Con. 4415-12.

GN–8210

(3 Hours)

[Total Marks : 100

N.B. :(1) Question No. 1 is **compulsory**.
  (2) Attempt any **four** questions from **remaining**.
  (3) **Each** question carries **equal** maximum marks.

1. (a) Discuss the different types of stations defined by HDLC. How a communication   5
   channel in HDLC that is used by a station can be configured.
 (b) Describe the characteristics of 3G system.   5
 (c) Compare different multiplexing techniques.   5
 (d) Compare SDMA, FDMA, TDMA and CDMA.   5

2. (a) Explain classification of signalling techniques.   10
 (b) Explain 3G UMTS network.   10

3. (a) Explain traffic management in ATM. Also explain ATM traffic policing.   10
 (b) Classify different switching architectures. Discuss one of them.   10

4. (a) Describe in brief BPSK modulator and demodulator. Also calculate probability   10
   of error.
 (b) Explain Hanoff Algorithm.   10

5. (a) What are different types of traffic ? Explain leaky bucket algorithm in brief.   10
 (b) Explain different traffic descriptors used in ATM.   10

6. (a) Explain ISDN protocol stack in detail with neat sketches.   10
 (b) What do you mean by ancryption ? Explain symmetric key and asymmetric key   10
   methods in detail.

7. Write short notes on any **two** :—   20
  (a) TMN
  (b) LLC Sublayer
  (c) Spreading codes and Scrambling process.

PH March Exam (4) 560

Con. 3917-12.

GN-7043

(3 Hours) [Total Marks : 100

N.B. (1) Question No. **1** is **compulsory.**

(2) Attempt any **four** questions from remaining **six**.

1. (a) What is meant by homogenous matrix representation ? 5
   (b) Different applications of computer graphics. 5
   (c) Describe in brief physical modelling. 5
   (d) List various workstation based Architecture. 5

2. (a) What is meant by virtual reality ? Explain type of virtual reality system. 10
   (b) Explain Cohen-Sutherland line clipping Algorithm with example. 10

3. (a) Explain boundary fill and flood fill algorithm using and connect Approach compare them for their performance. 10
   (b) Explain graphical rendering pipeline. 10

4. (a) Write DDA line Drawing Algorithm. Calculate the pixel co-ordinate of line AB using DDA Algo where A(0, 0) and B(4, 6). 10
   (b) Explain in detail Sun Blade 1000 Architecture. 10

5. (a) Explain scaling, rotation and translation with example. 10
   (b) Describe input and output device used for virtual reality. 10

6. (a) Explain virtual programing with reference to Java 3D. Also describe motion control methods. 10
   (b) Explain line clipping, text clipping and point clipping. 10

7. Write short notes on :— 20
   (a) Fractal in computer graphics.
   (b) Application of virtual reality in military and medicine
   (c) Computer Animation.
   (d) RGB and CMY colour model.

(3 Hours)   [Total Marks : 100

N.B. 1) Question No. 1 is compulsory.
       2) Attempt any four questions out of remaining six questions.

1.a) What are the main advantages   for an operating system designer of using   (10)
     virtual machine architecture ? what is the main advantage for a user.

b) Consider the following snapshot of the system.   (10)

Process	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2	1	5	2	0
P1	1	0	0	0	1	7	5	0				
P2	1	3	5	4	2	3	5	6				
P3	0	6	3	2	0	6	5	2				
P4	0	0	1	4	0	6	5	6				

     Answer the following questions using banker's algorithm.
       i)Determine the total amount of resource of each type.
       ii) What is the content of need matrix?
       iii)Determine if   the system is in safe state using safety algorithm.
       iv)if a request from process p1 arrives for (0,4,2,0) can the request be
         granted immediately.

2.a) On a disk with 1000 cylinders, numbers 0 to 999, compute the number of   (10)
     tracks the disk arm must move to satisfy all the requests in the disk queue.
     Assume that the last request serviced was at track 345 and head is moving
     towards track 0. The queue in FIFO order contains requests for the following
     tracks:
     123, 874, 692, 475,105,376. Perform the computation for following disk
     Scheduling algorithms.
     i)FIFO   ii)SSTF   iii)SCAN

b) What is RTOS? Give the classification of RTOS and comparison of any two   (10)
     RTOS.

3.a) Consider the following snapshot of the process to be executed. Draw the   (10)
     Gantt chart and   determine the average waiting time and average turnaround
     time for FCFS, SJF(preemptive), SJF(nonpreemptive) and round robin
     (quantum=2) scheduling algorithm.

Process	Arrival Time	Burst Time
P1	0	4
P2	2	5
P3	4	6
P4	5	2
P5	6	1

b) Describe Inode and FAT structure.   (10)

Q4.a) On a simple paging system with 2^{24} bytes of physical memory 256 pages   (10)
    of logical address space and page size of 2^{10} bytes.
    i) Determine the no of bits in physical address. Specify the page frame?
    ii) How many entries are present in page-table?
    iii) How many bits are in logical address space?
  b) Suggest an implementation of binary semaphores that avoids busy waiting.   (10)

Q5. a) What is a kernel ? Describe briefly the approaches of designing kernel.   (10)
  b) Consider the following page traces in a demand paging system with 3 page   (10)
  frames.
  2,3,1,1,2,3,4,6,2,3,4,3,1,2,3.
  Determine the number of page faults and hit ratio using FIFO and LRU page
  replacement algorithm.

6.a) Describe programmed IO and DMA.   (10)
  b) Consider a disk having 8 surfaces. Each surfaces having an outer diameter of   (10)
  16cm and inner of 6cm and inner track space is 0.2mm.There are 32 sectors in
  each track. If disk address for reading a byte or sector on any surface track of
  disk is 27bits. What is sector size in bytes if disk rotates at 3600rpm. What is
  effective data transfer rates in bytes/sec?

7. Write short notes on the following : —   (20)
  i) Monitor
  ii) Distributed O.S.
  iii) Network O.S.
  iv) Symbian O.S.

Con. 3852-12. **(OLD COURSE)** **GN-7872**

(3 Hours) **[Total Marks : 100**

N.B. : (1) Question No. **1** is **compulsory**.
     (2) Solve any **four** questions from the remaining **six** questions.
     (3) **Figures** to the **right** indicate **full** marks.
     (4) Make **suitable** assumptions where **required**.

1. (a) Explain CDF and PDF.   5
   (b) Explain equalization.   5
   (c) Compare BPSK and DPSK.   5
   (d) Explain Shanon Hartley theorem.   5

2. (a) What is conditional probability ? Derive an expression for conditional probability.   10
   (b) A certain random variable has the CDF given by :—   10

$$F_x(x) = 0 \qquad \text{for } x \le 0$$
$$= Kx^2 \qquad \text{for } 0 < x \le 10$$
$$= 100 \ K \qquad \text{for } x > 10$$

     (i) Calculate the value of K.
     (ii) Find the value of $P(x \le 5)$ and $P(5 < x \le 7)$.
     (iii) Plot the corrosponding PDF.

3. (a) Explain in detail the various noises and sources of signal loss.   10
   (b) Draw the block diagram of a PCM system. What is the drawback of PCM and how is it overcome in Delta modulation ?   10

4. (a) Draw a block diagram of a QPSK transmitter and receiver and explain it's functioning.   10
   (b) Compare the following :—   10
     (i) $|S|$ and $|C|$
     (ii) Systematic and Non-systematic codes.

5. (a) Explain Minimum Shift keying with the help of a neat sketch.   10
   (b) Explain Syndrome decoding for cyclic codes.   10

6. (a) Derive an expression for P(e) of the Integrate and dump receiver.   10
   (b) Construct the (7,4) linear code word for the generator polynomial $G(D) = 1 + D^2 + D^3$ for the message bits 1001 and find the checksum for the same.   10

7. Write short notes on :—   20
   (a) Eye Pattern
   (b) Public Key Cryptosystem
   (c) Duobinary Encoder.

****