Code No.: **40205**

MR14

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)

Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad

II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018

Subject: **Network Theory**

Branch: **EEE**

Time: 3 hours **Max. Marks: 75**

PART-A

I. Answer ALL questions of the following **5 x 1M=5 M**

1. Differentiate active and reactive power
2. Define pole and zero of a network function.
3. State the applications of hybrid parameters
4. State Fourier theorem
5. What is the significance of Laplace transforms in Network analysis

II. Answer ALL questions of the following **10 x 2M=20 M**

1. What are the various types of filters encountered in network theory
2. Write short notes on ABCD parameters.
3. Determine the delta equivalent when three resistances of 6Ω, 4Ω and 3Ω are connected in star.
4. State any two properties of Fourier transforms
5. Sketch the response when a 4μF capacitor, previously charged to 10V, is dissipated in to a 10Ω resistor connected across it.
6. Deduce an expression for Y_{11} and Y_{22} in terms of Z-parameters
7. Differentiate low pass filter and high pass filter
8. Express fourier series in exponential form. What is even symmetry?
9. Discuss behavior of RC series circuit with switch operated at t = 0 .
10. Define driving point impedance and transfer function.

PART-B

Answer ALL questions of the following **5 x 10 M=50 M**

1. A three phase , 50 Hz star – connected balanced source has a per phase voltage of 231 volts. The 3- phase load is as follows:
   a. Between R ph. & Load neutral: 100 ohms resistor.
   b. Between Y ph. & Load neutral: 100 ohms inductive reactance.
   c. Between B ph. & Load neutral: Open Circuit.

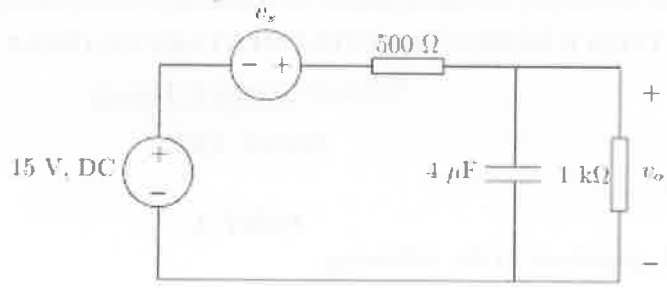
   Find the voltage between the source neutral and the load neutral, and draw the phasor diagram

   OR
2. With a neat phasor diagram, Prove that for 3 –phase star system line voltages are 30 deg ahead of their respective phase voltages.

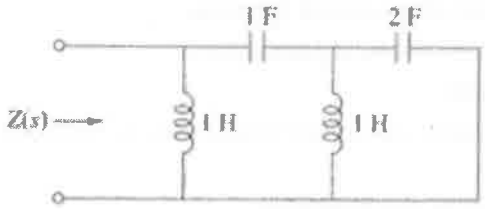
3. Discuss behaviour of RC series circuit with switch operated at t = 0

   OR

4. Find $v_o(t)$ at steady state in the circuit shown in the figure , given that $V_s = 0.1 \sin \omega t$ V. Compare the cases when $\omega = 5000$ rad/s and $\omega = 300$ rad/s.



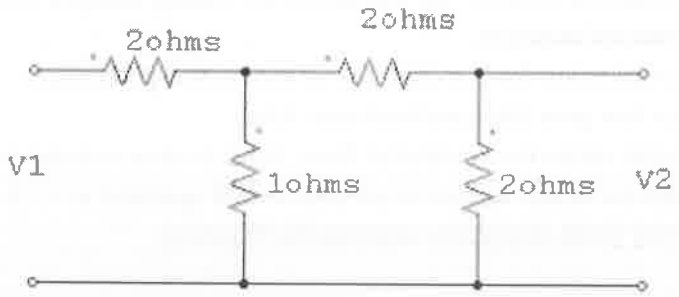
5. For the network shown below, draw the pole-zero plot of driving point impedance function.



OR

6. What is a pole-zero plot? What is its significance? Explain time domain behavior from pole-zero plot?

7. For the network shown below, find Z parameters.



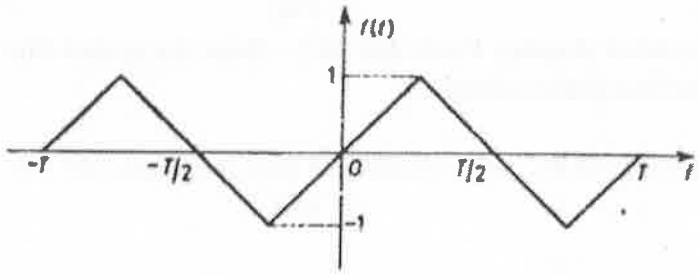
OR

8. What are the ABCD parameters? Express ABCD parameters in terms of Z parameters.

9. Explain the classifications of filters in brief.

OR

10. Determine the Fourier expansion of the triangular waveform shown in the figure below.



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MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

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Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad

II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018

Subject: **Electronic Circuits**

Branch: **EEE**

Time: 3 hours **Max. Marks: 75**

PART – A

I. Answer ALL questions of the following **5x1Mark=5 Marks**

1. What are the methods available for biasing a single stage FET amplifier?
2. Classify the large signal amplifiers.
3. Define Feedback.
4. Explain how transistor acts as an clipper.
5. What is a bistable multi vibrator?

II. Answer ALL questions of the following **10x2Mark=20 Marks**

1. Why CE configuration is widely used in amplifier circuits?
2. Explain how FET can be used as an amplifier?
3. What is meant by impedance matching in power amplifiers?
4. Explain frequency response of an amplifier.
5. What are the advantages of negative feedback in amplifiers?
6. What are the properties of peizo electric crystal?
7. Why RC-high pass circuit is called as differentiator?
8. Draw different clamping circuits using diode with different inputs.
9. What is unsymmetrical triggering? Where is it used
10. What are the applications of Schmitt Trigger?

PART-B

Answer ALL questions of the following **5x10 Marks= 50Marks**

1. a) Analyze general transistor amplifier circuit using h-parameter model. Derive the expression for Ai,Av,Ri, Ro, Ais, Avs
   b) Give the differences between BJT & FET.

OR

2. a) For a single stage transistor amplifier, Rs = 200Ω and R_L = 5KΩ. The h-parameter values are h_{fb} = -0.98, h_{ib}= 21Ω, h_{rb} = $2.9x10^{-4}$, h_{ob} = 0.49 μA/V. Find Av , A_I , Avs , R_i and Ro for CB transistor configuration.
   b) Compare the characteristics of the three FET amplifier configurations in terms of Av , A_i , $R_i$and Ro

3. a) Sketch the schematic of class B push-pull amplifier with complementary symmetry configuration and explain the working of it.
   b) Calculate the following for the given data. i. Power dissipation of each transistor ii. Efficiency A complementary push pull amplifier has capacitive coupled load RL=8Ω, supply voltage of.12V

OR

4. a) What is harmonic distortion in transistor amplifier circuits? Discuss about second harmonic distortion.
   b) In a transformer coupled class A power amplifier, show that the conversion efficiency is 50%.

5. a) Explain the relevant information, how the negative feedback improves stability reduce noise and Increase input impedance.
   b) A Wein bridge oscillator has a frequency of 500Hz, if the value of C is 100Pf,determine the value of R .

OR

6. a) What are feedback concepts? Explain the types of them with necessary examples.
   b) Explain briefly shunt feedback amplifiers.

7. a) Derive an expression for lower cut off frequency of a high pass circuit.
   b) Draw the output waveforms of a high pass circuit excited by step, pulse and square waveforms for different time constants.

OR

8. a) Explain how RC circuits are used as integrators and differentiators. Sketch the output waveform for square wave input.
   b) Sketch the output waveforms for an RC integrating circuit when i) $\tau = 10\ t_p$ ii) τ= tp and iii) $\tau = 0.1\ t_p$

9. a) With the help of neat circuit diagram, explain the working of an emitter-coupled monostable multivibrator
   b) Derive an expression for the frequency of oscillation of an astable multi vibrator.

OR

10. a) Derive an expression for the frequency of oscillation of the collector coupled astablemultivibrator.
    b) Design a fixed bias binary using npn transistors having $h_{FE(min)} = 50$; Vcc = 10V, V_{BB} = -10V, Assume $V_{CE(sat)} = 0$, $V_{BE(sat)} = 0$ and $I_{c(sat)} = 5mA$.

Code No.: **40204**

MR14

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

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Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad

II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018

Subject: **Power Systems - I**

Branch: **EEE**

Time: 3 hours **Max. Marks: 75**

PART – A

I. Answer ALL questions of the following **5x1Mark=5 Marks**

1. On which cycle TPS works
2. Advantage of CT and PT
3. Advantage of DC distribution
4. What is plant factor?
5. What is block rate tariff?

II. Answer ALL questions of the following **10x2Mark=20 Marks**

1. Explain Chimney and cooling tower
2. Explain Radiation hazards and its effect
3. Explain use of Busbar and single bus bar diagram symbol
4. Draw single line diagram of GIS
5. What is distribution system
6. What are Primary distribution voltage adopted in India
7. What is Tariff and general form of Tariff
8. Explain why pf tariff is imposed
9. What is diversity factor and how it influence the cost of generation
10. What information can be supplied by load curves

PART-B

Answer ALL questions of the following **5x10 Marks= 50Marks**

1. a. Compare Nuclear and Thermal Power plant
   b. Explain Working of any Boiler with neat sketch

OR

2. Explain Nuclear Power station with all the components briefly with neat sketch.

3
   a. Compare Air Insulated and Gas Insulated Substation
   b. Explain any two parts of Gas power station with neat sketches

OR

4. Explain GIS with Single line diagram and also explain each parts briefly

5.

a. Compare overhead and underground distribution system
b. Compare ring main and Radial system

OR

6. A single phase 2 wire feeders, 1500m long, supplies a load of 60A at 0.85 pf and 50A at 0.88pf lagging at distances of 600, 1200 1500 meters respectively from the feeding point. The resistance and reactance of the feeder per km length are 0.06 and 0.1 OHM respectively. If the voltage at the far end is maintained at 220V, Find the voltage at sending end, and its phase angle with respect to receiving end.

7. A power station has the following load:

Residential lighting	Load: max load = 1000KW
	Load factor = 20%
	Diversity between consumers= 1.3
Commercial load:	maximum load = 2000KW
	Load factor = 30%
	Diversity between consumers = 1.1
Industrial load:	maximum load = 5000KW
	Load factor = 80%
	Diversity between consumers=1.2

Over all diversity factor is taken as 1.4 find (i) **MD** on the system (ii) Daily energy consumption of each type of load and total energy consumption (iii) Connected load of each type, assuming demand factor of each is 100%.

OR

8.

a. Explain
   I. Demand factor
   II. Utilization factor
   III. Diversity factor
b. Explain all types of cost in detail.

9. A factory works for 16hrs a day in a year. The following two systems of tariff are available:
   HV supply at Rs1/unit + Rs 50/month/KVA of MD + Rs 1.10/unit.
   The factory has an average load of 250KW at 0.8 pf and a MD of 300KW at same pf. The HV equipment costs Rs 500/KVA and losses can be taken as 5%. Interest and depreciation charges are 12%. Calculate the difference in the annual cost between the two systems.

OR

10. a. Describe different types of tariff methods
    b. A consumer has a MD of 200KW at 40% load factor . if the tariff is Rs100/KWof MD plus 10paisa/KWH, find the overall cost/KWH

Code No.: 40B01 | MR14

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

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II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018

Subject: **Managerial Economics and Financial Analysis**

Branch: **Common to CE & EEE**

Time: 3 hours **Max. Marks: 75**

PART – A

I. Answer ALL questions of the following **5x1M=5 Marks**

1. What is meant by Law of demand?
2. Define Fixed cost and variable cost.
3. Define monopoly
4. Explain Partnership.
5. What is Balance Sheet?

II. Answer ALL questions of the following **10x2M=20 Marks**

1. Explain the scope of Managerial Economics.
2. Write any two methods of Demand Forecasting.
3. What is Break-Even Point and its importance.
4. Write a short note on 'law of return to scale'.
5. What is the need of public enterprises?
6. Explain any two methods of Pricing.
7. Define capital and write different types of capital.
8. Explain pay-back period and Average Rate of Return.
9. Who are the users of financial statements?
10. What is Current Ratio and Net Profit Ratio?

PART-B

Answer the following questions **5x10M=50 Marks**

1. Distinguish various types of price elasticity of demand. What are the factors on which the elasticity of demand depends?

OR

2. Explain how Managerial Economics is linked with other academic disciplines.

3. Define production function? What are the types of production function? Explain them in brief.

OR

4. ABC Company has supplied the following information.
   No. of units sold:20,000 units,
   Fixed cost: Rs. 2, 00, 000
   Variable cost per unit Rs. 10
   Selling price per unit. Rs. 20
   Find out:
   a) BEP in units
   b) Margin of safety
   c) Sales to get a profit of Rs. 1,00,000
   d) Verify the results in all the above cases

5. What is monopolistic competition? Explain the equilibrium of firm and industry in both the short-run and long-run under monopolistic competition .

OR

6. Compare between monopoly and perfect competition.

7. Explain the features of sole proprietorship and explain its advantages and disadvantages.

OR

8. A company is considering two investment opportunities (A and B) that cost Rs. 4, 00,000 and Rs. 3, 00,000 respectively. The first project generates Rs. 1,00,000 a year for four years. The second generates Rs. 60,000, Rs.1, 00,000, Rs.80, 000, Rs. 90,000 and Rs.70, 000 over a five year period. Assume that all cash flows are after depreciation and tax.The company's cost of capital is 8%. Which project will you choose under NPV method?

9. Journalize the following Transactions from the books of Miss. Madhuri?

   a) Madhuri Commenced business with a capital of Rs.1,00,000/-

   b) Purchased furniture Rs.3,000/-

   c) Sold Goods worth Rs.3,500/-

   d) Paid Salaries Rs.10,000/-

   e) Office Expenses paid Rs.800/-

   f) Cash deposited into bank Rs.30,000/-

   g) Purchased good on credit basis from Miss. Shreya Rs.40,000/-

   h) Cash withdraw from bank Rs.15,000/-

OR

10. What are the important Financial Ratios? Explain any four of them with examples to understand the financial statements?

Code No.: **30111/40111**

MR13/ MR14

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Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad

II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018

Subject: **Electrical Machines-II**

Branch: **EEE**

Time: 3 hours **Max. Marks: 75**

PART – A

I. Answer ALL questions of the following **5x1Mark=5 Marks**

1. What is shell type transformer?
2. What is leakage reactance?
3. Define starting torque in an induction motor.
4. How to change speed of an induction motor?
5. Why single phase motor is not self-starting ?

II. Answer ALL questions of the following **10x2Mark=20 Marks**

1. A transformer with 1200 primary turns and 300 secondary turns is supplied from a 150 V ac supply. Calculate the secondary voltage and the volts per turn.
2. What is voltage regulation of a transformer?
3. Write condition for maximum voltage regulation in a transformer.
4. How to reduce eddy current losses in a transformer?
5. Write expression for maximum torque in three phase induction motor.
6. Draw circuit diagram for slip ring three phase induction motor.
7. Explain working of an induction generator?
8. What happens if we change phase sequence of three phase induction motor?
9. Explain working of capacitor start single phase induction motor.
10. What is split phase motor?

PART-B

Answer ALL questions of the following **5x10 Marks= 50Marks**

1. a) A 30kVA transformer has a voltage ratio of 3300/300V. Calulate the primary and secondary currents. [5]

b)Draw equivalent circuit of a single phase transformer. [5]

(OR)

2. a) Draw full load phasor diagram of a single phase transformer. [5]

b) A transformer has 2 per cent resistance and 5 per cent reactance. Find its voltage regulation at full load, 0.8 pf lagging . [5]

3. a)Explain the delta/delta, star/star connections of a 3-ø Transformer. [5]

b) Discuss construction of three phase core type and shell type transformers. [5]

(OR)

4. An 12000/420V, 50Hz, 3 phase transformer is delta connected on the HV side and the LV Windings are star connected. There are to be 14V per turn and the flux density is not to exceed 1.3Wb/sq.m. Calculate the number of turns per phase on each winding and the net iron cross-sectional area of the core. [10]

5. The power input to a 3-phase induction motor is 80kW. The stator losses total 1.2kW. Find the total mechanical power developed and the rotor copper losses per phase if the motor is running with a slip of 4%. [10]

(OR)

6. Explain double cage and deep bar rotors in an induction motor. [10]

7. a) Explain production of rotating field in a three phase induction motor. [5]

b) The frequency of the emf in the stator of a 4 pole induction motor is 50Hz, and that in the rotor is 1.5 Hz. What is the slip, and at what speed is the motor running? [5]

(OR)

8. Draw the equivalent rotor circuit modal and stator circuit model of a three induction motor. [10].

9.a). Explain double field theory of single phase induction motor. [5]

b) Draw equivalent circuit model of slip phase induction motor. [5]

(OR)

10.a) Explain construction details of single phase induction motor [5]

b) Explain working of capacitor start capacitor run induction motor with phasor and circuit diagram. [5]

Code No.: 30403/40403

MR13 & MR14

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II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018

Subject: **Switching Theory and Logic Design**

Branch: **EEE**

Time: 3 hours **Max. Marks: 75**

PART-A

I. Answer ALL Questions of the following **5x1M=5M**

1. Convert the following binary numbers to Gray code a) 111100 b) 101001
2. Compare static and dynamic hazards.
3. Compare the combinational and sequential circuits
4. How many number of flipflops are required to implement mod-13 counter?
5. What is a merger graph?

II. Answer ALL Questions of the following **10x2M=20M**

1. State about error correcting codes?
2. Convert f = $(\bar{A} + B + \bar{C})(A + \bar{B} + C)$ into SOP form.
3. Write the block diagram of 2-4 and 3-8 decoders?
4. Plot the k-map for Ex-OR function of 3 variables.
5. Distinguish between synchronous and asynchronous latch?
6. Draw the timing diagram of clocked J-K Flip- Flop.
7. What are the steps involved in a sequential circuit design.
8. Distinguish between synchronous and asynchronous circuits.
9. State 'State equivalence theorem'
10. Draw Moore sequential circuit model.

PART-B

Answer ALL Questions of the following **5x10M=50M**

1. a) Convert the number $(19.125)_{16}$ to base 10, base 4, base 5 and base 2 .
   b) Perform the binary arithmetic operations on (-17) - (-6) using signed 2's complement representation.

OR

2. a) Given $(64)_{10}=(100)b$. Determine b value [4M]
   b) Perform binary arithmetic operations on (+12)-(4) using signed 2's complement representation [6M]
3. a) Determine the canonical POS and SOP form of $T(x,y,z)=x^1(y^1+z^1)$ [4M]
   b) Reduce the following Boolean expression using theorems and identities
   $F=AB+C\bar{D}B+\bar{A}C\bar{D}$ [6M]

OR

4. a) Implement the following Boolean function with 8:1 multiplexers
   F(A,B,C,D) = sigmam (0,5,8,9,10,12,14)
   b) Explain briefly Multiplexers and Demultiplexers.

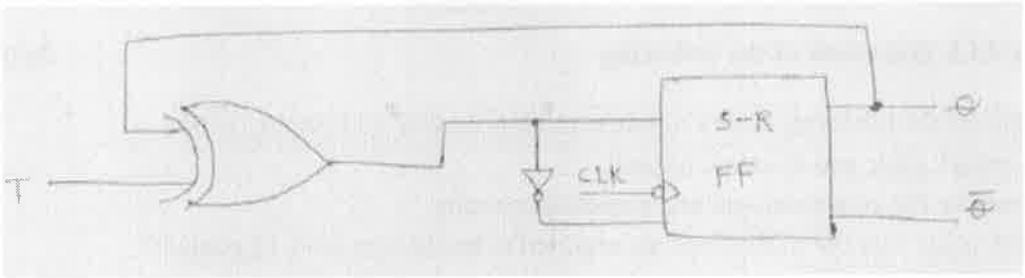
5. a) Draw the circuit of T-Flip Flop using gates and give its truth table.

   b) Convert J-K flip-flop to SR flip-flop

OR

6. a) Classify the required circuits into synchronous, asynchronous, clock mode, pulse mode with suitable examples. [5M]

   b) Prepare the truth table for the following circuit and show that it acts as a T-flip flop. [5M]



7. a) Design a 3-bit binary UP/DOWN counter with a direction control M.. use J-K flip flop

   b) Draw and explain the operation of the 4-bit parallel-in-parallel-out shift register.

OR

8. a) Design a BCD counter using JK flip flops [6M]

   b) What are the design aspects of synchronous sequential finite state machines? [4M]

9. Explain the procedure to implement the weighing machine.

OR

10. Find the Equivalence partition for the given Machine. Show a standard form of the corresponding reduced machine.

PS	NS,Z	
	X = 0	X = 1
A	F,0	B,1
B	G,0	A,1
C	B,0	C,1
D	C,0	B,1
E	D,0	A,1
F	E,1	F,1
G	E,1	G,1