PGIVS-001-B-21
M.Sc. IV Semester (CBCS) Degree Examination
APPLIED ELECTRONICS
Microcontrollers and Interfacing
Paper : HCT - 4.1

Time : 3 Hours   **Maximum Marks : 80**

Instructions to Candidates:

   i)   Write the Q. No. clearly.

   ii)   Draw a neat labelled diagram wherever necessary.

PART - A

Answer any **EIGHT** of the following: (8×2=16)

1. a)   Give the on chip data and program memory bytes of 8031 and 8051 microcontrollers.

   b)   How do you distinguish between 8 and 16 bit microcontrollers?

   c)   What do you understand by RISC and CISC processors?

   d)   Define LJMP, SJMP and AJMP.

   e)   Differentiate between RET and RETI instructions.

   f)   Define the functions of assembler and linker.

   g)   List the features of 89C2051.

   h)   List the specifications of pic 16C61.

   i)   Write the memory organization of pic microcontroller.

   j)   Define ADC interrupts of pic microcontroller.

PART - B

Answer any **FOUR** of the following: (7×4=28)

2.   Explain embedded versus external memory devices.

3.   Explain in detail the register of 8051.

4.   With neat diagram explain the circuit of oscillator and reset connection mechanism of 8051.

5. Draw the test circuit for 89C2051 and explain its working.

6. Write a program to exchange lower and upper nibble of accumulator then exchange it with the content of R0.

7. Discuss about option register of pic microcontroller.

PART - C

Answer any **THREE** of the following: (3×12=36)

8. With a neat diagram explain the internal architecture of 8051.

9. Define timer modes of 8051. Explain mode 0 and 1 operation with necessary programs.

10. Draw the internal architecture of 89C2051 and explain about each unit.

11. Explain about 89C2051 precision analog comparator.

12. Write short notes on any **two** of the following: (2×6=12)

   a) Parallel I/O ports of 8051

   b) Memory organizations of 8051

   c) Atmel Microcontrollers

   d) Applications of microcontroller

PGIVS-003-B-21
M.Sc. IV Semester (CBCS) Degree Examination
APPLIED ELECTRONICS
Digital Signal Processing
Paper : SCT - 4.1

Time : 3 Hours   **Maximum Marks : 80**

Instructions to Candidates:

    i)   Write the Q. No. clearly.

    ii)   Draw a neat labelled diagram wherever necessary.

PART - A

1. Answer any **EIGHT** of the following: (8×2=16)

    a)   Define Continuous and Discrete Time signals. Sketch them neatly.

    b)   Define discrete time system. Mention its important properties and basic building blocks.

    c)   What is convolution? Give its properties.

    d)   Define Z-transform. Explain its significance.

    e)   Sketch and explain the ROC, zeroes and poles.

    f)   What do you mean by radix-2 FFT algorithm?

    g)   Define system function.

    h)   Define all pass filters.

    i)   Define frequency sampling structure.

    j)   Mention the important properties of lattice filters.

PART - B

Answer any **FOUR** of the following: (4×7=28)

2. What is a signal? List the different types of signals and give its mathematical representation.

3. How will you perform the manipulation of signal? Explain with suitable example.

4. Explain the properties of Z-transform.

5. With suitable example, discuss the overlap-add method.

6. Distinguish between DIT and DIF FFT.

7. Describe the importance of feedback systems.

PART - C

Answer any **THREE** of the following: $(3 \times 12 = 36)$

8. With suitable, example, explain the technique of performing convolution.

9. If $X(n) = \{-1, -2, 0, -2, 1, -1, 1\}$ and $h(n) = \{1, -2, -1\}$, find $y(n)$ using OA and OS method.

10. Discuss the stability and causality in LTI system.

11. Explain the importance of basic computational elements required to find the output in digital networks.

12. Write short notes on any TWO: $(2 \times 06 = 12)$

    i) Applications of digital signal processing   ii) Applications of DFT and FFT

    iii) FFT algorithms for Composite N   iv) IIR lattice filters.

PGIVS-002-B-21
M.Sc. IV Semester (CBCS) Degree Examination
APPLIED ELECTRONICS
Microwave Electronics and Applications
Paper : HCT - 4.2

Time : 3 Hours   **Maximum Marks : 80**

Instructions to Candidates:

    i)   Write the Q. No. clearly.

    ii)   Draw a neat labelled diagram wherever necessary.

PART - A

Answer any **EIGHT** of the following: (8×2=16)

1.   a)   Define Radar, Mention its two advantages and disadvantages.

    b)   List the applications of Satellite.

    c)   Who proposed the concept of idea of satellite communication and when it was realized?

    d)   Why uplink and downlink frequencies are different in satellite communication?

    e)   What is MSAT?

    f)   Give the examples for wireless communication.

    g)   Define Doppler effect.

    h)   Define GPS.

    i)   Define MTI.

    j)   What is SARSAT?

PART - B

Answer any **FOUR** of the following.   (4×7=28)

2.   What are the basic differences between search Radar and tracking Radar? Discuss the various scanning techniques and tracking mechanism.

3.   State Kepler's law. Explain the significance of Kepler's law's to satellite communication.

4. Discuss in detail about uplink and down link budget calculation in satellite communication.

5. Explain about data broadcast satellites (VSAT).

6. With a neat block diagram discuss the working of cellular telephone system.

7. Discuss in detail the trend in cellular radio and personal communication system.

PART - C

Answer any **THREE** of the following. (3×12=36)

8. With necessary block diagram discuss the working principle of frequency modulated CW radar. Mention its applications.

9. Describe the geostationary orbits.

10. Explain the working of typical earth station of satellite communication system.

11. Discuss briefly about INTELSAT and MSAT.

12. Write a short note on: (2×6=12)

   i)   Attitude control   ii)   INMARSAT

   iii) Paging systems   iv)   Personal communication system.