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PGIIIS-035-A-22

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 the instructions

PART - A

Answer any Eight of the following. **(8×2=16)**

1. a) Define signal ? Give examples.

b) List out any four applications of DSP.

c) What is Digital Signal Processing?

d) Find the Z-transform of Impulse signal

e) Mention the different memory sizes in TMS320C5×DSP.

f) List out types of serial port available in DSP.

g) What is an Interrupt?

h) What is DDS? Mention its applications.

i) What is Memory mapped register? Give example.

j) Describe MAR*, AR0 instruction.

PART - B

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

2. Explain the Classification of Systems.

3. Find the inverse Z - transform of $x(z)=\frac{z}{\left(z-\frac{1}{2}\right)\left(z-\frac{1}{4}\right)}$

4. Give the comparative study between IIR and FIR filter.

5. Write a note on ALU's in DSP.

6. With a neat diagram explain Memory Organization in TMS320C5XDSP.

7. With neat diagram explain AIC architecture.

PART - C

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

8. Obtain the Z-transform of the following functions

   a) $a^n \cos n\omega_0$

   b) Step Function

   c) Exponential function

9. Explain the Design of IIR filter by using Bilinear Transformation Method.

10. With a neat diagram explain Architecture of TMS320C5X DSP.

11. Explain the interfacing of DDS with DSP and write necessary ALP to initialize it .

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

    a) FIR filter

    b) Properties of Fourier transformation.

    c) Instruction set classification of TMS320C5X DSP

    d) Lock - in Amplifier.

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PGIIIS-033-A-22

M.Sc III Semester (CBCS) Degree Examination

ELECTRONICS AND INSTRUMENTATION

Embedded Systems

Paper : HCT - 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**

SECTION - A

Answer any Eight of the following. **(8×2=16)**

1. a) Define system and embedded system.
   b) Mention any four core elements used in embedded system.
   c) What is SoC ? Give an example.
   d) What is non-operational quality attribute?
   e) What is meant by evolvability of embedded system?
   f) What are the lines used in I^2C bus? Mention its protocol.
   g) Define threads used in RTOS
   h) Write any four features of C8051F020
   i) Write an embedded 'C' program to initialize on-chip serial port UART0 in mode -2
   j) Mention bit pattern of TMOD register of C8051F020

SECTION - B

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

2. Explain briefly about a typical embedded system.
3. Discuss the classification of embedded systems.

4. Explain the purpose of embedded systems.

5. With schematic diagram, explain working of temperature measurement system. Write an embedded 'C' program for same.

6. With the help of diagram, explain working of Timero module of C8051F020

7. With block diagram, explain working of C8051F020 based waveform generator.

SECTION - C

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

8. Discuss the various characteristics of embedded systems.

9. Explain the hardware and software features of automatic chocolate wending machine.

10. With the help of neat sketch, discuss the architectural features of C8051F020

11. With neat diagram, explain working of C8051F020 based DC motor speed control system.

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

    a) Characteristics of embedded systems

    b) RTOS

    c) PCA module

    d) Microcontroller based temperature control system.

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PGIIIS-036-A-22

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:

Answer the questions as per the instructions.

PART - A

Answer any Eight of the following. **(8×2=16)**

1. a) Define Microprocessor.

b) What are procedures and Macros.

c) Mention Assemble Language Development Tools.

d) What are ROM and RAM

e) What decides the bit size of the processor?

f) Draw the functional block diagram of IBM PC.

g) What are ISA and EISA?

h) What are scalars and variables?

i) List out the MATLAB file systems.

j) Mention applications of MATLAB.

PART - B

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

2. What are addressing modes? Explain with example.
3. Explain working the following instruction with example.
   a) MOV b) MUL
   c) DIV d) ROR
4. Describe the control word format of 8255.
5. Write a MATLAB program to find compound interest.
6. Explain printer port of IBM PC
7. What are arrays? Explain two dimensional arrays in MATLAB.

PART - C

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

8. With a neat diagram explain the 8086 microprocessor architecture.
9. With a neat diagram explain the interfacing of seven segment display with 8086.
10. What is GUI? Explain its elements.
11. What is SIMULINK? Explain the design of Simulink model for half adder.
12. **Write a short note on any Two of the following.** **(2×6=12)**
    a) 8088, 80286 and 80486 comparative study.
    b) Interfacing of binary counter with 8086 microprocessor.
    c) Write an ALP to arrange the given numbers on ascending order.
    d) MATLAB based temperature measurement system.

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PGIIIS-034-A-22

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 :

Answer the questions as per the instructions.

PART - A

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

1. a) What is the principle of thermocouple?

b) What is the principle of elastic type pressure transducer?

c) What are the differences between variable head meter and variable area meter?

d) What is the principle of hot-wire anemometer?

e) Define force and write its units.

f) Define moisture and dew point.

g) What is the principle of hair hygrometer?

h) Draw the diagram of dew point measurement system.

i) Define level and give its units.

j) Write the principle of radiation Densitometer.

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PGIIIS-034-A-22

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 :

Answer the questions as per the instructions.

PART - A

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

1. a) What is the principle of thermocouple?

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d) What is the principle of hot-wire anemometer?

e) Define force and write its units.

f) Define moisture and dew point.

g) What is the principle of hair hygrometer?

h) Draw the diagram of dew point measurement system.

i) Define level and give its units.

j) Write the principle of radiation Densitometer.

PART - B

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

2. Explain selective radiation pyrometer.
3. With a neat diagram, explain elastic pressure device.
4. With a neat diagram, explain rate meter.
5. Explain Electromagnetic flow meter.
6. With neat diagram, explain psycho meter.
7. Explain electrical type level method.

PART - C

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

8. Define temperature and describe the working principle of non-electrical type thermometers.
9. With neat diagram explain primary (quantitative)flow meters.
10. Explain the working principle of NMR and IR methods for moisture measurement.
11. Explain displacement and float type densitometers.
12. **Write a short notes on any Two of the following** **(2×6=12)**
    a) High Pressure Measurement.
    b) Load Cell
    c) Electrolysis type hygrometer.
    d) Hydrostatic Level Measurement.
