Duration: 3 Hours   **[Total marks: 80]**

N.B.: (1) Question no. 1 is compulsory

      (2) Attempt any three questions from remaining

      (3) Assume suitable data wherever necessary

Q1 (a)	Define system and with suitable diagram explain the System Development Life Cycle in detail.	10
(b)	List and explain the roles of system analyst in brief. "Systems Analyst as Agent of Change", Justify with suitable example.	10
Q2 (a)	Define Process and Re-engineering. Draw and explain Business Process Reengineering (BPR) life cycle.	10
(b)	What is cohesion and coupling in the context of software design? Explain different types of coupling.	10
Q3 (a)	Explain the need of deployment diagram. Draw a deployment diagram to model fully distributed systems.	10
(b)	Draw the use case diagram for online railway reservation system with extend, include relations between use cases.	10
Q4 (a)	Draw and explain Zachman framework.	10
(b)	Give Types of Costs and Benefits. Explain **ALL** the techniques used for Cost-Benefit Analysis in brief with formulae.	10
Q5 (a)	What is the importance of Data flow diagram (DFD) in structured analysis and design? Draw DFD for suitable example.	10
(b)	Explain the rules for developing State Machine Diagram. Draw the State Machine Diagram for **Water Phases** e.g. Water can exist in several states - liquid, vapor, solid, and plasma.	10
Q6	Write short note (Any Two)	20

         a) SRS document

         b) Design of user interface

         c) Requirement gathering techniques

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(3 Hours) [Total Marks: 80]

NB: 1. Question No.1 Compulsory.

2. Solve any THREE from Q.2 to Q.6

3. Assume suitable data whenever necessary with justification.

Q1		Solve any **FOUR**	
	(A)	Explain Segmentation in 8086 Processor.	05
	(B)	Give different bits of Control Register-0 (CR0) of 80386.	05
	(C)	Explain Branch Prediction Logic.	05
	(D)	Explain Flag Register bits of 8086.	05
	(E)	Explain Virtual Mode (VM86) 80386 Processor.	05
Q2.	(A)	Draw & Explain architecture of 8086 Processor with example.	10
	(B)	Explain Block diagram of PPI 8255.	10
Q3.	(A)	Explain Maximum mode of 8086 Processor.	10
	(B)	Explain modes of PIT8254.	10
Q4.	(A)	Explain Interrupt Structure of 8086 Processor.	10
	(B)	Explain Branch Prediction Logic of Pentium Processor.	10
Q5.	(A)	Explain TSS in details.	10
	(B)	Explain data Cache architecture for Pentium Processor.	10
Q6.	(A)	Explain SPARC Processor with block diagram.	10
	(B)	Explain block diagram of PIC8259.	10

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(3 Hours) [Total Marks : 80]

N.B.   1. Q.no.1 is **compulsory**
2. Attempt any **three** out of the remaining five questions
3. Figures to **right** indicate **full** marks
4. Assume suitable data if necessary but justify the same

Q.1.   Attempt the following
(a) Explain virtual memory in brief   5
(b) Differentiate between Process and Thread   5
(c) List the data structures used in Banker's algorithm   5
(d) What is paging?   5

Q.2.   (a) Explain the dining philosopher's algorithm and discuss the solutions   10
(b) What is the need for page replacement policy? Explain FIFO, LRU and OPTIMAL
for the following string assuming the page frame size is 4.

6 1 2 3 1 4 1 5 3 4 1 4 2 3 1

Calculate page hit and page miss for each policy.   10

Q.3.   (a) Explain system components in Windows Operating System   10
(b) What is an operating system? Explain its different functions and objectives.   10

Q. 4.   (a) Explain the file management in LINUX operating system   10
(b) What is mutual exclusion? Discuss the software approaches for mutual exclusion   10

Q.5.   (a) Explain I/O buffering techniques in detail   10
(b) What is deadlock? Explain the deadlock avoidance in detail   10

Q.6.   Write notes on the following: 20

(a) Thrashing
(b) Semaphores
(c) Process Control Block
(d) Segmentation

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Duration: 3 Hrs.   Total Marks:80

N.B. : 1. Question No. 1 is Compulsory.

2. Attempt **any three** questions from remaining **five** questions.

3. Figure to the right indicates full marks.

Q.1 a) What is framing? Explain in short different framing methods.   5

b) Discuss design issues for various layers.   5

c) Compare TCP/IP and OSI reference models.   5

d) Explain various error-reporting messages in Interned Control Message Protocol.   5

Q.2 a) What is congestion control? Explain various congestion prevention policies.   10

b) Explain working of simple mail transfer protocol (SMTP).   10

Q.3 a) Explain in detail IPv4 header format with diagram.   10

b) Explain CSMA protocols. How are collisions handled in CSMA/CD?   10

Q.4 a) Explain working of link state routing algorithm. Explain content and requirements   10

of link state packets.

b) Explain congestion control approaches in TCP.   10

Q.5 a) Explain File Transfer Protocol (FTP).   10

b) Explain sliding window protocol using Go Back-N technique.   10

Q. 6 Write short notes on following.   20

a) Simple Network Management Protocol (SNMP)

b) Address Resolution Protocol (ARP)

c) Bluetooth

d) Berkeley Sockets

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