

PGIIS 1054 A-16
M.Sc IInd Semester (CBCS) Degree Examination
Electronics and Instrumentation
(Micro Controllers and Applications)
Paper : HCT-2.2

Time : 3 Hours

Maximum Marks : 80

Instructions to candidates: 1) Answer the questions as per the instructions

2) Write question number clearly

PART - A

Answer any **eight** of the following questions

(8 × 2 = 16)

- 1 a) Mention the RAM and ROM size of 8031 and 8051 microcontrollers.
- b) List out six commercial microcontrollers used for Industrial applications.
- c) What are the various flags of PSW register? State the function of AC flag used in 8051.
- d) Give the use of DJNZ instruction of 8051 microcontroller
- e) Mention the use of PSW register of 8051.
- f) What is PIC microcontroller? List out its merits.
- g) What are the uses of PWM in motor control using microcontroller.
- h) How many I/O parts are supported in a basic PIC microcontroller?
- i) Mention any six salient features of PIC 16C 877.
- j) Write about the design steps involved in using microcontroller for frequency measurements system.

PART - B

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

(4 × 7 = 28)

2. Explain the internal RAM section of 8051 with necessary diagram.
3. With a neat diagram explain the interrupt structure of 8051 microcontroller.
4. Explain the interfacing scheme of DAC to 8051 and write an ACP to generate a triangular wave.
5. Explain the program and data memory organization of PIC 16C877 microcontroller.
6. Discuss the various timers associated with PIC 16C877.

7. With a neat sketch explain 8051 microcontroller based electronic balance system.

Part - C

Answer any three of the following questions

(3 × 12 = 36)

8. Draw the internal architecture of 8051 microcontroller and explain the function of each unit.
9. Draw the diagram to interface a stepper motor with 8051 and explain the interfacing scheme. Write an ACP to rotate the stepper motor in both clock and anti lock directions for full step.
10. What are the functional blocks in PIC 16C877? Discuss its architectural features.
11. Design 8051 or PIC based system to measure and display the temperature in -Celsius with respect to time, system will take input from PT 100 sensor.
12. Write short notes on any two of the following **(6 × 2 = 12)**
- a) Special function registers
 - b) ADC 0808 interfacing with 8051
 - c) Addressing modes of PIC 16C877
 - d) PIC microcontroller based DC motor speed control.
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PGIIS 1055 A - 16
M.Sc. IInd Semester (CBCS) Degree Examination
Electronics and Instrumentation
(Electrical and Electronic Instrumentation)
Paper : SCT 2.1

Time : 3 Hours

Maximum Marks : 80

Instructions to candidates :

Answer the questions as per the instructions

Part - A

1. Answer any **EIGHT** questions **(8×2=16)**
- a) Give the principle of PMMC meter
 - b) How do you convert DC microammeter into DC milliammeter?
 - c) Mention the significance of instrument transformer
 - d) Define power factor
 - e) Mention the advantages of Has bridge
 - f) Draw the circuit diagram for wheat stone bridge
 - g) Give the features of Digital storage oscilloscope.
 - h) What is Q-meter?
 - i) Differentiate single and dual beam CROs
 - j) Draw the block diagram for Analog phase meter

Part - BAnswer any **FOUR** questions **(4×7=28)**

- 2. Explain construction and working of electro-dynamometer
- 3. Briefly discuss any two types of AC bridges

4. Explain rectifier type AC voltmeter.
5. With a neat diagram, explain the working of Analog frequency meter
6. Design and construct function generator using ICL 8038lc
7. Design and construct Digital voltmeter.

Part - C

Answer any **THREE** questions

(3×12=36)

8. Using PMMC mechanism explain the construction of analog multimeter.
 9. With a neat diagram, explain the working of watt hour meter
 10. With a neat block diagram, explain the working of CRO
 11. Explain sine and square wave generators.
 12. Write short notes on any two **(2×6=12)**
 - i) DC voltmeter
 - ii) Wein Bridge
 - iii) Nano Ammeter
 - iv) Samples oscilloscope
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PGIIS 1056 A-16
M.Sc. IInd Semester (CBCS) Degree Examination
Electronics and Instrumentation
(Introduction to Electronic Instrumentation)
Paper : OET 2.1

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates :

Answer the questions as per the instructions.

PART - A

1. **Answer any EIGHT questions** **(2 × 8 = 16)**
- a) Define Transducer
 - b) Classify standards
 - c) Find the gain of close loop control system.
 - d) Define Resolution and sensitivity of an Instrument
 - e) Mention various types of Temperature Transducers.
 - f) Draw the pin diagram of Op-amp μA 74.
 - g) Mention the features of Instrumentation Amplifier.
 - h) Draw the circuit diagram for voltage follower.
 - i) Write the principle of Ammeter
 - j) Draw the block diagram of Analog frequency meter.

PART - B

- Answer any FOUR questions.** **(4 × 7 = 28)**
2. With a neat diagram explain bourdon tube pressure gauge
 3. Give a comparative study between open loop and close loop control systems.
 4. Explain the working of LVDT
 5. Give a comparative list of characteristics of Ideal and practical Op-Amplifier.
 6. Explain any two Op-amp configurations.
 7. With a neat block diagram. Explain the working of ohmmeter.

PART - C

Answer any **THREE** questions.

(3 × 12 = 36)

8. Explain the static characteristics of an Instrument.
 9. With a neat diagram explain the working of PT-100 and Thermistor.
 10. Explain the various mathematical operations using Op-amp
 11. With a neat block diagram explain the working of Cathode Ray Oscilloscope (CRO)
 12. Write short notes on any **Two** (2 × 6 = 12)
 - i) Classification of Instrument
 - ii) Strip chart recorders
 - iii) Instrumentation Amplifier
 - iv) Digital Voltmeter.
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[Total No. of Pages : 2

PGIIS-1053 A-16
M.Sc. IInd Semester (CBCS) Degree Examination
Electronics and Instrumentation
(Introduction to VLSI Design)
Paper : HCT - 2.1

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) Name the different IC technologies.
 - b) Give the process of VLSI technology.
 - c) What is stick diagram?
 - d) What are ASICs?
 - e) What are the differences between CPLD and FPGA?
 - f) What is CLB, what it does?
 - g) Write VHDL code for D - Flip - Flop.
 - h) What is sheet resistance?
 - i) Draw the stick diagram for inverter.
 - j) Mention any four VHDL logical operators.

Part - B

Answer any **Four** of the following :

(4×7=28)

2. Explain pull - up and pull - down ratio for nMOS inverter.
3. With neat diagram, explain the layer of abstraction in VLSI.
4. Explain the generic CPLD architecture.
5. Discuss different data types in VHDL
6. Write a note on ASICs
7. Write the VHDL code to design 74LS138 decoder with CPLD.

Part - C

Answer any **Three** of the following :

(3×12=36)

8. With the help of neat diagrams explain nMOS fabrication process.
9. Describe VLSI design flow with diagrams.
10. Explain the architecture of FPGA. Give some applications.
11. Discuss the design of Decade counter using VHDL.
12. Write short notes on any **two** of the following :
 - a) ID - VD characteristics of MOS transistor.
 - b) Propagation delays
 - c) Switch matrix
 - d) VHDL for Encoder

(2×6=12)
