

PGIS 1089 B-14
M.Sc. Ist 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 questions as per the instructions
2. Write question numbers clearly

Part-A**I. Answer any Eight Questions****(8×2=16)**

- a) What is rectifier? Draw the diagram of half-wave rectifier
- b) Define regulator. Draw the diagram of zener voltage regulator
- c) What are the merits and demerits of series regulators
- d) Define offset voltage of op. Amp. What is its value for op-amp 741
- e) What is active load? Where it is used.
- f) If the gain of the inverting amplifier is 100 and if the input voltage applied to it is 1V. What will be the its output voltage
- g) Convert the following decimal numbers into binary numbers
 - i) 99
 - ii) 123
- h) What is racing? How can it be avoided
- i) mention the merits of synchronous counters
- j) Define fan-in and fan-out of TTL gates.

Part-B

Answer any **four** questions

(4×7=28)

2. With necessary diagram explain the working of bridge rectifier
3. Discuss the comparative features of RC,LC & II section filters
4. Discuss the characteristics of ideal and practical op. Amps
5. With diagram explain working of wein-bridge oscillator
6. Describe the operation of parallel-in serial-out shift register
7. With neat diagram discuss the design and working of 3-8 decoders using logic gates

Part-C

Answer any **Three** questions

(3×12=36)

8. With neat sketch explain the design and working of series voltage regulator
 9. With the help of diagrams discuss the operation of Op amp in different configurations
 10. Explain the design and working of 2 digit BCD adder with diagrams
 11. With neat diagrams describe the operation of 4-bit up-down counter
 12. Write short notes on any **two** of the following (6×2=12)
 - a) Invertors
 - c) Instrumentation amplifier
 - d) Master-slave flip-flop
 - e) MOD-10 counter
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PGIS 1092 B-14
M.Sc. Ist Semester (CBCS) Degree Examination
Electronics & Instrumentation
(Introduction to 8086 Microprocessor and C Programming)
Paper - SCT : 1.1

Time : 3 Hours

Maximum Marks : 80

Instructions to candidates:

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

Part-A**I. Answer any Eight questions (8×2=16)**

- a) List all 8-bit registers that are used for register addressing in 8086
- b) What is the use of ALE signal in 8086 system
- c) Find the memory address of the next instruction executed by 8086 if CS=1000H and IP=2000H
- d) Define macro directive. Give an example
- e) List the features of 80386 microprocessor
- f) Differentiate between loop and REP instructions
- g) List the few serial communication standards
- h) What is a virtual memory
- i) Define conditional operators of C
- j) List the different bitwise operators used in C

Part-B

Answer any **four** questions

(4×7=28)

2. Explain the various flags of 8086
3. With suitable example explain the immediate addressing register addressing and direct addressing modes.
4. What is meant by directive record? Explain the format with an example
5. What is RS232 serial data standard? Discuss its pin names and signal directions
6. Write a program in C to arrange the array of number in ascending order
7. With suitable flow chart explain the working of while loop statement of C

Part-C

Answer any **Three** questions

(12×3=36)

8. Explain the internal architecture of 8086 with a neat diagram
 9. Draw the block diagram of 8259A. Explain briefly the interrupt sequence
 10. With a neat diagram, explain the interfacing of seven segment display with 8086 through 8255
 11. Define arrays in C. Explain the working of arrays, declaration of array entering and reading data from array and array initialization
 12. Write short notes on any **two** of the following (6×2=12)
 - a) Applications of microprocessor
 - b) MUL and IMUL instructions
 - c) Pointers in C
 - d) Program end directives.
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PGIS 1090 B- 14
M.Sc. Ist Semester (CBCS) Degree Examination
Electronics and Instrumentation
(Fundamentals of Instrumentation)
Paper : HCT 1.2

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates:

1. Answer the questions as per instruction.
2. Write question number clearly.

PART - A

1. Answer any **eight** questions. (8 × 2 = 16)
- a) What is calibration?
 - b) Name the various types of instruments.
 - c) Define resolution and sensitivity.
 - d) Write the classification of transducers.
 - e) Write the principle of operation of LVDT.
 - f) Name any two active transducers.
 - g) Mention the various strain gages.
 - h) Write the principles of operation of a photo conductive cell.
 - i) What is an elastic transducer? Explain.
 - j) Explain the necessity of signal conditioning in instrumentation.
 - k) Draw the circuit diagram of sample & hold circuit.
 - l) What are data loggers? Explain.

PART - BAnswer any **four** questions.

(4 × 7 = 28)

2. With neat block diagram explain the functioning of a measurement system.

3. How do you select an instrument for a particular application.
4. Discuss the various characteristics of an instrument.
5. Find the step response of 1st order instrument.
6. Explain the working of Piezo electric pressure transducer.
7. Explain the working of a lock in amplifier.

PART - C

Answer any **three** questions.

(3 × 12 = 36)

8. Discuss the various types of errors.
 9. With neat diagram, explain the working of a RVDT.
 10. Derive an expression for second order Butterworth low pass filter and draw its frequency response.
 11. Discuss the principle and operation of the different temperature transducers.
 12. Write short notes on any two. **(2 × 6 = 12)**
 - a) Standards
 - b) Variable resistance transducers
 - c) Mechanical temperature sensors
 - d) X - Y recorder.
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PGIS 1091 B-14
M.Sc. Ist Semester (CBCS) Degree Examination
Electronics & Instrumentation
(Control Systems & Automation)
Paper - HCT - 1.3

Time : 3 Hours

Maximum Marks : 80

Instructions to candidates:

1. Answer the questions as per the instructions
2. Write question number clearly.

Part - A

1. Answer any **eight** questions. (2×8=16)
- a) Draw the block diagram for closed loop control system and find its transfer function
 - b) Find the transfer function for series R-C network.
 - c) Write the formula for Mason's gain formula and explain each term in it.
 - d) Show that the derivative of step function is an impulse function.
 - e) What is the significance of performance indices in control system.
 - f) Define relative stability.
 - g) State the advantages of bode plots.
 - h) Define gain Margin and phase Margin.
 - i) Define a state variable
 - j) Define controllability.

Part - B

Answer any **four** questions (7×4=28)

2. Find the mathematical model for armature controlled DC motor.
3. What is feedback? What are the effects of feedback on overall gain and band width of a system.
4. Find the time response of first order system for Ramp input.

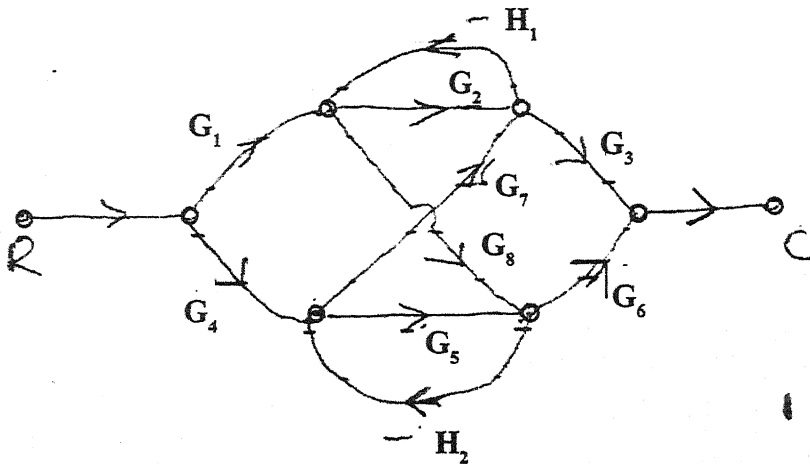
5. Explain static error co-efficients
6. Draw the Bode plot for $G(S)=\frac{1}{S}$
7. Explain constant-M circles .

Part - C

Answer any **three** questions

(3×12=36)

8. Find the overall transfer function of a system whose signal flow graph is shown in figure and also state the advantages of this technique.



9. a) Explain various types of stabilities. (6)
 b) Find the stability of a system whose characteristic equation is given as $q(s)=s^5+2s^4+5s^3+6s^2+8s+12=0$ (6)
10. a) Draw the polar plot for $G(S)=\frac{1}{1+ST}$ (6)
 b) Explain the correlations between time and frequency responses (6)
11. Find the state transition matrix for $A=\begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix}$
12. Write short notes on any **two** (2×6=12)
 - i) Block diagram reduction rules
 - ii) Time response of second order system.
 - iii) Constant-N circles.
 - iv) Properties of state transition matrix

PGIS 1048 B-14
M.Sc. Ist Semester (CBCS) Degree Examination
Applied Electronics
(Semiconductor and Microwave Devices)
Paper - HCT-1.1

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates:

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

Part-A

- I. 1. Answer any eight questions (8×2=16)**
- a) Draw symbol of thyristor and sketch its labelled V-I characteristics
 - b) What do you mean by turn-on and turn-off state of a thyristor
 - c) Write a neat diagram, depict a buck converter
 - d) State the principle of step-up de chopper
 - e) Draw the basic block diagram of SMPS
 - f) List the limitations of conventional fuses
 - g) Define velocity modulation of klystron oscillator
 - h) Define electronic admittance
 - i) List the microwave characteristics of TWT
 - j) Define Gunn effect

Part-B

- II.** Answer any **four** questions (4×7=28)
2. Explain the operation of thyristor
 3. a) What are the advantages of an MCT over IGBT? (4)
b) Define latching current, holding current and reverse current (3)
 4. Explain the principle of operation of linear and switched mode power supply
 5. Explain the gain considerations of TWT
 6. Explain the construction and working of TRAPATT diode
 7. With a neat diagram, explain the working of reflex Klystron oscillator

Part-C

- III.** Answer any **three** questions (3×12=36)
8. With a neat diagram and I-V graph explain series operation of thyristor
 9. Interpret power supply specifications
 10. Derive the equation of velocity modulation in two cavity Klystron and draw the necessary diagram
 11. Derive the equators of Manley-Rowe power relations for parametric amplifiers
 12. Answer any **two** : (2×6=12)
 - a) Thyristor firing circuits
 - b) Buck-boost regulators
 - c) Microwave FETS
 - d) Read diode
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PGIS 1055 B-14
M.Sc. Ist Semester (CBCS) Degree Examination
Applied Electronics
(Digital Electronics and 8085 Microprocessor)
Paper - SCT-1.1
(New)

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates:

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

Part-AAnswer any **eight** questions**(8x2=16)**

1.
 - a) What is the use of tristate buffer?
 - b) List out the basic logic gates and write their truth tables
 - c) How the microprocessor differentiate between data and instructions?
 - d) Mention the hardware and software interrupts of 8085
 - e) List out the flags of 8085
 - f) define resolution, Accuracy as applied to DAC
 - g) What is the function of a multiplexer and demultiplexer
 - h) List out the various modes of PPI 8255
 - i) What is the function of 'READY' pin and when it is used?
 - j) What is meant by DMA?

Part-B

Answer any **four** questions

(4x7=28)

2. Compare open-collector gates with tristate gates.
3. Illustrate various types of registers of 8085. Discuss their functions
4. Draw and explain the timing diagram for 'OUT' instruction
5. Write a program to arrange the given numbers in ascending order.
6. Discuss the block diagram of 8237 DMA controller
7. Explain the square wave generation by using DAC with 8085.

Part-C

Answer any **three** questions

(3x12=36)

8. Explain about the 8085 interrupts and their priorities. Also write the configurations of vectored interrupts
 9. Discuss the memory management concepts in detail. Also compare memory mapped I/O technique with I/O mapped I/O technique.
 10. What is PPI? Discuss the block diagram of PPI. Also write the control word format
 11. Explain the interfacing of ADC with 8085. Show the necessary hardware and software
 12. Answer any two (2x6=12)
 - a) TTL characteristics
 - b) Architecture of 8085
 - c) SIM and RIM instructions
 - d) Coprocessors
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PGIS 1050 B-14
M.Sc. Ist Semester (CBCS) Degree Examination
Applied Electronics
(Electronic Instrumentation)
Paper - HCT-1.2

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates:

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

Part-A

I. 1. Answer any eight questions (8×2=16)

- a) Write the objectives of instrumentation
- b) Write dynamic characteristics of an instrument
- c) Differentiate between active and passive transducers
- d) State the advantages of electrical transducers over other transducers
- e) Define gage factor
- f) Define pH of a solution
- g) Write the basic blocks of a digital system
- h) Write the principle of operation of an AC electrodyamometer
- i) What is a data acquisition system
- j) Draw the diagram of a sample and hold circuit

Part-B

- II Explain any **four** questions (4×7=28)
2. Discuss the various static characteristics of an instrument
 3. Explain the working of variable capacitance transducer
 4. Explain the operation of a lock - in amplifier
 5. Discuss the measurement of humidity
 6. Explain the construction and operation of an analog integrator ADC
 7. Discuss the operation of a magnetic tape recorder

Part-C

- III Answer any **three** questions (3×12=36)
8. Discuss the construction and working of optical transducers
 9. Describe the construction and operation of DFM
 10. Explain with neat diagram the principle and operation of LVDT
 11. Describe with block diagram, the functioning of digital DAS
 12. Write short notes on any two
 - a) Biomedical electrodes
 - b) Digital multimeter
 - c) pH meter
 - d) Q-meter
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PGIS 1052 B-15
M.Sc. Ist Semester (CBCS) Degree Examination
Applied Electronics
(Electromagnetics and Antennas)
Paper - HCT:1.3

Time : 3 Hours

Maximum Marks : 80

Instructions to candidates:

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

Part-A

I. Answer any Eight Questions**(8x2=16)**

- a) What are TE waves
- b) TEM waves do not exist inside a waveguide. Justify
- c) Define guide wavelength and cutoff wavelength
- d) What is meant by cavity resonator
- e) Define 3dB beam width and directive gain of an antenna
- f) sketch the dipole antenna
- g) Sketch different types of aperture antennas
- h) What is impedance matching? Explain
- i) Write the function of slide screw tuner
- j) What is isotropic antenna

Part-B

Answer any **four** questions

(4x7=28)

2. The dimensions of a waveguide are 2.5x1 cm. The frequency of 8.6 GHz. Find
 - i) Possible modes
 - ii) cut off frequencies
 - iii) guide wave length
3. With a neat diagram explain the working of H-plane tree
4. Discuss the power dissipation in a lossy waveguide
5. Narrate the potential function for a sinusoidal oscillator
6. Give the design consideration of helical antenna
7. Prove that radiation resistance of half wave dipole antenna is 73Ω

Part-C

Answer any **Three** questions

(3x12=36)

8. Derive the wave equation for a TM wave and obtain all field components in a rectangular waveguide
 9. Discuss in detail the design considerations of pyramidal horn antenna
 10. What is antenna array? Derive an expression for array of two isotropic sources
 11. With neat diagram, explain the working of directional coupler
 12. Write short notes on any **two** of the following
 - a) Smith chart
 - c) S-parameters
 - d) Phase shifter
 - e) Suppression of side lobes.
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