QP Code : MV-18419

(3 Hours) [Total Marks : 100]

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

Q1. (a) Define and explain the following terms: i) Process ii) Process state iii) Multiprogramming iv) Time-sharing. 05
(b) Draw and Explain process state diagram. Can a process make a transition from a ready state to the blocked state? Why or why not? 05
(c) What is a system call? Explain any four system calls. 05
(d) Explain effect of page size on performance. 05

Q2. (a) Define the notion of a deadlock. Explain necessary and sufficient conditions for a deadlock to occur. What is the difference between a deadlocked state and an unsafe state? 10
Q2.(b) Describe the difference between pre-emptive and non-pre-emptive scheduling algorithms. Which one is more suitable for a time-sharing system? Justify. 10

Q3 (a) What are the different file allocation methods? Which file allocation method would you use for a system whose main task is database management? Why? 10
Q3(b) Briefly explain the different modes of inter-process communication. 10

Q4. (a) Briefly explain how message passing can be used to achieve mutual exclusion. Compare this technique with semaphores and monitors. 10
(b) What is the critical section problem? Discuss a solution to the problem 10

Q5 (a) There are five processes A to E which are waiting to be scheduled. Their arrival times are 0,1,3,9 and 12 sec respectively and their processing times are 3,5,2,5,and 5 seconds respectively. What is the average turn-around time using FCFS, SJF and Round-Robin(with a quantum of 1 sec) scheduling? 10
Q5 (b) What are the requirements of memory management? Explain segmentation with the help of an example. 10

Q6 a. What are processes and threads? What are the advantages and disadvantages of implementing threads in kernel space and user space? 10

Q6 b. Compare and contrast any three disk arm scheduling algorithms. 10

Q7. Short notes on: 20
  i) Unix File management
  ii) I/O buffering
  iii) Real Time Operating System
  iv) RAID.

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QP Code : **MV-18464**

(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) Differentiate between Raster Scan Display and Random Scan Display. 5
   (b) Draw and explain basic block diagram of Virtual Reality System. 5
   (c) Calculate the pixel co-ordinates of line AB using DDA algorithm where A is (0,0) and B is (4,6). 5
   (d) What are fractals ? Derive an equation $D = \log N/\log S$. 5
   (e) Explain the significance of homogeneous co-ordinate system. 5

2. (a) Explain five 2D transformations with suitable example of each. 10
   (b) Explain Bezier Curve in detail. 10

3. (a) Describe any two VR arhitectures with neat diagrams. 10
   (b) Derive 3D transformation for translation and scaling. 4
   (c) What is computer Animation ? Explain its significance in real life. 6

4. (a) What are different types of projection ? Derive the matrix representation for perspective transformation in XY plane and on negative Z-axis. 10
   (b) Explain Cohen-Sutherland line clipping algorithm with suitable example. List the shortcomings/advantages of this method, if any. 10

5. (a) Explain the terms Antialising and Morphing in detail. 10
   (b) Explain different Input and Output devices used in VR systems. Describe 3D tracker in detail. 10

6. (a) Describe Physical and Geometric modeling. 10
   (b) List various polygon filling algorithms and explain scanline fill in detail. 10

7. (a) Write a detailed note on VR applications. 10
   (b) Describe Text Clipping and Polygon Clipping with suitable examples. 10

Con. 11238-14.

QP Code : **MV-18503**

(3 Hours)   [Total Marks : 100

N.B. (1) Questions No. **1** is **compulsory.**
    (2) Solve any **four** out of remaining questions.
    (3) Assume **suitable** data if **necessary.**

1. Attempt the following (any **four**) : –   20
    (a) What are differnce between ASK, PSK, FSK ?
    (b) How frames are form at data link layer ?
    (c) Explain GSM channels in detail ?
    (d) What is importance of logical layers in TMN ?
    (e) Explain different network topology ?

2. (a) What are different error correction and detection techniques used at data link layer?   10
    (b) Explain modulator and demodulator used in Binary frequency shift keying (BFSK).   10
        What is probability of error ?

3. (a) Explain Telecommunication managemen network (TMN) in detail and also explain   10
        use of reference points in TMN.
    (b) Explain in detail circuit switching, virtual circuit switching, packet switching ?   10

4. (a) Explain ISDN protocol stack ? How call is established and released in ISDN ?   10
    (b) Explain input buffering, out buffering and shared buffering. Also state their merits   10
        and demerits.

5. (a) Explain any three methods used for error correction and error detection at data   10
        link layer ?
    (b) Whar is Bridging ? Explain Bridges in LANS.   10

6. (a) What are different types of Bluetooth technology ? Explain bluetooth protocol   10
        stack in detail ?
    (b) What are the different multiple access system used in cellular system ?   10

7. Write short notes (any **four**) : –   20
    (a) Shared Memory and Shared Medium Switching
    (b) 3G UMTS Network
   (c) Traffic Shaping and Traffic Policing
    (d) GSM architecture
    (e) Network Topology.

Con. 11747-14.

MPPS   QP. Code : MV-18547

(3 Hours)   [Total Marks : 100

N. B. : (1) Question **No. 1** is **compulsory**.
       (2) Solve **any 4** questions from remaining **6** questions.
       (3) Figures to the **right** indicate **full marks**.
       (4) Assume suitable data wherever necessary.

1. (a) Write note on role of computers in manufacturing.   5
   (b) Draw neat block diagram of Lathe machine and lable at least seven important   7
       parts.
   (c) What are the advantages of Statistical Quality Control.   4
   (d) What are the advantages of CNC machine tools over conventional machine   4
       tools.

2. (a) Differentiate between drilling and reaming operations performed on drilling   5
       machine.
   (b) Differentiate between hot working and cold working of metals.   5
   (c) Write note on TIG welding.   5
   (d) Draw neat labelled block diagram of vertical column and knee type milling   5
       machine.

3. (a) Draw neat diagram, and explain extrusion process for polymers.   7
   (b) Why operation planning is required in manufacturing? Explain.   6
   (c) Write note on Statistical Quality Control tools.   7

4. (a) Write note on types of controllers used in CNC systems.   4
   (b) Prepare a part program for drilling 3 holes as shown in part drawing.   8

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Con. 12610-14.
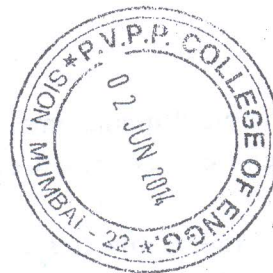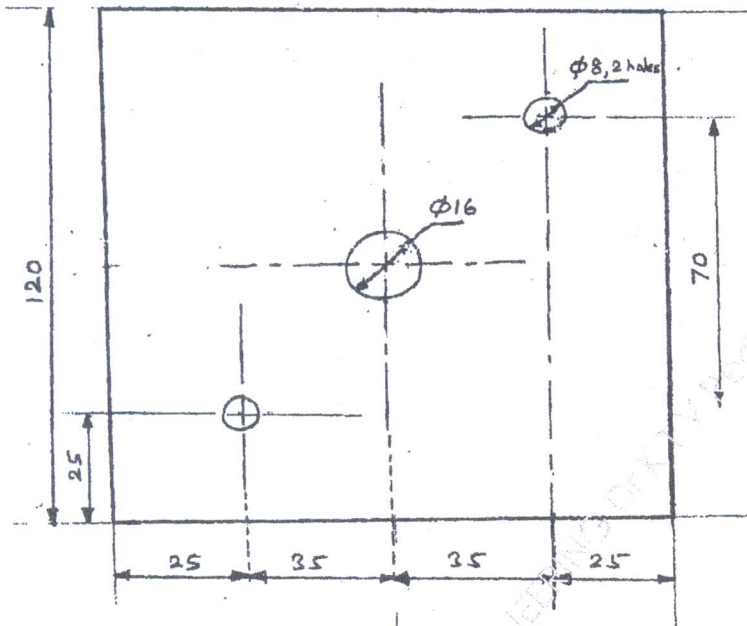
Raw Material: MS plate, 15 mm thick.

(c) Write note on flexible manufacturing system.   8

5. (a) Write general guidelines for ergonomic design of workstation.   6
   (b) Write note on robot co-ordinate systems.   8
   (c) Differentiate between product layout and process layout.   6

6. (a) Explain the following concept in product design: 6
        (i) Reverse engineering
        (ii) Concurrent engineering
        (iii) Standardisation.
   (b) Write note on inputs and outputs of MRP.   7
   (c) Write note on Just-in-time.   7

7. Solve any four: 20
    (a) What is the role of demand management in made-to-order environment?
    (b) List operations that can be performed on Lathe machine by holding tool on tool post.
    (c) Differentiate between thermoplastics and thermosetting plastics.
    (d) Write note on control charts for variables.
    (e) Write note on group technology.

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