Time: 3hrs.   Max. Marks: 75

SECTION-A (4 X 15 = 60 M)
Answer ALL Questions

1. **a)** Explain the architecture of 8086.   **(15M)**
    OR
    b) Explain assembler directives of 8086.   **(15M)**

2. **a)** What are assembly language program development tools.   **(15M)**
    OR
    b) Explain 8086 Interrupts and interrupts response .   **(15M)**

3. **a)** What are the specifications and different types of DAC and Interfacing.   **(15M)**

    OR
    b) Explain briefly about 8251.   **(15M)**

4. **a)** Explain the architecture of 8051.   **(15M)**
    OR
    b) Write about instruction set of 8051.   **(15M)**

Section-B (5 X 3 =15 Marks)

5. **Answer any FIVE of the following:**

    a)   What are the difference between MP & MC

    b)   Draw the pin configuration of 8086.

    c)   Explain the minimum mode system.

    d)   What are the ports in micro computer system.

    e)   Draw 8255 architecture.

    f)   Define DMA .

    g)   Draw the pin configuration of 8051 and explain.

    h)   What are the addressing modes of 8051.

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ADIKAVI NANNAYA UNIVERSITY::RAJAMAHENDRAVARAM
III B.TECH – II SEMESTER
ELECTRONICS AND COMMUNICATION ENGINEERING
BTECE602: MICROWAVE ENGINEERING
MODEL QUESTION PAPER

Time: 3hrs.   Max. Marks: 75

SECTION-A (4 X 15 = 60 M)
Answer ALL Questions

1. a) Explain the microwave spectrum and bands**.**   **[15M]**
    (OR)
    b) What are the characteristics equation and cut off frequencies.   **[15M]**

2. a)What are the S- matrix calculations for two port junctions , E- plane and H- plane tees.
                                                                                            [15M]
    (OR)
    b) Explain S- matrix Calculations for Gyrator, Isolator and Circulator.   **[15M]**

3. a) Explain O type and M type classifications.   **[15M]**
    (OR)
     b) Explain velocity modulation process and applegate diagram.   **[15M]**
4. a) Explain the description of Microwave bench , different blocks and their features.
                                                                                            [15M]
    (OR)
    b) Explain the measurement of Attenuation.   **[15M]**

Section-B (5 X 3 =15 Marks)
5. **Answer any FIVE of the following:**
    a). Draw the sketches of TE and TM mode fields in the cross section.
    b). What are the applications of Microwaves.
    c). Explain dielectric , rotary vane types.
    d).Explain probe loop, aperture types.
    e) Explain velocity modulation process.
    f) Define Reflex klystron .
    g)Define VSWR.
    g) What are the impedance measurement.

Time: 3hrs.   Max. Marks: 75

SECTION-A (4 X 15 = 60 M)
Answer ALL Questions

1. **a)** What are the steps involved in the nMOS fabrication? Explain with neat sketches.   **(7M)**
    b) Explain the structures of n MOS enhancement mode, depletion mode and p-MOS enhancement mode transistors**.**   **(8M)**
    OR
    b) Derive the expression for the ratio between Zp.u and Zp.d if an nMOS inverter is to be driven from another nMOS inverter.   **(8M)**
    c) Draw and explain the operation of BiCMOS inverter.   **(7M)**

2. **a)** What is a stick diagram? Explain about different symbols used for components in stick diagram.   **(8M)**
    b) Draw and Explain about the nMOS inverter design style.   **(7M)**

    OR
    c) Explain about Lambda Based Design Rules.   **(7M)**
    d) Design a stick diagram for 2 input NAND gate by using CMOS Logic.   **(8M)**

3. **a)**. Explain the concept of sheet resistance and apply it to compute the ON resistance (VDD to GND) of an NMOS inverter having pull up to pull down ratio of 4:1, If n channel resistance is Rsn $=10^4$ Ω per square.   **(7M)**
    b) What is inverter delay? How delay is calculated to for multiple stages?   **(8M)**
    OR
    b) Realize basic gates using NMOS.   **(8M)**
    c) Explain the structured design approach of parity generator.   **(7M)**

4. **a)** Explain about building block architecture of FPGA.   **(8M)**
    b) Write the VHDL code to implement stack.   **(7M)**
    OR
    b) Write the VHDL code to implement four bit shift register.   **(8M)**
    c) Explain the design flow using FPGA.   **(7M)**

Section-B (5 X 3 =15 Marks)
5. Answer any FIVE of the following:

   a) Compare CMOS, Bipolor, BiCMOS technologies?

   b) Define the terms figure of merit (ω_0), Pass transistor, $g_{ds.}$

   c) Explain how stick diagrams can be used for layout diagrams.

   d) Design a stick diagram for inverter using CMOS.

   e) Explain a four line Gray code to Binary code converter.

   f) Write short notes on switch logic and its arrangements.

   g) List the applications of FPGA.

   h) Explain the functions of LUT based logic block.

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ADIKAVI NANNAYA UNIVERSITY::RAJAMAHENDRAVARAM
III B.TECH – II SEMESTER
BTECE604: DIGITAL SIGNAL PROCESSING
MODEL QUESTION PAPER

Time: 3hrs.   Max. Marks: 75

SECTION-A (4 X 15 = 60 M)
Answer ALL Questions

1. A) Find the solution to the following linear convolution difference equation

    $y(n) - \frac{3}{2} y(n-1) + \frac{1}{2} y(n-2) = (\frac{1}{2})^n \; for \; n \geq 0$

    with initial conditions $y(-1) = 4 \; and \; y(-2) = 10$ (10M)

    B) Explain causality and Stability of a linear time invariant system   (5M)

                                          OR

    C) Determine the frequency response, Magnitude and Phase responses and time delay of
    the systems given by $y(n) = x(n) - x(n-1) + x(n-2)$ (10M)

    D) Derive the relationship between impulse response and frequency response of a discrete
    time system   (5M)

2.A) Find the DFT of the Following sequence using FFT DIF $X(n) = \{1,2,3,5,5,3,2,1\}$ (10M)

    B) Find the N-Point DFT for $X(n) = a^n \; for \; 0 < a < 1$ (5M)

                                          OR

    C) Compute the DFT of the sequence $x(n) = \sin[\sin n\pi/4]$, where N=8 using DIT FFT

                                                                                                 (10M)

    D) Given $x(n) = \{1,2,3,4,4,3,2,1\}, find \; x(k) using \; DIF \; FFT \; algorithm$ (5M)

3. A) Realize the following IIR system functions in the direct form I and II and also Parallel form

    $$H(Z) = \frac{1}{(1+az^{-1})(1-bz^{-1})}$$ (15M)

                                          OR

    B) What is a Keiser window? In what way is it superior to other window functions   (5M)

    C) Convert the analog filter to digital filter whose system function is

    $$H(s) = \frac{1}{(s+Z)^2+(s+1)}$$ (10M)

4. A) Draw the block diagram of multistage interpolator and explain each block   (10M)

    B) Derive an expression for the spectrum of output signal of an decimator   (5M)

                                          OR

    C) The Desired frequency of a low pass filter is $H_d(e^{-jw}) = \begin{cases} e^{-j3w} & \frac{-3\pi}{4} \leq w \leq \frac{3\pi}{4} \\ 0 & ,Otherwise \end{cases}$

    Determine $H(e^{jw}) \; for \; M = 7$ using rectangular Window.   (15M)

Section-B (5 X 3 =15 Marks)
5. Answer any FIVE of the following:

a) Find the power of the signal $x[n] = f(x) = \begin{cases} 3(-1)^n, & n \geq 0 \\ 0, & n < 0 \end{cases}$

b) What is BIBO stability? What are the conditions of BIBO system?

c) Show that the following systems are nonlinear and time invariant $y(n) - x(n)y(n-1) = x(n)$

d) What are the basic building blocks of realization structures?

e) What are the Advantages of DSP processors in relation to general purpose processors?

f) State all properties of DFT?

g) Compare direct form I and direct form II realization of IIR systems?

h) What is the need for multirate signal processing?

Time: 3hrs.   Max. Marks: 75

SECTION-A (4 X 15 = 60 M)
Answer ALL Questions(4x15=60)

1. a) why   we need object oriented programming languages instead of structured programming languages ?Explain.   (7M)
   b) How can we say that java is a complete object oriented programming language?Justify your answer.   (8M)

(OR)

   c) Explain the role of command line arguments in java programming .   (7M)
   d) Write a java program to find the individual digits of a given number.   (8M)

2. a) with the help of syntax, flow chart and example program explain different conditional statements supported by java.   (15M)

(OR)

   b) Write and explain bitwise, logical and special operator supported by java.   (15M)

3 a) What is an array? Why we need them? list the different types of arrays supported by java? write a java program to multiply two   matrices.   (15M)

(OR)

   b) Define a package? write a java program to illustrate the working of packages.   (8M)
   c) How can we assign the priorities to a thread? explain.   (7M)

4 a) With the help of a neat sketch, explain the exception handling mechanism.   (7M)
   b) Distinguish between applet and application programming.   (8M)

(OR)

   c) With the help of a neat sketch explain the life cycle of an applet.   (7M)
   d) Write a java program to read information from the keyboard,store it in a file and display the same. (8M)

SECTION-B

5. Answer any FIVE questions   (5x3=15M)
a).Give brief information about the history of java.
b)Write a java program to find the factorial value of any given number.
c) Write about the precedence of arithmetic operators .
d) Write a java program to illustrate incerment and decrement operators.
e) Decribe about the thread synchronization.
f) Describe about the naming conventions used for packages.
g) Write short notes on types of errors.
h) Write an applet program to generate cycles and ellipses.

Time: 3hrs.   **Max. Marks: 75**

SECTION-A (4 X 15 = 60 M)
Answer ALL Questions

1. **a)** Explain software development process models with a suitable example project for each model. [15M]

Or

   b) Explain project management activities. [15M]

2. **a)** Briefly explain the requirements process. Consider a web application for conducting mid examinations. List major use cases for this system along with goals, preconditions and exception scenarios. [15M]

Or

   b) What are the different architectural styles? Consider an online shopping website which provides many different features to perform various tasks. Suggest a suitable architectural style for this. [15M]

3. **a)** Explain structured design methodology with an example. [15M]

Or

   b) Explain programming principles and guidelines [15M]

4. **a)** Describe how the measure cyclomatic complexity is derived and its usage during testing with an example.[15M]

Or

   b) Explain any 2 black box test case design methods. [8M]
   c) Explain any 2 white box test case design methods. [7M]

SECTION – B (5x3=15 Marks)

5. Answer any FIVE Questions
   a) Define software engineering.
   b) Write a short notes on the problem of scale.
   c) Defect injection and removal cycle.
   d) Top Down vs Bottom Up effort estimation approach.
   e) Consider a program containing many modules. If a global variable x must be used to share data between two modules A and B, how would you design the interfaces of these modules to minimise coupling.
   f) Pair programming
   g) Define error, fault and failure
   h) Give relevant test cases for a login form.

ADIKAVI NANNAYA UNIVERSITY::RAJAMAHENDRAVARAM
III B.TECH – II SEMESTER
BTECE605C:DATA MINING AND WARE HOUSING
MODEL QUESTION PAPER

Time: 3hrs.   **Max. Marks: 75**

SECTION-A (4 X 15 = 60 M)
Answer ALL Questions

1. a)Compare and contrast OLAP and OLTP. [15M]

    OR

    b) What are different schemas for design of a data ware house? Explain with neat sketches. [15M]

2. a) Explain how the evolution of database technology led to data mining. [15M]

    OR

    b) Describe any five advanced data base systems and applications.[15M]

3. a) What is association rule Mining problem? Explain Aprori algorithm for finding frequent item sets with example. [15M]

    OR

    3b) What is the difference between mining frequent item sets with candidate generation and without candidate generation? Explain. [15M]

4. a) Briefly describe the ways to reduce the computational complexity of frequent item set generation. [15M]

    OR

    b) What is candidate generation? List the requirements for an effective candidate generation. [8M]

    c) Briefly describe the relation among frequent, maximal frequent and closed frequent item sets. [7M]

Section-B (5 X 3 =15 Marks)
5. Answer any FIVE of the following:

a) What is data mining? Give an example.
b) Compare and contrast ROLAP versus MOLAP
c) What is data integration and why it is necessary?
d) What is classification? Explain briefly.
e) What are the time and space complexities of K-means clustering algorithm?
f) What is Apriori principle? Explain briefly.
g) Why confidence-based pruning is required?
h) Would the cosine measure be the appropriate similarity measure to use with K-means clustering for time series data? Why or why not?

Time: 3hrs.   **Max. Marks: 75**

SECTION-A (4 X 15 = 60 M)
Answer ALL Questions

1. **a)** How the bioelectric potentials are measured? Name some of the equipment using such measurement.   **(7M)**

b) What is a man-instrument system? Explain.**.**   **(8M)**

OR

c) What is a man-instrument system? Explain..   **(8M)**

d) Discuss the Bioelectric potentials of EMG.   **(7M)**

2. **a)** Draw different ECG lead configurations and explain recording of ECG.   **(8M)**

b) Explain the electrical conduction system of a heart   **(7M)**

OR

c) Explain the basic transducer principle with an example   **(7M)**

d) Give the comparison of internal and external bio-potential electrodes..   **(8M)**

3. **a)** Compare and contrast pacemakers and defibrillators.   **(8M)**

b) With neat diagram explain about the calibration and repair ability of patient monitoring equipment.   **(7M)**

OR

c) What are the elements of intensive-care unit? Explain.   **(8M)**

d) What are the elements of intensive-care unit? Explain.   **(7M)**

4. **a)** Explain about shock hazards of electrical equipment.   **(8M)**

b) Explain the working principle of CT Scan with block diagram.   **(7M)**

OR

c) What is the use of telemetry for ECG measurements? Explain.   **(8M)**

d) What are the different types of recorders? Explain.   **(7M)**

Section-B (5 X 3 =15 Marks)

5. Answer any FIVE of the following:

a) What is the use of bioamplifier?

b) Write the Nernst equation.

c) What are the different bio-chemical electrodes?

d) Draw reference electrode basic configuration.

e) What is the use of de- fibrillator?

f) What is macro shock?

g) Write notes on CAT

h)Applications of the CT Scan.

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MODEL QUESTION PAPER

Time: 3hrs.   **Max. Marks: 75**

SECTION-A (4 X 15 = 60 M)
Answer ALL Questions

1. a) What do you mean by computer network? Classify computer networks and

   Explain them in brief.   (8M)

   b) Distinguish between TCP/IP and OSI Model   (7M)
                                    (OR)
   c) Explain detail about Network Hardware. How network hardware support the
      communication of two systems?   (8M)
   d) Define Topology. Discuss in brief about computer network topolgies   (7M)

2. a) Define Topology. Discuss in brief about computer network topologies   (8M)

   b) Explain details about ISDN. Describe the types of ISDN   (7M)

                                    (OR)

   c) Differentiate between guided and unguided transmission media.   (8M)

   d) What are the advantages of Narrow brand and broad band ISDN?   (7M)

3. a) What are the various types of error detection methods and explain in detail (15M)
                                    (OR)
   b) Explain detail about the carrier sense multiple access protocols.   (15M)

4. a) Describe importance of DNS in application layer   (8M)

   b) What is multicasting? Briefly discuss multicasting techniques and protocols (7M)

                                    (OR)

   c) Write a detailed note on transport services   (8M)

   d) What is World Wide Web? Explain details about HTTP   (7M)

Section-B (5 X 3 =15 Marks)
5. Answer any FIVE of the following:
   a) Define Computer network
   b) What are the advantages of MAN?
   c) Discuss about unguided transmission media.
   d) Write about Hamming code.
   e) What is the purpose of DNS.
   f) What are the advantages of transport layer.
   g) What are the advantages of slotted Aloha.
   h) What is the difference between broad casting and multicasting.