

PGIIS 1592 B-15
M.Sc. IIIrd Semester Degree Examination
Electronics & Instrumentation
(Digital Signal Processors & Applications)
Paper - SCT - 3.1

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates:

Answer the questions as per instructions.

Section - A

1. Answer any **Eight** questions. (8×2=16)
- a) Define causal and Non causal systems.
 - b) Define Fourier Transform.
 - c) Define Z- Transform.
 - d) List out the special features of Digital Filter.
 - e) Define Linear phase in FIR Filters.
 - f) List out the memories of DSP with their sizes.
 - g) Give examples for memory mapped registers.
 - h) Define Program Bus (PB) and Program Address Bus (PAB)
 - i) List out the applications of DSP
 - j) What is the meaning of $*0+$ in the instruction LACC $*0+$

Section - BAnswer any **Four** of the questions: (4×7=28)

2. With a neat block diagram explain digital signal processing.
3. Find the Z - Transform of
- i) $2^n u(n-1)$
 - ii) $a^n \cos n\omega_0$

4. Give the comparative between IIR and FIR Filters.
5. Briefly explain butterworth Filters.
6. Explain status registers of TMS3205 × DSP.
7. Explain the interrupt system is a Digital signal processor.

Section -C

Answer any **Three** of the questions:

(3×12=36)

8. Discuss the properties of Z-Transform.
9. Explain the method of design of IIR filter by Bilinear Transformation.
10. Explain the architecture of TMS 320 C5× DSP with a neat block diagram.
11. Explain the DSP-based Lock - in - Amplifier.
12. Write short notes on any **two**.

(2×6=12)

- a) Advantages of DSP
 - b) Chebyshev Filter.
 - c) Addressing modes of DSP
 - d) Interfacing of ADC.
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PGIIS 1593 B - 15
M.Sc. IIIrd Semester(CBCS) Degree Examination
Electronics & Instrumentation
(Introduction to Microprocessors & Microcomputers)
Paper : OET - 3.1

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates :

- 1) Answer the question as per the instructions.
- 2) Write question number clearly.

PART - A

1. Answer any **Eight** of the following : **(8×2=16)**
- a) Mention the use of ALE signal in 8086 system.
 - b) Define the directive 'EXTERN' with an example.
 - c) What do you mean by interrupt? List out the hardware interrupts of 8086.
 - d) Define ISA and EISA.
 - e) Define types of modes of operators used on 8086.
 - f) Name any six flags of 8086.
 - g) What are the different data types used in MATLAB ?
 - h) What is the difference between a script file and a data file ?
 - i) List out the advantages of GUI based system.

PART - B

Answer any **FOUR** questions.

(4×7=28)

2. Explain the different types of addressing modes of 8086.
3. Explain in brief the use of type '0' and type '2' interrupts.
4. Discuss the development process of an assembly program with necessary steps.
5. With a neat diagram explain the memory and I/o map of PC.
6. Write an ALP in 8086 to add two 32 bit numbers and store the result in memory.
7. Write a function file in MATLAB for temperature conversion between Celsius and Fahrenheit.

PART - C

Answer any **three** of the following:

(3×12=36)

8. With a neat functional block diagram explain the working of each unit present in the architecture of 8086 microprocessor.
9. What are the interrupts? Explain the interrupt operation of 8086 with examples.
10. With a neat diagram explain the memory address decoding of PC.
11. List the major components of MATLAB environment. Explain arithmetic operations in MATLAB.
12. Write short notes on any **two** of the following. (2×6=12)
 - a) Procedures and macros.
 - b) BIOS and DOS interrupts of PC.
 - c) Interfacing of memory (RAM and EPROM)
 - d) Display formats in MATLAB.

PGIIS 1590 B-15
M.Sc. IIIrd Semester (CBCS) Degree Examination
Electronics And Instrumentation
(Embedded Systems and Applications)
Paper - HCT 3.1

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates.

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

Part-A

1. Answer any **eight** of the following **(8×2=16)**
- a) Define Embedded system. Give any two examples.
 - b) Draw the block diagram of SOC.
 - c) Write the protocol diagram of UART bus.
 - d) What is the role of watchdog timer in embedded system?
 - e) What is the difference between macro and function? Give examples.
 - f) Mention any four advantages of Java programming for embedded systems.
 - g) How many interrupts are there for C8051F020? What is the vector address of ADCO Interrupt?
 - h) Write an embedded 'C' program to generate square wave on P1.O line
 - i) Write the bit pattern of DACOCN registers.
 - j) Draw the block diagram of C8051F020 based temperature measurement system.

Part - B

Answer any **four** questions. **(4×7=28)**

2. With block diagram explain the hardware and software feature of an embedded system with example.

3. Explain processor selection for an embedded system with examples.
4. Explain conditional statements of embedded 'C' programming.
5. Describe the operation of ADC module of C8051F020.
6. Write an embedded 'C' program to generate sine wave through on-chip DAC module of C8051F020.
7. With block diagram explain working of DC motor speed control system.

Part - C

Answer any **three** questions.

(3×12=36)

8. Explain the design process involved in designing of an embedded system with examples.
 9. Discuss the design principles when using RTOS to design an embedded system.
 10. With the help of neat diagram describe the operation of PCA module of C8051F020
 11. With neat diagram explain the hardware and software features of C8051F020 based lock in amplifier.
 12. Write short notes on any **Two** of the following. (2×6=12)
 - a) I²C bus
 - b) Network Operating System
 - c) Timers of C8051F020.
 - d) Air quality monitoring system.
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PGIIS 1591 B-15
M.Sc. IIIrd Semester Degree Examination
Electronics & Instrumentation
(Process Instrumentation)
Paper - HCT 3.2

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates :

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

PART - A

1. Answer any **Eight** of the following :

(8×2=16)

- a) What is the international practical temperature scale?
- b) Mention non-electrical temperature measurement systems?
- c) What is the principle of radiation type temperature measurement systems?
- d) What is Anemometer?
- e) What is the principle of electromagnetic flow meter?
- f) Define the term humidity.
- g) Define the term moisture.
- h) What is the principle of capacitive type of moisture measurement.

- i) Define liquid density?
- j) What is the principle of float type density measurement system?

PART - B

Answer any **FOUR** questions.

(4×7=28)

2. Describe how thermistor is used for temperature measurement.
3. Discuss the method of high pressure measurement system.
4. How the hydraulic type of load cell works? Explain in detail.
5. Discuss the NMR method of moisture measurement.
6. Discuss the working arrangement of hair hygrometer.
7. Discuss the principle and working of resistance type level measurement.

PART - C

Answer any **three** of the following:

(3×12=36)

8. a) Describe the calibration and testing of a pressure quartz .
b) Describe the working of ultrasonic flow meter with the use of diagram. (6+6=12)
9. With a neat diagram. Discuss the working and applications of pneumatic load cell.
10. With a neat diagram, Discuss the working and applications of IR method of moisture measurement.
11. What is densitometer? Further, discuss the working of radiation type densitometer with use of diagram.

12. Write short notes on any **two** of the following.

(2×6=12)

- a) Thermocouple.
 - b) Elastic force measurement system.
 - c) Electrolysis type hygrometer.
 - d) Ball type hydrometer.
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