

**PGIS-222 A-21**  
**M.Sc. I Semester (CBCS) Degree Examination**  
**ELECTRONICS AND INSTRUMENTATION**  
**Analog and Digital Electronics**  
**Paper : HCT 1.1**

**Time : 3 Hours****Maximum Marks : 80****Instructions to Candidates:**

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

**PART - A****Answer any Eight of the following:****(8×2=16)**

1.
  - a) What is rectifier? What is the value of ripple factor for half-wave rectifier?
  - b) Draw the block diagram of regulated DC power supply.
  - c) What is filter? Draw the diagram of RC filter.
  - d) Define slew rate and input bias currents of op amp.
  - e) Draw the diagram of current mirror.
  - f) Calculate the CMRR of op amp. If  $A_d$  is  $10^4$  and  $A_c$  is 0.1
  - g) Convert  $105.75_{10}$  to binary.
  - h) State De Morgan's theorems.
  - i) Draw the diagram of discrete two input AND gate.
  - j) What are the advantages of synchronous counters?

**PART - B****Answer any Four of the following:****(4×7=28)**

2. Discuss the characteristics of ideal and practical op amps.
3. Explain the design and working of discrete component voltage regulator with diagram.
4. With diagram discuss working of instrumentation amplifier. Derive its output equation.
5. With neat diagrams explain working of Full-Adder and Full-Subtractor.
6. Discuss the design and working of Mod-10 counter with necessary diagrams.
7. With neat sketch explain working of serial-in parallel-out shift register.

### PART - C

Answer any **Three** of the following:

(3×12=36)

8. With neat sketch, explain the principle and working of SMPS.
  9. Discuss various configurations of op amp. With diagrams.
  10. With diagrams, discuss design and working of Excess-3 Adder and subtractor using 4-bit binary adders.
  11. Discuss the design and working of 3-bit up/down counter with diagrams.
  12. Write short notes on any **Two** of the following. (2×6=12)
    - a) 723 regulator.
    - b) Wein-bridge oscillator.
    - c) Flip-flops.
    - d) Parallel-in serial-out shift register.
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**PGIS-225 A-21**  
**M.Sc. I Semester Degree Examination**  
**ELECTRONICS AND INSTRUMENTATION**  
**Introduction to 8086 Microprocessors and 'C' Programming**  
**Paper : SCT 1.1**

**Time : 3 Hours****Maximum Marks : 80****Instructions to Candidates:**

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

**PART - A**

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

1.
  - a) Name the functional units of 8086 CPU.
  - b) What do you mean by LAHF and SAHF instructions?
  - c) Write the purpose of program segments.
  - d) What is the necessity of interfacing?
  - e) Sketch Modem handshaking diagram.
  - f) Write the main purpose of 8259.
  - g) Define an interrupt. Write its types.
  - h) Define a pointer and its significance.
  - i) Write a 'C' program to multiply elements of two arrays.
  - j) What is the advantage of program control statements?

**PART - B**

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

2. Explain the data addressing modes of 8086 microprocessor.
3. Discuss the salient features of ALP development tools.
4. Explain the programmable peripheral IC 8279 configuration.
5. Describe the application of microprocessor for controlling the speed of stepper motor.
6. With suitable examples, explain the applications of arrays.
7. How will you represent data types in C programming? Explain with examples.

## PART - C

**Answer any Three of the following:**

**(3×12=36)**

8. With a neat block diagram, explain the architecture of 8086.
9. With a neat diagram and suitable example, explain timing diagram parameters.
10. Write an overview on serial data transmission methods.
11. Discuss various functions and ways of passing values to C functions.
12. **Write short notes on any Two of the following.**

**(2×6=12)**

- a) MACROS.
  - b) Modes of 8254.
  - c) RS 232 Interface.
  - d) Loop statements in C Language.
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