Enrollment No……

Bachelor of Engineering
Fourth Semester Examination, June-2021
Data Base Management System [IT-225]
Branch: 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 deadlock?
(b) What is serializability. Explain its types

Q.2 (a) What do you means by functions of DBA?
(b) Explain the aggregation.

Q.3 (a) What is DBMS? Explain basic operations of DBMS.
(b) Explain levels of Database with the help of suitable example.

Q.4 (a) Explain check constraints.
(b) Explain distributed database.

Q.5 (a) What is E-R model? Draw any E-R diagram of your choice.
(b) What is an Entity? Explain the different types of entities.

Q.6 (a) Explain the integrity constraints.
(b) What is a key? Explain primary key and candidate key.

Q.7 (a) Discuss the various disadvantages in the file system and explain how it can be overcome by the database system.
(b) Explain the functional dependence with example.

Q.8 (a) Write a short note (Any two) -
i) Relational calculus
ii) Normalization
iii) SQL

Enrollment No……

Bachelor of Engineering

Fourth Semester Examination, June-2021

Operating System [IT-226]

Branch - IT

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

Note : 1. Attempt any five questions out of eight.
2. Each question carries equal marks.

Q.1 (a) Explain Process Control Block. Draw the block diagram of process transition states.
(b) What is system call? Explain briefly about various types of system calls provided by an operating system.

Q.2 What is average waiting time and average turnaround time of all process for FcFs and SRTF?

Process	Arrival time	Burst time
P1	1	7
P2	3	6
P3	4	9
P4	5	10

Q.3 (a) If the average page faults service time of 25ms and on memory access time of 10ns. Calculate the effective access time?
(b) Explain the concept of virtual memory.

Q.4 Consider the main memory with capacity of 4 page frames. Assume that the page of a process is referenced in the order given below:

1, 3, 4, 5, 3, 2, 5, 4, 3, 3, 2, 1

Which one is better FIFO and LRU and why?

Q.5 (a) If the average page faults service time of 25ms and on memory access time of 10ns. Calculate the effective access time?
(b) Explain the concept of virtual memory

Q6. (a) Explain the concept of dirty bit for improving the performance during page fault?
(b) Explain file access methods.

Q.7 Suppose that a disk drive has 200 cylinders, numbered 0 to 199 of the work queue is 23, 89, 132, 142, 187. Determine the total distance for the following disk scheduling Algorithm.

(i) SCAN
(ii) Look
(iii) C-look

Q.8 Write a short notes (any three):

(i) I-node
(ii) Thrashing
(iii) Best and worst fit
(iv) Kernel

Enrollment No……

Bachelor of Engineering
Fourth Semester Examination, June-2021
Communication Systems [IT-227]
Branch - IT

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

Note : 1. Attempt any five questions out of eight.
2. Each question carries equal marks.

Q.1 (a) Comment on frequency deviation, deviation ratio and Carson's rule.
(b) With the help of suitable diagrams explain direct and indirect methods of FM generation.

Q.2 Draw a block diagram of communication system and explain it briefly.

Q.3 (a) What is Double Side Band Suppressed Carrier (DSB-SC) modulation? Explain the basic principal of DSB-SC modulation with suitable sketch.
(b) When the modulation percentage is 75%, an AM transmitter radiates 10kW power? How much of this is carrier Power?

Q.4 Give the difference between Frequency Modulation (FM) and Phase Modulation (PM).

Q.5 Write and explain time and frequency shifting properties of Fourier transform.

Q6. (a) With reference to radio receivers. Define the following terms:
(i) Sensitivity
(ii) Selectivity
(iii) Fidelity
(b) With a block diagram, explain the working of high power AM Transmitter.

Q.7 What is a Coaxial cable? Which is the most common cable used for video signals?

Q.8 Draw and explain any four of the following signals:
(i) Sinusoidal (ii) Unit step
(iii) Ramp (iv) Signum
(v) Rectangular pulse (vi) Impulse (delta)

Enrollment No……

Bachelor of Engineering
Fourth Semester Examination, June-2021
Computer Architecture [IT-228]
Branch - IT

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

Note : 1. Attempt any five questions out of eight.
2. Each question carries equal marks.

Q.1 (a) Draw Von Neumann model of computer and explain all the subsystems of computer.
(b) What do you mean by SHIFT micro operation? Explain all three types of SHIFT micro-operation.

Q.2 (a) Draw one stage of arithmetic unit with its function table.
(b) Explain all the CPU registers with their size and functions. Explain how instructions are executed in a computer?

Q.3 (a) Explain signed-magnitude, signed 1's and 2's complement representations of negative numbers.
(b) Explain the process of multiplication using BOOTH method. Solve –5×2 using Booth method.

Q.4 (a) Differentiate hardwired and microprogrammed control units. Define microprogram sequencer.
(b) What do you mean by zero, one two and three address instructions? Give suitable examples.

Q.5 What is Cache? Explain the principle of "Locality of references". Enlist and explain page replacement algorithms.

Q6. (a) What is Mapping? Name all the types of cache mapping and explain any one in detail.
(b) What are the advantages of parallel processing? Define the terms: Pipeline, speed up ratio and memory interleaving

Q.7 (a) Write a short note on virtual memory.
(b) What is multiprocessor? Explain the characteristics of multiprocessors.

Q.8 Write short notes on any two of the followings:
(i) Addressing modes (ii) Hardwired control unit
(iii) DMA data transfer (iv) Daisy chaining

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.

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.