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**PGIIS-824 A-21**  
**M.Sc. III Semester (CBCS) Degree Examination**  
**ELECTRONICS AND INSTRUMENTATION**  
**Digital Signal Processors and Applications**  
**Paper : SCT - 3.1**

**Time : 3 Hours**

**Maximum Marks : 80**

***Instructions to Candidates:***

Answer the questions as per instructions.

**PART - A**

Answer any **Eight** of the following.

**(8×2=16)**

1. a. Differentiate between analog and digital signals.
- b. List out the applications of DSP.
- c. How DSP is different from general purpose microprocessor?
- d. Define Linear phase in FIR filter.
- e. Find the Z - transform of a step function.
- f. What is memory size in TMS320C5X DSP?
- g. Explain LACB instruction.
- h. What is AIC?
- i. Write an ALP to initialise AIC.
- j. Give the advantages of AIC.

**PART - B**

Answer any **Four** of the following.

**(4×7=28)**

2. Explain the properties of Z - transform.
3. Find the Z - transform of  $h(n) = a^n \cos n\omega_0$ .
4. Explain the design of a Butterworth filter.

5. Explain the design of IIR filter by Impulse Invariant Technique.
6. Explain the following instructions with examples.
  - i. MPYA
  - ii. ADDC
  - iii. BANZ
7. Write an ALP to generate. Triangular wave.

**PART - C**

Answer any **Three** of the following.

**(3×12=36)**

8. Obtain the inverse Z - transform of the following equation by partial fraction method.

$$H(z) = \frac{-4 + 8z^{-1}}{(1 + 4z^{-1})(1 + 2z^{-1})}$$

9. Discuss the design of IIR filter by Bilinear Transformation method.
10. a) Explain the memory organisation of TMS320C5×DSP. **(6)**  
 b) Explain the Addressing modes of TMS320C5×DSP. **(6)**
11. With a neat diagram, explain the interfacing of DDS with DSP and write the necessary ALP.
12. Write short notes on any **Two**. **(2×6=12)**
  - i. Types of systems
  - ii. Analog filter Vs Digital filter
  - iii. Advantages of FIR filter.
  - iv. DSP - band Lock - in - Amplifier.

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**PGIIS-825 A-21**  
**M.Sc. III Semester (CBCS) Degree Examination**  
**ELECTRONICS AND INSTRUMENTATION**  
**Introduction to Microprocessors and Microcomputer**  
**Paper : OET - 3.1**

**Time : 3 Hours**

**Maximum Marks : 80**

***Instructions to Candidates:***

1. Answer the questions as per the instructions.
2. Write the question numbers clearly.

**PART - A**

1. Answer any **Eight** of the following. **(8×2=16)**
- a) What is Microprocessor? What is the bit size of 8086 microprocessor?
  - b) What is the meaning of assembly directives DW, DD.
  - c) State the use of CF and ZF flag in 8086.
  - d) What is the advantage of memory segmentation?
  - e) Explain the instructions i. ADD, ii. ADC.
  - f) What is interfacing? Give example.
  - g) What is an EISA and ISA?
  - h) Differentiate between I/O and memory mapped address decoding techniques.
  - i) What is MATLAB? Mention how MATLAB different from other programming languages.
  - j) What are MATLAB windows?

**PART - B**

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

2. Explain addressing modes of 8086 microprocessor with examples.
3. Write an ALP to arrange the given numbers in descending order.
4. Discuss the interfacing of odd and even memory banks of 8086.

5. Draw the block diagram of programmable interval timer 8254 and explain.
6. Draw the block diagram of IBMPC. Mention its salient features.
7. Write MATLAB program to create GUI to convert Centigrade to Fahrenheit and vice - versa.

**PART - C**

Answer any **Three** of the following.

**(3×12=36)**

8. With suitable examples, explain the classification of instruction set of 8086.
  9. Explain interfacing of 8 - bit binary counter with 8086 through 8255. Write an ALP.
  10. Explain Memory & I/O map of PC.
  11. Explain built in function of arrays.
  12. Write short notes on any **Two** of the following. **(2×6=12)**
    - a) Architectural features of 8086.
    - b) Assembly language development tools
    - c) Printer port
    - d) MATLAB File system.
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**PGIIS-823 A-21**  
**M.Sc. III Semester (CBCS) Degree Examination**  
**ELECTRONICS AND INSTRUMENTATION**  
**Process Instrumentation**  
**Paper : HCT 3.2**

**Time : 3 Hours**

**Maximum Marks : 80**

***Instructions to Candidates:***

- 1) *Answer the questions as per the instructions.*
- 2) *Write question numbers clearly.*

**PART - A**

Answer any **Eight** of the following.

**(8×2=16)**

1.
  - a) Define Pressure and give its units.
  - b) What is the principle of radiation type thermometer?
  - c) What are rate meters?
  - d) What is the principle of electromagnetic flow meter?
  - e) What are the differences between primary and secondary flow meters?
  - f) Define absolute, specific & relative Humidity.
  - g) What is the principle of NMR moisture measurement system?
  - h) Define density and give its units.
  - i) Give the diagram for Psychrometer.
  - j) Mention the principle of Hydrostatic level measurement system.

**PART - B**

Answer any **Four** questions.

**(4×7=28)**

2. Explain total radiation pyrometer.
3. With a neat diagram explain Manometers.
4. Explain any two methods of primary flow meters.
5. Explain electric force measurement system.

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6. Explain the working principle of Dew point moisture measurement system.
7. With a neat diagram explain radiation methods for level measurement.

**PART - C**

Answer any **Three** questions.

**(3×12=36)**

8. Describe the working principle of electrical type thermometers.
  9. With a neat diagram explain low pressure measurement system.
  10. With a neat diagram explain electromagnetic and hot wire anemometers.
  11. With a neat diagram explain capacitance type and Coriolis type densitometers.
  12. Write a short notes of any **Two** of the following. **(2×6=12)**
    - i) Mechanical thermometers.
    - ii) Electrolysis type Hygrometer.
    - iii) IR radiation methods for moisture measurement.
    - iv) Resistance type level measurement.
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