

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)
Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad

III B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018Subject: Static DrivesBranch: **EEE****Time: 3 hours****Max. Marks: 75****PART-A****I. Answer ALL Questions of the following****5x1M=5M**

1. Draw the speed torque characteristics of D.C series motor.
2. What are the advantages of three phase drives over single phase drives?
3. Distinguish between class A and class B choppers.
4. Draw equivalent circuit diagram of Induction Motor.
5. Which of the Induction motor Drive applicable for sub synchronous speed operation?

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

1. Explain the importance of DC Drives over AC Drives.
2. Define about load equalization in Drives.
3. Write the speed equation for a 3-phase full converter connected to DC separately excited motor.
4. Draw the wave forms of 3-phase semi-converter and speed torque characteristics.
5. Draw the power circuit of plugging for both separately excited and series excited DC motor.
6. In which quadrant does the step down chopper operate and write the average output voltage expression.
7. Draw the circuit diagram of 3 phase CSI.
8. Write any two advantages PWM control based variable frequency drives.
9. Draw the speed-torque characteristics of static Kramer drive.
10. When operating in true synchronous mode, why the frequency must be changed in small steps.

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

1. Explain the operation of a separately excited dc motor supplied from 1-phase fully controlled rectifier with necessary diagrams. Assume Continuous conduction.

(OR)

2. Explain the operation of single phase semi converter with neat sketches.
3. A 600V, 1500 rpm, 60A separately excited dc motor is fed through a 3-phase half controlled rectifier from 3-phase 440V AC supply. Motor armature resistance is 0.5Ω . armature current is assumed constant. For firing angle of 45° at 1000rpm, compute the rms values of source and thyristor currents, average value of thyristor current and the input supply power factor.

(OR)

4. A three phase Full converter is connected to 400V, 50Hz AC supply is delivering 20A to dc motor, If the firing angle 30° . Compute input power factor to the motor?

5. A 200V, 970rpm, 100A Dc separately excited motor has an armature resistance of 0.05Ω . it is braked by plugging from an initial speed of 1000rpm calculate a)resistance to be placed in armature circuit to limit braking current to twice the full load value b)braking torque c)torque when the speed has fallen to zero.

(OR)

6. Draw the circuit diagram of 3-phase dual converter? Explain the Four Quadrant operation of DC motor by a dual converter in circulating current mode.
7. A separately excited dc motor with $R_a = 0.3\Omega$ and $L_a = 15\text{mA}$ is to be Dc chopper speed controlled over a range of 0-2000rpm. The Dc supply is 220V. The load torque constant and requires average armature current of 25A. Calculate the range of mark space ratio require if the motor design constant ($K_e \phi$) has a value of 0.00167 Vs per revolution.

(OR)

8. The parameters of a three phase 400 Volts, 50 Hz, 6 pole, 960 rpm, and star connected induction motor has the following parameters per phase referred to the stator. $R_1 = 0.4 \text{ Ohm}$. $R_2 = 0.20 \text{ Ohm}$, $X_1 = X_2 = 1.5 \text{ Ohm}$, $X_m = 30 \text{ Ohms}$. If the motor is controlled by variable frequency control at a constant flux of rated value, determine the motor speed and the stator current at half the rated torque and 25Hz.
9. Draw and explain a closed loop operation for a static kramer controlled drive.

(OR)

10. Explain the slip power recovery control of slip ring induction motor.

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III B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018**Subject: Environmental Studies****Branch: EEE****Time: 3 hours****Max. Marks: 75****PART – A****I. Answer ALL questions of the following****5x1Mark=5 Marks**

1. What is Homeostasis?
2. What is insitu conservation of biodiversity?
3. What are biodiversity hot spot areas?
4. Thickness or ozone layer is measured in which units?
5. What is meant by urban sprawl?

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

1. Define the terms Food chain and Food web with Example?
2. What are the biotic and abiotic components of an ecosystem?
3. What are the uses of various types of minerals?
4. What are anthropogenic causes of droughts.
5. Discuss adverse effects of water pollution.
6. Write a note on Fukushima Daiichi Disaster.
7. Discuss briefly about impacts on different environmental components.
8. Discuss the impacts of global warming
9. Crazy consumerism is a threat to sustainability. Explain.
10. What are the responsibilities of municipal authorities to manage solid waste?

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

1. Define Ecosystems. Explain the structure and function of aquatic ecosystems.

OR

2. What are the Ecological pyramids? Explain why some of these pyramids are upright while others are inverted in different ecosystems.

3. a) Explain about hydrological cycle. (5M)
b) Discuss the impacts of overutilization of surface and ground water (5M)

OR

4. Briefly discuss growing energy needs and give an account of renewable energy resources in detail.

5. What is solid waste management? Write about TSDF (Transport, storage and disposal facilities) practices?

OR

6. Discuss various sources of Marine pollution, How can you prevent pollution of an Ocean.
7. What is Environmental management plan? Explain the role of remote sensing and GIS in EIA studies

OR

8. Define Green house Effect. Discuss the potential and contribution of these gases to global warming phenomenon.

9. Give brief account on:

- a) What is the difference between human centric and eco centric thinking.
- b) Role of IT in Environment

OR

10. Define solid waste management and explain various methods of disposal for municipal and industrial solid wastes.

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Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad**III B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018**Subject: Computer Methods In Power SystemsBranch: **EEE**Time: **3 hours**Max. Marks: **75****PART-A****I. Answer ALL Questions of the following****5x1M=5M**

1. Define terms Cutsets and Basic Cutsets.
2. What is DC Load Flows?
3. How the Reactors are classified?
4. Define present state stability limit.
5. Define Critical Clearing Angle.

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

1. Draw and explain Primitive network in Admittance form.
2. Draw and explain Primitive network in Impedance form.
3. What are assumptions made during study Fast Decouple Load Flow studies?
4. What are the various types of buses in load flow studies?
5. List different causes of Short Circuits in Power System.
6. What are the significances of symmetrical components?
7. Draw zero sequence network for Y-Y & Y- Δ transformer.
8. Draw Power angle characteristics and Explain.
9. Define constants M and H.
10. Explain briefly about fast operating circuit breakers

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

1. Derive the equation for self and mutual impedance of Z_{BUS} . for the addition of a branch.

(OR)

2. Using Bus building algorithm, determine the Z_{BUS} for the data shown in the following table.

Element	SELF		MUTUAL	
	Buscode (p-q)	$Y_{pq, pq}$	Bus code (r-s)	$Y_{pq, rs}$
1	1-2	0.4		
2	1-3	0.3		
3	2-3(1)	0.2		
4	2-3(2)	0.5	1-2	0.2

3. a) Write the step by step procedure for load flow analysis by Newton-Raphson method. (6M)
b) Compare the following methods of load flow solutions: (4M)
(i) Gauss-Siedel method (ii) Newton-Raphson method (iii) Decoupled methods

(OR)

4. The system data for a load flow problem are given in Table 1 and Table 2. Determine bus voltages at the end of 1st iteration by Gauss-Seidal method. Take acceleration factor as 1.6.

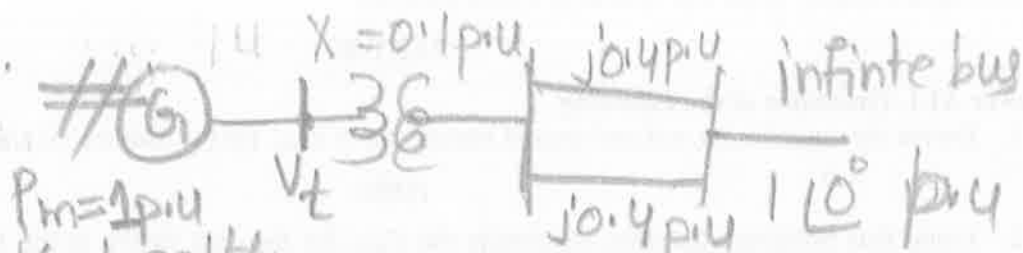
Table 1		Table 2				
Bus Code	Admittances	Bus Code	PD in p.u	QD in	V in p.u	Remarks
1 - 2	$2 - j8$	1	-	-	$1.06 \angle 0^\circ$	Slack
1 - 3	$1 - j4$	2	0.5	0.2	-	PQ
2-3	$0.666 - j2.664$	3	0.4	0.3	-	PQ

5. a) What are the advantages of per unit system? (3M)
 b) A generating station has five section bus-bar connected with a tie bar through 7.5% reactors rated at 3000 kVA. Each generator is of 3000 kVA with 10% reactance and is connected to one section of the bus bar. Find total steady input to a dead short circuit between the lines on one of the sections of the bus-bars (i) with and (ii) without reactors. (7M)

(OR)

6. a) What do you understand by short-circuit KVA ? Explain. (3M)
 b) Two generators P and Q each of 6000 KVA capacity and reactance 8.5% are connected to a bus bar at A. A third generator R of capacity 12,000 KVA with 11 % reactance is connected to another bus bar B. A reactor X of capacity 5000 KVA and 5% reactance is connected between A and B. Calculate the short circuit KVA supplied by each generator when a fault occurs (a) at A and (b) at B. (7M)

7. a) Derive the power angle equation for a SMIB system. Also draw the power-angle curve.
 b) A Generator shown in figure is delivering power to infinite bus. Find maximum power that can be transferred when system is healthy. (6M +4M)



(OR)

8. Derive the formula for power transfer through a transmission line and also derive the condition for maximum power transfer.

9. a) Write short note on auto reclosing circuit breakers. (4M)
 b) What are the factors that affect the transient stability? Explain in detail. (6M)

(OR)

10. A generator operating at 50Hz delivers 1.0 p.u. power to an infinite bus through a transmission circuit in which resistance is ignored. A fault takes place reducing the maximum power transferable to 0.5 p.u., whereas before the fault this power was 2.0 p.u. and after clearance of the fault it is 1.5 p.u.. Determine the critical clearing angle by the use of equal area criterion and derive formula used.

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III B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018Subject: Microprocessors and MicrocontrollersBranch: **Common to EEE & ECE****Time: 3 hours****Max. Marks: 75****PART-A****I. Answer ALL questions of the following****5 x 1M=5 M**

1. What is stack pointer of 8086?
2. What are the Rotate instructions of 8086.
3. What is meant by the term ISR?
4. What is microcontroller?
5. Draw the bit table of TMOD register

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

1. What is the advantage using interrupts?
2. List the features of 8086 microprocessor?
3. List the addressing modes of 8086.
4. State the need for an instruction set.
5. State the need of serial I/O communication.
6. List the different operating modes of serial port with their baud rates.
7. Explain the program counter and data pointer?
8. Explain the program status word in 8051 microcontroller?
9. Write the structure of PCON?
10. What are the serial Interrupts of 8051?

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

1. Draw and discuss the minimum mode of 8086 system with relevant read and write cycle timing diagrams.

OR

2. Explain the function of following pins in 8086.

- | | | | |
|--|-----------------------|-----------|-------------------|
| i) NMI | ii) \overline{INTA} | iii) DEN | iv) S_1 & S_0 |
| v) $\overline{QS_0}$ & $\overline{QS_1}$ | vi) IO/\overline{M} | vii) HOLD | viii) HLDA |

3. a) Explain the different types of instruction formats used in 8086.
- b) Explain addressing modes of 8086.

OR

4. a) Write a program to find the factorial of 5.
- b) Write an algorithm for converting ASCII to BCD and draw the flow chart for the same?

5. a) What is meant by interfacing? Explain the brief description of 8255 PPI chip.
b) Explain the different modes of operation of 8255.

OR

6. a) Draw the block diagram of 8255 and explain each block.
b) Explain about interfacing of DAC with 8086 using 8255.
7. Write a program (in interrupt mode) to light the LEDs at port 0 (for sometime) If the switch connected at INT0 (P3.2) is pressed and to light the LEDs at port 2 (for some time) if the switch connected at INT1 (P3.3) is pressed. Assume that a crystal oscillator of 22MHz is used.

OR

8. a) Explain the architecture of 8051 Microcontroller with a neat sketch.
b) Explain bit level logical instructions of 8051.
9. Write a program in which 10 bytes of data stored in RAM locations starting from 45H are transferred serially. At the end of the data transfer, the value of R0 (i.e., 0) is displayed on P1.

OR

10. a) Discuss the interrupt structure of 8051. Mention the priority. Explain how least priority is made as highest priority.
b) Write 8051 program to generate a square wave of 5KHz frequency at pin P1.3. Assume XTAL=11.0592MHz. use Timer 1.