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PGIIIS-802 A-21

M.Sc. III Semester (CBCS) Degree Examination

APPLIED ELECTRONICS

Microwave Eelectronics and Measurements

Paper : HCT - 3.2

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates:

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

PART - A

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

1. a) Mention the types of micostrip lines.

b) Mention the advantages and limitations of strip lines.

c) List the important factors in the selection of particular matching network.

d) What is meaning of double stub tuning?

e) Sketch a loop inductor of MIC.

f) With neat diagram mention the input and output of a power combining circuit.

g) Draw the mechanism of power divider of H - plane waveguide Tee.

h) What do you understand about EMI and EME at microwave?

i) List any two microwave hazards.

j) Define quiet zone in anechoic chamber.

PART - B

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

2. Explain clearly the structure of field lines in strip lines and microstrip lines.

3. With a neat circuit diagram explain the working of single stub tuning with series stub.

4. Explain in brief, the working of Chebyshev transformer.

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PART - B

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

2. Explain clearly the structure of field lines in strip lines and microstrip lines.

3. With a neat circuit diagram explain the working of single stub tuning with series stub.

4. Explain in brief, the working of Chebyshev transformer.

5. Calculate the characteristic impedance and attenuation due to conductive loss and dielectric loss of a microstrip line which is composed of zero thickness copper conductors on a substrate having $E_e = 8.4$, tan S = 0.0005, thickness = 2.4 mm of width 1mm operating at 10 GHz.

6. Explain the working of lange coupler with an illustration.

7. Discuss briefly about design consideration of oscillator.

PART - C

Answer any **Three** of the following. **(3×12=36)**

8. With a neat diagram explain the working of resistive divider and discuss the mechanism of power available in each port under matched condition.

9. Discuss the design consideration of quarter wave transformer.

10. With a neat diagram, explain the coupled line directional couplers with even and odd mode excitation.

11. Discuss in detail, the design consideration of microwave broadband amplifier or oscillator.

12. Write short notes on any **Two** of the following. **(2×6=12)**

    a. Matching with lumped elements.

    b. Free space attenuation.

    c. Wilkinson power divider.

    d. Microwave hazards.

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PGIIIS-804 A-21

M.Sc. III Semester (CBCS) Degree Examination

APPLIED ELECTRONICS

Communication And Digital Electronics

Paper : OET - 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

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

1. a) What are surface waves?

b) Define skip distance and critical frequency.

c) Define super - heterodyne receiver.

d) What type of current is required to radiate EM wave from an antenna.

e) List the advantages of FM over AM.

f) Define photo detector.

g) What is LASER?

h) Convert $(11101)_2$ to a decimal number.

i) Draw the symbols of OR and AND gates and explain truth table.

j) Mention the truth tables of universal gates.

PART - B

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

2. Discuss the effect of ionosphere on radio waves.

3. Give the qualitative description of Yago - Uda antennas.

4. Derive the equation of modulation index in AM.

5. Explain the principles of light transmission through optical fiber.

6. With suitable example explain the use of 1's and 2's complement conversion.

7. Show the construction of NAND and NOR gates using basic gates.

PART - C

Answer any **Three** of the following. **(3×12=36)**

8. Discuss in detail, the sky wave propagation.

9. Explain the generation and detection of AM waves.

10. Discuss the characteristics of step index and graded index profile of single mode fiber.

11. State and prove De-Morgan theorem and sketch logic diagrams and truth tables.

12. Write short notes on any **Two** of the following. **(2×6=12)**

    a) Microstrip antenna.

    b) Advantage of modulation.

    c) Losses in fibers.

    d) Use of Boolean algebra.

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PGIIIS-803 A-21

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

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

1. a) Write the major goals for design of a digital communication system.

b) State the characteristics of line coding.

c) What are the main causes of ISI?

d) Define pulse modulation.

e) Mention the applications of PAM.

f) Using the Nyquist sampling theorem for a baseband signal, determine the sampling rate and Nyquist interval for an analog signal represented by $s(t) = 7\cos[124\pi t] + 20\cos[1000\pi t]$.

g) Define baseband transmission.

h) Define synchronization.

i) Sketch ASK, FSK and PSK modulated signal waveforms.

j) State the various digital modulation techniques.

k) Distinguish between coherent and noncoherent binary modulation.

l) What do you mean by differential phase shift keying?

PART - B

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

2. Draw a unipolar NRZ and RZ pulse diagram for a binary message 11010111.

3. Describe a basic TDM - PCM system.

4. What do you mean by adaptive delta modulation? Mention its importance.

5. Explain the quantization, sampling and companding process during PCM.

6. Discuss the salient features of matched filter and optimum terminal filter.

7. With a state space diagram, describe the coherent binary PSK system.

PART - C

Answer any **Three** of the following. **(3×12=36)**

8. i. Define AMI line coding. Explain with suitable example. **(5)**

   ii. Explain M-ary encoding. **(7)**

9. Discuss the construction of delta modulator and demodulator.

10. Explain the significance of carrier recovery circuits.

11. Discuss Noncoherent Orthogonal Modulation technique.

12. Write short notes on any **Two**. **(2×6=12)**

    a. Pulse shaping.

    b. Differential PCM.

    c. Bit timing recovery.

    d. Coherent Quadrature modulation technique.
