

PGIS 1047 B-15
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.

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

Section - A

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

- 1. a) Define gate control of SCR.
- b) What do mean by forward blocking and forward conduction state in thyristor?
- c) Define latching, holding and reverse current in thyristor.
- d) Define choppers.
- e) What is switching mode regulator?
- f) What are the limitations of conventional vacuum tubes at microwave frequencies?
- g) Define velocity modulation.
- h) List the microwave characteristics of a reflex klystron oscillator.
- i) List the limitations of LSA diode.
- j) Differentiate between TED's and microwave transistor.

Section - B

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

- 2. Explain the series and parallel operation of thyristors. Sketch neat diagrams.

3. With a neat diagram explain the operation of FET controlled thyristor.
4. Explain the working of buck-boost regulator.
5. With a neat diagram, explain the working of reflex klystron oscillator.
6. Explain the gain consideration of TWT.
7. Explain the construction and working of IMPATT diode.

Section - C

Answer any **three** questions.

(3×12=36)

8. With a neat diagram explain the operation of klystron amplifier and derive the equation of velocity modulation.
 9. Discuss any two types of configuration for switched mode-de power supply.
 10. With a neat diagram explain the working of MOS controlled thyristor and add applications of thyristor.
 11. Explain the principles of operation of Gunn-diode using Valley-Model theory.
 12. Write short notes on any **two** of the following. . **(2×6=12)**
 - a) Thyristor firing circuits.
 - b) Switched mode AC power supply.
 - c) Microwave FETS.
 - d) Applications of Parametric amplifiers.
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PGIS 1048 B-15
M.Sc. Ist Semester (CBCS) Degree Examination
Applied Electronics
(Electronic Instrumentation)
Paper - HCT - 1.2

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates.

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

Section - A**I. Answer any eight questions. (8×2=16)**

- a) Give the definition of Instrumentation.
- b) Mention the types of errors
- c) Give the definition of transducer.
- d) What is the principle of resistive transducer?
- e) What is the principle of piezo electric transducer?
- f) Define the term conductivity.
- g) what is the principle of electrodynamic meter?
- h) What is auto-zeroing?
- i) What is the principle of v/f converter?
- j) How the information storage is accomplished in magnetic tape recorder?

Section - B**II. Answer any four of the following (4×7=28)**

2. Mention the types of errors and explain each of them?

3. Give a brief account on types resistive transducers.
4. Give an account an classification of temperature transducers
5. Define gauze factor of strain gauze and show how strain gauze is used as transducer.
6. Define pH. Show how pH is measured with use of diagram.
7. With the use of block diagram, describe the operation of Analog data acquisition system.

Section - C

- III.** Answer any **three** questions. **(3×12=36)**
8. Describe the working of photoelectric and biomedical transducers.
 9. With a use of block diagram describe the operation of digital storage oscilloscope.
 10. Discuss the role of PC in measurement of displacement.
 11. With the use of block schematic, describe the principle and working of DFM
 12. Write short notes on any **two**. **(2×6=12)**
 - a) Static characteristics of Instrument.
 - b) List the types of optical transducers and explain any one of them.
 - c) Conductivity measurement of given solution
 - d) Humidity measurement.
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PGIS 1049 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 instructions
- 2) Write the question number clearly.

Section - A**I. Answer any eight questions.****(8×2=16)**

- 1) a) Give the comparison of TE and TM waves.
- b) Write the significance of smith chart.
- c) What are stubs?
- d) What is wave impedance?
- e) Write the different types of slow wave structures.
- f) What is Q of the cavity resonator?
- g) What do you understand by an Antenna? Define radiation intensity w.r.t. Antenna.
- h) What do you understand by Co-polarization and cross polarization of an antenna.
- i) What is the special feature of Helical antenna?
- j) Who invented Horn antenna?

Section - B**II. Answer any four of the following****(7×4=28)**

- 2) Give an account on impedance matching with stub.

- 3) What are Sp parameter? Explain.
- 4) With a neat diagram explain the constructional features of waveguide Tees.
- 5) Give the design considerations of Horn Antenna.
- 6) List the basic parameters of an antenna and explain the working of Helical Antenna with a diagram.
- 7) Write a note on Principle pattern multiplication with a typical example.

Section - C

III. Answer any **three** questions.

(12×3=36)

- 8) Obtain TM mode field equations in a rectangular waveguide.
- 9) With a neat diagram discuss the constructional features and applications of a directional coupler.
- 10) Show that the radiation resistance of a half wave dipole antenna is 73Ω .
- 11) Prove that the power radiated by a current element is.

$$P = 80 \pi^2 \left[\frac{dl}{\lambda} \right]^2 I_{eff}^2$$

12) Write short notes on (any two)

(6×2=12)

- a) Phase shifter
 - b) Attenuators
 - c) Array antennas
 - d) Suppression of side lobes.
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PGIS 1050 B-15
M.Sc. Ist Semester (CBCS) Degree Examination
Applied Electronics
(Digital Electronics and 8085 Microprocessor)
Paper - SCT - 1.1

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates:

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

Section - AAnswer any **Eight** questions.**(8×2=16)**

1.
 - a) What are the logic families?
 - b) What do you understand by MOS & CMOS logic?
 - c) What is open collector gate?
 - d) What is microprocessor?
 - e) Write the pin diagram of 8085 up.
 - f) What is cache memory?
 - g) What are the main parts of CPW 8085?
 - h) What is an interrupt? How many Interrupt are there in 8085 up?
 - i) Mention the functions of Peripherals interfacing.
 - j) What is the memory capacity of 8085 up?

Section - B

Answer any **Four** of the following:

(4×7=28)

2. Explain the working of open collector and tri state gates.
3. What are the function of data bus and address bus?
4. Mention the addressing modes of 8085 up
5. How many instruction sets are there in 8085 give examples.
6. What do you understand by memory? And mention the types of memory
7. What is the function of DMA co-processor? Explain.

Section - C

Answer any **Three** questions.

(3×12=36)

8. Draw the diagrams of DAC & ADC and explain their working.
9. Mention the difference between TTL types and Schotky standard TTL.
10. Give the Schematic block diagram of 8085.
11. What is 8255 PPI? Mention its functions.
12. Write short note on (**any Two**) of the following.

(6×2=12)

- a) Multiplexer and demultiplexer
 - b) High speed gate.
 - c) Memory organization of 8085.
 - d) 8279 Interfacing.
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