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**PGIIS-1055 A-18**  
**M.Sc. II<sup>nd</sup> Semester Examination**  
**ELECTRONICS & INSTRUMENTATION**  
**(Electrical and Electronic Instrumentation)(CBCS)**  
**Paper : SCT 2.1**

Time : 3 Hours

Maximum Marks : 80

**Instructions to Candidates:**

*Answer as per Instruction.*

**PART - A**

**(8×2=16)**

1. Answer any **Eight** questions :

- a) Write the principle of working of a moving coil galvanometer.
- b) Distinguish between ohmmeter & megger.
- c) What is Hall effect?
- d) Define power factor.
- e) Write the functions of instrument transformers.
- f) How do you calibrate dc voltmeter?
- g) Differentiate between analog and digital instruments.
- h) Write the applications of a CRO.
- i) Draw the basic Q - meter circuit.
- j) Write the principle of a storage oscilloscope.

**PART - B**

**(4×7=28)**

Answer any **FOUR** questions :

2. Explain the series & shunt type ohm meters.

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3. Discuss the functioning of maxwell bridge.
4. Explain the working principle of a power factor meter.
5. Explain RMS type voltmeter.
6. Discuss the working of analog phase meter.
7. Explain the construction & working of RF signal generator.

### PART - C

Answer any **Three** questions :

**(3×12=36)**

8. Explain the principle & working of a PMMC moving coil galvanometer. Distinguish between moving coil & moving iron galvanometers.
  9. With neat sketch, explain the construction & working of an electro-dynamometer.
  10. Explain the working of a digital storage oscilloscope.
  11. With neat block diagram, explain the working of a digital frequency meter.
  12. Write short notes on any **two** :
    - a) Watt - hour meter.
    - b) Electronic voltmeter.
    - c) Nano - ammeter.
    - d) Spectrum analyser.
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**PGIIS-1053 A-18**  
**M.Sc. II<sup>nd</sup> Semester Examination**  
**ELECTRONICS & INSTRUMENTATION**  
**(Introduction to VLSI Design)**  
**Paper : HCT 2.1**

Time : 3 Hours

Maximum Marks : 80

**Instructions to Candidates:**

- i) Write question number clearly.
- ii) Draw a neat labelled diagram wherever necessary.

**PART - A**

1. Answer any **EIGHT** of the following : **(8×2=16)**
- a) Mention the important steps involved in n - well fabrication of a device.
  - b) Write the alternative forms of pull - up transistor.
  - c) Illustrate the n-mos depletion load NAND and NOR stick diagram.
  - d) State the significant design goals.
  - e) Differentiate between CPLD and FPGA.
  - f) Draw internal block architecture of Xilinx XC4000 FPGA.
  - g) Give the types of gate arrays based ASICS.
  - h) Write the prime purposes of VHDL.
  - i) What do you mean by PURE & IMPURE function?
  - j) Write VHDL code for a half adder.

**PART - B**

- Answer any **FOUR** of the following : **(4×7=28)**
2. With a neat diagram, explain enhancement mode transistor action.

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3. Describe the importance and electrical behaviour of CMOS inverter.
4. With a neat schematic, stick diagram and corresponding layout, explain the n-MOS inverter.
5. Discuss the generic CPLD architecture.
6. Explain the logical and shift operators of VHDL.
7. Design a VHDL specification of a 8-bit register.

**PART - C**

Answer any **THREE** of the following :

**(3×12=36)**

8. Define
    - a) Pull - up & Pull - down ratio for an inverter
    - b) CMOS inverter
    - c) BiCMOS inverter.
  9. Write the significance of stick diagram. Mention its advantages and applications.
  10. Discuss the salient features of Full - custom and semicustom ASICS.
  11. Explain packages and how compiled design units are stored in design libraries.
  12. Write short notes on any **TWO** :
    - a) BiCMOS technology **(6)**
    - b) Inverter delays. **(6)**
    - c) Programmable interconnect **(6)**
    - d) VHDL procedures. **(6)**
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**PGIIS-1056 A-18**  
**M.Sc. IInd Semester Examination**  
**ELECTRONICS & INSTRUMENTATION**  
**(Microcontrollers and Applications)(CBCS)**  
**Paper : HCT 2.2**

Time : 3 Hours

Maximum Marks : 80

***Instructions to Candidates:***

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

**SECTION - A**

1. Answer any **Eight** of the following : **(8×2=16)**
- a) Draw the block diagram of 8051.
  - b) Mention the address of P0, P1, P2 and P3.
  - c) How a many special function registers are there in 8051? Name them.
  - d) What is need for interfacing?
  - e) Draw the bit pattern of TMOD register of 8051.
  - f) Explain working of the instruments
    - i) RLA
    - ii) RLCA
  - g) Mention any four salient features of PIC 16C877.
  - h) Explain working of the instructions
    - i) BCF
    - ii) IORLW
  - i) Draw the bit pattern of status Register of PIC 16C877.
  - j) What is the role of microcontroller in Instrumentation?

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### SECTION - B

Answer any **FOUR** of the following questions :

(4×7=28)

2. Explain working of on - chip timers/counters of 8051 in different modes.
3. Write an ALP to arrange the given data in ascending order.
4. Describe interfacing of 8KB of program memory with 8051 with neat diagram.
5. Discuss the memory organization of PIC 16C877.
6. With diagram, explain interfacing of multiplexed display with PIC 16C877.
7. With the help of diagram, explain measurement of ON time of TTL signal using 8051.

### SECTION - C

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

(3×12=36)

8. With the help of diagram, explain Architecture of 8051.
9. Explain interfacing of D/A converter with 8051. Write an ALPs to generate Rectangular and Triangular waveform.
10. Discuss the working of on - chip A/D converter module of PIC 16C877. with necessary diagrams.
11. With the neat sketch, explain working of 8051 based temperature control system. Draw the flowchart of the system.
12. Write short notes on any **TWO** :  
a) Addressing modes.  
b) Interfacing of stepper motor.  
c) CCP modules.  
d) Thickness Measurement.

(2×6=12)