

PGIIS-1590 B-17
M.Sc. IIIrd Semester (CBCS) Degree Examination
ELECTRONICS & INSTRUMENTATION
(Embedded Systems and Applications)
Paper : HCT 3.1

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates :

- i) Answer the questions as per the instructions.
- ii) Write questions numbers clearly.

Part - A

1. Answer any **EIGHT** of the following. (8×2=16)
- a) Distinguish between general system and embedded systems. Give two examples for each.
 - b) List any two characteristics of an embedded system.
 - c) Draw the diagram of single bit SRAM.
 - d) Explain the differences between ASIC and PLD.
 - e) Write an embedded 'C' program to generate square wave using on-chip DACO of C 8051 F020.
 - f) Explain the differences between OS and RTOS.
 - g) Mention any two applications of on-chip PCA modulate of C 8051 F020.
 - h) What are the vector interrupts of TIMER ϕ and TIMERI interrupt of C 8051 FO 20.
 - i) How many serial ports are there for C 8051 F020, name them.
 - j) Draw the block diagram of Air quality monitoring system.

Part - B

- Answer any **FOUR** questions. (4×7=28)
2. Explain various purposes of embedded system with examples.
 3. Write a note on memory selection for embedded systems.

4. With diagram explain working and protocols of UART port.
5. Explain working of function in embedded 'C' with examples.
6. Describe the operation of on-chip ADCO mode of C 8051 F020.
7. With diagram explain working of C 8051 F020 based level control system.

Part - C

Answer any **THREE** of the following.

(8×3=24)

8. Discuss the classifications of imbedded systems.
9. Explain basic design principles of embedded systems using RTOS
10. With the help of neat diagram, explain the working of on-chip PCA module of C 8051 F020.
11. With a neat sketch, explain the design and working of C 8051 F020 based temperature control system.
12. Write short note on any **TWO** of the following. (2×6=12)
 - a) Embedded systems on-chip.
 - b) Processor directives
 - c) PCA module.
 - d) Lock in amplifier.



PGIIS-1591 B-17
M.Sc. IIIrd Semester (CBCS) Degree Examination
ELECTRONICS & INSTRUMENTATION
(Process Instrumentation)
Paper : HCT 3.2

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates :

- i) *Answer the questions as per the Instructions.*
- ii) *Write question numbers clearly.*

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

- a) What is the principle of Radiation type temperature measurement systems.
- b) What is atmospheric pressure?
- c) What is Ultra Sonic?
- d) What is the principle of Anemometer.
- e) Why the humidity at sea level is high?
- f) How the moisture is defined.
- g) What are the basic elements used in NMR methods for moisture measurement.
- h) What is the principle of resistance type level measurement.
- i) What is Radioactive material.
- j) Define liquid density.
- k) What is the principle of float type densitometer?
- l) What do you mean by oscillating coriolis?

Part - B**Answer any FOUR questions.****(4×7=28)**

2. Give an account on Informational practical temperature scale.
3. With a neat diagram explain the operation of Low-pressure measuring system.

4. With a neat sketch, show how Ultra Sonic flow meter is used to measure flow.
5. What is Pneumatic load cel? Explain its function.
6. Discuss the resistivity type moisture measurement system.
7. Explain the working of displacement type Densitometer.

Part - C

Answer any **THREE** of the following.

(3×12=36)

8. Give detailed explanation of Non-electrical temperature measurement and electrical temperature measurement systems.
9. Explain principle and working of Electromagnetic flow meter and mention its merits.
10. Define absolute, specific and relative humidity and explain the working electrolysis type hydrometer.
11. Give detailed explanation of the working and applications of hydrometers.
12. Write short note on any two of the following. (2×6=12)
 - a) Balance load cell
 - b) Dew point measurement
 - c) Vacuum measurement system
 - d) Displacer type level measurement



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PGIIS-1592 B-17
M.Sc. III Semester (CBCS) Degree Examination
ELECTRONICS & INSTRUMENTATION
(Digital Signal Processors and Applications)
Paper : SCT 3.1

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates :

Answer the questions as per the instructions.

Part -A

1. Answer any **EIGHT** of the following questions. (2×8=16)
- a) Give the classification of signals.
 - b) Prove the shifting property in Z-transform.
 - c) Find the Z-transform of a step signal.
 - d) What is need for Digital Filter?
 - e) What are the applications of Digital Signal Processors?
 - f) Mention the ALUs of TMS 320C 5 × DSP.
 - g) Describe LACC * +, O.
 - h) What is Interrupt? List out interrupts in TMS 320 C 5 × DSP.
 - i) What is memory mapped register?
 - j) What are the functions of on-chip peripherals?

Part - B

(4×7=28)

Answer any **FOUR** questions.

2. Briefly explain various types of systems.

3. Find the inverse transform of $x(z) = \frac{1 + \frac{1}{2}z^{-1}}{1 - \frac{1}{2}z^{-1}}$.

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4. Give the comparative study between IIR and FIR filters.
5. Write an ALP to find sum of N-natural numbers.
6. With a neat block diagram explain on-chip serial part.
7. Explain the addressing modes of DSP.

Part - C

Answer any **THREE** of the following questions.

(3×12=36)

8. Find the z-transform of the following functions.

- a) $a^n \cos n\omega_0 t$
- b) $e^{-3n} u(n-1)$
- c) $3^n u(n-2)$
- d) $n^2 u(n)$

9. Explain the method of design of IIR filter by Impulse Invariant Technique.

10. Explain generation of sine / cosine of waveforms in DSP.

11. Explain DSP based Lock-in Amplifier.

12. Write short note on any two of the following.

(2×6=12)

- a) Butterworth filter
- b) Properties of fourier is transform
- c) AIC
- d) Architectures of DSP



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PGIIS-1593 B-17
M.Sc. III Semester Degree (CBCS) Examination
ELECTRONICS & INSTRUMENTATION
(Introduction to Microprocessors & Microcomputers)
Paper : OET 3.1

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates :

- i) Answer the questions as per the instructions.
- ii) Write question number clearly.

PART-A

1. Answer any **EIGHT** of the following. **(8×2=16)**
- a) Define term interrupt and mention software interrupts of 8086.
 - b) Define the directive EXTERN with a example.
 - c) Differentiate between 8086 and 8088.
 - d) List the procedure and steps involved in the execution of an ALP.
 - e) Define types of modes of operations used in 8086.
 - f) Explain the memory mapped I/O in PC.
 - g) Explain the instructions
 - i) XLAT
 - ii) ROL
 - h) Mention the different data types used in MATLAB.
 - i) List the advantages of GUI based system.
 - j) List the applications of MATLAB.

PART - B

- Answer any **FOUR** of the following. **(4×7=28)**
2. Write an ALP in 8086 to add two 32 bit numbers and store the result in memory.
 3. Explain the use of type 0 and type 2 interrupts of 8086.

4. Explain the addressing and decoding methods used in pc.
5. Write a program using MATLAB to plot a curve for a function described by the equation $y = x^4 + 2x^2 + 6$ where x varies from -20 to $+20$.
6. Explain about logical instructions of 8086 with example.
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 block diagram explain each unit in the architecture of 8086.
9. With a neat diagram explain the procedure of interfacing seven segment display with 8086.
10. With a neat diagram explain the memory address decoding of pc.
11. Explain the operations and display formats of MATLAB with example.
12. Write short note on any two of the following. **(6×2=12)**
 - a) Control transfer instructions of 8086.
 - b) ISA and EISA.
 - c) BIOS and DOS interrupts of pc.
 - d) Built in functions of MATLAB.

