Hall Ticket Number :										

Code: 4GA51

R-14

III B.Tech. I Semester Regular Examinations November 2016

Managerial Economics and Financial Analysis

(Common to CE, ME and ECE)

Max. Marks: 70 Time: 3 Hours

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

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UNIT–I

1. Define Managerial Economics? Explain its Nature and Scope?

OR

2. What is Law of Demand? Explain its assumptions and exceptions?

UNIT–II

3. Explain Production function with single variable?

OR

4. What is Break-even analysis? Discuss its objectives, assumptions and importance?

UNIT–III

5. Elaborate Price output determination in perfect competition market.

OR

6. Explain various public sector business organizations with suitable examples?

UNIT–IV

7. What is Capital? Explain various sources of raising capital?

OR

8. Distinguish between payback period method and accounting rate of return in capital budgeting?

UNIT–V

9 What is Journal? Explain its importance in book-keeping accounting system?

OR

10 Discuss various liquidity ratios in financial analysis?

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Hall Ticket Number :										

R-14

Code: 4G351

III B.Tech. I Semester Regular Examinations November 2016

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)

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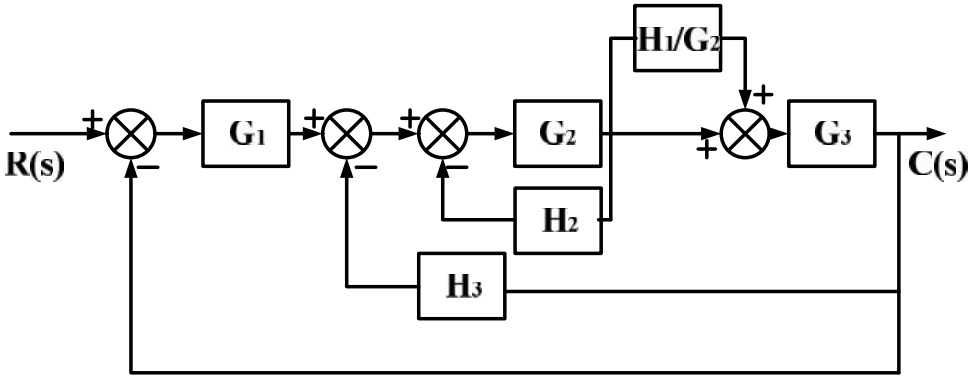
UNIT–I

1. a) Write a short note on comparison between open loop and closed loop system with necessary examples? 7M

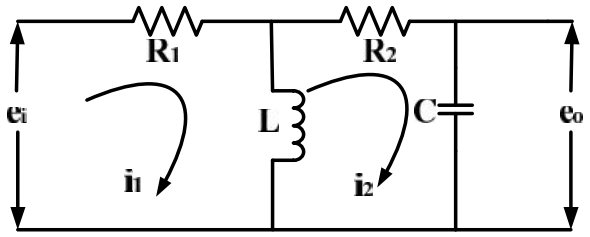
   b) Simplify the block diagram shown in figure and obtain the closed loop transfer function?



7M

OR

2. a) Obtain transfer function (Eo(s)/Ei(s)) for electrical network shown below?



7M

   b) Discuss about effect of feedback on system gain, stability, noise and sensitivity? 7M

UNIT–II

3. a) Draw the root-locus for the open loop transfer function with unity feedback system, $G(s) = \frac{K}{s(s+1)(s+2)}$? 7M

   b) Obtain the response of the first order system by using step, ramp and impulse signals? 7M

OR

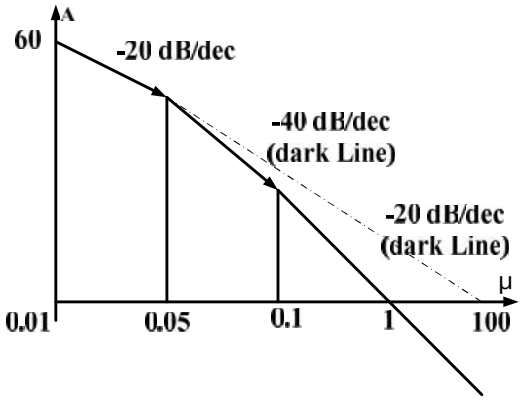
4. a) Define delay time, rise time, peak time, maximum peak overshoot and settling time with significant expressions? 7M

   b) For a closed loop transfer function given by $\frac{C(s)}{G(s)} = \frac{2600k(s+25)}{s^4 + 125s^3 + 5100s^2 + 65000s + 65000k}$. Find the imaginary axis intercepts of root locus? 7M

UNIT–III

5. a) Write a short note on Nyquist stability criterion and procedure to construct nyquist plot? 7M

   b) Obtain the transfer function for the Bode magnitude plot shown below?



7M

OR

6. a) List the steps involved to construct bode plot and how the stability is obtained from bode plot? 7M

   b) A unity feedback system has open loop transfer function $G(s)=\frac{1}{s(s+2)(s+4)}$. Find its gain margin? 7M

UNIT–IV

7. Consider a unity feedback system whose feed forward transfer function is given by $G(s)=\frac{1}{s^2}$. It is desired to insert a series compensator so that the open loop frequency response curve is tangent to the M=-3 db circle at μ =3 rad/sec. The system is subjected to high frequency noises and sharp cut-off is desired. Design appropriate series compensator? 14M

OR

8. a) Explain procedure for design of PID controller? 7M

   b) Explain clearly about frequency domain interpretation of phase lead control? 7M

UNIT–V

9. a) Define State, State Variable, State vector and state element? 7M

   b) Obtain state transfer matrix of the system defines by

$$\begin{bmatrix}\dot{x}_1\\ \dot{x}_2\\ \dot{x}_3\end{bmatrix}=\begin{bmatrix}0 & 1 & 0\\ 0 & 0 & 1\\ -2 & -4 & -6\end{bmatrix}\begin{bmatrix}x_1\\ x_2\\ x_3\end{bmatrix}+\begin{bmatrix}0 & 0\\ 0 & 1\\ 1 & 0\end{bmatrix}\begin{bmatrix}u_1\\ u_2\end{bmatrix} \text{ and } \begin{bmatrix}y_1\\ y_2\end{bmatrix}=\begin{bmatrix}1 & 0 & 0\\ 0 & 1 & 0\end{bmatrix}\begin{bmatrix}x_1\\ x_2\\ x_3\end{bmatrix}$$

7M

OR

10. a) A state space representation for the transfer function $\frac{y(s)}{u(s)}=\frac{s+6}{s^2+5s+6}$ is $\dot{x}=Ax+Bu, y=cx$ where $A=\begin{bmatrix}0 & 1\\ -6 & -5\end{bmatrix}$, $B=\begin{bmatrix}0\\ 1\end{bmatrix}$. Find out elements of matrix C? 7M

   b) Define the terms Controllability and observability and write necessary conditions for verification of controllability and observability? 7M

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Hall Ticket Number :										

R-14

Code: 4G352

III B.Tech. I Semester Regular Examinations November 2016

Linear IC Applications

(Electronics & Communication Engineering)

Max. Marks: 70 Time: 3 Hours

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

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UNIT–I

1. a) Derive the expression of CMRR for dual input balanced output differential amplifier. 8M

   b) Write short notes on

      i) level translator

      ii) cascaded differential amplifier stages 6M

OR

2. a) Explain in detail about block diagram of op-amp 7M

   b) Explain in detail about op amp open loop configurations. 7M

UNIT–II

3. a) What is an instrumentation amplifier and derive the expression for output voltage of three op amp instrumentation amplifier. 8M

   b) Draw and explain the voltage to current converter with floating load and grounded load 6M

OR

4. a) Draw and explain the operation of triangular wave generator. 7M

   b) Draw the circuit diagram of log amplifier with two op amp and explain its operation. 7M

UNIT–III

5. a) Design an astable multivibrator by using 555 timer with 50% of duty cycle. 7M

   b) List and explain the applications of monostable multivibrator using 555 timer. 7M

OR

6. a) With neat block diagram explain the working principle of PLL 7M

   b) Explain IC 566 and derive the expression for frequency of oscillations by using it. 7M

UNIT–IV

7. a) Explain about R-2R and inverted R-2R DAC techniques. 8M

   b) Explain the specification of DAC and ADC. 6M

OR

8. a) Explain in detail about the operation of dual slope ADC. 7M

   b) Explain the operation of successive approximation converter. 7M

UNIT–V

9. a) Explain about the operation of IC 723 8M

   b) List the characteristics of three terminal IC regulators. 6M

OR

10 a) Derive the expression for the transfer function of second order high pass Butter-worth filter. 8M

   b) Design a second order Butter-worth filter low pass filter with cut off frequency of 1kHz 6M

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Hall Ticket Number :										

R-14

Code: 4G353

III B.Tech. I Semester Regular Examinations November 2016

Digital IC Applications

(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)

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UNIT–I

1. a) Draw 2-input CMOS Nand gate and explain 7M
   b) Draw the CMOS circuit for $(AB + CD)^{I}$ 7M

OR

2. Explain in detail about dynamic electrical behaviour of CMOS 14M

UNIT–II

3. Explain structural design elements of VHDL with an example program 14M

OR

4. Discuss data objects , Functions and procedures of VHDL 14M

UNIT–III

5. Discuss with an example behavioral design elements of VHDL 14M

OR

6. Explain with syntax of wait, loop, exit, if and case statements 14M

UNIT–IV

7. Draw IC of parity circuit and write its VHDL program 14M

OR

8. a) Write VHDL program of One's counter 7M
   b) Draw and write VHDL code for 8x1 Mux 7M

UNIT–V

9. Draw and explain four bit Universal shift register 14M

OR

10. Draw and explain four bit up/down counter 14M

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Hall Ticket Number :										

R-14

Code: 4G354

III B.Tech. I Semester Regular Examinations November 2016

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)

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UNIT–I

1. a) Generate the relation between the effective height and radiation resistance. Show that the directivity for unidirectional operation is 2(n+1) for an intensity variation of $U = U_m COS^n\theta$. 8 M

   b) Explain the terms with expressions

   I. Radiation power density

   II. Radiation intensity 6 M

OR

2. a) Show that the radiation resistance of Half Wave Dipole is 73Ω. 8 M

   b) An antenna has R_r=73Ω, R_L=2Ω. Compute its efficiency. 6 M

UNIT–II

3. a) Develop the radiation pattern for 2-isotropic point sources fed with equal amplitude and in-phase quadrature excitation. 7 M

   b) Define uniform linear array and derive the expression for array factor of n-element linear array. 7 M

OR

4. a) Calculate the directions of the maxima and nulls of the array factor of an array of two infinitesimal dipoles oriented along the Z-direction, kept at $Z_1 = -0.125\lambda$ and $Z_2 = 0.125\lambda$ and carrying currents $I_1 = \exp(-j\pi/4)$ and $I_2 = \exp(+j\pi/4)$ respectively. 7 M

   b) Explain the operation of Binomial arrays. 7 M

UNIT–III

5. a) Sketch and explain the constructional features of a helical antenna. 7 M

   b) Give various causes of side lobes in the pattern of the dish antennas. 7 M

OR

6. a) Find the directivity of a 460-mm circular parabolic dish at 12.5 GHz assuming an aperture efficiency of 75 percent. 8 M

   b) Memorize corner reflector antennas. 6 M

UNIT–IV

7. What are the conditions under which the wave travels in the ground wave mode? List out various applications of the ground wave propagation. 14M

OR

8. What is the field strength due to ground wave according to Sommer field? What are the factors that are incorporated into this formula? 14M

UNIT–V

9. Describe the phenomenon of ‘ghosting’ and ‘shadow zone’? What are the preventive measures that can be taken? 14M

OR

10. Explain the relation between launching angle, ionization density and frequency in the sky wave propagation. 14M

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Hall Ticket Number :										

R-14

Code: 4G455

III B.Tech. I Semester Regular Examinations November 2016

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)

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UNIT–I

1. a) Perform the following number system conversions:
   (a) $(67.24)_8 = ?_2$ (b) $10100.1101_2 = ?_{16}$ (c) $F3A5_{16} = ?_2$
   (d) $101111.0111_2 = ?_8$ (e) $15C.38_{16} = ?_2$ 10M
   b) Write about basic operational concepts of Computer systems 4M

OR

2. a) List pros and cons of integer representations 4M
   b) Discuss various complements and data types with an example 10M

UNIT–II

3. a) Discuss in detail various micro operations 8M
   b) Write about Bus and memory transfer 6M

OR

4. a) Design one stage of arithmetic logic shift unit and show the function table 10M
   b) List various types of computer instructions and give example to each category 4M

UNIT–III

5. a) Interpret the binary division to an example -7/-3 8M
   b) Distinguish between floating point addition and subtraction with example 6M

OR

6. a) Assuming the following address and register contents, determine all possible ways to put the value 8 into register R0, assuming instructions of the form MOV R0,_____ for each way, describe type of addressing mode you are using

	Address				Register				
Location	1	2	3	4	5	1	2	3	4	5
Content	6	5	4	2	8	2	3	4	5	0

7M

   b) Explain about Control Memory in Micro programmed control unit in detail with diagram 7M

UNIT–IV

7. a) Explain Direct Associative, Set Associative and Fully Associative mapping with an example in cache memories 9M
   b) Explain about virtual memory with example 5M

OR

8. a) List Various I/O techniques and explain any one in detail 8M
   b) Distinguish between vectored interrupts and non-vectored interrupts 6M

UNIT–V

9. a) Discuss in detail RISC pipeline vector processing 8M
   b) Distinguish between instruction pipelining and arithmetic pipeline 6M

OR

10. a) An un pipelined processor has a cycle time of 25ns. What is the cycle time of a pipelined version of the processor with 5 evenly divided pipeline stages, if each pipeline latch has a latency of 1ns? 6M
    b) Discuss Flynn classification for Multiple Processor Organizations. 8M

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