Information on technology sem V
Old Digital Communication 28 May edo

P4–Exam.-4March–10–2–261

Con. 3399–10. **(OLD COURSE)** **AN–4084**

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

N.B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions from remaining **six** questions.
(3) **Figures** on the **right** indicate marks.
(4) **All** questions carry **equal** marks.
(5) Draw diagrams **neat** and **legible** wherever **necessary**.

1. Explain the following :– **20**
   (a) What is the need of equalization in communication circuits ?
   (b) Define – (i) Hamming weight (ii) Code efficiency
   (iii) Hamming bound (iv) White Gaussian noise.
   (c) The type of losses encountered in link design of communication.
   (d) What is ISI ?

2. (a) Explain Viterbi algorithm and sequential decoding of convolutional codes. **10**
   (b) Explain the working of delta modulator with neat diagrams and mention its disadvantages. **10**

3. (a) For the following binary sequence sketch various line codes / waveforms : **10**
   1011010110
   (i) RZ (ii) NRZ (iii) Manchester Coding (iv) AMI.
   (b) What is matched filter in communication systems ? Derive an expression for probability of error of matched filter. **10**

4. (a) Explain how 'Duo binary signaling' introduces controlled inter symbol interference (ISI). Also find duo-binary transfer function and sketch the pulse. **10**
   (b) Explain signature authentication using Public key crypto system. **10**

5. (a) An error code has the following parity check matrix – **10**

$$H = \begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 \\ 1 & 1 & 0 & 0 & 0 & 1 \end{bmatrix}$$

   Determine –
   (i) Generator matrix 'G'
   (ii) Decode received word 110110 and 110010
   (iii) Find error detection and correction capability.
   (b) Explain the working of JPEG in detail with neat diagram and equations. **10**

6. (a) Explain the block diagram of QPSK transmitter and receiver with neat diagrams. **10**
   (b) Explain the working of MSK with the block diagram and waveforms. State why MSK is called shaped QPSK. **10**

20

7. Write short notes on any **four** of the following :–

(a) Binary Symmetric Channel (BSC)

(b) Auto correlation and cross-correlation functions

(c) Noise factor and noise temperature

(d) Eye-Pattern

(e) Run length coding

(f) Transversal equalizer.

Information technology sem V Exam Nov 28 May 2010

VT-April-10- 121 operating system for computational Devices

Con. 3453–10. **(REVISED COURSE)** **AN–4309**

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

N.B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions out of remaining **six** questions.
(3) Assume **suitable data** wherever **required** but justify them.
(4) **All** questions carry **equal** marks.
(5) Answer to **each new question** to be started on a **fresh page**.
(6) **Figures** to the **right** indicate **full** marks.

1. (a) What are the various real-time CPU scheduling algorithms. Explain each one in brief. **10**
   (b) What are requirements of mutual exclusion ? Explain Peterson's algorithm for mutual exclusion. **10**

2. (a) What are two differences between user-level threads and Kernel-level threads ? Under what circumstances is one type better than the other ? **10**
   (b) Consider the following page reference string :– **10**
   1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6
   How many page faults would occur for the following replacement algorithms assuming one, two, three, four, five, six or seven frames ?
   - LRU Replacement
   - FIFO Replacement
   - Optimal Replacement.

3. (a) How does DMA increase system concurrency ? How does it complicate hardware design ? **10**
   (b) How do caches help improve performance ? Why do systems not use more or larger caches if they are so useful ? **10**

4. (a) What are the various disk-scheduling algorithms. Explain each one in brief. **10**
   (b) Consider the following segment table :– **10**

Segment	Base	Length
0	219	600
1	2300	14
2	90	100
3	1327	580
4	1952	96

What are the physical addresses for the following logical addresses ?
(i) 0, 430, (ii) 1, 10, (iii) 2, 500, (iv) 3, 400, (v) 4, 112.

5. (a) What are the four conditions that create deadlock ? Explain deadlock prevention and avoidance techniques. **10**

(b) Given five memory partitions of 100 kB, 500 kB, 200 kB, 300 kB, and 600 kB (in order), how would the first-fit, best-fit, and worst-fit algorithms place processes of 212 kB, 417 kB, 112 kB, and 426 kB (in order) ? Which algorithm makes the most efficient use of memory ? **10**

6. (a) What are the various buffering techniques ? Explain each one in detail. **10**

(b) Explain file allocation methods in details. **10**

7. Write a short notes on any **four** of the following :– **20**

(a) Monolithic Vs. Micro Kernels

(b) Comparison of any two RTOS

(c) V_x Works 5·X

(d) NOS Vs. DOS

(e) Race Condition

(f) Inodes.

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2 June 2010 T.E. Information technology SEM V REV

Computer Graphics and virtual Reality Systems

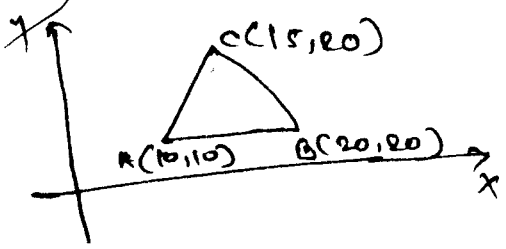
Con. 3431-10. (REVISED COURSE) **AN-4322**

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

N.B. (1) Question No. **1** is **compulsory**.
(2) Solve any **four** questions from remaining **six** questions.
(3) **Figures** to the **right** indicate **full** marks.
(4) Make suitable assumptions whenever necessary and state them **clearly**.

1. (a) Explain Raster scan display and Random scan display. **10**
   (b) Explain Bresenham's line drawing algorithm with an example. **10**

2. (a) Explain different types of projections in detail. **10**
   (b) (i) Find the sequence of transformations to scale the object with respect to reference point A in x_y plane. **5**



   (ii) Write a short note on homogeneous coordinate system. **5**

3. (a) List various types of computing architectures of VR and explain any one in detail. **10**
   (b) Explain in detail any one VR toolkit. **10**

4. (a) List various applications of VR and explain any one in detail. **10**
   (b) Compare mesh and feature based warping methods. **10**

5. (a) Derive mathematical representation for Bezier curve and state their properties. **10**
   (b) Explain Lagrange Interpolation curve in detail. **10**

6. (a) Explain Flood Fill and Boundary Fill algorithm using 8-connected approach and state their advantages and disadvantages. **8**
   (b) Write a note on I/P and O/P devices for VR. **12**

7. (a) (i) Write a short note on TPS based image warping. **6**
   (ii) What are advantages of 3D morphing over 2D morphing. **6**

   (b) Let ABCD be the rectangular window with A (20,20), B(90,20), C(90,70) and D(20,70). Find region codes for endpoints and use Cohen Sutherland algorithm to clip the lines P_1P_2 with P_1 (10,30), P_2 (80,90) and q_1q_2 with q_1 (10,10), q_2 (70,60). **8**

T.E. Computer & Information Technology
SEM V old

Microprocessors

38 : 1st half.10-AM(k)

Con. 3389-10. **(OLD COURSE)** **AN–4018**

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

N.B.: (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions out of the **remaining**.
(3) **Figures** to the **right** indicate **full** marks.
(4) Assume **suitable** data if **necessary** with **justification**.

1. (a) Design a 8086 based Microprocessor System with following specifications :— **16**
   (i) 8086 Microprocessor working at 8 MHz.
   (ii) 32 kb of EPROM using 16 kb devices.
   (iii) 64 kb of SRAM using 16 kb devices.
   Explain the design and show the memory map.

   (b) Differentiate between I/O maped I/O and memory mapped I/O. **4**

2. (a) Draw the timing diagram and explain for — **12**
   (i) Memory write when operated in minimum mode.
   (ii) Memory write when operated in maximum mode.

   (b) Explain Even and Odd memory banks for 8086 with neat diagram :— **8**
   (i) Accessing the even addressed byte
   (ii) Accessing the odd addressed byte
   (iii) Accessing an even addressed word
   (iv) Accessing an odd addressed word.

3. (a) Explain string instruction with examples. **10**
   (b) Explain 8259 pic block diagram and explain types of command words. **10**

4. (a) Write a short note on mixed language programming and its objectives. **10**
   (b) Explain 8255 programmable peripheral interface and its modes. **10**

5. (a) List the data types supported by the 8087 numeric co-processor. Convert the (178.625) decimal to short real format. **10**
   (b) What do you mean by bus arbitration ? When it is required ? Explain different types of arbitration schemes. **10**

6. (a) Explain the architecture of IOP 8089 with its application. **10**
   (b) What is addressing mode ? Explain different addressing modes supported by 8086 with example. **10**

7. Write short notes on any **two** of the following :— **20**
   (a) IEE 488 GPIB
   (b) DMA controller 8237
   (c) Minimum mode operation of 8086
   (d) 8288 bus controller.

T.E/ comp & IT /sem - V / old / KT /. Exam - May 2010

07 - 6 - 2010

VT-April-10- 149

Computer Networks.

Con. 3639–10. **(OLD COURSE)** **AN–4012**

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

N.B. :(1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions out of remaining **six** questions.
(3) Draw **suitable** diagrams wherever **required**.

1. (a) Compare circuit switching, packet switching and message switching. **10**
   (b) Explain the following terms with example : **10**
   Mac address, IP address, Socket, Band rate, Latency.

2. (a) Explain different types of routing algorithm. **10**
   (b) Explain stop and wait and sliding window protocols with suitable examples. **10**

3. (a) Explain RSA algorithm with suitable example for public key security. **10**
   (b) What is an IEEE standard ? Compare IEEE 802·3, 802·4, 802·5 and 802·11. **10**

4. (a) Compare the performance characteristics of coaxial, twisted pair and fiber optic transmission media. **10**
   (b) What is CRC ? Write the algorithm for computing checksum and explain with suitable example. **10**

5. (a) Describe any five functions of data link layer with suitable examples. **10**
   (b) With the help of suitable diagram, explain how a call is transferred from landline to the mobile phone. **10**

6. (a) Describe Shannon channel capacity and Nyquist criteria applied to computer network. **10**
   (b) List the bluetooth features and explain network formation process. **10**

7. Write short notes on the following :– **20**
   (a) IPV6
   (b) CSMA/CD
   (c) Slotted ALOHA
   (d) Digital Certificate.

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T.E. IT Sem-V Rev/KT/ Exam 2010 May

Sub:- COT & NIC

P4-Con No-40

Con. 3472-10. (REVISED COURSE) AN-4312

(3 Hours) [Total Marks : 100

Convergence of Technologies & Networking in Communication

N. B (1) Question no. 1 is compulsory
(2)Attempt any four questions of the remaining six questions.
(3)Figures to the right indicate full marks
(4)Answers to question should be grouped and written together.

Q. 1 (a) Describe in brief Binary Phase Shift Keying modulator and demodulator? Also calculate probability of error for BPSK? **(15 MARKS)**

(b) Compare the different evolution of second, third, fourth generation of wireless communication system? **(O5 MARKS)**

Q .2 a) Explain the Digital Signature? Also explain firewall used for security purpose? **(10 MARKS)**

b) Explain traffic management in ATM? Also explain ATM traffic policing? **(10 MARKS)**

Q.3.a) what is convergence? Also explain IEEE 802.11 standard? **(07 MARKS)**

b) Explain Multiple Access Techniques TDMA, FDMA, SDMA and SSMA? Also explain Packet Radio Multiple Access (slotted ALOHA/pure ALOHA)? **(13 MARKS)**

Q. 4.a) Compare the probability of error for an optimum filter? What is matched filter? **(10 MARKS)**

b) Explain basic concept of cellular system? How frequency reused method is implemented? **(10 MARKS)**

Q. 5.a) How channel capacity is improved by cell splitting and cell sectoring? **(10 MARKS)**

b) How Tiger Hash function used for encryption? Compare block ciphers with stream ciphers? **(10 MARKS)**

Q. 6.a) Explain general GSM architecture? Also explain different GSM channels used? **(10 MARKS)**

b) Explain high level data link (HDCL) protocol? Also explain the frame structure in HDCL? **(10 MARKS)**

Q.7) write short notes on (any four) :
1) Bluetooth
2) Binary frequency Keying **(20 MARKS)**
3) Handoff algorithms
4) Telecommunication management network (TMN)
5) ISDN

T.E. Computer & Information Technology
Sem V old
Computer Network.

VT-April-10- 149

Con. 3639–10. **(OLD COURSE)** **AN–4012**

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

N.B. :(1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions out of remaining **six** questions.
(3) Draw **suitable** diagrams wherever **required**.

1. (a) Compare circuit switching, packet switching and message switching. **10**
   (b) Explain the following terms with example : **10**
   Mac address, IP address, Socket, Band rate, Latency.

2. (a) Explain different types of routing algorithm. **10**
   (b) Explain stop and wait and sliding window protocols with suitable examples. **10**

3. (a) Explain RSA algorithm with suitable example for public key security. **10**
   (b) What is an IEEE standard ? Compare IEEE 802·3, 802·4, 802·5 and 802·11. **10**

4. (a) Compare the performance characteristics of coaxial, twisted pair and fiber optic transmission media. **10**
   (b) What is CRC ? Write the algorithm for computing checksum and explain with suitable example. **10**

5. (a) Describe any five functions of data link layer with suitable examples. **10**
   (b) With the help of suitable diagram, explain how a call is transferred from landline to the mobile phone. **10**

6. (a) Describe Shannon channel capacity and Nyquist criteria applied to computer network. **10**
   (b) List the bluetooth features and explain network formation process. **10**

7. Write short notes on the following :– **20**
   (a) IPV6
   (b) CSMA/CD
   (c) Slotted ALOHA
   (d) Digital Certificate.

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T.E. Information technology Sem V Rev

P4-Con No-40 Convergence of Technologies & Networking communication

Con. 3472–10. (REVISED COURSE) AN–4312

(3 Hours) [Total Marks : 100

N. B (1) Question no. 1 is compulsory
(2)Attempt any four questions of the remaining six questions.
(3)Figures to the right indicate full marks
(4)Answers to question should be grouped and written together.

Q. 1 (a) Describe in brief Binary Phase Shift Keying modulator and demodulator? Also calculate probability of error for BPSK? **(15 MARKS)**

(b) Compare the different evolution of second, third, fourth generation of wireless communication system? **(O5 MARKS)**

Q .2 a) Explain the Digital Signature? Also explain firewall used for security purpose? **(10 MARKS)**

b) Explain traffic management in ATM? Also explain ATM traffic policing? **(10 MARKS)**

Q.3.a) what is convergence? Also explain IEEE 802.11 standard? **(07 MARKS)**

b) Explain Multiple Access Techniques TDMA, FDMA, SDMA and SSMA? Also explain Packet Radio Multiple Access (slotted ALOHA/pure ALOHA)? **(13 MARKS)**

Q. 4.a) Compare the probability of error for an optimum filter? What is matched filter? **(10 MARKS)**

b) Explain basic concept of cellular system? How frequency reused method is implemented? **(10 MARKS)**

Q. 5.a) How channel capacity is improved by cell splitting and cell sectoring? **(10 MARKS)**

b) How Tiger Hash function used for encryption? Compare block ciphers with stream ciphers? **(10 MARKS)**

Q. 6.a) Explain general GSM architecture? Also explain different GSM channels used? **(10 MARKS)**

b) Explain high level data link (HDCL) protocol? Also explain the frame structure in HDCL? **(10 MARKS)**

Q.7) write short notes on (any four) :
1) Bluetooth
2) Binary frequency Keying **(20 MARKS)**
3) Handoff algorithms
4) Telecommunication management network (TMN)
5) ISDN

T. E. Information technology.
Sem V Old

Con. 3999-10. **(OLD COURSE)** **AN–4138**

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

Automata theory.

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

1. (a) Design a FSM to test divisibility by 3. **5**
   (b) Distinguish between NFA and DFA. **5**
   (c) What is an NP Hard problem ? Explain. **5**
   (d) Design a PDA to accept $a^n b^n$ over $\Sigma = \{ a, b \}$, $n \geq 0$. **5**

2. (a) Design a TM to accept i/p as \$ A + B \$ and add the two generating o/p as \$ C = A + B \$. **10**
   (b) Using pumping Lemma, show that $L = \{ 0^n 1^n 2^n / n > 0 \}$ is neither regular nor content free. **10**

3. (a) What type of languages are accepted or generated by PDA's ? Design a PDA to accept L over $\Sigma = \{ 0, 1 \}$ such that number of 0's are greater than twice the number of 1's. **15**
   (b) Using Pumping Lemma, show that $L = \{ a^n b^n / n > 1 \}$ is not regular. **5**

4. (a) Design a suitable parser for 'if then else' and 'if without else'. Let i, t and c represent if, then and else. Use C for condition and S for statements. **12**
   (b) What are Ambigious Grammers ? How is Ambiguily resolved ? **8**

5. (a) Design a Mealy machine to generate 2's complement of a number. Convert it to Moore machine. **10**
   (b) Design regular expression, NFA, DFA and reduced DFA for $L = \{ x / x$ has alternate a's and b's and x ends with a, b $\}$. **10**

6. (a) Generate and reduce the grammar for the following to CNF and GNF :— **10**
   $L = \{ a^n b^m c^n / n \geq 1, m \geq 0 \}$ over $\Sigma = \{ a, b, c \}$
   (b) Explain types of Grammers with suitable examples. **10**

7. Write short notes on any **four** :— **20**
   (a) Post Correspondance Problem
   (b) Power of UTM
   (c) Halting Problem
   (d) Closure Properties
   (e) Operator Precedence Parser.

T.E. Information technology Sem V / Rev
Object oriented Analysis & Design.

Con. 3767-10. **(REVISED COURSE)** **AN–4315**

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

N. B. : (1) Question no. **1** is **compulsory**.
(2) Attempt any **four** questions out of remaining **six** questions.
(3) Make **suitable** assumptions whenever **necessary** and state them.

1. Construct the use case diagram and class diagram for the following scenario : student information sytem. The university conducts many courses and students can register for those courses. The registrar of the university will introduce any new course. Also the registar maintains the curriculum and students details. The examination will be conducted for the students and the degree is issued for the students who have completed the course successfully. **20**

2. Explain the following terms with example. **20**
   (a) Inheritance
   (b) Aggregation
   (c) Abstraction
   (d) Association.

3. (a) Explain process of design and its principles. **10**
   (b) Explain different types of test scenarios for Library Management System. **10**

4. (a) State different types of coupling and cohesion. Explain any four types of both coupling and cohesion. **10**
   (b) What is functional model ? Explain different steps that are performed in constructing functional model. **10**

5. (a) Construct the activity diagram for Hospital Management System. **10**
   (b) What is the difference between include and extends ? Explain with example. **10**

6. (a) Write detailed note on "Frame Work and Components". **10**
   (b) What is a sequence diagram ? What are the elements used in sequence diagram ? Explain each. **10**

7. (a) Construct the state diagram and component diagram for the on line Railway Reservation System. **10**
   (b) How deployment diagrams are useful in modelling a fully distributed system ? **10**

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11 June 2016 T.E. Information Technology sem V

Con. 3726-10. (REVISED COURSE) **AN-4318**

Manufacturing processes planing systems

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

N.B. (1) Question No. **1** is **compulsory**.
(2) Solve any **four** questions from remaining **six** questions.
(3) Draw **neat** sketches wherever **required**.

1. (a) What is transformation process ? Explain it for a large manufacturing unit. **10**
   (b) List any ten operations that can be performed on Lathe machine and explain any four of them. **10**

2. (a) Draw neat block diagram of Lathe machine and name atleast six important major parts. **6**
   (b) Differentiate between gang drilling and multiple spindle drilling operation. **4**
   (c) Explain resistance spot welding with the help of neat schematic diagram, **6**
   (d) What are advantages and limitations of polymers ? **4**

3. (a) With the help of neat schematic diagram explain the process of rolling. **6**
   (b) Write a note on operation sheet preparation. **6**
   (c) Explain any four SQC tools with neat sketches. **8**

4. (a) What are the basic objectives of control charts ? Explain control charts for attribute data. **10**
   (b) Write a note on CNC operational sequence with the help of block diagram. **10**

5. (a) Differentiate between absolute and incremental system of programming used in CNC machines with suitable example. **6**
   (b) With neat schematic diagrams explain any two robot co-ordinate systems. **6**
   (c) Explain group technology. Write its advantages and limitations. **8**

6. (a) What is ergonomics ? Which factors will be considered for an ergonomic design of a chair used in I.T. industry ? **6**
   (b) Explain with schematic diagram, product layout and process layout. **8**
   (c) What is the role of forecasting in capacity planning ? **6**

7. (a) What is the role of demand management in Assemble-to-order environment ? **6**
   (b) What is Master Production Schedule ? What are its main objectives ? On what basis it is prepared ? **6**
   (c) Write a note on Just-In-Time. **8**