

PGIS- 1049 B-18
M.Sc. I Semester (CBCS) Degree Examination
APPLIED ELECTRONICS
(Electromagnetics and Antennas)
Paper - HCT-AE-1.3

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates:

1. *Answer the Questions as per instructions.*
2. *Write the Question numbers clearly.*

PART-A

1. Answer any **Eight** of the following:

(8×2=16)

- a) What are TE and TM waves?
- b) What are the applications of waveguides?
- c) What is H-plane Tee?
- d) What do you understand by Smith chart?
- e) What is Q of a waveguide?
- f) What is the special feature of a helical antenna?
- g) List the parameters of an antenna.
- h) Define the radiation efficiency of an antenna.
- i) What do you understand by co-polarization of an antenna?
- j) Define Null w.r.t an antenna.

PART-B

Answer any **four** Questions:

(4×7=28)

2. Explain the power dissipation in a lossy waveguide.
3. With a neat block diagram explain the operation of slowwave structure.
4. Give the design considerations of a helical antenna.

5. An antenna whose radiation resistance is 300Ω s operates at a frequency of 1 GHz and with a current of 3 amperes. Find the radiated power.
 6. Define the following terms w.r.t antenna.
 - i. Half Power beam width
 - ii. Directive Gain
- Discuss briefly about potential function for sinusoidal oscillator.
7. Write note on suppression of side levels.

PART-C

Answer any **THREE** of the following:

(3×12=36)

8. Derive TE mode field equations in rectangular waveguide.
9. With a neat diagram explain the working of a directional coupler.
10. List and sketch the different types of aperture antennas with a neat diagram give the design considerations of an optimum Pyramidal Horn Antenna.
11. What do you understand by Broad side array and End-fire array? Show that the radiation resistance of a half wave dipole antenna is 73Ω s
12. Write short notes on (**Any two**) (2×6=12)
 - a) Impedance matching with stubs
 - b) S-parameters
 - c) Radiation Pattern of an Antenna
 - d) Principle of Pattern multiplication



PGIIS-1051 A-19
M.Sc II Semester (CBCS) Degree Examination
APPLIED ELECTRONICS
Fundamentals of Electronics
Paper : OET - 2.1

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates:

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

PART - A

1. Answer any **EIGHT** of the following : (8×2=16)
- a) Define voltage and current and write their units.
 - b) Mention the function of resistor in an electronic circuit.
 - c) Define power and energy and mention their units.
 - d) Define Norton's theorem.
 - e) Write hybrid parameters of a transistor.
 - f) Give two applications of transistor.
 - g) Draw the circuit diagram of an instrumentation amplifier.
 - h) Draw the circuit diagram of precision rectifier using operational amplifier.
 - i) What is the minimum and maximum input voltage has to be given to 3 pin IC regulator 7812?
 - j) Define a regulated power supply.

PART - B

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

2. List the advantages of active devices over passive devices
3. Explain V-I characteristics of p-n diode.

4. Draw the input and output characteristics of a transistor in CE configuration and mention its uses.
5. Draw the various sections present in an ideal operation amplifier and explain the function of each unit.
6. Draw the circuit diagram of AC and DC operational amplifier and explain their working.
7. Draw the circuit diagram of astable multivibrator and explain its working.

PART - C

Answer any **THREE** of the following.

(3×12=36)

8. Explain the working of a voltage divider circuit and mention its application.
9. Explain the construction and working of solar cell and mentions its applications.
10. Derive the equation of output parameter of operational amplifier as an integrator and draw the output waveform under sine and square wave input.
11. Explain the working of D to A converter and mention its applications.
12. Write short notes on any **TWO** of the following : (2×6=12)
 - a) LED
 - b) Static characteristics of a transistor.
 - c) Active filters.
 - d) Monostable multivibrator.

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PGIIS-1558 B-18
M.Sc. III Semester (CBCS) Degree Examination
APPLIED ELECTRONICS
(Modern Digital Communication)
Paper - SCT 3.1

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates:

1. Answer the questions as per the instructions.
2. Write Question Numbers clearly.

PART-A

1. Answer any **EIGHT** of the following: **(8×2=16)**
- i) What do you mean by quaternary encoding?
 - ii) Draw a Unipolar and polar NRZ-L code for binary stream 101101001.
 - iii) Define DC wander.
 - iv) What do you mean by aliasing effect?
 - v) Draw a neat labelled diagram of basic TDM/PCM system.
 - vi) Distinguish between PWM and PTM.
 - vii) Draw a basic digital communication system.
 - viii) What do you mean by bit-error-rate?
 - ix) Sketch pulse diagram for OOK, BPSK, and BFSK.
 - x) What is the purpose of carrier recovery circuits?

PART-B

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

2. Explain the differential encoding and decoding of a binary message 101010.
3. Explain pulse shaping using raised-cosine spectrum.
4. Describe the basic stages in the generation of PCM.
5. Explain the importance of matched filter.
6. How will you perform sigma-delta A/D conversion? Explain.
7. Discuss the probability of bit error in baseband transmission.

PART-C

Answer any Three of the following.

(3×12=36)

8. Describe M-ary encoding and ISI.
9. Explain DPCM and Delta modulation.
10. Discuss the eye diagram to understand the various parameters of a digital signal.
11. With a neat diagram, explain coherent binary modulation techniques.
12. Write short notes on any TWO of the following:

(2×6=12)

- a) Manchester line code
- b) Pulse amplitude modulation
- c) Synchronization
- d) Differential Phase shift keying.

