R16

II B.TECH II SEM

SUPPLEMENTARY EXAMINATIONS

APRIL 2024

Narasaraopeta Engineering College (Autonomous)
Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

NEC

Subject Code: R16CC2201

II B.Tech II Semester supplementary Examinations, April 2023
BUSINESS MANAGEMENT CONCEPTS FOR ENGINEERS
(EEE & ME)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Outline the concept of Managerial Economics
   (b) Classify the various types of Costs.
   (c) Define Financial Accounting.
   (d) Brief about the nature of Management
   (e) Write a short note on Human Resource Management
   (f) Explain PERT.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2.	(a)	Discuss the nature and scope of Managerial Economics
	(b)	Elucidate the concept of Demand Forecasting. Explain the various methods of Demand Forecasting.
3.	(a)	Explain the various Production Function. Discuss the Production function with One Variable Inputs.
	(b)	Sales Rs.50,000; Profit Rs.5,000; Variable Cost 70% Calculate (i) P/V Ratio (ii) Fixed Cost (iii) Sales volume to earn a profit of Rs.20,000
4.	(a)	Elaborate the merits and demerits of Double Entry System.
	(b)	Describe the various concepts and conventions of Accounting (GAAP).
5.	(a)	Examine the assumptions of McGregor Theory X & Theory Y.
	(b)	Explain the functions of Management. Highlight the importance of Management
6.	(a)	Debate the managerial and operating functions of Human Resource Management.
	(b)	Illustrate the various techniques of Inventory Management.
7.	(a)	Distinguish between PERT and CPM. Discuss the Critical Path.
	(b)	Discuss the Dimensions of Working Capital Management.

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Subject Code: R16CE2201

II B.Tech II Semester supplementary Examinations, April 2023
STRUCTURAL ANALYSIS-I
(CE)

Time: 3 hours   **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) What is static indeterminacy
   (b) Write about Double integration method.
   (c) Define a continuous beam.
   (d) Write the Effects of sinking of supports.
   (e) What is a cable? What is the bending moment at any point in the cable?
   (f) What is an influence diagram?

                                                                                   [2+2+2+2+2+2]

PART-B

                                                                                   4 X 12 = 48

2. Determine the magnitudes and nature of forces in all members of the frame given in Fig.1.
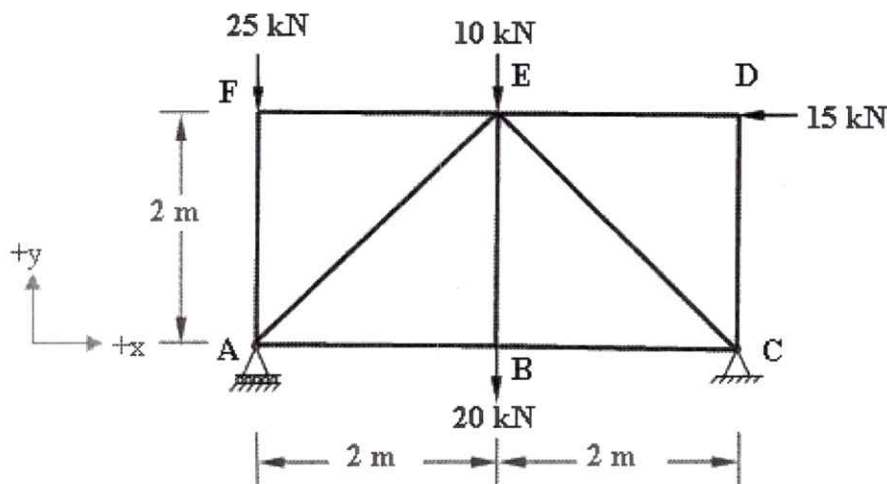   By Method of Joints.

Fig.1.

3. (a) A horizontal beam AB is simply supported at A and B, 6m apart. The beam is subjected to a clockwise couple of 300kNm at a distance of 4m from the left end. If $E=2\times10^5 N/mm^2$ and $I=2\times10^8 mm^4$ .Determine (I) Deflection at the point where couple is acting (ii) the maximum deflection.
   (b) A cantilever beam AB of length 4m carries a point load of 100kN at free end and another point load 100kN at 2m from the free end. If $E = 2X10^5 N/mm^2$ and $I=2X10^8 mm^4$ for the cantilever then determine the slope and deflection at the free end by Moment area method.

4. (a) A cantilever beam AB of length 5m carries a point load of 75 kN at free end and another point load 50kN at 2.5m from the free end. If E = 2×10^5 N/mm^2 and I=2×10^8 mm^4 for the cantilever then determine the slope and deflection at the free end by Moment area method.

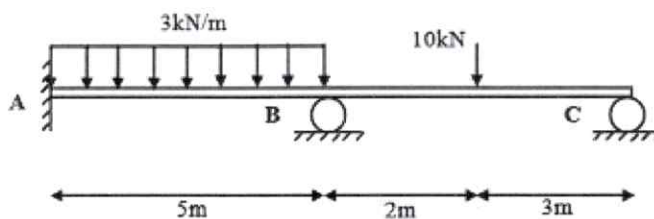(b) Analyze the following beam (Fig.2) by using conjugate beam method

Fig.2

5. (a) Derive the energy stored due to axial loading

(b) Define Strain energy. Derive an expression for strain energy due to bending moment.

6. A three hinged parabolic arch of span 100m and rise 20m carries a uniformly distributed load of 2KN/m length on the right half of 30m. Determine the maximum bending moment in the arch.

7. Four point loads 5 kN, 10 kN, 10 kN and 8kN have centre to centre spacing of 2m between consecutive loads and they traverse a girder of 25m span from left to right with 10 kN load leading. Calculate the maximum bending moment and shear force at 6m from the left support.

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Subject Code: R16EE2202

II B.Tech II Semester Supple Examinations, April-2024
DIGITAL ELECTRONICS
(EEE)

Time: 3 hours   **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Convert the following number $(11001101.0101)_2$ to base 8 and base 4.
   (b) state and prove **De-Morgan laws**.
   (c) List the applications of Multiplexer and Demultiplexer.
   (d) What is PAL? How does it differ from PROM and PLA?
   (e) What is race around condition? How can minimized in J-K flip-flop.
   (f) Compare synchronous & Asynchronous circuits.

                                       [2+2+2+2+2+2]

PART-B

                                    4 X 12 = 48

2. (a) Simplify the following Boolean functions to minimum number of literals.
       i. $F = ABC + ABC' + A'B$.
       ii. $F = (A+B)' (A'+B')$.
   (b) Subtract 278_{10} and 495_{10} using excess -3 subtractor.

3. Simplify the following Boolean expressions using K-map and implement them using NOR gates:
       i. $F (A, B, C, D) = AB'C' + AC + A'CD'$.
       ii. $F (W, X, Y, Z) = W'X'Y'Z' + WXY'Z' + W'X'YZ + WXYZ$.

4. (a) Design a combinational circuit that accepts a three-bit binary number and generates an output binary number equal to the twice the input number.
   (b) Construct the 4 bit parallel adder with look ahead carry generation.

5.   Implement the following functions using PAL and PLA
         $F1 = \sum m(2,3,4,7,8,11)$
         $F2 = \sum m(1,3,5,7,9,11,13,15)$

6. (a) Design a sequential circuit with two D-Flip-Flops A and B and one input x. When x=0, the state of the circuit remains the same. When x=1, the circuit goes through the state transitions from 00 to 01 to 11 to 10 back to 00 and repeats.
   (b) Draw the circuit of a negative edge triggered JK Flip-Flop with active high preset & clear, Explain its operation with the help of truth table.

7. (a) Draw the circuit diagram of MOD-10 Counter and explain the operation of it.
   (b) Explain about 4-bit ripple counter.

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NEC

Subject Code: R16EE2203

II B.Tech II Semester Supple Examinations, April-2024
CONTROL SYSTEMS
(EEE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Explain the effect of negative feedback in control systems
   (b) Distinguish between open loop and closed loop system.
   (c) What are the applications of synchro?
   (d) What is steady state response?
   (e) Define type and order of the system.
   (f) Define Gain margin and Phase margin.

   [2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. a) What is feed back? Explain the any two effects of feedback..

   b) Obtain the transfer function for the system represented by block diagram shown below using the block diagram reduction technique.
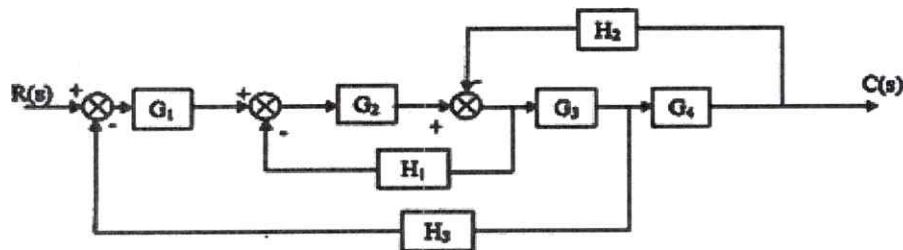
3. a) Derive the time response of second order under damped system due to unit step input.

   b) Why derivative controller is not used in control systems? What is the effect of PI controller on the system performance.

4. Sketch the root locus plot of a unity feedback system whose open loop T.F is

$$G(s) = \frac{K(s^2 - 2s + 2)}{(s+2)(s+3)(s+4)}.$$

5. a) Determine the range of K for stability of unity feedback system whose open loop transfer function is $G(S) = \dfrac{K}{S(S+1)(S+2)}$

b) Sketch the Bode plots for a system $G(s) = \dfrac{15(s+5)}{s(S^2+16\,s+100)}$ Hence determine the stability of the system.

6. Determine the canonical state model of the system whose transfer function is

$$T(S) = \frac{2(s+5)}{(s+2)(s+3)(s+4)}$$

7. a)   Discuss the advantage of State Space Analysis.

   b)   Consider the matrix. Compute e^{At}. $A = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix}$

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Subject Code: R16EE2204

II B.Tech II Semester Supple Examinations, April-2024
POWER GENERATION AND ECONOMIC ASPECTS
(EEE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Write the importance of electrostatic precipitator.

   (b) What is the importance of reflector in nuclear reactor?

   (c) Explain the factors that affect the cost of power generation.

   (d) Make comparison between indoor and outdoor substations

   (e) Distinguish between low tension cables and high-tension cables

   (f) Distinguish between Feeder and service main.

   [2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain the functions of Cooling tower and condenser with respect to a Thermal power station.

   (b) Explain impulse and reaction turbines in brief.   **[6+6]**

3. (a) Draw a neat line diagram of a nuclear power plant showing basic components. Discuss the merits of nuclear power plant compare to thermal power plants.

   (b) Discuss the radiation hazards in nuclear power plants   **[8+4]**

4. (a) A generating station has the following daily load cycle

Time (hrs)	0-6	6-10	10-12	12-16	16-20	20-24
Load (MW)	40	50	60	50	70	40

   Draw the load curve and find: (i) Maximum demand. (ii) Units generated per day.
   (iii) Average load and load factor.

   (b) Explain (i) Block rate tariff, (ii) Two part tariff, and (iii) Maximum demand tariff **[6+6]**

5. (a) Explain with a neat lay out diagram of a single bus bar arrangement and list its merits and demerits.

   (b) Give the comparison between Air insulated substation and Gas insulated substation. **[6+6]**

6. (a) Derive the expression for calculating the insulation resistance in the cables

   (b) What is the need for grading of cables? Discuss the capacitance grading. **[6+6]**

7. (a) Make a comparison between DC and AC distribution systems **[6+6]**

   (b) Discuss importance of voltage drop and power loss calculations in distribution system.

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Subject Code: R16EE2205

II B.Tech II Semester Supple Examinations, April-2024
ELECTRICAL MACHINES-II
(EEE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B.**
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Generalize why staring torque of a squirrel cage induction motor cannot be altered when the applied voltage is constant.
   (b) What measure can be taken for minimizing the effect of crawling in a 3-phase induction motor?
   (c) How can you distinguish between the two types of large synchronous generator from their appearance?
   (d) Distinguish between the 'Synchronous reactance' and the 'Potier reactance' of a Synchronous generator.
   (e) Why a 3-phase synchronous motor will always run at synchronous speed?
   (f) Examine the reason for providing centrifugal switches in many 1- phase induction motors.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Estimate the ratio between maximum and full load torque for a 20 HP, 50 Hz, 3 Phase, star connected Induction motor with the following test results:
   No Load test : 400 V, 9 A, 0.2 p.f lagging
   Blocked rotor test :200 V, 50 A, 0.4 p.f lagging
   Stator resistance per phase : 0.56 Ohm   [12]

3. (a) A 400 V induction motor runs at a speed of 1440 rpm when supplied from a 50 Hz source. Find its speed at 30 Hz when the load torque is constant. The frequency is varied while maintaining the ratio (V/f) constant.   [12]

4. (a) Define armature reaction and explain the effect of armature reaction on different power factor loads of synchronous generators.
   (b) Derive the emf equation of an alternator.   [6+6]

5. (a) A 3 phase Y-connected, 1000 KVA, 2000V, 50HZ, alternator gave the following open-circuit and short circuit test readings:

I_f (A)	10	20	25	30	40	50
$V_{o.c}$ (V)	800	1500	1760	2000	2350	2600
$I_{s.c}$ (A)	-	200	250	300	-	-

The armature effective resistance per phase is 0.2 Ω. Draw the characteristic curves and Obtain the full load percentage regulation at (i) 0.8 p.f lagging, (i) 0.8 p.f leading by MMF method.   [12]

6. (a) Deduce the V and inverter V curves of a Synchronous motor. Analyse at what power factor a Synchronous motor can be operated as Condensor.

(b) With the aid of Phasor diagram, derive the expression for mechanical power developed by a Synchronous motor. [6+6]

7. (a) Using double field revolving theory, compose why a single phase induction motor is not self-starting. Also obtain the equivalent circuit of single phase induction motor with necessary equations. [12]

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NEC

Subject Code: R16EE2206

II B.Tech II Semester Supple Examinations, April-2024
ANALOG ELECTRONICS
(EEE)

Time: 3 hours   **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) What is feedback? Give the types of feedbacks?
   (b) Compare clipper and clamper?
   (c) List out the ideal characteristics of Op-Amp?
   (d) What is the condition for oscillations?
   (e) What is the importance of higher order filter?
   (f) What is the purpose of A/D and D/A converters

                                                [2+2+2+2+2+2]

PART-B

                                    4 X 12 = 48

2. (a) Explain with the help of mathematical expressions, how the negative feedback in amplifiers increases amplifier bandwidth and reduces distortion in amplifiers
   (b) An amplifier has a midband gain of 125 and a bandwidth of 250 KHz. If 4% negative feedback is introduced, find the new bandwidth and gain

3. (a) Derive the response of RC low pass circuit when the sinusoidal signal is given as input?
   (b) Explain the function of basic parallel clipper circuit during positive and negative periods of sinusoidal signal?

4. (a) If Vin=2V, R1 and R2 are 5KΩ, find the output voltage and voltage gain for the given circuit.
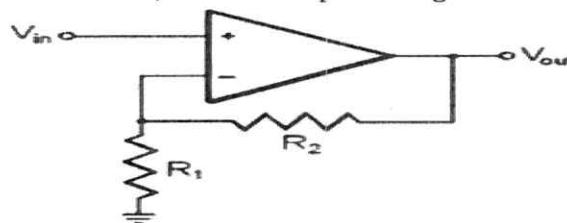
   (b) Define the following w.r.t. op-amp:
        i) input offset voltage   ii) CMRR   iii) input impedance   iv) slew rate   v) PSRR

5. (a) Explain the working principle of Monostable Multivibrator with wave forms.
   (b) Determine the period and frequency of oscillation for an astable multivibrator component values R1 & R2= 2 & 10 k Ω, C1 & C2= 0.01 µF & 0.05 µF

6. Explain first and second order LPF with neat sketches?

7. (a) Describe the operation of the R-2R Ladder and inverted R-2R DAC operation.
   (b) Compare the characteristics and specifications of ADC and DACs

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Narasaraopeta Engineering College (Autonomous)
Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16ME2205

II B.Tech II Semester Supple Examinations, April-2024
MANUFACTURING TECHNOLOGY
(ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1 (a) Write three advantages of sand casting.
   (b) What is the function of gates in casting?
   (c) Define the term "weldability".
   (d) What is the principle of thermit welding?
   (e) Define the term "angle of bite".
   (f) List the extrusion defects.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2 (a) Explain the shell moulding with neat diagram.   [6]
   (b) What are pattern allowances? Explain any two pattern allowances with a neat   [6]
        sketch.

3 (a) What is the function of gates in casting? Write a short notes on the types of Gates?   [6]
   (b) Explain the working principles of investment casting process with a neat sketch.   [6]

4 (a) Explain any four types of welding defects with simple diagram.   [6]
   (b) Explain with neat sketch flame characteristics of a gas welding process.   [6]

5 (a) Explain submerged arc welding with a neat diagram.   [6]
   (b) List out the advantages and dis-advantages of TIG welding process.   [6]

6 (a) Define forging and explain drop forging with a neat sketch.   [6]
   (b) Define the term recrystalization. State its significance in metal forming.   [6]

7 (a) Explain with neat sketch the process of wire drawing.   [6]
   (b) Differentiate between forward and backward extrusion process.   [6]

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Subject Code: R16EC2201

II B.Tech II Semester supplementary Examinations, April 2023
SWITCHING THEORY AND LOGIC DESIGN
(ECE)

Time: 3 hours   **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Using hamming code to correct one bit error in a data block of size 7, how many redundant bits need to be added?

   (b) Convert the given sum of products (SOP) expression to product of sums (POS) expression
   $$f = x y^1 + y z^1$$

   (c) Implement the logic function F= A+ BC using two level NAND gates.

   (d) Implement a T flip-flop from D flip-flop.

   (e) What are select lines in a Multiplexer? To implement 8x1 multiplexer, how many select lines are required?

   (f) What are the characteristic features of Mealy machine?

                              [2+2+2+2+2+2]

PART-B

                           4 X 12 = 48

2. (a) Deduce X from the following?

   (i) $(1056)_{16} = (X)_{10}$ (ii) $(4182)_{10} = (X)_8$

   (iii) $(11678)_8 = (X)_{12}$ (iv) $(5050)_{10} = (X)_{16}$

   (b) i)Justify the statement that "Gray code is a class of reflected code".
   ii) Perform the binary arithmetic operations on (+12)-(4) using signed 2'scomplement representation

3. (a) Simply the given boolean function 'F' using k-map and express the reduced expression in SOP and POS forms. $F = \Sigma m (0, 6, 8, 13, 14) + \Sigma d (2, 4, 10)$
   (b) Minimize the following Boolean function by using Tabulation method.
        $F = \Sigma (0, 1,2,8,10,11,14, 15)$

4. (a) Design and implement a Full adder using decoder.
   (b) Realize a 32:1 multiplexer using two 16:1 MUXs and one 2:1 MUX.

5. (a) Explain in brief about Programmable Read Only Memory (PROM) with a suitable example.
   (b) Demonstrate PLA for the following Boolean function. F1(A,B,C)= Σm(3,5,7) F2(A,B,C)= Σm(4,5, 7)

6. (a) Realize D flip-flop using JK flip-flop.
   (b) Design a modulo-6 gray code counter using T flip-flops.

7. (a) Explain the following related to sequential circuits with suitable examples: i) State diagram ii) State table iii) State assignment.

(b) Convert the following Moore machine to Mealy machine.

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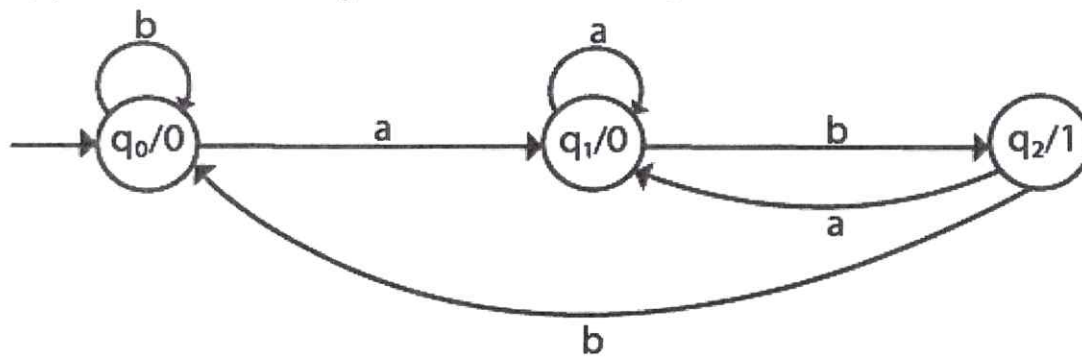
Subject Code: R16EC2202

II B.Tech II Semester Supple Examinations, April-2024
ELECTRONIC CIRCUIT ANALYSIS
(ECE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Draw the signal analysis model of the differential amplifier.
   (b) What are the salient features of h-parameters? Given a application.
   (c) Write advantages of two stage RC coupled amplifier.
   (d) What are the disadvantages of negative feedback?
   (e) Show the high input resistance transistor circuit
   (f) List the advantages of push-pull connection?

                                                          [2+2+2+2+2+2]

PART-B

                                                          4 X 12 = 48

2. (a) Draw & explain the Darlington emitter follower. Discuss, why the input impedance is higher than that of a single-stage emitter follower.   6M
   (b) In terms of the h-parameters and the source resistance, Relate the equation for the output admittance. Derive the expression for AV in terms of AI.   6M

3. (a) Sketch the small-signal high-frequency CC model of a transistor. What I the physical origin of the two capacitors in hybrid-π model. Also provide the order of magnitude of each capacitance.
   (b) Find the components of hybrid-π equivalent circuit for IC(Q) = 2.6 mA, VT = 26 mV, β = 100, hie = 1100 Ω, hre = 2.0 x 10-4, hoe = 30 x 10-6 mhos, fT = 160 MHz and Cc = 5 pF. 6M+6M

4. (a) Show the cascode amplifier schematic and derive expressions for voltage gain, current gain, input impedance, and output impedance.   6M+6M
   (b) Explain these: Bootstrapping principle in Emitter follower circuit and Darlington amplifier.

5. (a) Source follower has R_L = 2.5 kΩ. FET has g_m = 400 x 10^{-6} mhos, μ = 20 and r_d = 50 kΩ. Calculate Gain A, Feedback Amplifier gain A_F, Z_{out}(FB), Z_{in}(FB) and feedback factor β for the source follower circuit (Voltage Series Feedback Amplifier).   6M+6M
   (b) Draw the block diagrams for the four types of negative feedback amplifiers illustrating the sampling of signals at the output port and mixing of signals at the input port.

6. (a) Draw a circuit of a crystal-controlled oscillator and explain its operation.   6M
   (b) Sketch the circuit of a Wein bridge oscillator, determine the frequency of oscillation. Will oscillation take place if the bridge is balanced?   6M

7. (a) Use two complementary silicon transistors, draw a simple class B push pull amplifier circuit which does not use an output transformer.   6M
   (b) What is crossover distortion? How does a Class-AB Power Amplifier avoid crossover distortion? 6M

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Subject Code: R16EC2203

II B.Tech II Semester Supple Examinations, April-2024
PULSE AND DIGITAL CIRCUITS
(ECE)

Time: 3 hours   **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Brief out the necessary conditions for a high pass circuit to be a good differentiator.
   (b) The clamping circuit is also called as DC-Restorer, Why?
   (c) Differentiate Fan in and Fan out.
   (d) List out the applications of Multivibrators.
   (e) Define hysteresis and list out the methods to eliminate it in Schmitt trigger.
   (f) Explain the differences between sampling gates and logic gates

                                                                    [2+2+2+2+2+2]

PART-B

                                                                    4 ×12 = 48M

2. (a) Derive the expression for response of a low pass circuit to a RAMP input and draw the output
   response for RC>> T and RC<<T.   **[8M]**
   (b)Explain about the Ringing Circuit.   **[4M]**

3. (a) For the circuit shown below obtain the transfer characteristics and the output waveform if the
   input varies as $V_i = 50 \sin \omega t$. Assume the diodes are ideal?
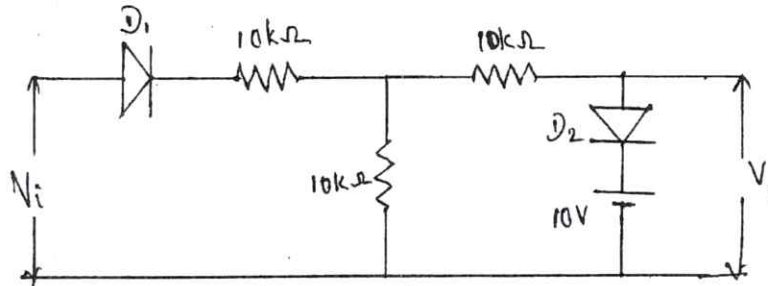
   (b) With a neat circuit diagram explain the principle of operation of a positive peak clamper.
   Sketch the output waveform for a sinusoidal input signal.

4. (a) Describe the piece wise linear characteristics of a diode.
   (b) Explain the terms pertaining to transistor switching characteristics.
      i) Turn-on-time   ii) Storage time   iii) Fall time

5. (a) The self biased binary uses npn silicon transistors with $h_{FE \, (min)} = 20$. The junction voltages and
   I_{CBO} may be neglected. Design the circuit subject to the condition. $V_{CC} = 18V$, R1 = R2 : $I_{C(MAX)}$ =
   10mA. The base current of ON transistor is twice the minimum base current and V_{BE} of the OFF
   transistor is equal to –1V.   **[8M]**
   (b) Analyse the role of Collector catching Diodes in multivibrators.   **[4M]**

6. (a) Design an Astable multivibrator using two transistors with h_{fe} = 50, $V_{CC}=V_{BB}=20V$, $R_{C1}= R_{C2} =$ 1k Ω. The repetition rate is 500Hz, and pulse width is 0.2m sec.

(b) With the help of a neat circuit diagram and waveforms explain the working of a Schmitt trigger. Derive the expressions for UTP and LTP.

7. (a) Draw the circuit of Boot strap sweep using transistors and explain its operation. Derive the expression for sweep interval and Retrace interval.

(b) Why are sampling gates called linear gates? With the help of a neat diagram explain the working of unidirectional diode gate.

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Subject Code: R16EC2204

II B.Tech II Semester Supple Examinations, April-2024
ANALOG COMMUNICATIONS
(ECE)

Time: 3 hours   **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Explain the need of modulation in communication system?
   (b) Compare the DSB and SSB systems.
   (c) Explain the terms of Narrow band FM and wide band FM
   (d) Define noise figure, noise equivalent temperature.
   (e) Define sensitivity,selectivity,fedility.
   (f) Discuss the types of pulse Modulation

                                                                                  [2+2+2+2+2+2]

PART-B

                                                                                  4 X 12 = 48

2. (a) How AM is generated using square law modulator? Derive relevant expressions.
   (b) Calculate the percentage power saving when the carrier and one of the sidebands are suppressed in an AM wave modulated to a depth of 100% and 50%.

3. (a) What is DSB-SC modulator? Explain the ring modulator for generation of DSB-SC.
   (b) Describe the SSB in frequency domain and then explain how to generate SSB

4. (a) With neat diagram explain the detection of FM using Zero crossing detector.
   (b) With neat diagram, explain the FM demodulator using PLL.

5. (a) Define the following (i) thermal noise (ii) shot noise (iii) noise figure
   (b) Discuss in detail about Pre-emphasis & de-emphasis circuits.

6. (a) Discuss about frequency stability in FM Transmitter.
   (b) Write short notes on amplitude limiting.

7. (a) Explain the process of generation of PWM with neat diagrams.
   (b) With neat sketch explain Frequency Division Multiplexing.

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Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16EC2205

II B.Tech II Semester Supple Examinations, April-2024
ELECTROMAGNETIC WAVES AND TRANSMISSION LINES
(ECE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Write the Poisson's and Laplace equations.
   (b) Explain about transformer EMF
   (c) State Ampere's circuit law.
   (d) Define circular polarization.
   (e) What is meant by Total Internal Reflection?
   (f) For a transmission line VSWR is 4. What is the reflection coefficient?

   [2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) State Gauss's law. Using divergence theorem and Gauss's law, relate the displacement density D to the volume charge density ρ_v. [6M]
   (b) A charge of -0.3 mC is located at A(25, -30, 15) cm and a second charge of 0.5 mC is located at B(-10, 8, 12) cm. Find the electric field strength, E at (i) The origin (ii) Point P (15, 20, 50) cm. [6M]

3. (a) Derive an expression for magnetic field strength, H, due to a current carrying conductor of finite length placed along the y-axis, at a point in x-z plane and 'r' distant from the origin. Hence deduce expressions for H due to semi-infinite length of the conductor. [6M]
   (b) Find magnetic field strength, H, on the Z-axis at a point P (0, 0, h), due to a current carrying circular loop, $x^2 + y^2 = A^2$ in Z=0 plane. [6M]

4. (a) Write Maxwell's equations in different final forms and in word Statements. [6M]
   (b) Discuss about the inconsistency of Ampere's Law. [6M]

5. (a) Find the relations between E and H in a uniform plane wave. Find the value of intrinsic impedance of free space. [6M]
   (b) Explain skin depth and derive an expression for depth of penetration for good conductor.

6. (a) An EM wave travelling in air is incident normally on boundary between air and a dielectric having permeability same as free space and permittivity as 4. Prove that one-ninth of the incident power is reflected and eight-ninths of it is transmitted into the second medium. [6M]
   (b) Derive the boundary conditions for the tangential and normal components of Electrostatic fields at the boundary between two perfect dielectrics. [6M]

7. (a) Define the reflection coefficient and derive the expression for the input impedance in terms of reflection coefficient. [6M]
   (b) Derive the expression for the input impedance of a transmission line length L. [6M]

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Subject Code: R16EC2206

II B.Tech II Semester Supple Examinations, April-2024
DATABASE MANAGEMENT SYSTEMS
(ECE)

Time: 3 hours   **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Provide an overview of the Relational Data Model. How does it represent data, and what are the fundamental concepts in this model?
   (b) Explain the Network Data Model. What are its key characteristics, and how does it differ from the Hierarchical Data Model?
   (c) Define the term "schema" in the context of a database. How does it relate to the overall database structure?
   (d) Differentiate between the logical schema and the physical schema in a database. What are their respective roles?
   (e) What is data independence in the context of database management? How does it support the principles of the database system?
   (f) What is data redundancy in a database, and how can it lead to data anomalies? Provide an example to illustrate this concept.

                                                                      [2+2+2+2+2+2]

PART-B

                                                                      4 X 12 = 48

2. (a) Compare and contrast the ER Model with other data modeling techniques like the relational model and object-oriented model.

   (b) Describe how you would represent inheritance in an Entity-Relationship Diagram (ERD) or a relational schema. Provide a practical example.

3. (a) Write and explain creating views, updating views and dropping views

   (b) Write SQL query for following consider table EMP (empno , deptno, ename ,salary, Designation, joiningdate, DOB,city)

      a. Display names of employees whose experience is more than 10 years
      b. Display age of employees
      c. Display average salary of all employee
      d. Display name of employee who earned highest salary

4. (a) Explain the purpose of foreign keys in enforcing referential integrity. How are foreign keys used to maintain consistency between related tables?

   (b) What is a domain constraint in the context of SQL? Provide an example of a domain constraint.

5. (a) Define decomposition in the context of database normalization. How does it break down a relation into smaller relations?

(b) Explain the Second Normal Form (2NF) and its relationship with functional dependencies. Provide an example of a relation in 2NF.

6. (a) Discuss the importance of buffer replacement policies in DBMS buffers. What strategies are commonly used for this purpose?

(b) How does DBMS buffer management impact the trade-off between read and write operations in a transaction-intensive environment?

7. (a) Explain the concept of a conflict serializability graph and how it is used to analyze the serializability of schedules.

(b) Describe the purpose of a deadlock in the context of concurrent transactions and locks. How can different types of locks help prevent deadlocks?

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Subject Code: R16CS2203
II B.Tech II Semester Supple Examinations, April-2024
FRONT END WEB TECHNOLOGIES
(CSE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Define Anchor tag with an example.
   (b) What is an internal CSS style ?
   (c) Define instance of operator in Java script
   (d) What is the use of <noscript>tag
   (e) Define Event Handling.
   (f) What is Sliding Elements.

                                                            [2+2+2+2+2+2]

PART-B

                                                            4 X 12 = 48

2. (a) Explain the lists in HTML. Give an example.
   (b) Explain the tables in HTML with example. Necessary of tables in HTML?

3. (a) Discuss about different background properties of webpage.
   (b) Explain Drag and Drop operations in HTML5

4. (a) Using JavaScript, validate an input-field that contains an e-mail address.
   (b) Discuss the DOM (Document Object Model) in Java Script and also discuss the role of Event handling with proper example.

5. (a) Describe the Document type Definition (DTD) in XML. What is difference between Internal and External DTD?
   (b) Create a document with two links to an external document. The first link should lead to the beginning of the external document. The second link should lead to a particular section in the external document.

6. (a) What is jQuery? Explain programming conventions of jQuery.
   (b) Discuss about various Array utility methods.

7. (a) Discuss about various animations and effects.
   (b) Illustrate dynamic interaction of dialog with an suitable example.

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Subject Code: R16CS2204

II B.Tech II Semester Supple Examinations, April-2024
DATABASE MANAGEMENT SYSTEMS
(CSE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) What are the key characteristics of a database system that distinguish it from a file system?
   (b) Compare and contrast the flexibility of a database system with a traditional file system. How does a database system better manage data?
   (c) Define the Entity-Relationship Model (ER Model) and explain its significance in database design.
   (d) Explain DML statements with syntax and examples.
   (e) Explain the difference between a foreign key and a unique constraint. Give an example of a scenario where you would use each
   (f) Explain the key features of the relational model, such as tables, relationships, and data integrity.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain the difference between a one-to-one (1:1), one-to-many (1:N), and many-to-many (M:N) relationship in the ER Model. Provide examples for each.

   (b) What is an associative entity, and why is it used in the ER Model? Provide an example of an associative entity and its role in modeling.

3. (a) What are Joins? Explain inner join and outer join.

   (b) Write SQL queries for following

      a. Create table EMP with following attributes using suitable data types (Eno, Ename, Deptname, Salary, designation, Joining_Date)
      b. Display names of employee whose name start with alphabet 'A'
      c. Display names of employee who joined before '1/1/2000'
      d. Increase the salary of employees by 20% who joined after '1/1/2005'

4. (a) Write a SQL query that retrieves all employees who do not have a specified manager (where the manager's ID is stored as a nullable foreign key).

   (b) Explain the purpose of the AND logical operator in SQL. Provide an example of a query that uses the AND operator to retrieve specific data from a table.

5. (a) Describe the key properties of functional dependency, such as reflexivity, augmentation, and transitivity. Provide examples to illustrate each property.

(b) Provide an example of a relation and then demonstrate the process of transforming it into 1NF, 2NF, and 3NF. Explain the steps and rationale for each normal form

6. (a) In a multiuser system, how does a read operation by one user affect another user's concurrent transactions that involve the same data?

(b) What is the purpose of DBMS buffers in the context of database transactions? How do they improve data access and system performance?

7. (a) Compare and contrast serial schedules, serializability, and non-serial schedules, emphasizing their significance in database management and transaction processing.

(b) Describe the Two-Phase Locking protocol and its role in guaranteeing serializability in a multi-transaction environment.

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