Seat No.

B.E.(ETC) (Part-IV)(Semester VII) Examination, March - 2023
COMPUTER NETWORKS
Sub. Code : 83825

Day and Date : Saturday, 17 - 06 - 2023   **Total Marks : 70**
Time : 02.30 p.m. to 05.00 p.m.

Instructions : 1) All questions are compulsory.
              2) Use of non-programmable calculator is allowed

Q1) Solve the following MCQ's:(1 Mark Each)   **[14]**

i)   What is a Firewall in Computer Network?

   a) The physical boundary of Network

   b) An operating system of computer Network

   c) A System designed to prevent unauthorized access

   d) A web browsing Software

ii) Internet working is function of_____layer

   a) Physical   b) Network

   c) Data link   d) None of above

iii) Bidirectional data transfer is called_____

   a) Piggybacking   b) Cyclic redundancy check

   c) Fletcher's checksum   d) Parity check

iv) What is the address size of IPv4

   a) 32 bit   b) 64 bit

   c) 128 bit   d) 256 bit

v)   For Stop-and-Wait ARQ, for 10 data packets sent, _____ acknowledgments are needed.

   a) Exactly 10   b) Less than 10

   c) More than 10   d) None of the above

vi) Distance Vector Routing Protocol is of _____ layer

   a) Network   b) Data link

   c) Physical   d) None of above

vii) DHCP (dynamic host configuration protocol) provides_____to the client.

   a) IP address   b) MAC address

   c) Url   d) None of the mentioned

viii) Which of the following devices translates hostnames into IP addresses?

   a) DNS Server   b) Hub

   c) DHCP Server   d) Firewall

ix) Which of the following is the ethernet broadcast address used in ARP and RARP requests?

   a) 255.255.255.255   b) 08:00:20:11:aa:01

   c) ff:ff:ff:ff:ff:ff   d) 224.0.0.0

x)   What is the uses of subnetting

   a) It divides one large network into several smaller ones

   b) It divides network into network classes

   c) It speeds up the speed of network

   d) None of above

xi) Which of the following are application layer protocols used in networking

   a) SMTP   b) FTP

   c) DNS   d) All of above

xii) Which queue operation is used for holding the packets in Leaky Bucket implementation?

    a) LIFO   b) FILO

    c) FIFO   d) None of above

xiii) What is the address size of IPv6

    a) 32 bit   b) 64 bit

    c) 128 bit   d) 256 bit

xiv) Varying output data rate is allowed by _____ algorithm

    a) Leaky bucket   b) Token bucket

    c) Both a and b   d) None of the above

Q2) **Answer any Two**   **[14]**

    a) Differentiate between guided and unguided transmission media.

    b) What is pure ALOHA and slotted ALOHA? Mention the advantages of slotted ALOHA.

    c) Explain HDLC frame format in detail

Q3) **Answer any Two**   **[14]**

    a) Describe the stop and wait protocol with neat sketch

    b) With neat sketch explain Twisted pair cables, connectors of twisted pair cables with neat graph explain the performance of Twisted pair cables.

    c) Explain MODEM with types, block schematic and standards.

Q4) **Answer any Two**   **[14]**

    a) Explain the working of DNS.

    b) What are the general principles of congestion control? Explain

    c) Explain RTP protocol in detail.

Q5) **Answer any Two**   **[14]**

    a) What are the static routing algorithms? Explain the concept of flooding.

    b) Write a note on   i) http   ii) telnet

    c) With appropriate format explain error reporting messages and query messages of ICMP.

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Seat
No.

B.Tech. (E &TC) (Part - II) (Semester - III) Examination, March - 2023
ANALOG COMMUNICATION
Sub. Code : 73246

Day and Date : Friday, 16 - 06 - 2023   **Total Marks: 70**
Time : 2.30 p.m. to 5.00 p.m.

Instructions: 1)   **All questions are compulsory.**
                          2)   **Use suitable assumptions if required.**
                          3)   **Draw necessary figures on right side of answer sheet.**

Q1) **Attempt following Multiple Choice Questions.**   **[14×1=14]**

   i)   In an AM Wave useful power is carried by_____.

           a)   Carrier   b)   Sidebands

           c)   Sidebands and Carrier   d)   None of the above

   ii)   In India,_____ modulation is used for radio Transmission

           a)   Frequency   b)   Amplitude

           c)   Phase   d)   None of the above

   iii)   Over modulation (Amplitude) occurs when signal amplitude is _____than

           carrier amplitude.

           a)   Equal to   b)   Greater than

           c)   Less than   d)   None of the above

   iv)   As the modulation level is increased, the carrier power_____.

           a)   Is increased   b)   Is decreased

           c)   Remains the same   d)   None of the above

v)   In frequency modulation, the_____ of carrier is varied according to the strength of the signal.

    a)   Amplitude   b)   Frequency

    c)   Phase   d)   None of the above

vi) Ideal or perfect modulation (amplitude) occurs when signal amplitude is

    _____carrier amplitude

    a)   Equal to   b)   Greater than

    c)   Less than   d)   None of the above

vii) The standard value for Intermediate frequency (IF) in AM receivers is

    a)   455 KHz   b)   580KHz

    c)   10.7 MHz   d)   50 MHz

viii) In Phase Modulation

    a)   Amplitude of the carrier remains same

    b)   Phase of the carrier varies in accordance with the modulating signal

    c)   The number of side bands are infinite

    d)   All of the above

ix) Low frequency noise is

    a)   Transit time noise   b)   Flicker noise

    c)   Shot noise   d)   None of the above

x)   In AM number of sidebands are_____.

    a)   1   b)   7

    c)   3   d)   2

xi) Quantization noise can be reduced by_____the number of levels.

  a) Decreasing   b) Increasing

  c) Doubling   d) Squaring

xii) Amplitude limiter in FM receivers are used to_____

  a) Remove amplitude variations due to noise

  b) Filteration

  c) Demodulation

  d) Amplification

xiii) In frequency modulation

  a) Amplitude of the carrier remains same

  b) Frequency of the carrier varies in accordance with the modulating signal

  c) The number of sidebands are infinite

  d) All of the above

xiv) In phase modulation, the_____ of carrier is varied according to the strength of the signal.

  a) Amplitude   b) Frequency

  c) Phase   d) None of the above

Q2) Attempt any two   [2×7=14]

  a) Draw and Explain Block Diagram of Analog Communication System.

  b) Explain concept of angle modulation with respect to phase modulation.

  c) Explain Signal to Noise ratio, Noise factor, Noise figure, Noise Temperature.

Q3) Attempt any two   [2×7=14]

a)   Explain superheterodyne receiver with advantages and disadvantages.

b)   Draw and explain foster-seeley discriminator.

c)   Explain PWM and PPM generation with waveforms.

Q4) Attempt any two

[2×7=14]

a)   Draw and Explain frequency spectrum of AM.

b)   Explain Narrowband FM.

c)   Define signal to noise ratio and FRISS formula for noise figure.

Q5) Attempt any two

[2×7=14]

a)   Define Sensitivity, dynamic range, selectivity, fidelity of super heterodyne receiver.

b)   Explain ratio detector.

c)   Discuss generation of PPM.

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B.Tech- ETC.

Seat No.	

Final B. Tech. (Electronics & Telecommunication Engg.)
(Semester - VII) (CBCS) Examination, March - 2023
EMBEDDED SYSTEM
Sub. Code : 83824

Day and Date : Friday, 16- 06- 2023   **Total Marks : 70**
Time : 02.30 p.m. to 05.00 p.m.

Instructions:
1) All questions are compulsory.
2) Assume suitable data wherever necessary.
3) Use of non-programmable Scientific Calculator is allowed.
4) Figures to the right indicate full marks.

Q1) Choose the correct option.   **[14]**

i) How does the pin RC2/CCP1 get configured while initializing the CCP module in the compare mode of operation?

a) as an input by writing it in TRISC register

b) as an output by writing it in TRISC register

c) as an input without the necessity of writing or specifying it in TRISC register

d) compare mode does not support pin RC2/CCP1 configuration CCP initialization

ii) How many registers are there in ARM7?

a) 35 register (28 GPR and 7 SPR)

b) 37 registers (28 GPR and 9 SPR)

c) 37 registers (31 GPR and 6 SPR)

d) 35 register (30 GPR and 5 SPR)

iii) ARM processor enters _____ mode upon failed attempt to access a memory.

a) IRQ   b) FIQ

c) Abort   d) System

iv) The LPC 2148 Microcontroller has _____ GPIO ports.

a) 2   b) 3

c) 4   d) 5

P.T.O.

v) ARM7 processor core is placed in _____ mode after reset.

    a) supervisor   b) system

    c) user   d) undef

vi) The size of Timer 0 is _____ bit and Timer 1 is _____ bit in LPC2148 respectively

    a) 16,16   b) 16,32

    c) 32,32   d) 8,8

vii) How many maximum tasks can be present in Running state in single processor system

    a) Zero   b) More than One

    c) N number of Task (No Limit) d) One

Q2) Answer any 2 of the following: **[14]**

    a) Write a program for addition of two 8-bit numbers and save the carry generated from the addition along with result?

    b) Explain Timer 1 Module of PIC16F877 along with FSRs.

    c) What is embedded system?.Classify them based on complexity.

Q3) Answer any 2 of the following: **[14]**

    a) What are different features of PIC microcontroller?

    b) How Capture module of PIC 16F877 works? Explain with neat diagram.

    c) Describe ARM core data flow model with suitable diagram.

Q4) Answer any 2 of the following: **[14]**

    a) Compare between ARM & THUMB instruction set features.

    b) Write embedded C code for LED blinking using GPIO of LPC 2148.

    c) Draw and explain architecture of RTOS kernel.

Q5) Answer any 2 of the following: **[14]**

    a) Write assembly language program to move the block of 10 data wards.

    b) State the features of LPC 2148 Microcontroller.

    c) Explain the round robin software system architecture.

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Seat
No.

Fourth year B.Tech.(Electronics & Telecommunication Engg.)
(Semester - VII)(CBCS) Examination, March - 2023
SATELLITE COMMUNICATION
Sub. Code : 83823 (PCC-ETC 701)

Day and Date : Thursday, 15 - 06 - 2023   Total Marks : 70
Time : 2.30 p.m. to 5.00 p.m.
Instructions :   1)   Use non-programmable calculator is permissible.
                          2)   Figures to the right indicate full marks.
                          3)   Assume suitable data if required.

Q1) Answer the following MCQ questions   [7×2 = 14]

a)   A communication satellite is a _____ satellite.
       i)   Artificial satellite   ii)   Natural satellite
       iii)   Man made satellite   iv)   Either (i) or (iii)

b)   Which technique uses two different antennas to reduce traffic on the
       same frequency?
       i)   Spatial isolation   ii)   Frequency reuse
       iii)   Multiplexing   iv)   Modulation

c)   _____ amplifies the power of frequency down converted signal
       (down link) to the required level.
       i)   Carrier Amplifier   ii)   Power Amplifier
       iii)   Carrier Processor   iv)   Power Processor

d)   The radius of orbit of a geostationary satellite is given by _____
       i)   [(T2*G*M)/(4*pi2)]3/2   ii)   [(T2*G*M)/(4*pi2)]2/3 - R
       iii)   [(T2*G*M)/(4*pi2)]1/3 - R   iv)   [(T2*G*M)/(4*pi2)]1/3

e)   Which one is not a category of military satellite?
       i)   Wideband satellite systems   ii)   Tactical satellite systems
       iii)   Protected satellite systems   iv)   GPS

P.T.O.

f) Which among below is not a methods to establish or address connectivity issues on the satellite.

    i)   On-board connectivity with transponder hopping

    ii)   On-board connectivity with switching or by using switch matrix

    iii) On-board connectivity with beam scanning

    iv) On-board connectivity with beam stearing

g) Duplexer is a two-way microwave gate.

    i)   TRUE   ii)   FALSE

    iii) Can be true or false   iv) Cannot say

Q2) Answer Any Two Questions.   **[2×7=14]**

    a)   State and explain various system performance parameters related to orbital effects in communication.

    b)   Explain attitude and orbit control system. (AOCS)

    c)   Write short notes on System noise temperature.

Q3) Answer Any Two Questions.   **[2×7=14]**

    a)   Explain Kepler's three laws of planetary motion.

    b)   Explain with typical block diagram tracking, telemetry, command and monitoring system.

    c)   Define noise figure and G/T ratio with relevant expressions.

Q4) Answer Any Two Questions.   **[2×7=14]**

    a)   Explain Satellite constellation

    b)   Write in detail about Delay and Throughput Consideration

    c)   Write a note on different frequency bands in satellite application.

Q5) Answer Any Two Questions.   **[2×7=14]**

    a)   Explain Protocol Translation, Stacking and Tunneling

    b)   With the help of geometry explain satellite coverage area calculation

    c)   Explain beam control technology in Directed Energy Laser Weapons

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Seat No.

Total No. of Pages : 2

F.Y. B.Tech. (Electronics and Telecommunication Engineering) (Part - IV) (CBCS) (Semester - VIII) Examination, March - 2023
MICROWAVE ENGINEERING (New)
Sub. Code : 84860

Day and Date : Monday, 19 - 06 - 2023

Total Marks : 70

Time : 10.30 a.m. to 01.00 p.m.

Instructions :
1) Use non-programmable calculator is permissible.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Q1) Answer the following MCQ questions. [2×7=14]

i) GaAs MESFETs are versatile device because it finds application in:
   a) Low-noise amplifiers
   b) High gain amplifiers
   c) Mixers
   d) All of the mentioned

ii) Most of the power measuring microwave devices measure _____.
   a) Average power
   b) Peak power
   c) Instantaneous power
   d) None of these

iii) The following vacuum tube can be used as an oscillator and an amplifier.
   a) klystron
   b) BWO
   c) TWT
   d) Magnetron

iv) Strapping is used in magnetrons to
   a) prevent mode jumping
   b) ensure bunching
   c) improve the phase-focusing effect
   d) prevent cathode back heating

v) The ratio of maximum power density in the desired direction to the average power radiated from the antenna is called as _____.
   a) directivity
   b) directive gain
   c) power gain
   d) partial directivity

P.T.O.

vi) A major disadvantage of klystron amplifier is:
   a) Low power gain   b) Low bandwidth
   c) High source power   d) Design complexity

vii) Barretters have _____.
   a) positive temp efficient of resistance
   b) negative temp coefficient of resistance
   c) both
   d) none

• Answer the following Descriptive Questions.

Q2) Answer any two questions.   [2×7=14]
   a) Derive Solutions of Wave Equations in Rectangular Coordinates.
   b) Explain Velocity-Modulation Process.
   c) Write a note on Electromagnetic compatibility.

Q3) Answer any two questions.   [2×7=14]
   a) Derive S Matrix of E-plane Tee.
   b) Explain working principle of magnetron.
   c) Explain different materials used in MMIC.

Q4) Answer any two questions.   [2×7=14]
   a) Explain RWH Theory.
   b) Design a rectangular microstrip antenna using a substrate (RT/duroid 5880) with dielectric constant of 2.2, h = 0.1588 cm (0.0625 inches) so as to resonate at 10 GHz.
   c) Explain measurement of microwave power using bridge circuit.

Q5) Answer any two questions.   [2×7=14]
   a) Explain working principle of HEMT.
   b) Define and explain antenna gain, directivity and beam width.
   c) Explain thermistor parameters and thermistor mounts.

Seat
No.

F.Y. B.Tech. (Electronics Engg.) (Part - IV) (Semester - VII) Examination, March - 2023

JAVA SCRIPT (Elective - I)

Sub. Code : 83829

Day and Date : Tuesday, 20 - 06 - 2023　　　　　　　　**Total Marks : 70**

Time : 02.30 p.m. to 05.00 p.m.

Instructions :　　1)　All questions are compulsory.

　　　　　　　　　2)　Figures to the right indicate full marks.

Q1) Answer following questions.　　　　　　　　　　　　　　　　　　**[14]**

    a)　Why JavaScript Engine is needed?

        i)　　Both Compiling and Interpreting the JavaScript

        ii)　　Parsing the JavaScript

        iii)　Interpreting the JavaScript

        iv)　Compiling the JavaScript

    b)　Which of the following is the property that is triggered in response to JS errors?

        i)　　on click　　　　　　　　　ii)　on error

        iii)　on message　　　　　　　　iv)　on exception

    c)　To which object does the location property belong?

        i)　　Window　　　　　　　　　ii)　Position

        iii)　Element　　　　　　　　　iv)　Location

    d)　Which of the following is not an error in JavaScript?

        i)　　Missing of Bracket　　　　ii)　Division by zero

        iii)　Syntax error　　　　　　　iv)　Missing of semicolons

    e)　The navigator property belongs to which of the following object.

        i)　　Document　　　　　　　　ii)　Window

        iii)　Navigator　　　　　　　　iv)　Location

f) Which of the following can be used to select HTML elements based on the value of their name attributes?

   i)   get Element By Name ()   ii)   get Elements By Name ()

   iii) get Elements Name ()   iv) get Element Name ()

g) The high-level events among the following events are _____.

   i)   User interface events   ii)   Device-independent events

   iii) Device-dependent events   iv) Stage event change

Q2) Solve any two question below.   **[14]**

   a) Explain different Keywords in Javascript with example.

   b) Explain with example Primitive and Non-primitive Data types.

   c) Compare while loop, do....while loop with example code in JS.

Q3) Solve any two question below.   **[14]**

   a) Explain methods for creating objects in JavaScript Programming.

   b) Explain events in JavaScript with example code.

   c) Explain Switch, Break, Continue statement with example code in JS.

Q4) Solve any two question below.   **[14]**

   a) Write a program to use and demonstrate the operators.

   b) Explain History object in JavaScript with example.

   c) Explain static method in JavaScript with syntax.

Q5) Solve any two question below.   **[14]**

   a) Write a program to create class with objects.

   b) Explain Window object in JavaScript with example.

   c) Explain methods of document object.

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ETC

Seat No.	

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Total No. of Pages : 2

F.Y. B.Tech. (E & TC) (Part - IV) (CBCS) (Semester - VIII) Examination, March - 2023
HIGH PERFORMANCE COMMUNICATION NETWORKS
Sub. Code : 84864

Day and Date : Saturday, 24 - 06 - 2023

Time : 10.30 a.m. to 01.00 p.m.

Total Marks : 70

Instructions :
1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q1) Attempt following multiple choice questions. [7×2=14]

i) ISDN stands for _____
   a) Integrated Services Digital Network
   b) Integrated Services Discrete Network
   c) Integrated Services Digital Node
   d) Integrated Services Discrete Node

ii) FDDI uses which type of physical topology?
   a) Bus
   b) Ring
   c) Star
   d) Tree

iii) Which of the following is classification of traffic?
   a) Constant bit Rate (CBR)
   b) Variable bit Rate (VBR)
   c) Messages
   d) All of the above

iv) ATM uses _____
   a) Asynchronous Frequency division Multiplexing
   b) Asynchronous Time division Multiplexing
   c) Asynchronous Space division Multiplexing
   d) Asynchronous Amplitude division Multiplexing

P.T.O.

v) VPNs are known as a _____ Protocol.
     a) Connectionless   b) Data link layer
     c) Tunneling   d) Network layer

vi) Wavelength Division Multiplexing (WDM) is an analog multiplexing technique to combine _____
     a) Magnetic signals   b) Electromagnetic signals
     c) Digital signals   d) Optical signals

vii) What is VANET stands for _____
     a) Vehicular Adhoc Network
     b) Vehicular Address Network
     c) Vehicular Adhoc Neural Network
     d) Wireless Sensor Networks

Q2) Solve any two: [2×7=14]
     a) Draw and explain TCP-IP reference model.
     b) Explain different network services.
     c) Draw and explain ATM cell Header for NNI.

Q3) Solve any two: [2×7=14]
     a) Draw and explain FDDI network.
     b) Draw and explain open data network model.
     c) Explain ATM switching building blocks.

Q4) Solve any two: [2×7=14]
     a) What is VPN? Explain Remote Access VPN.
     b) Explain block diagram of WDM.
     c) Explain in detail key challenges in vehicular network.

Q5) Solve any two: [2×7=14]
     a) Draw and explain MPLS header.
     b) Draw and explain in detail optical cross-connects.
     c) Write short note on vehicle sensors in VANET.

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Seat No.	

F.Y. B.Tech. (E & TC) (Part - II) (CBCS) (Semester - VIII) Examination, March - 2023
ADVANCED NETWORK SECURITY
Sub. Code : 84865

Day and Date : Saturday, 24 - 06 - 2023   **Total Marks : 70**
Time : 10.30 a.m. to 01.00 p.m.
Instructions :   1)   All questions are compulsory.
                       2)   Figures to the right indicate full marks.
                       3)   Assume suitable data if necessary.

Q1) Attempt following MCQ.   [7×2=14]

   i)   Which of the following modes of operation in DES is used for operating?

   a)   Cipher Feedback Mode (CFB)

   b)   Cipher Block Chaining (CBC)

   c)   Electronic Code Book (ECB)

   d)   Output Feedback Modes (OFB)

   ii)   Data encryption standard is a block cipher and encrypts data in blocks of size of _____ each.

   a)   64 bits   b)   32 bits

   c)   16 bits   d)   All of the mentioned above

   iii)   Which one of the following refers to the technique used for verifying the integrity of the message?

   a)   Digital signature   b)   Decryption algorithm

   c)   Protocol   d)   Message Digest

   iv)   The response time and transit time is used to measure the _____ of a network.

   a)   Security   b)   Longevity

   c)   Reliability   d)   Performance

v)   A Hash function must meet _____ criteria.

    a)   One   b)   Two

    c)   Three   d)   None

vi) Password based authentication can be divided into two categories such as _____ and _____.

    a)   Fixed; Variable   b)   Fixed : One Time

    c)   Both of them   d)   None of them

vii) TLS offers stronger protection than SSL.

    a)   True

    b)   False

Q2) Attempt any two: **[2×7=14]**

    a)   Identify the security attacks and distinguish the same.

    b)   Explain working of DES.

    c)   Explain Diffie-Hellman key exchange algorithm and list its applications.

Q3) Attempt any two: **[2×7=14]**

    a)   Describe security services and mechanism.

    b)   Explain working of AES with its applications.

    c)   Describe the requirements of RSA algorithm with its operation.

Q4) Attempt any two: **[2×7=14]**

    a)   Describe message authentication code.

    b)   Describe IP security in detail.

    c)   Explain Web vulnerability scanning tools in detail.

Q5) Attempt any two: **[2×7=14]**

    a)   Write note on MD5.

    b)   Write note on Electronic mail security.

    c)   Write note on Network instruction and detection tools.

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Fourth Year B.Tech. (ETC) (Semester - VIII) (CBCS)
Examination, March - 2023
WIRELESS COMMUNICATION
Sub. Code : 84861

Day and Date : Saturday, 17 - 06 - 2023   Total Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

Instructions :   1)   All questions are compulsory.
                 2)   Figures to the right indicate full marks.
                 3)   Assume suitable data if necessary.
                 4)   Use of standard datasheet is allowed.

Q1) Multiple Choice Questions (2 martks each)   [14]

    a)   Which of the following is not an outdoor propagation model?

        i)   Longley-Rice model

        ii)   Ericson Multiple Breakpoint Model.

        iii) Hata model

        iv)   Okumura model above

    b)   Direct RF pulse system helps in calculating.

        i)   Impulse response in frequency domain

        ii)   Impulse resoponse in phase domain

        iii) Power delay of the channel

        iv)   All of the above

    c)   Wireless LANs implement security measures in the

        i)   System Layers   ii)   Sub Layer

        iii) Multi Layers   iv)   Data Link Layers

d) Which of the most widely used model for signal prediction in urban areas?

   i)   Ericsson Multiple Breakpoint Model

   ii)   Log distance path loss model

   iii) Okumura model

   iv) Attenuation factor model

e) Which new modulation technique is used by EDGE?

   i)   8-PSK   ii)   DQPSK

   iii) AFSK   iv) BPSK

f) Types of small scale fading, based on Doppler spread are

   i)   Fast fading

   ii)   Frequency non selective fading

   iii) Flat fading

   iv) Frequency selective fading

g) Which of the following specifies a set of media access control (MAC) and physical layer specuifications for implementing WLANs?

   i)   IEEE 802.16   ii)   IEEE 802.11

   iii) IEEE 802.3   iv) IEEE 802.15

Q2) Attemp Any Two.   **[14]**

a) Explain Handoff in cellular system.

b) Draw and Explain two ray model.

c) Explain types of small - scale fading.

Q3) Attempt Any Two.   **[14]**

a) Explain concept of frequency reuse.

b) Explain Knife edge diffraction model.

c) Consider a transmitter which radiates a sinusoidal carrier frequency of 1850MHz. For a vehicle moving 60 mph. compute the received carrier frequrency if the mobile is moving

   i)   Directly towards the trasmitter,

   ii)   Directly away from the transmitter,

   iii) In a direction which is perpendicular to the direction of arrival of the transmitted signal.

Q4) Attempt Any Two.   **[14]**

a) Explain in detail B-ISDN services.

b) Draw and explain system architecture of IEEE 802.11 wirless LAN.

c) Explain in detail about WML.

Q5) Attempt Any Two.   **[14]**

a) Differentiate Between Wireless and Fixed Telephone Networks.

b) Draw and explain Bluetooth architecture in detail.

c) Explain Wireless Transport layer security.

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SE-105

Seat No.	

F.Y. B.Tech. (Computer Science and Engineering) (Part - II)
(CBCS) (Semester - VIII) Examination, March - 2023
AD-HOC WIRELESS SENSOR NETWORKS (Elective - II)
Sub. Code : 84726

Day and Date : Monday, 19 - 06 - 2023
Time : 10.30 a.m. to 1.00 p.m.

Total Marks : 70

Instructions :
1) All questions are compulsory.
2) Assume suitable data if wherever necessary.
3) Figures to the right indicate full marks.

Q1) Solve MCQs.   **[1 each]**

i)   Wireless network without a centralized access point may be:
   a)   An infrastructure network
   b)   An ad hoc network
   c)   Cellular network
   d)   All of these None of these

ii) The main source of power consumption in wireless sensor networks is due to
   a)   Sensing   b)   Transmitting
   c)   Processing   d)   None of these

iii) MARCH exploits the properties of _____ antennas and overhearing properties of 1 point MANETs.
   a)   Single directional
   b)   Bi-directional
   c)   Omnidirectional
   d)   None of these

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Q2) Solve any 2 of the following   **[7 each]**
   a)   What is Cellular and Ad Hoc wireless networks?
   b)   Explain Classification of routing protocols
   c)   What is Network security requirements?

Q3) Solve any 2 of the following   **[7 each]**
   a)   Define Issues in designing a multicast routing protocol.
   b)   What are the Issues and challenges in Quality of service?
   c)   What Split TCP; Security in ad hoc wireless networks?

Q4) Solve any 2 of the following   **[7 each]**
   a)   What is sensor network? Explain definition, operation.
   b)   Explain Energy-Aware Routing protocol.
   c)   Distinguish between absolute and relative localization in Detail

Q5) Solve any 2 of the following   **[7 each]**
   a)   Explain the architecture of IEEE 802.15 standard.
   b)   What is Geographic Routing discuss in detail?
   c)   Briefly explain Interval methods.

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iv) ---

a) Preferred input line, estimated time

b) Preferred input line, estimated distance

c) Preferred output line, estimated time

d) Preferred output line, router

v. Routing, a pro-active approach is used inside the zone (the node maintains the topology inside the zone, using a table driven routing protocol), whereas a reactive approach is used across zones.

a) MZRP

b) ABAM

c) PLBM

d) AODV

vi. A wireless network interface controller can work in

a) infrastructure mode

b) ad-hoc mode

c) both (a) and (b)

d) none of mentioned

vii. WPS is abbreviated as _____

a) Wi-Fi protocol setup

b) Wireless protocol setup

c) Wi-Fi protected setup

d) Wi-Fi protocol system

viii. What type of routing is used in VANET?

a) Single layer routing

b) Cross layer routing

c) Hybrid routing

d) AP routing

ix. The size of wireless sensor system is limited mostly by

a) A cost of maintaining communication links

b) The cost of sensor hardware

c) Environmental monitoring

d) Option (a) and (b)

x. The portions of electromagnetic spectrum occupied by a signal is called

a) Signal spectrum   b) Bandwidth

c) Frequency width   d) Signal strength

xi. _____ is a process used by contact center applications to distribute tasks according to a set of defined characteristics.

a) Attribute-Based Routing

b) Rumor routing

c) Clustering

d) Directed diffusion

xii. _____ is a method that allows the distributed nodes in a wireless sensor network to share its data efficiently among each other.

a) Broadcasting   b) SNR

c) OLA   d) Rumor

xiii. They can even use other services such as location tracking using the

a) GPS   b) VPS

c) GPRS   d) GSM

xiv. Sensors can be used

a) To monitor conditions and movements of wild animals or plants in wildlife habitats

b) To monitor air quality and track environmental pollutants, wildfires or other natural or man-made disasters

c) To monitor biological or chemical hazards to provide early warnings

d) All of the above

ETC

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Total No. of Pages : 3

Seat No.

F.Y. B.Tech. (Electronics and Telecommunication Engineering) (CBCS) (Semester - VII) Examination, March - 2023
IMAGE PROCESSING
Sub. Code : 83826

Day and Date : Monday, 19 - 06 - 2023
Time : 02.30 p.m. to 05.00 p.m.

Total Marks : 70

Instructions :
1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data, if necessary.

SECTION - I

Q1) Answer Multiple Choice Question. **[14]**

i) In which type of image acquisition technique need not required any type of motion.
   a) Image acquisition using single sensor
   b) Image acquisition using a linear sensor strip
   c) Image acquisition using a circular sensor strip
   d) Image acquisition using a circular sensor array

ii) The function of Iris is _____
   a) Detect color
   b) Varies focal length
   c) Control source of light
   d) Control amount of light

iii) What is the name of the tool that helps in zooming, shrinking, rotating, etc.?
   a) Filters
   b) Interpolation
   c) Sampling
   d) None of the above

iv) Hit-or-miss transformation is used for shape.
   a) Correction
   b) Detection
   c) Compression
   d) Enhancement

P.T.O.

v) A binary image consists of disks of sizes 3, 7, 9, 15, 17 pixels. We want to remove all the disks of size less than 13 pixels. Which morphological operation perform the task?

   a) Erosion with structuring element(disk) of size 15

   b) Erosion with structuring element(disk) of size 13

   c) Dilation with structuring element(disk) of size 15

   d) Dilation with structuring element (disk) of size 13

vi) The translation of set B is the

   a) $\{c|c = b+z\}$ b) $\{c|c = b-z)$

   c) $\{c|c = bxz\}$ d) $\{c|c = b\}$

vii) Which of the thresholding technique is appropriate when image histogram has more than two modes.

   a) Single threshold

   b) Double threshold

   c) Otsu threshold

   d) Result is invariant to the underlying thresholding method

Q2) Answer any two.   [14]

   a) Explain the basic concept of sampling and quantization of images to convert in digital form.

   b) What is meant by the histogram of an image? Explain the significance of histogram equalization.

   c) Explain the mechanics of Spatial Filtering.

Q3) Answer any two.   [14]

   a) Explain neighbor, connectivity and adjacency with respect to image pixels.

   b) Explain the Hadamard transform in Digital image processing.

   c) Explain the significance of first order and second order derivative for image sharpening.

Q4) Answer any two.   [14]

   a) Define image segmentation and discuss any two image discontinuities.

   b) Explain Hit-or-miss transform.

   c) Define image compression. Why compression is needed in image processing? Explain coding redundancy.

Q5) Answer any two.   [14]

   a) Describe region growing algorithm for segmenting image into different region.

   b) Define dilation and erosion and explain their properties.

   c) Explain loss less predicative coding in image compression.
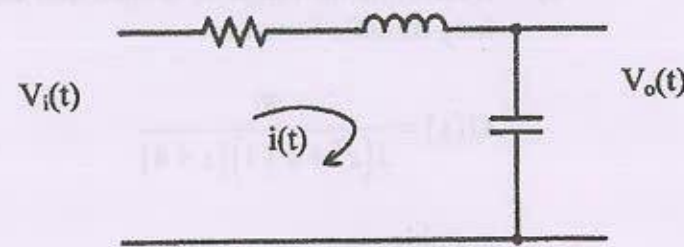
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[14]

Q5) Attempt any two:

   a) Derive state model for linear system.

   b) Obtain the state model of system in controllable canonical form having transfer function.

$$\frac{Y(s)}{U(s)} = \frac{s^3 + 5s^2 + 8s + 12}{s^3 + 7s^2 + 12s + 6}$$

   c) Obtain state model for series RLC circuit.

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Seat No.

Total No. of Pages : 4

F.Y. B.Tech. (Electronics & Telecommunication Engineering) (CBCS) (Semester - IV) Examination, March - 2023

CONTROL SYSTEM ENGINEERING

Sub. Code : 79183

Day and Date : Wednesday, 21 - 06 - 2023   **Total Marks : 70**

Time : 10.30 a.m. to 01.00 p.m.

Instructions : 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Assume suitable data, if necessary.

Q1) Choose one correct answer and rewrite the complete statement.   **[7×2=14]**

   i) The nature of the transient system depends on

      a) Only on system poles

      b) Only on inputs applied

      c) Both on system poles and applied inputs

      d) None of these

   ii) The unit impulse response of a system given as $c(t) = -4e^{-t} + 6\,e^{-2t}$ The step response of the same system for $t \geq 0$ equal to
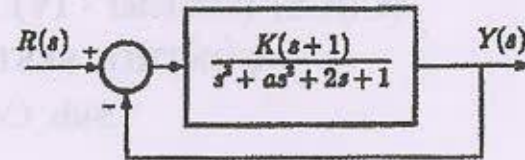
      a) $3e^{-2t} + 4e^{-t} + 1$ b) $-3e^{-2t} + 4e^{-t} + 1$

      c) $-3e^{-2t} + 4e^{-t} - 1$ d) $3e^{-2t} - 4e^{-t} + 1$

   iii) If the characteristic equation of a closed-loop system is $s^2 + 2s + 2 = 0$ then the system is

      a) overdamped   b) critically damped

      c) underdamped   d) Undamped

P.T.O.

iv) The feedback system shown below oscillates at 2 rad/s when

    a)   K = 2 and a = 0.75   b)   K = 3 and a = 0.75

    c)   K = 4 and a = 0.5   d)   K = 2 and a = 0.5

$R(s)$ $+$ $\otimes$ $\longrightarrow$ $\boxed{\dfrac{K(s+1)}{s^3 + as^2 + 2s + 1}}$ $\longrightarrow$ $Y(s)$

v) The transfer function of the system depends on

    a)   Nature of input   b)   Nature of output

    c)   System parameter alone   d)   initial condition

vi) Three blocks with gains of 4, 6 and 8 are connected in parallel. The total gain of the arrangement is

    a)   18   b)   32

    c)   196   d)   52
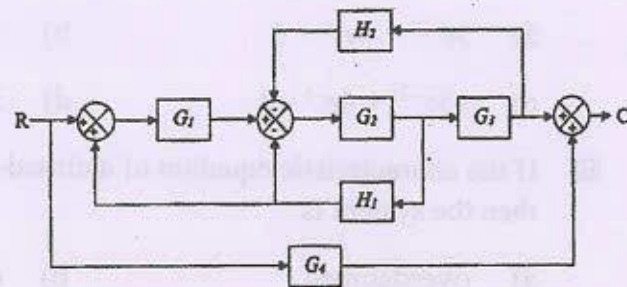
vii) If the gain K of the system increases the steady state error of the system

    a)   Decreases   b)   Increases

    c)   May increase or decrease   d)   Remains unchanged

Q2) Attempt any two: **[14]**

    a)   Compare Open Loop and Closed Loop Systems

    b)   Determine overall transfer function using Block diagram red ion technique.

R $\longrightarrow$ $\otimes$ $\longrightarrow$ G_1 $\longrightarrow$ $\otimes$ $\longrightarrow$ G_2 $\longrightarrow$ G_3 $\longrightarrow$ $\otimes$ $\longrightarrow$ C, with H_2, H_1, G_4 feedback blocks

    c)   Derive the expressions for Rise Time (t_r) and Peak Time (t_p)

Q3) Attempt any two: **[14]**

    a)   State and explain Routh criterion for system stability.

    b)   The open loop transfer function of a unity feedback system is

$$G(s) = \frac{10}{s(s+4)}$$

         Determine the rise time, peak time.

    c)   Determine the range of K such that unity feedback system with an open loop transfer function

$$G(s) = \frac{K}{s(s^2 + s + 1)(s + 4)}$$

         is stable.

Q4) Attempt any two.   **[14]**

    a)   What is the need of compensation? Explain lead compensator in detail.

    b)   Sketch Bode plot and determine gain crossover and phase crossover Frequencies.

$$G(s) = \frac{100(s+3)}{s.(s+1)(s+5)}$$

    c)   Define polar plot. Sketch polar plot for unity feedback system with open loop transfer function.

$$G(s) = \frac{1}{(s+4)(s+2)}$$