Code No.: **10419/20419**

MR11 & MR12

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-2018

Subject: **Microprocessors and Microcontrollers**

Branch: **EEE**

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

Answer any FIVE Questions of the following **5x15M=75M**

1. a) Discuss briefly the arithmetic instruction set of 8086. [7M]
   b) What do you mean by addressing modes? What are the different addressing modes supported by 8086? [8M]
2. a) Explain any Five Data Transfer instruction with suitable examples. [7M]
   b) Describe the function of the following assembler directives used in the short program. [8M]

```
Code-here segment
Assume CS: code-here
 MOV AX, 0574H
  ADD AX, 96ACH
   Code-here Ends
    End.
```

3. a) Draw and explain briefly the pin configuration of DAC. [10M]
   b) Interface DAC0800 with an 8086 CPU running at 8MHz and write an assembly language program to generate a Sawtooth waveform of period 1 ms with V_{mod} of 5V [5M]
4. a) Explain the need for DMA in Microprocessor based systems. [5M]
   b) Explain the interfacing of 8257 DMA Controller with 8086. [10M]
5. Draw and explain the signal descriptions/pin configuration of 8251 USART [15M]
6. a) Draw the pin diagram of 8051 microcontroller and explain the functions of each pin.
   b) Define PSW register?Enlist the various flags in the PSW register. [10M +5M]
7. a. Draw and discuss the bit addressable Interrupt Enable Register [7M[
   b. How to decide the edge and level triggered configuration of external interrupts INT0 and INT1 8M
8. a) Discuss on selecting an Analog-to-digital converter? [7M]
   b) Draw the circuit diagram for ADC AD571 Interfacing with 8051microcontroller. [8M]

Code No.: **10217/20217**

MR11 & MR12

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

Subject: **Computer Methods In Power Systems**

Branch: **EEE**

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

Answer any **FIVE** Questions of the following **5x15M=75M**

1. a) Define and explain the following terms:- [6+9]
   (i) Twig (ii) Primitive network (iii) Sub graph (iv) Connected graph
   b) Prove that the formation of Y_{BUS} can also be obtained by direct transformation method.

2. Derive the expression for mutual impedance when the addition of element in a partial network is a branch [15 M]

3. a) Derive the static load flow equations.
   b) Explain the Algorithm if Gauss seidal method for load flow analysis with PV bus.

4. Explain the following.
   a) Advantages and Disadvantages of the N R method
   b) Acceleration factor
   c) Ac load flow Analysis

5. a) What are the advantages of P.U. system?
   b) A3 phase alternator with a rating of 10MVA, 33KV has its armature resistance of 15Ω/phase and synchronous reactance of 80Ω/phase. Determine P.U impedance of the alternator [8+7]

6. A 25 MVA, 11KV generator has an xd"=0.2 PU. It's negative and zero sequence reactance are respectively 0.3 and 0.1 PU. The neutral of the generator is solidly grounded. Determine the sub transient current in the generator and the line to line voltages of sub transient conditions when (i) an LG fault (ii) LL fault occurs at the generator terminates. Assume that before the occurrence of the fault the generator is operating at no load at rated voltage. Ignore resistances. [15 M]

7. a) Discuss the following term, which are used in the study of stability analysis.
   (i) Inertia constant, M (ii) Constant, H (iii) Power angle equation
   b) Derive the expression for steady state power interms of ABCD constants. [9+6]

8. a) A 4-pole, 50Hz, 60MVA turbo generator has a moment of inertia of $9X10^3$ kg-m^2. 7M
   Determine i) Kinetic energy in MJ at rated speed ii) Inertia constant M&H.
   b) Discuss the factors affecting transient stability. 8M

Code No.: **10406/20406** **MR11 & MR12**

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

Subject: **Switching Theory and Logic Design**

Branch: **EEE**

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

Answer any 5 Questions **5×15=75M**

1. a) Convert the following binary numbers into decimal, octal and hexadecimal
   (i) 111100001101 (ii) 111.0111 [8]
   b)Explain the classification of binary codes? [7]
2. a)What are SOP and POS forms of logical functions? Explain the standard or canonical SOP and POS forms. [7]
   b) Design a 2 input EX-OR and EX-NOR gates using minimum number of NAND and NOR gates respectively? [8]
3. a) Define K-map. Explain the implementation and simplification of 2-variable and 3-variable k-map. [7]
   b) Simplify the following Boolean function using tabulation method. [8]
   $Y(A,B,C,D)= \sum (2,3,5,7,8,10,12,13)$
4. a) Draw the logic circuit and truth table of full adder? [7]
   b) Realize 16X1 Multiplexer using only 2X1 Multiplexer. [8]
5. a) Write short notes (i)Architecture of PLD's
   (ii)Capabilities and the limitations of threshold gates [8]
   b) How does a Programmable logic device differ from a fixed logic device? what are the primary advantages of using programmable logic devices? [7]
6. a) Define set-up and hold times. [5]
   b) List the applications of flip-flops [3]
   c) Explain the working of JK flip-flop using truth table . [7]
7. a) Draw the Block diagram of Mealy model and Moore model. [7]
   b) Define the following (i)Completely specified functions (ii) Incompletely specified functions [4]
   c) Define Merger graph and Merger table? [4]
8. a) Write the process for control subsystem implementation [4]
   b) Explain the salient features of the ASM chart [4]
   c) Using the ASM chart design the data path circuit and control logic for a weighing machine. [7]

Code No.: **102A1/202A1** | **MR11/ MR12**

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

Subject: **Renewable Energy Sources**

Branch: **EEE**

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

Answer any **FIVE** Questions of the following **5x15M=75M**

1. a) List out the reasons for variation in solar radiation reaching the earth than received at the outside of the atmosphere. [8M]
   b) Write short notes on solar radiation on tilted surfaces. [7M]
2. Define solar collector. Explain in detail about different types of advanced collectors with neat sketches. [15M[
3. a) Discuss briefly "solar thermal energy storage". [10M]
   b) Explain the types of Sensible heat storage with a neat sketch. [5M]
4. Explain different types of Horizontal axis wind mills with neat sketches. [15M]
5. a) What are the different wet processes used in bio mass conversion?
   b) Write a short note on i) Combustion characteristics of Bio-gas ii) Gasification. [7+8 M]
6. a) What is plate tectonic theory and how is it related to geothermal energy? [6M]
   b) Explain the efforts being done in India for utilizing geothermal energy as an alternative source of energy. [9M]
7. a) Describe the closed cycle OTEC system and mention its advantages and limitations.
   b) Explain the wave energy conversion using floats with a neat diagram. [7M+8M]
8. a) Discuss the direct and indirect energy conversion systems emphasizing on the advantages and limitations of each. [8M+7M]
   b) Why is Carnot cycle not applicable in the estimation of efficiency of thermoelectric generator?