Q.P. Code: 24567

(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 Answer the following: [**20**]

a) What is Unified Modeling Language (UML)? Explain need for UML.

b) Explain software development life cycle used for system analysis.

Q2 a) Explain purpose of use case diagram with example. [**10**]

b) What are the different types of cohesion and coupling? Explain in short. [**10**]

Q3 a) What is the purpose of system proposal? Explain with example. [**10**]

b) Explain different requirement gathering techniques. [**10**]

Q4 a) Explain various steps involved in SRS document with suitable example. [**10**]

b) Explain importance of class diagram in system design with example. [**10**]

Q5 a) Explain the need of sequence diagram with example. [**10**]

b) What are the different types of cost -benefit analysis? Explain any one in short. [**10**]

Q6 Write a short notes on (any two) [**20**]

a) Application Architecture

b) Zachman framework

c) Boundary class, entity class and control class

d) Data flow diagram (DFD)

Time (3 hrs) **Total Marks: 80**

N.B.(1) Question no 1 is compulsory
(2) Attempt any **three** questions out of remaining five questions

1. Solve any **four**
   (i) Why page size is always power of 2? **05**
   (ii) Define C-SCAN disk scheduling. **05**
   (iii) Explain difference between signal processor and multi-processor system. **05**
   (iv) Explain different states of process. **05**
   (v) State characteristics of good process scheduler **05**
   (vi) Distinguish between CPU bound process and IO bound process? **05**

2. (a) What is process control block? Explain its significance. **10**
   (b) Explain solution to avoid deadlock in dining philosopher problem **10**

3. (a) What is deadlock ? Explain necessary and sufficient conditions for deadlock to occur. **10**
   What is the difference between Deadlock avoidance and prevention?

   (b) Discuss situations in which the most frequently used (MFU) page replacement algorithm generates fewer Page faults than the least recently used (LRU) page replacement algorithm. Also discuss under what circumstances the opposite holds. **10**

4. (a) What is Operating System ? Explain different functions and objectives of operating system. **10**
   (b) What is mutual exclusion? Explain wait() and signal(). **10**
   Explain how mutual exclusion is achieved semaphore

5. (a) Explain resource allocation graph with example. **10**
   (b) Explain various I/O buffering techniques. **10**

6. (a) What are system calls in an operating system? Explain any five system calls. **10**
   (b) Explain techniques of disk scheduling. **10**

(3Hrs)

Max 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 Answer any FOUR questions

	(A)	Explain Memory Bank in 8086 Processor.	05
	(B)	Give different bits of Control Register-0 (CR0) of 80386.	05
	(C)	Draw and Explain Floating Point Pipeline for Pentium Processor.	05
	(D)	Explain assembler directives.	05
	(E)	Explain DAA and XLAT instructions of 8086 Processor.	05
Q2.	(A)	Explain architecture of 8086 Processor with example.	10
	(B)	Explain PPI 8255 with block diagram.	10
Q3.	(A)	Design 8086 based system with following specifications. (1) 8086 working at 8MHz at minimum mode (2) 64KB RAM using 32KB X 8 device (3) 64KB EPROM using IC 27128.	10
	(B)	Explain Operating Modes of PIC 8259.	10
Q4.	(A)	Explain 80386 Processor descriptor and it's content.	10
	(B)	Explain Superscalar and Branch Prediction for Pentium Processor.	10
Q5.	(A)	Write details note on Multitasking and Protection.	10
	(B)	Explain Instructions pairing rules for Pentium Processor.	10
Q6.	(A)	Explain SPARC Processor with block diagram.	10
	(B)	Explain with block diagram PIT 8254.	10

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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)	Explain LAN, MAN and WAN.	5
	B)	Compare various network topologies.	5
	C)	Explain the purpose of Flow control and Error Control from DLL perspective.	5
	D)	Explain the purpose of fragmentation of Packet and how it is done.	5
Q.2.	A)	Explain OSI / ISO model with neat diagram and the functions of each layer.	10
	B)	Explain the functionality of Repeater , HUB , L2-Switch and Router.	10
Q.3.	A)	Explain the need for subnetting? A company is granted the site address 201.70.64.0 (class C). The company needs six subnets. Design the subnets.	10
	B)	What is difference between interior gateway and exterior gateway routing ? Explain the count to infinity problem of DVR and various solutions for the same.	10
Q.4.	A)	What are Berkley socket primitives? Explain in brief.	10
	B)	What is error detection and correction? Explain CRC with example.	10
Q.5.	A)	What is congestion control ? Explain open loop and closed loop congestion control policies.	10
	B)	Explain in brief – a) Telnet b) TCP timers	10
Q.6.		Write Short Note on (Any four) (a) TCP segment header (b) IPV4 vs IPV6 (c) Go back n ARQ (d) Design issues for various layers (e) DNS	20
