

Hall Ticket Number :										
----------------------	--	--	--	--	--	--	--	--	--	--

R-15

Code: 5G353

III B.Tech. I Semester Supplementary Examinations October 2020

Analog & Digital Integrated Circuits
(Electronics and Communication Engineering)

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit (5 x 14 = 70 Marks)

UNIT-I

1. Discuss AC characteristics of OP-Amps and explain about OP-Amp block diagram?

OR

2. a) Classify the types of ICs and interpret circuit complexity?
b) Draw and explain integrator circuit using OP-Amp?

UNIT-II

3. Explain the operation of mono stable multi vibrator using 555 timers. Derive the expression of time delay of mono stable multi vibrator with 555 timers

OR

4. a) Discuss the basic principle of successive approximation type ADC
b) Give some advantages and disadvantages of above

UNIT-III

5. Discuss the operation of CMOS Inverter and its characteristics

OR

6. a) Evaluate the operation of DTL and TTL logics
b) What are the advantages and disadvantages of above

UNIT-IV

7. Explain the operation of BCD to Seven Segment decoder display using VHDL case statement

OR

8. Discuss the Entities, Architectures and Configurations of VHDL design with an example.

UNIT-V

9. Explain with neat diagram about universal shift register with VHDL program

OR

10. What are the impediments to Synchronous design?

Hall Ticket Number :																				
----------------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

R-15

Code: 5G354

III B.Tech. I Semester Supplementary Examinations October 2020

Antennas and Wave Propagation

(Electronics and Communication Engineering)

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit (5 x 14 = 70 Marks)

UNIT-I

- 1. a) Distinguish between 'directivity' and 'gain' of an antenna. Derive expressions for both. 7M
- b) Find the directivity of a Half wave dipole antenna. 7M

OR

- 2. a) Explain the term radiation resistance of a antenna. Calculate the radiation resistance of an antenna in free space having wavelength 10 mm and length 1 cm. 7M
- b) Derive the reciprocity theorem for antennas. Show that the transmitting and receiving radiation patterns of an antenna are equal. 7M

UNIT-II

- 3. a) Define an Antenna Array? Write in brief about the pattern of Multiplication 7M
- b) Show that the directivity of a Broad Side Array is $D=2L/\lambda$ 7M

OR

- 4. Describe the operation of Yagi Uda Antenna with a neat sketch 14M

UNIT-III

- 5. With a neat diagram express the about Helical Antenna and derive the helical modes 14M

OR

- 6. a) Generalize the Lens antenna and explain the zoning concept of lens antenna 7M
- b) Analyze the geometry and characteristics of Parabolic reflector 7M

UNIT-IV

- 7. a) Summarize the classification of Waves 7M
- b) Differentiate between Space wave and surface wave 7M

OR

- 8. a) Explain about Plane wave reflection 7M
- b) Explain Ground wave propagation 7M

UNIT-V

- 9. a) What is super refraction? Explain its use in long range propagation. 7M
- b) Describe the tropospheric propagation in detail. 7M

OR

- 10. a) Find the expression for the critical frequency of a layer. 7M
- b) Discuss the characteristics of ionosphere and its effect on wave-propagation. 7M

Code: 5G352

III B.Tech. I Semester Supplementary Examinations October 2020

Control Systems

(Electronics and Communication Engineering)

Max. Marks: 70

Time: 3 Hours

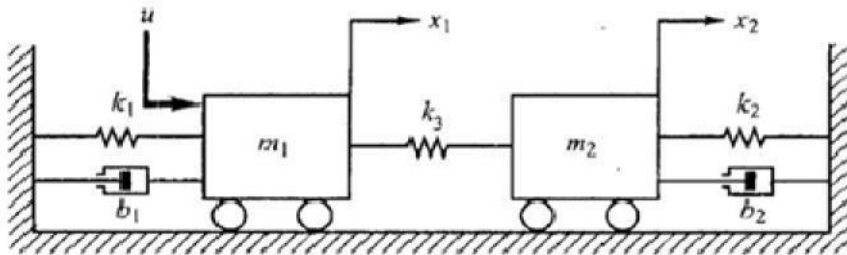
Answer all five units by choosing one question from each unit (5 x 14 = 70 Marks)

UNIT-I

1. a) Discuss about effect of feedback on system gain, stability, noise and sensitivity? 9M
b) Write down Mason's gain formula and explain each term 5M

OR

2. a) Obtain transfer functions $x_1(s)/u(s)$ and $x_2(s)/u(s)$ of the mechanical system shown below



7M

- b) Write a short note on comparison between open loop and closed loop system with necessary examples 7M

UNIT-II

3. a) Define the standard input test signals used in control system analysis. 7M
b) Write the procedure for constructing Routh array for three cases. 7M

OR

4. a) List the steps involved to construct root locus with necessary equations? 7M
b) Consider the following characteristic equation $s^4 + 2s^3 + (4 + k)s^2 + 9s + 25 = 0$ using Routh stability criterion, determine the ranges of k for stability? 7M

UNIT-III

5. Sketch the bode plot for the transfer function $G(S) = 200(s+2) / [s(s^2+10s+100)]$ and determine the gain margin and phase margin 14M

OR

6. Define phase margin and gain margin with significant expressions and discuss about their effects on stability? 14M

UNIT-IV

7. a) Write the differences between lead and lag compensator 7M
b) Explain the procedure for design of PID controller 7M

OR

8. Explain Clearly about steps involved to realize phase margin of system using PI controller in frequency domain, summarize the advantages and disadvantages of properly designed PI controller using those steps? 14M

UNIT-V

9. a) Write the Properties of State Transition Matrix 7M
b) State the solution of linear state equations 7M

OR

10. a) Define the terms Controllability and observability and write necessary conditions for verification of controllability and observability? 9M
b) What are the advantages of State space analysis? 5M

Hall Ticket Number :																			
----------------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

R-15

Code: 5G453

III B.Tech. I Semester Supplementary Examinations October 2020

Computer System Architecture

(Electronics and Communication Engineering)

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit (5 x 14 = 70 Marks)

UNIT-I

- 1. a) How to measure the performance of a computer explain 7M
- b) List and explain various types of computers in detail 7M

OR

- 2. How the data can be read from memory? Explain with timing diagrams for memory read and memory write operations. 14M

UNIT-II

- 3. List and explain instruction formats in detail 14M

OR

- 4. a) What is meant by micro operation? Explain arithmetic operations in detail 7M
- b) List out the registers needed by the basic computer explain them in brief 7M

UNIT-III

- 5. What is control unit explain control memory with a block diagram 14M

OR

- 6. Explain in detail about addressing modes with an example 14M

UNIT-IV

- 7. Draw a flowchart for adding and subtracting two fixed point binary numbers where negative numbers are signed 1's complement presentation. 14M

OR

- 8. a) Discuss with help block diagram Associate memory with example 7M
- b) Construct an associative memory page table with number of words equal to the number of blocks in the main memory 7M

UNIT-V

- 9. a) Explain about multistage memory interconnection structure 7M
- b) Explain the operation of 8X8 omega switching network with neat diagram 7M

OR

- 10. a) What are the various fields in instruction format of vector processor explain 7M
- b) Describe briefly about the hyper cube interconnection 7M

Hall Ticket Number :									
----------------------	--	--	--	--	--	--	--	--	--

R-15

Code: 5G351

III B.Tech. I Semester Supplementary Examinations October 2020

Digital Communications

(Electronics and Communication Engineering)

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit (5 x 14 = 70 Marks)

UNIT-I

1. a) Write in detail about basic Elements of Digital Communication system
- b) Derive the expression to find SNR of PCM System.

OR

2. a) Describe the Principle of Delta modulation and mention its drawbacks
- b) Discriminate PCM and Delta modulation

UNIT-II

3. a) Derive an expression for Probability error of Optimum filter.
- b) Briefly write about base band signal receiver.

OR

4. a) State and prove properties of Matched filter.
- b) Illustrate the principle and operation of Correlator.

UNIT-III

5. a) Describe the generation and coherent detection of Amplitude Shift Keying (ASK) signal.
- b) Derive an equation for probability of error in ASK system.

OR

6. a) Describe the generation and detection of Quadrature Phase Shift Keying (QPSK) signal.
- b) Derive an equation for probability of error in QPSK system.

UNIT-IV

7. a) What is entropy? State and prove the properties of entropy.
- b) A continuous signal is band limited to 5 kHz. The signal is quantized to 8-level PCM system with probabilities: 0.25, 0.2, 0.2, 0.1, 0.1, 0.05 and 0.05. Calculate the rate of information.

OR

8. A Discrete Memory less Source (DMS), X have equally likely symbols.
 - (i) Construct a Shannon-Fano code for X and calculate the efficiency of the code;
 - (ii) Construct another Shannon-Fano code and compare the results;
 - (iii) Repeat for the Huffman code and compare the results.

UNIT-V

9. a) Explain the Error detection and correction capabilities of LBC
- b) For a (7,4) cyclic code if $g(x)=1+X+X^2$ then identify the syndrome for $R=[1011001]$

OR

10. For a (3,1,2) Convolution encoder if $g_1=[1\ 1\ 0]$ $g_2=[1\ 0\ 1]$ then draw the following
 - i) Tree diagram
 - ii) State diagram
 - iii) Trellis diagram

Hall Ticket Number :

--	--	--	--	--	--	--	--	--	--

R-15

Code: 5GA51

III B.Tech. I Semester Supplementary Examinations October 2020

Managerial Economics and Financial Analysis

(Common to CE, ME & ECE)

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit (5 x 14 = 70 Marks)

UNIT-I

1. Define managerial economics? Explain nature and scope. 14M

OR

2. What is demand? State and explain law of demand. Are there any exceptions to the law? 14M

UNIT-II

3. Define cost. Explain the difference types of cost concepts used in the process of cost analysis. 14M

OR

4. State the break even analysis? Explain objectives, importance's and show the graphical representation of BEP. 14M

UNIT-III

5. Evaluate sole trader form of organization 14M

OR

6. Despite the features, advantages and disadvantages of partnership business. 14M

UNIT-IV

7. Define capital? Explain significance, need and types of capital. 14M

OR

8. What is working capital? Explain the factors governing working capital requirements? 14M

UNIT-V

9. Prepare journal entries and ledger accounts from the following 14M
Jan 1 started business with cash Rs 10000
Jan 3 deposit into bank Rs 15000
Jan 10 purchased machinery Rs34000 from jawahar.
Jan 16 sold goods for cash Rs 52000
Jan 20 received cash from business Rs 12000

OR

10. Define ratio analysis? Explain advantages and disadvantage ratio analysis. 14M
