

OAD

Sem ~~V~~

IT

13 Dec 12

Shilpa -(b) 46

Con.7647-12.

KR- 5537

(3 Hours)

[Total Marks : 100

- N.B. :** (1) Question No. 1 is **compulsory**.
(2) Attempt any **four** questions out of **remaining** questions.
(3) Draw **neat** diagrams, wherever **required**.
(4) Assume **suitable** data, if **necessary**.

1. (a) Read the following **case study** and give answers of the following questions. **10**
(i) Identify actors, use cases and classes .
(ii) Draw system level use case diagram clearly stating the difference between Include and extends.
Rent a car : In order to rent a car, first of all customer provides the start date and finish date for the rental and his personal details (name, address and credit card number) as well. All rentals are paid either via cash or credit. Company also provides a facility that if the car is stolen proper assistance and help should be provided to customer, in this regard they issue a notice that car is stolen. Each week, the Clerk will provide a list of rentals, which has been initiated the pervious week, as report to Manager who monitor's the **entire** system flow. Clerks can also add cars to the system. When new cars are purchased by the company Store Manager's are allowed to delete cars from system. A car is deleted from system when sold or destroyed in an accident.
- (b) Explain following terms with examples :- **10**
(i) Inheritance
(ii) Aggregation
(iii) Generalization
(iv) Modularity
(v) Multiplicity.
2. (a) What is Requirement ? Explain various methods to collect system Requirements. **10**
(b) What are Design principles ? Explain the design principles in detail. **10**
3. (a) Enlist the design pattern and explain any two design pattern in detail. **10**
(b) Draw Activity diagram for "Online Railway Reservation System". **10**
4. (a) What is Cohesion and Coupling ? Explain different types of cohesion with examples. **10**
(b) Explain various software testing strategies. **10**
5. (a) You are appointed as a consultant of intranet development of your college. **10**
Write a detailed problem statement and draw deployment diagram for the same.
(b) For Library Management system design test cases for "Issue **and** return of Book". **10**

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6. (a) What are the four phases of RUP ? Explain in detail. **10**
(b) For the Rent a Car – **case study** "Problem specification in Q.1 (a) draw class diagram. **10**
7. Write short notes on (any **Two**) :- **20**
- (a) Frame work and components
 - (b) Nested state Diagram
 - (c) Interaction modelling in UML
 - (d) Alpha and Beta testing
 - (e) Swim Lanes.
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TE | IT | V (REV)

OFCP
OFCP

Con. 9208-12.

(3 Hours)

KR-5012

[Total Marks : 100

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

(2) Attempt any four questions out of the remaining six questions.

- 1. (a) What is the critical section problem ? Discuss Dekker's solution and show how it satisfies all three requirements of the critical section problem. **10**
- (b) Compare and contrast short term, long term and medium term scheduling. **10**

- 2. (a) Consider the following set of processes with length of CPU bursts given in milliseconds. **12**

Process	Burst-Time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The arrival order is P1 P2 P3 P4 P5 all at time 0.

- (i) Draw Gantt Charts illustrating execution of these processes using FCFS, SJF (non-preemptive) and RR (quantum=1) algorithms.
- (ii) Calculate the turnaround time and waiting time for each process and state which algorithm results in minimum waiting time.
- (b) What is mutual exclusion ? Discuss different ways in which it can be achieved. **8**
- 3. (a) Assume that the disk head is initially positioned over track 100. For the disk space request of 27, 129, 110, 186, 147, 41, 10, 64 and 120 show how disk scheduling is done for (i) SSTF (ii) C-SCAN (iii) C-LOOK. Calculate the average seek length and show the tracing of the requests. **10**
- (b) Discuss the different file allocation methods. **10**
- 4. (a) What are the different methods of free space management to keep track of free disk space ? **10**
- (b) Discuss the different approaches of I/O buffering provided by the O.S. **10**
- 5. (a) Consider the following sequence of page reference – **10**
1,0,2,2,1,7,6,7,0,1,2,0,3,0,4,5,1,5,2. How many page fault would occur for LRU, FIFO and optimal algorithms assuming a page frame of 4 ?
- (b) Explain the necessary and sufficient conditions for a deadlock. Explain how a resource allocation graph determines a deadlock. **10**
- 6. (a) What are the characteristics of real-time systems? **10**
- (b) Compare and contrast deadline scheduling and rate monotonic scheduling algorithms. **10**

- 7. Write short notes on (any two) :- **20**
 - (a) System Calls
 - (b) Semaphores
 - (c) User Threads and Kernel Threads
 - (d) Applications of RTOS.

TE/IT/V (REV.) 22/11/2
CGVRS

22-12-2022

Con. 7588-12.

KR-5147

(3 Hours)

[Total Marks : 100

- N.B.** (1) Question No. 1 is compulsory.
(2) Attempt any **four** out of remaining **six** questions.
(3) Assume suitable **data** if **necessary** and state the assumptions **clearly**.

1. Solve any **four** :—
 - (a) Draw and explain basic block diagram of Virtual Reality System. 5
 - (b) Explain the significance of Homogeneous Co-ordinate System. 5
 - (c) Rotate a triangle ABC by an angle 30° where the triangle has co-ordinates A(0, 0), B(10, 2) and C(7, 4) 5
 - (d) Compare DDA line algorithm with Bresenham's line algorithm. 5
 - (e) List at least three input and three output devices of VR system and explain any one device in detail. 5
2. (a) Prove that a shear transform can be expressed in terms of rotation and scaling operations. 7
(b) Specify highlights and drawbacks of Bezier curves. Construct the Bezier curve of order three with control points P1 (0, 0), P2(1, 3), P3(4, 2) and P4(2, 1). Generate at least five points on the curve. 13
3. (a) Describe any two VR architectures with neat diagrams. 10
(b) What are Fractals ? Derive an equation $D = \log N / \log S$. Outline the procedure of generating Koch curve or Hilbert curve. 10
4. (a) Develop a single transformation matrix which does the following on given object :— 6
 - (i) Reduces the size by 1/2
 - (ii) Rotates about Y axis by (-30°)
 - (iii) Performs a single point perspective transformation projection to $z = 0$ and $z = 10$.
- (b) Derive a 3D inverse transformation for translation and scaling. 4
(c) Explain with example Sutherland-Hodgeman Polygon clipping algorithm. List the short comings of this method, if any. 10
5. (a) What are the different types of projection ? Derive the matrix representation for perspective transformation in XY plane and on negative Z-axis. 10
(b) Explain flood fill algorithm using four and eight connected method with suitable example and diagrams. Compare the same with boundary fill algorithm. 10

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Con. 7588-KR-5147-12.

2

6. (a) Compare the capabilities and limitations of geometric and kinematic modeling techniques. **10**
- (b) Compare —
- (i) Mesh and Feature based warping **5**
 - (ii) 2D and 3D Morphing. **5**
7. (a) Using Liang Barsky Algorithm, find the clipping co-ordinates of line segment with end co-ordinates A(-10, 50) and B(30, 80) against the window ($X_{\min} = -30, Y_{\min} = 10$) ($X_{\max} = 20, Y_{\max} = 60$). **10**
- (b) Write a detailed note on VR applications. **10**
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3/12/12

T.E. 17 sem. V (Rev) NID - 12

SMB - & CTNC

2-p1-0-upq SH KSL12 C

Con. 9857-12.

KR-5279

(3 Hours)

[Total Marks : 100

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

1. (a) Describe the characteristics of 3G system. 5
(b) List the protocols / technologies along with the topology and supported area networks. 5
(c) List the functions performed by LLC sublayer. Draw its PDU format. 5
(d) Compare different multiplexing techniques. 5
2. (a) Classify different switching architectures. Discuss one of them. 10
(b) Explain ISDN protocol stack in detail with neat sketch. 10
3. (a) Explain ASK, FSK and PSK in detail. 10
(b) Describe FDMA/TDMA in GSM networks. 10
4. (a) What is traffic management ? Explain the different elements of Traffic Management. 10
(b) How Key Management for symmetric encryption techniques is done using Kerberos ? 10
5. (a) Explain Telecommunication Management Network (TMN) with appropriate diagram. 10
(b) Discuss the benefits of spreading codes. What are the issues that still remain to be addressed by spreading codes ? Describe how the process of scrambling is used to solve these problems. 10
6. (a) With the help of neat diagram. Explain GSM architecture. 10
(b) Explain classification of signalling techniques. 10
7. Write short notes on any **two** :- 20
(a) Handoff algorithms
(b) Firewalls
(c) Adhoc Wireless networks.

Con. 7644-12.

(3 Hours)

KR-5408

[Total Marks : 100

- N. B. :** (1) Question No. **1** is **compulsory**.
 (2) Answer any **four** questions out of remaining **six** questions.
 (3) **Figures** to the **right** indicates **full** marks.
 (4) Assume **suitable** data wherever **necessary**.

- Q.1 a) State and explain following concepts in product design: 06
 1) Reverse Engineering 2) Standardization 3) Robust Design
 b) Differentiate between products & services. 06
 c) Explain brazing process with neat sketch. Write benefits & limitations of brazing with respect to other metal joining processes. Also write its applications. 08
 Q.2 a) Draw block diagram of Lathe machine & name at least 8 important parts. 08
 b) Differentiate along with neat sketches between turning operation & facing operations. 04
 c) Explain rolling process with neat sketch. Write benefits & limitations of rolling with respect to other metal working processes. Also write its applications. 08
 Q.3 a) Differentiate along with neat sketches of relative motion between work piece & tool for milling machine & shaper machine. 06
 b) Discuss the important properties because of which plastics find wide applications. Also state its limitations. 06
 c) Define operation planning & explain the steps involved in preparing an operation sheet. 08
 Q.4 a) Define quality & explain its dimensions. 06
 b) The number of rust spots found in each sample of sheet metal of 01 Sq. ft. area is noted down as follows. Draw the appropriate control chart and state if the process is in control or not. 06

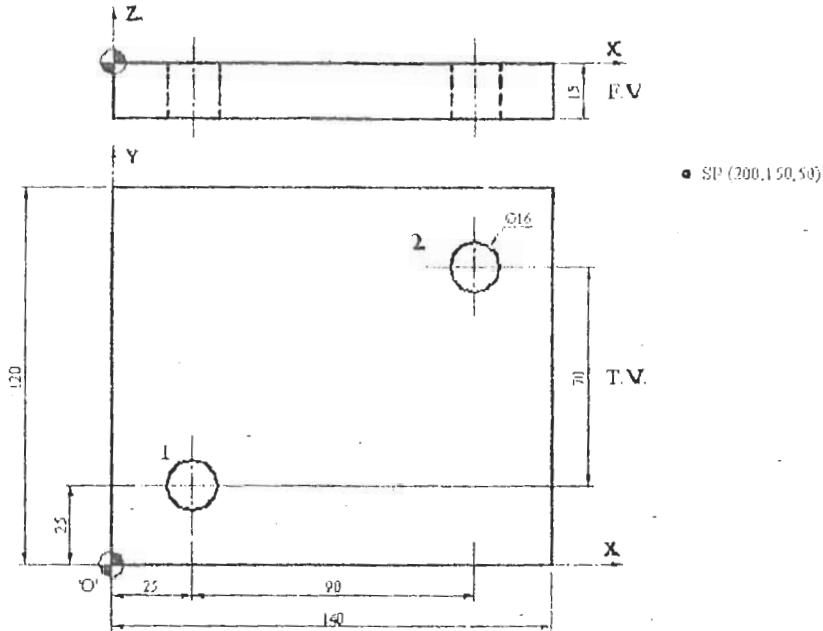
Sample Number	1	2	3	4	5	6	7	8	9	10
Number of defects found	7	9	6	9	5	8	7	10	8	6

- c) Write note on robot co-ordinate systems. 08
 Q.5 a) Differentiate with neat representative sketches, the following basic types of motion controls in CNC machines. 06
 1) Point to **point** 2) Straight cut 3) Contouring cut.
 b) List advantages & limitations of Flexible Manufacturing System. 06

[TURN OVER

e) Write a CNC program for drilling operation for the figure given below.

08



Q.6 a) Explain the principles of Hand tool design.

08

i) The table below shows two layout options of a facility. The distance between any two adjacent departments is 15m. No diagonal movement of materials is possible. For eg., if a load has to be moved from department 7 to department 5 in layout A, it can either be through department 8,9, and 6 or through department 3,1, and 2 by traveling a distance of 60m. The table below also shows the department processing sequence of various products and their quantity produced per month.

08

Which layout is better in terms of lower total load-distance value?

Layout A

1	2	3
4	5	6
7	8	9

Layout B

5	3	4
9	6	1
2	7	8

Product	Department Processing Sequence	Quantity per month
V	3-7-2-9	3,000
W	2-6-3-7-8-9	1,000
X	1-2-7-8	2,000
Y	5-2-1-7-9	4,000
Z	3-4-7-8-9	1,000

c) Write note on types of capacities.

04

Q.7 Write notes on any four.

20

- 1) Master production schedule
 - 2) Role of demand management in assemble to order environment.
 - 3) KANBAN
 - 4) Wastes identified in JIT
 - 5) ERP
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