdown Automata, (iii) PDA corresponding to given CFG (iv) CFG corresponding to a given PDA

7. a)What is NP Complete and NP hard problems .
b) Obtain an NFA for the regular expression $(a+b)^*$ aa $(a+b)^*$.

8. Define following:
(i) Tractable and Untraceable problem
(ii) Recursive and Recursively enumerable language
(iii) Hamiltonian path problem

Enrollment No……

Bachelor of Engineering
Fourth Semester Main Examination, June-2021
ANALYSIS & DESIGN OF ALGORITHM [CS228T]
Branch : CSE

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

Note: - Attempt any five questions out of eight.
All Questions carry equal marks.

Q.1 (a) What is an Algorithm? What are Parallel Algorithms?
(b) Define Spanning tree. Discuss design steps in Prim's algorithm to construct minimum spanning tree with an example.

Q.2 (a) Explain divide and conquer algorithms? Explain Kruskal's algorithm.
(b) Explain the various asymptotic notations used in algorithm design?

Q.3 (a) Explain Warshall's & Floyd's Algorithm.
(b) Explain the concept of Dynamic Programming?

Q.4 (a) What is Knapsack problem in greedy strategy?
(b) Define optimal binary search trees with example.

Q.5 (a) Discuss the solution for Travelling salesman problem using branch & bound technique.
b) Define Hamiltonian cycle with example?

Q.6 (a) Explain the 8-Queen's problem & discuss the possible solutions.
(b) Define Branch and Bound method?

Q.7 (a) Explain Graph coloring with example.
(b) Define height balanced tree? Explain all the rotation perform to balance the tree with example?

Q.8 (a) Give a suitable example & explain the Breadth first search & Depth first search.
(b) Explain about Knapsack Problem using back tracking with example?

Enrollment No.....

Bachelor of Engineering
Fourth Semester Main Examination, June-2021
Material Science [ES220T]
Branch: CS/IT

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 do you mean by dipolar relaxation?
(b) Explain magnetic resonance in details.

Q.2 (a) Explain Bragg's Law in details.
(b) Write short note on Linde's rule and Joule's rule.

Q.3 (a) What do you mean by atomic structure? Also explain molecules and general bonding principles.
(b) Explain spin magnetic moment in details.

Q.4 (a) Write a short note on orbital magnetic dipole movement and angular momentum of simple atomic model.
(b) What is Curie-Weiss law? also explain spontaneous magnetization.

Q.5 (a) Explain high conductivity and high resistivity material.
(b) Explain atomic interpretation of Ohm's law of conductor

Q.6 (a) Explain n-type and p-type semiconductor in details.
(b) What do you mean by semiconductors? Explain chemical bonds in Ge and Si.

Q.7 (a) What is photoconductivity and photo electronic cells?
(b) Explain conductors and also Write properties of superconductor.

Q.8 Write short note on :
(i) Bravais lattice (ii) Composite material.

Enrollment No.....

Bachelor of Engineering
Fourth Semester Main Examination, June-2021
System Engineering [ES221T]
Branch-CS/EX/EC/IT/ME

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

Note: (i) Attempt any five questions out of eight.
(ii) All question carry equal marks.

Q.1 (a) Discuss origin of system Engineering.
(b) Explain system engineering fields.

Q.2 (a) Discuss structure of complex systems.
(b) Explain system environment, interfaces.

Q.3 (a) Discuss complexity of modem systems.
(b) Explain concept development and exploration.

Q.4 (a) Discuss system operational requirements.
(b) Explain Implementation of concept exploration.

Q.5 (a) Discuss reducing program risk.
(b) Explain functional analysis and design.

Q.6 (a) Explain prototype development as a risk mitigation technique.
(b) Explain test planning and preparation.

Q.7 (a) Explain operational test and evaluation.
(b) Write short notes on any two:
(i) Production operations
(ii) System engineering approaches
(iii) Integrating testing

Q.8 (a) Explain the concept of modeling systems.
(b) Explain the system life cycle phase and the product development life cycle phases.