[3363] – 451

OPERATING SYSTEMS

TE - IT. 2008 (May) (2003 Course)

Time : 3 Hours Max. Marks : 100

Instructions: *1) Answers to the **two** Sections should be written in **separate** books.*
*2) **Neat** diagrams must be drawn **wherever** necessary.*
*3) Black figures to the **right** indicate **full** marks.*
*4) Assume suitable data, if **necessary**.*
*5) Answer **all** questions from **all** Section.*

SECTION – 1

1. a) Write short notes on :
Real time Operating Systems
Distributed Operating Systems. 8

b) Describe the function of Operating Systems as a control program. 8

OR

1. a) Explain the concept of virtual computers. 8

b) Describe classification of operating systems with examples. 8

2. a) What is critical section problem ? 4

b) Draw process-state transition diagram and explain. 6

c) Apply the deadlock detection algorithm to the following data and show the results AVAILABLE = [2, 1, 0, 0]

REQUEST	ALLOCATION
2 0 0 1	0 0 1 0
1 0 1 0	2 0 0 1
2 1 0 0	0 1 2 0

If a request [1, 1, 0, 0] comes from a process, will it be granted ? Will the system still remain in safe state ? 8

OR

P.T.O.

2. a) Implement producer-consumer problem using monitors and discuss how critical section requirements are fulfilled. 8

b) What is process control block ? Draw the schematic showing all fields of a PCB. 4

c) Compare deadlock detection, prevention and avoidance methods of handling deadlocks. 6

3. a) Consider following set of processes.

PROCESS	Arrival Time	Processing Time
P0	0	3
P1	1	5
P2	3	2
P3	9	5
P4	12	5

Draw a Gantt chart and find out the average waiting time and average turn-around time for FCFS and SJF scheduling algorithms. 6

b) Explain design issues for multiprocessor scheduling. State the four approaches for multiprocessor thread scheduling and processor assignment. 10

OR

3. a) List and explain four classes of real time scheduling. 8

b) State and explain the scheduling criteria for uni-processor scheduling. 8

SECTION – 2

4. a) A process references 5 pages A B C D E in following order

A B C D A B E A B C D E.

Use FIFO and LRU page replacement algorithms to find out the number of page faults for this reference string using 3 page-frames. 8

b) Explain PAGING. 8

OR

4. a) Explain internal and external fragmentation. 8

   b) Explain with diagram the concept of translation look-aside buffer. 4

   c) Describe the following terms in brief :

      1) Principle of locality

      2) Thrashing. 4

5. a) Explain disk free-space management techniques. 8

   b) Describe seven levels of RAID. 8

OR

5. a) Describe three levels of record blocking with the help of neat diagram. 8

   b) A disk drive has 640 cylinders numbered 0-639. The drive is currently serving the request at cylinder 200.

   The queue of pending request in FIFO order is 184, 153, 232, 128, 25, 533, 161, 169 starting from current head position.

   What is the total distance that the disk arm moves to satisfy all the pending requests for the following disk scheduling algorithms :

      1) FCFS

      2) C-SCAN

      3) SCAN

      4) SSTF. 8

6. a) Write a shell script to count number of digits in the given number as command line arguments. 4

   b) Describe any two active threats. 8

   c) Explain UNIX password scheme with neat diagrams. 6

OR

6. a) Write short notes on :

      1) Authentication

      2) Trusted System. 6

   b) Write a shell script to search a particular word from the file and display the total count and the linewise count. 6

   c) Describe two approaches to intrusion detection. What does audit record contain ? 6

[3363] – 452

MULTIMEDIA SYSTEMS
(2003 Course)

Time : 3 Hours TE - IT - 2008 (MAY) Total Marks : 100

N.B. : *i) Answer Q. 1 or Q. 2, Q. 3 or Q. 4, Q. 5 or Q. 6 from Section I and Q. 7 or Q. 8, Q. 9 or Q.10, Q. 11 or Q. 12 from Section II.*
*ii) Answers to the **two** Sections should be written in **separate** answer books.*
*iii) Neat diagrams should be drawn **wherever** necessary.*
*iv) Figures to the **right** indicate **full** marks.*
*v) Use of electronic pocket calculator is **allowed**.*
vi) Assume suitable data if necessary.

SECTION – I

1. a) What is a multimedia authoring tool ? Explain any one in detail. **6**

   b) List the steps in applying the Bresenham's line drawing algorithm for drawing a line. **10**

OR

2. a) Derive the list of pixels which will be burnt when a line with end points as P1(2, 4) and P2 (8, 10) is to be drawn using DDA line algorithm. **8**

   b) Explain the method of drawing a circle using Bresenham's circle drawing algorithm. **8**

3. a) Derive a transformation matrix for rotating a point P about origin by an angle θ in two dimensions. Assume homogeneous co-ordinate system for representing the point P. **8**

   b) A rectangle with the vertices as R1(1, 2), R2 (6, 2), R3(6, 9) and R4(1, 9) is to be reflected about y axis. Derive the new vertices of the rectangle after reflection. **8**

OR

4. a) Write the steps for clipping a line in 2D using Cohen Sutherland line clipping algorithm. **8**

   b) Answer the following :
      i) Define convex polygon **2**
      ii) Define concave polygon **2**
      iii) What is inside outside test ? **2**
      iv) What is a seed pixel ? **2**

P.T.O.

5. Write short notes on : **(6×3=18)**

a) Rotation about y axis in three dimension

b) Anti aliasing techniques

c) Gaurad Shading

OR

6. Write short notes on : **(3×6=18)**

a) Removable storage devices

b) Cohen Sutherland algorithm

c) Seed fill algorithm

SECTION – II

7. a) What is DPCM ? Explain in detail. **10**

b) Explain in brief any two sound characteristics. **6**

OR

8. a) Explain the MP3 file format used for audio. **8**

b) Explain the MIDI file format. **8**

9. a) With the help of examples, explain any two the principles of animation. **8**

b) Compare NTSC and PAL with respect to all their features. **8**

OR

10. a) What is meant by Cell animation ? Illustrate with suitable example. **8**

b) Explain the salient points of color models YUV and CMY. **8**

11. a) What is compression ? Explain any two types of loss less compression techniques in brief. **10**

b) Explain in detail the JPEG decompression steps. **8**

OR

12. Write short notes : **18**

a) GIF file format

b) Huffman coding

c) MPEG video file format

DATA COMMUNICATION AND NETWORKING
(2003 Course)

Time : 3 Hours TE - IT - 2008 (May) Max. Marks : 100

Instructions *: a) Answer* ***three*** *questions from Section* ***I*** *and* ***three*** *questions from Section* ***II.***
b) Answers to the ***two*** *Sections should be written in* ***separate*** *answer books.*
c) Draw ***neat*** *diagrams* ***wherever*** *necessary.*
d) Figures to the ***right*** *indicate* ***full*** *marks.*
e) Assume suitable data, if ***necessary.***

SECTION – I

1. a) Explain Shannon's Channel Capacity theorem. **6**

   b) What is ITU-T V.34 and V.29 modem specification ? **4**

   c) Explain different analog to digital modulation techniques with suitable diagram and constellation patterns (ASK, FSK, PSK, QAM, QPSK). **6**

   OR

2. a) Discuss Hamming code with a suitable example. **6**

   b) Explain the various transmission impairments in data communication with suitable examples. **6**

   c) What is the difference between information and signal ? **4**

3. a) What is TDM ? Explain the specification of T1 carrier system. **8**

   b) Discuss the difference between circuit switching and packet switching. **4**

   c) Explain the DSL technology. Also state various DSL technologies. **6**

   OR

4. a) Discuss SONET with reference to the following : **10**
      i) Device Types
      ii) Payloads and Frame.

   b) Write short note on cable modem. **8**

P.T.O.

5. a) Compare 8
   - Step index and graded index fibres.
   - Single mode and multimode fibres.

   b) Describe multiple access methods in Satellite Communication. 4

   c) Explain various losses in optical fibres. 4

OR

6. a) Describe with neat diagram the main components of a Satellite network in satellite communication. 8

   b) Discuss the principle used in transmitting light waves through a fibre optic cable. 8

SECTION – II

7. a) Compare EIA-232 and EIA-449 specification. 6

   b) Discuss following USB packets in detail 8
   - Token
   - Data
   - Handshake.

   c) State atleast one protocol used at each layer of the TCP/IP protocol suite. 2

OR

8. a) Describe in brief the TCP/IP protocol stack. 4

   b) Describe five ways of organizing a local area network with neat diagram. 10

   c) What is a null modem ? 2

9. a) Discuss HDLC specification in detail with reference to : 12
   - Station types and configuration
   - Frame classes and formats
   - Protocol Operation.

   b) Compare switch and bridge. 4

OR

10. a) Explain PPP protocol. **6**

b) Describe CSMA/CD. What are the advantages of CSMA/CD over CSMA ? **10**

11. a) Explain the Token passing access method used in FDDI with appropriate example. Also define the following : **10**

- Synchronous allocation.
- Target token rotation time (TTRT).
- Absolute Maximum time (AMT).

Timers

- Token rotation timer (TRT).
- Token holding timer (THT).

b) What is a VLAN ? How to set up VLAN using layer 2 switches ? State the advantages of VLANs. **8**

OR

12. a) Write short note on Gigabit Ethernet. Compare Gigabit Ethernet with Traditional Ethernet. **6**

b) Describe IEEE 802.3 and IEEE 802.5 frame formats in detail. **6**

c) Define **3**

- Propagation delay.
- Line utilization.
- Throughput.

d) Describe any one Collision free protocol. **3**

THEORY OF COMPUTATION
(2003 Course)

Time : 3 Hours TE - IT 2008 (May) Marks : 100

Instructions : *1) Attempt 3 questions from Section 1 and 3 questions from Section 2.*
*2) Figures to the **right** indicate **full** marks.*

SECTION – 1

1. A) Design FSM accepting the following languages over the alphabet {0, 1}
   i) Set of all strings with three consequetive zeros
   ii) Set of all strings such that the 4^{th} symbol from the right is 1. **8**

   B) Convert following NFA to DFA **8**

Q \ Σ	0	1
→p	p, q	r
q	r	r
r	s	q
(s)	s	s

OR

2. A) Construct a NFA that accepts strings in $(0 + 1)^*$ such that some two 0's are separated by string whose length is 6i for some i > = 0. **8**

   B) Show MAF, STF, Transition Graph and Transition Matrix for a divisibility by 3 tester assuming ternary input. **8**

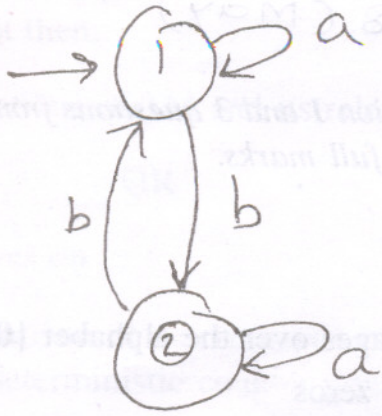
3. A) Use pumping lemma to show whether or not the following languages are regular :

   i) $A_1 = \{www / w \varepsilon (a, b)^*\}$

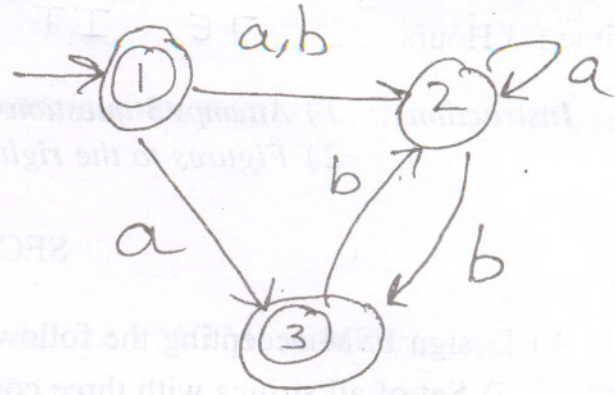
   ii) $A_2 = \{a^{2n} / n \geq 0\}$. **8**

B) Convert the following automata to regular expressions **10**

i)



ii)



OR

4. A) If L is regular, prove L^T is also regular. **6**

B) Are the following True or False. Support your answers with proofs or counter examples.

i) If $L_1 \cup L_2$ is regular and L_1 is regular then L_2 is regular.

ii) If $L_1 . L_2$ is regular and L_1 is regular then L_2 is regular.

iii) If L^* is regular, then L is regular. **12**

5. A) Find a grammar in GNF equivalent to the grammar :

$E \rightarrow E + T / T$

$T \rightarrow T * F / F$

$F \rightarrow (E) / id$. **8**

B) In each of the following cases find context free grammar generating the given language :

i) Set of odd length strings in {0, 1}* with middle symbol '1'

ii) Set of even length strings in {a, b, c, d}* with two middle symbols equal. **8**

OR

6. A) Prove whether the grammar $A = \{a^{n^2} / n \geq 1\}$ is context free. If so, enumerate some members of the equivalent CFL. **8**

B) Is the following CFG ambigous ? **8**

$S \rightarrow aB / ab$

$A \rightarrow aAB / a$

$B \rightarrow ABb / b$

If so, show multiple derivation tress for the same string.

SECTION – 2

7. A) Construct a PDA 'A' equivalent to CFG

$S \rightarrow OBB$

$B \rightarrow OS/IS/O.$

Enumerate all rules for 'δ' function. Test whether 010^4 is accepted by this PDA. **8**

B) Design post machine to check well-formedness of parentheses. **8**

OR

8. A) Prove that CFLs are closed under union, concatenation and Kleen closure. **8**

B) Construct a pda (describe in terms of 'δ' function) accepting $\{a^n b^m a^n / m, n \geq 1\}$ by null store. Construct corresponding CFG accepting the same set. **8**

9. A) Why do we not define 'ε' transitions for a Turing machine ? **4**

B) Design TM to find out GCD of two given numbers. **12**

OR

10. Design TM for

i) Finding n^2 where 'n' is integer and $n \geq 0$

ii) Halting problem. **16**

11. Write notes on :

i) Relation of grammars of Chomsky theirarchy with machines in TOC that accept them.

ii) Limitations of TM and its relevance to modern computability. **18**

OR

12. Write notes on :

i) Comparison of deterministic machines (FA/PDA/PM/TM) with their non-deterministic counter parts.

ii) Church's turing hypothesis and its relevance to modern computability. **18**

SYSTEM SOFTWARE
(2003 Course)

Time : 3 Hours TE - IT - 2008 (May). Max. Marks : 100

Instructions : *1) Answers to the **two** Sections should be written in **separate** books.*
*2) Neat diagrams must be drawn **wherever** necessary.*
*3) Black figures to the right indicate **full** marks.*
*4) Assume suitable data, **if necessary**.*
*5) Attempt **Q. 1** or **Q. 2**, **Q. 3** or **Q. 4**, **Q. 5** or **Q. 6** from Section **I** and **Q. 7** or **Q. 8**, **Q. 9** or **Q. 10** and **Q. 11** or **Q. 12** from Section **II**.*

SECTION – I

1. a) What are the various types of editors ? Explain the typical editor structure with a neat block diagram. **8**
   b) What are the language processing development tools ? **8**

OR

2. a) What are the software tools for program development ? **8**
   b) Write a short note on debugging monitors. **8**

3. a)

```
        Start   100
        Mover   areg, = 5
        add     creg, = 1
A       DS      3
L1      Mover   areg, b
        Add     areg, c
        Movem   areg, d
        L tor g
D       EQU     A + 1
L2      Print   D
        Origin  A – 1
        Sub     areg, = 1
        mult    creg, b
C       DC      '5'
        Origin  L2 + 1
        Stop
B       DC      19
        END.
```

   i) Show the contents of symbol table, literal table and pool table at the end of passI.
   ii) Show the intermediate code generated for the program. **10**

b) What are the features of macro facility ? Explain each with an example. **8**

OR

4.

```
Macro
Define      &XYZ
Macro
&XYZ        &X, &Y, &OP
Mover       areg, &X
&OP         areg, &Y
Movem       areg, &X
Mend
Mend
Macro
Compute     &f, &s
Movem       breg, tmp
Incr-M      &f, &s, breg
Mover       breg, tmp
Mend
Macro
Incr-M      &M, &I, &R
Mover       &R, &M
Add         &R, &I
Movem       &R, &M
Mend
Start       100
Define      Calc
Compute     X, Y
Calc        A, B, Mult
END.
```

i) Show the contents of MDT and MNT after macro processing.

ii) The expanded assembly language program. **18**

5. a) Explain lexical analysis. What are the different tasks of lexical analysis ? Explain the different data structures in lexical along with their format. **8**

   b) Explain recursive descent parsers. **8**

OR

6. a) What is a compiler ? What are the different types of compiler ? **8**

   b) Explain shift reduce parser with an example. **8**

SECTION – II

7. a) What are different types of intermediate code representations in compilers ? Explain each one with example. **10**

   b) Optimize the following code

   $a = x \wedge 2$

   $b = 3$

   $c = x$

   $d = c * c$

   $e = b + 2$

   $f = a + d$

   $g = e * f$ **6**

OR

8. a) Explain in brief the machine dependent code optimization. **6**

   b) Generate the quadruples for the code given below

   for (j = 1 ; j < = 5 ; j ++)

   X [2 * j] = Y [2 * j + 5]

   where X and Y are single dimensional arrays with lower and upper bounds as 1 and 5.

   Also generate the quadruples for the same after applying machine independent code optimization of any type. **10**

9. Show ESD, RLD and T×T cards for the source code given below. Also show the contents of GEST table and LESA table. Finally show the load map.

Source Card Reference	Relative Address		Source Program
1	0	MAIN	START
2			ENTRY M1, M2
3			EXTRN PROG, P1, P2
4	30	M1	_____
5	40	M2	_____
6	50		DC A (M2)
7	54		DC A (M1 + 5)
8	58		DC A (M2 – M1 – 4)
9	62		DC A (PROG)
10	66		DC A (P1 + P2 – PROG)
11			END
12	0	PROG	START
13			ENTRY P1, P2
14			EXTRN M1, M2
15	16	P1	_____
16	26	P2	_____
17	36		DC A (M1)
18	40		DC A (M2 + 10)
19	44		DC A (P2 – P1 – 3)
20			END

Assume Initial Program Load Address as 400. **18**

OR

10. a) What are absolute loaders ? Explain design of absolute loader scheme. Also state advantages and disadvantages of absoluter Loader scheme. **10**

b) Explain BSS loading scheme with example. Also discuss how four major tasks of loader are done using this scheme. **8**

11. a) Explain working of dynamic data exchange. **8**

b) Explain the use of clipboard in windows programming. **8**

OR

12. a) Explain the term object linking and embedding. **8**

b) Write a note on dynamic link library. **8**

COMPUTER NETWORK TECHNOLOGY
(2003 Course)

Time : 3 Hours TE - IT - 2008 (May) Max. Marks : 100

Instructions : *1) Answer **3** questions from **Section I** and **3** questions from **Section II**.*
*2) Answers to the **two** Sections should be written in **separate** books.*
*3) Neat diagrams must be drawn **wherever** necessary.*
*4) Black figures to the **right** indicate **full** marks.*

SECTION – I

1. A) Explain the difference between Interdomain and Intradomain routing protocols. Justify your answer by taking an example of each type of protocol. **8**

   B) What do you mean by congestion ? Discuss the open-loop and closed-loop congestion control mechanism. **8**

   OR

2. A) What is the purpose of ARP and RARP protocols ? What is the size of ethernet frame carrying an ARP packet as well as RARP packet ? **8**

   B) For a given class-C network, design 4 equal subnets having minimum 50 nodes in each subnetwork. **8**

3. A) What is a socket ? Explain various socket primitives used in client-server interaction. **8**

   B) Explain with a suitable diagram, the parameters involved in process to process communication. Give the different types of parts with their ranges. **8**

   OR

4. A) Explain how TCP provides flow control mechanism. **8**

   B) What is silly window syndrome ? How to overcome it ? **8**

5. A) What is FTP ? Where and when it is used ? Why does it require 2 ports ? Explain at least 5 user commands used in FTP ? **10**

   B) Differentiate between persistent and non-persistent HTTP connection. **8**

   OR

6. A) Write short notes on : **10**

   1) MIME

   2) LDAP

   B) What is the difference between IMAP and POP 3 protocols ? Explain when and where they are used ? **8**

SECTION – II

7. A) Explain the RTP and RTCP with proper examples. **8**

   B) Bandwidth scaling is required for streaming stored audio-video. Which protocol is used for this purpose and why ? **8**

OR

8. A) Differentiate between SIP & H.323 protocols. **8**

   B) What is the need of scheduling and policing techniques in multimedia networking ? **8**

9. A) What is the purpose of SMI & MIB in relation to SNMP. **8**

   B) Explain the terms; managing entity, managed device, management agents, MIB in network management context. **8**

OR

10. A) List the five areas of network management and explain the necessity of each. **8**

    B) Explain BOOTP and DHCP in detail. **8**

11. A) Explain the 802.11 architecture. **8**

    B) Write short notes on : **10**

    1) Frame relay

    2) B-ISDN

OR

12. A) Explain the cell and protocol stack used in ATM. **8**

    B) Write short notes on : **10**

    1) SMDS

    2) WLAN architecture.

MANAGEMENT INFORMATION SYSTEMS
(2003 Course)

TE - IT - 2008 (May)

Time : 3 Hours Max. Marks : 100

Instructions : *1) Answer **any three** questions from **each** Section.*
*2) Answers to the **two** Sections should be written in **separate** books.*
*3) **Neat** diagrams must be drawn wherever **necessary**.*
*4) Black figures to the **right** indicate **full** marks.*
*5) Assume **suitable** data if **necessary**.*

SECTION – I

1. a) What is information system ? Differentiate between information system and management information system. **6**

   b) Explain the various activities involved in implementing a new system in an organization. Give most important factors you would use in evaluating computers, hardware, software and services for a system. **6**

   c) What is the scope and purpose of an Information System ? **6**

   OR

2. a) MIS plays very vital role in management, administration and operation of an organization. Explain. **6**

   b) The process of management in any organization begins by setting goals, objectives and targets, Explain these terms (goals, objectives and targets) with suitable example. **6**

   c) What is matrix organization of management structure ? Write its advantages. **6**

3. a) What is marketing management ? Briefly explain at least four sub-systems of marketing management system. **8**

   b) Differentiate between service and product. Also explain how MIS helps in service industry to give better service to the customers. **8**

   OR

4. a) What is insurance ? Explain how MIS handles key areas of insurance industry ? 8

   b) Explain Enterprise Application Integration (EAI). Explain with figure how EAI software can integrate front-office and back-office application of e-business. 8

5. a) What is Enterprise Resource Planning (ERP ? List various phases of ERP implementation. 8

   b) What is outsourcing ? Which business functions of Pune University can be outsourced and why ? 8

OR

6. a) What is information technology architecture ? Explain Brokers' Workstation System. 8

   b) What is call center ? What activities are performed in call center ? 8

SECTION – II

7. a) What is electronic commerce ? Explain various models used in e-commerce. Also explain various resources required for setting e-commerce firm. 8

   b) What is customer relationship management ? Explain various phases involved in CRM. 8

OR

8. a) What is implementation change ? Explain IT based transformation of the organization. 8

   b) In today's scenario 'Customer is God'. Justify how CRM helps in making this statement true. 8

9. a) Herbert A. Simon gave a model for decision making called as Simon's model of decisions making. Explain it with suitable example. 8

   b) Explain Artificial intelligence systems. Why business is interested in Artificial intelligence ? Give example to justify your answer. 8

OR

10. a) What is data mining ? Explain how data mining concepts are used in decision support systems ? **8**

b) What is portal ? How 'Enterprise Information Portal' provide web-enabled information, knowledge and decision support to their executive, managers, employees, suppliers, customers and other business partners ? **8**

11. a) What are ethics ? What are various ethical responsibilities of business professionals like Computer users, Programmers and Developers, Companies and Government ? **9**

b) Explain the following terms which rose due to use of information technology in the workplace. **9**

a) Computer Vision Syndrome (CVS)

b) Repetitive Stress Injuries (RSI)

c) Musculoskeletal pain.

OR

12. a) Explain major dimension of the managing global Information Technology. **9**

b) Write short notes on: **9**

i) E-mail monitoring

ii) Cyber theft

iii) Biometric security.

HUMAN COMPUTER INTERFACE

(2003 Course)

TE - IT - 2008 (May-June)

Time : 3 Hours | Max. Marks : 100

Instructions : *1) Answer question **1** or **2**, **3** or **4**, and **5** or **6** from Section – **I** and question **7** or **8**, **9** or **10**, and **11** or **12** from Section – **II**.*

*2) Answers to the **two** Sections should be written in **separate** answer books.*

*3) Neat diagrams must be drawn **wherever** necessary.*

*4) Figures to the **right** indicate **full** marks.*

*5) Assume suitable data **if necessary.***

SECTION – I

1. a) What is the difference between direct control pointing devices and indirect control pointing devices ? Explain both types of devices with 3 examples. **8**

   b) We can't measure user friendliness. As a result this concept is not too useful when designing interfaces. Instead we identify specific things about the interface that we can measure that relate to the effectiveness and success of the product. There are at least five specific attributes that describe an interface's effectiveness. Name three of these measurable quantities we can use to determine success. **10**

   OR

2. a) What is reasoning ? Explain different types of reasoning with examples. **10**

   b) Explain the similarities and differences in human memory and computer memory. **8**

3. a) Give an example and discuss the implementation of one of Shneiderman's Golden Rules of Interface Design. **8**

   b) Task analysis breaks user's activities into a series of goals and sub-goals. In order to print a document, you must first select the 'print' command. You must then select the printer, the number of copies and so on. Briefly describe the benefits that task analysis can offer to the design of interactive computer systems. **8**

   OR

4. a) What are the different guidelines for data display ? Assume any single application user may interact. 8

b) Explain GOMS and keystroke level models. 8

5. a) Explain the processes of design. If your system is poorly designed from a human interaction standpoint, what are the problems user may face ? 8

b) What is participatory design ? What are the advantages and disadvantages of participatory design ? Explain. 8

OR

6. a) You have been asked to design a web-site for a company. Users will be able to browse and then purchase a 'ring-tone' for their mobile phone. Briefly explain how you would test for the success or failure of a design as you get close to the final delivery of your 'ring-tone' web site. Discuss the challenges and solutions. 10

b) What is User Centered Design ? 6

SECTION – II

7. a) List and explain the steps of usability testing. What are some of the limitations of such testing ? 8

b) List major types of menus. Explain when and why to use a particular menu system with example. 10

OR

8. a) Give any five diagrammatic textual notations used to design dialogs in effective user interface. Justify your notations w.r.t. examples. 10

b) Compare and contrast expert reviews with usability testing. 8

9. a) What is face-to-face communication and asynchronous interactions in CSCW ? Explain any two applications of each. 8

b) How useful is the online help and documentation as compared to printed documentation i.e. offline ? Explain. 8

OR

10. a) How do we think groupware (CSCW) is likely to affect our lives in the future ? Justify your answer with example. **8**

b) Explain the importance of hypertext over linear paper document. List important considerations for creating a good hypertext document. **8**

11. a) Write a short note on : Social acceptability of user interface. **6**

b) Some of the favorite techniques of web pages these days include automatic scrolling text boxes, moving marquees, and constantly running animations (e.g. for icons). Discuss these features in terms of web design guidelines. **10**

OR

12. a) Propose and discuss some ways the web may be made more accessible to the handicapped, either through browser design or web page design. **8**

b) Give four benefits and three problems of touch screens and voice recognition input. **8**

SOFTWARE ENGINEERING
(2003 Course)

Time : 3 Hours TE-IT-2008(May-June) Max. Marks : 100

Instructions : *1) Answers to the **two** Sections should be written in **separate** books.*
*2) Black figures to the **right** indicate **full** marks.*
*3) From Section **I**, answer (Q 1 or Q 2) and (Q 3 or Q 4) and (Q 5 or Q 6).*
*4) From Section **II**, answer (Q 7 or Q 8) and (Q 9 or Q 10) and (Q 11 or Q 12).*
*5) Neat diagrams must be drawn **wherever** necessary.*

SECTION – I

1. A) What are the essential characteristics that Software should meet ? What are Practitioner's Myths ? **8**

   B) What is meant by Process Framework ? What are the factors affecting processes? Explain in detail Process Patterns. **8**

   OR

2. A) What are the elements of Prototyping Model ? What are the demerits of Prototyping Model ? What are the situations in which Prototyping Model is preferred ? **8**

   B) What is the difference between Incremental development and Iterative development ? What are the workflows and phases of Unified Process ? **8**

3. A) What is meant by Practice ? What is the importance of Communication ? What issues Communication Practice do address ? **8**

   B) An organization wants to develop Employee Profiling System. The employee details need to be maintained for various purposes. Consider all the necessary functionalities and draw UML. Use Case and Class diagrams. **8**

   OR

4. A) What is the focus of Construction Practice ? Explain in detail coding principles. What is the relationship between coding and testing ? 8

   B) What factors need to be considered while constructing system model ? What are the elements of Product Engineering Hierarchy ? 8

5. A) What is meant by Normal and Exiting requirements ? How requirements are validated ? 9

   B) What is the goal of Object Oriented Analysis ? What are elements of Class Responsibility Collaborator (CRC) template ? What is meant by dynamic behaviour ? 9

OR

6. A) How requirements are identified ? How requirements are structured ? Why Requirement Engineering is considered to be difficult phase of SDLC ? 9

   B) What are the elements of Data model ? How relationships between data objects are traced ? What is meant by Cardinality and Modality ? 9

SECTION – II

7. A) What are elements of Design Model ? What are the elements of architectural design ? Explain in short design principles. 8

   B) Why participation of User is expected while performing User Interface Design ? What is Task Modeling and Analysis ? What is meant by Task and Object elaboration ? 8

OR

8. A) What is Abstraction ? What is Stepwise Refinement ? What is the role of Refactoring ? 8

   B) What are the steps of Interface Design ? Explain in short following User Interface Design issues : 8

      a) Response Time

      b) Error Handing

      c) Menu and Command Labelling.

9. A) What are the categories of stakeholders ? What are the characteristics of Effective Project Manager ? **8**

B) What is the necessity of Estimation ? How estimation with Use cases is performed ? **8**

OR

10. A) What is the relationship between People, Process, Product and Technology ? What is Defect Removal Efficiency ? What is the importance of Software Integrity ? **8**

B) Explain in detail COCOMO II model. **8**

11. A) What are fundamental sources of change ? What are the elements of a Configuration Management System ? What is the importance of baselines ? **9**

B) What is Business Process ? What are the elements of BPR model ? **9**

OR

12. A) What is Software Configuration Item ? What is the role of SCM repository ? What is the importance of Version Control ? **9**

B) Write short notes on : **9**

a) Forward Engineering for Object Oriented Architectures

b) Forward Engineering for Client/Server Architectures.