

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
(UGC-AUTONOMOUS)

M.Tech I Year I Semester (R16) Regular End Semester Examinations – January 2017

**MODERN CONTROL THEORY**  
(Electrical Power Systems)

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.  
In Q.no 1 to 5 answer either Part A or Part B only.

- Q.1(A) i. Explain the properties of state transition matrix. 5M  
ii. Obtain the state model of MIMO linear system. 5M

OR

- Q.1(B) Derive the state space representation of armature controlled DC motor. 10M

- Q.2(A) Describe the following state space representation methods. 10M  
a. Controllable canonical form  
b. Observable canonical form  
c. Diagonal canonical form  
d. Jordan canonical form.

OR

- Q.2(B) Explain the procedure to design the full order state observer for a linear time invariant system 10M

- Q.3(A) Explain in detail about the design procedure of Linear Quadratic Regulator with an example 10M

OR

- Q.3(B) Explain in detail about the controller design using output feedback. 10M

- Q.4(A) For the system represented by  $\dot{x} = Ax$  with  $A = \begin{bmatrix} -2 & 1 \\ 2 & -3 \end{bmatrix}$ . Let  $V = V^T P X$  with  $P = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ . Check the stability of the system and also explain the importance of choice of P&Q matrices. 10M

OR

- Q.4(B) Write short notes on  
a. Lyapunov stability analysis and 10M  
b. Popov's stability analysis.

- Q.5(A) Explain in detail about the adaptive multivariable control of a power plant boiler. 10M

OR

- Q.5(B) Explain in detail about the real time estimation of the state of a power system. 10M

\*\*\*END\*\*\*

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
(UGC-AUTONOMOUS)

**M.Tech I Year I Semester (R16) Regular End Semester Examinations –January 2017**  
**POWER SYSTEM DYNAMICS AND STABILITY**  
(Electrical Power Systems)

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.  
In Q.no 1 to 5 answer either Part A or Part B only.

- Q.1(A) What are the assumptions made in the development of classical model of Single Machine Infinite Bus system? 10M
- OR
- Q.1(B) Develop the classical model of multi machine connected infinite bus system. 10M
- 
- Q.2(A) What is dynamic stability and explain effect of excitation on dynamic stability. 10M
- OR
- Q.2(B) Develop the state space model of one machine system connected to infinite bus. 10M
- 
- Q.3(A) Develop the characteristic equation model of an unregulated synchronous machine. 10M
- OR
- Q.3(B) Explain the response of regulated synchronous machine with governor action with one time lag. 10M
- 
- Q.4(A) Explain the role of critical clearing angle and critical clearing time and in the transient stability studies. 10M
- OR
- Q.4(B) Explain the step-by-step method of obtaining the solution to swing equation. 10M
- 
- Q.5(A) Explain the analysis of voltage instability and collapse 10M
- OR
- Q.5(B) Explain the integrated analysis of voltage stability and angle stability. 10M

\*\*\*END\*\*\*

--	--	--	--	--	--	--	--	--	--

# MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

M.Tech I Year I Semester (R16) Regular End Semester Examinations –January 2017

## Analysis of Power Electronic Converters

(Electrical Power Systems)

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.

In Q.no 1 to 5 answer either Part A or Part B only.

Q.1(A) What is AC voltage controller & explain the operation of single phase AC voltage controller with R and RL loads with the help of neat circuit diagram and output voltage and current wave forms. 10M

**OR**

Q.1(B) What is Synchronous tap changer? Discuss the application of ac voltage controller as tap changer. 10M

Q.2(A) Describe the working of single phase full converter with RL Load and also sketch the waveforms for  $\alpha = 60^\circ$  and  $\alpha = 120^\circ$  10M

**OR**

Q.2(B) A single phase series full converter is operated from a 120 V, 50 Hz supply. If the resistive load is R = 20 ohm. If the average output voltage is 50% of maximum possible average output voltage, calculate the

- delay angles of the converter
- rms and average output currents
- average and rms thyristor currents
- input PF

Q.3(A) Explain time ratio and current limit control with wave forms. 10M

**OR**

Q.3(B) Describe the buck boost converter with neat sketch and also design parameters. 10M

Q.4(A) With an appropriate power diagram discuss the principle of working of a three phase inverter. Draw the waveforms on the each thyristor conduct for  $180^\circ$  and the resistive load is star connected. 10M

**OR**

Q.4(B) Explain briefly the following modulation techniques with relative advantages and disadvantages. 10M

- Multiple PWM
- Sinusoidal PWM
- Delta modulation.

Q.5(A) Explain briefly cascaded type multilevel inverter and also write applications of multilevel inverter. 10M

**OR**

Q.5(B) Draw and explain principle of operation and features of diode clamped multilevel inverter 10M

\*\*\* END\*\*\*

Hall Ticket No:

Course Code: 16EPS401

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
(UGC-AUTONOMOUS)

**M.Tech I Year I Semester (R16) Regular End Semester Examinations –January 2017**

**ARTIFICIAL INTELLIGENCE TECHNIQUES**

(Electrical Power Systems)

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.  
In Q.no 1 to 5 answer either Part A or Part B only.

Q.1(A) Explain about different learning methods in neural networks and characteristics of Neural Network. 10M

OR

Q.1(B) Enumerate about different neuron models? Brief some applications of ANN. 10M

Q.2(A) Explain about perceptron model and its limitations. Discuss about multilayer perceptron model. 10M

OR

Q.2(B) Discuss about training algorithms in neural networks. 10M

Q.3(A) Describe about self organized neural networks. 10M

OR

Q.3(B) Enumerate about architecture of ART 1 Model and its applications. 10M

Q.4(A) Explain in brief about different types of reproduction. 10M

OR

Q.4(B) Discuss about Mutation operator. Explain how genetic algorithm is used to solve Economic load dispatch Problem. 10M

Q.5(A) Discuss about fuzzy relation and membership functions 10M

OR

Q.5(B) What are the different Defuzzification Methods? Explain about them. 10M

\*\*\*END\*\*\*

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**

(UGC-AUTONOMOUS)

**M.Tech I Year I Semester (R16) Regular End Semester Examinations –January 2017****EHVAC Transmission**

(Electrical Power Systems)

Time: 3Hrs

Max Marks: 50

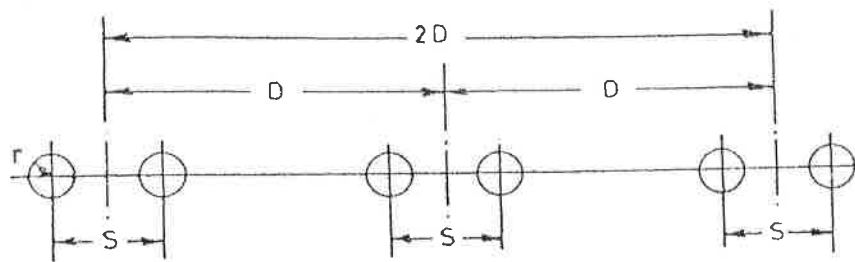
Attempt all the questions. All parts of the question must be answered in one place only.

In Q.no 1 to 5 answer either Part A or Part B only.

Q.1(A) Discuss about power handling capacity and line losses of AC transmission lines. What conclusions can be drawn from preliminary understanding of trends relating to power-handling capacity and line losses? 10M

**OR**

Q.1(B) A three phase line has horizontally spaced bundle conductors as shown in Figure given below. [Given  $D=6\text{m}$ ,  $S=0.3\text{m}$ ,  $r=12.5\text{mm}$ ,  $f=50\text{Hz}$ ], Find 10M



- (a) Bundle conductor
- (i) Capacitance to neutral per km.
  - (ii) Capacitive reactance per phase, per km.
- (b) Single conductor
- (i) If line is of single conductors of equal cross sectional area calculate the capacitance.
  - (ii) Capacitive reactance.
- (c) Effect of bundling on capacitance.

---

Q.2(A) Derive an expression for electrostatic field of Single-Circuit 3-Phase Line. 10M

**OR**

Q.2(B) Explain the effect of high electrostatic field on biological organisms and human beings in detail. 10M

---

Q.3(A) The following details are given for a 750-kV 3-phase line: Resistance  $r = 0.014$  ohm/km, inductance  $l = 0.866$  mH/km, reactance  $x = 0.272$  ohm/km at 50 Hz,  $c = 12.82$  nF/km giving a susceptance of  $y = 4.0275 \times 10^{-6}$  mho/km, velocity  $v_0 = 3 \times 10^8$  m/s =  $3 \times 10^5$  km/sec, line length = 500 km. Calculate items (a) and (b) below, and work parts (c) and (d). Give proper units for all quantities. 10M

(a)  $Z = L(r+j\omega l)$ ,  $Y = j\omega cL$ ,  $Z_{00} = \sqrt{l/c}$

(b) The generalized constants A, B, C, and D, in both polar and rectangular forms.

- (c) For  $E_r = 750$  kV and  $|E_s| = 0.98 E_r$ , determine the coordinates of the centre of the receiving-end power-circle diagram and the radius.
- (d) Find the power angle  $\delta$  for transmitting a load of 2000 MW at 750 kV at the receiving end at unity power factor.

**OR**

Q.3(B) Explain different configurations of static var compensators used in shunt compensation in detail. Write the applications of SVC. 10M

Q.4(A) i. How to calculate decibel values in audible noise? Explain the procedure to evaluate the resultant SPL and dB values for addition of N sources. 5M

ii. The AN level of one phase of a 3-phase transmission line at a point is 50dB. Calculate (a) the SPL in Pascals; (b) if a second source of noise contributes 48dB at the same location, calculate the combined AN level due to the two sources. 5M

**OR**

Q.4(B) What is corona? Explain about formation of corona. What are the factors that affect corona? Also write advantages and disadvantages. 10M

Q.5(A) Explain about typical construction and cross-section of cables. 10M

**OR**

Q.5(B) Design EHV AC line with 400kV, 400km line to transmit 1000MW using shunt reactor compensation at both ends for no-load condition and switched capacitors for loading condition for voltage control at busses. 10M

\*\*\* END\*\*\*

Hall Ticket No:

Course Code: 16EPS103

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE  
(UGC-AUTONOMOUS)

M.Tech I Year I Semester (R16) Regular End Semester Examinations –January 2017

**MODERN POWER SYSTEM ANALYSIS**

(Electrical Power Systems)

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.  
In Q.no 1 to 5 answer either Part A or Part B only.

Q.1(A) Explain the solution methodology of economic dispatch problem using Gradient method. 10M

OR

Q.1(B) Derive and explain the coordination equation for economic dispatch problem with losses. 10M

Q.2(A) Obtain the interconnection of sequence networks for double line to ground fault and thus derive the expression for fault current 10M

OR

Q.2(B) Explain the steps involved in formation of bus impedance matrix using Z-bus building algorithm 10M

Q.3(A) What are the factors influencing transient stability? Explain methods to improve the transient stability. 10M

OR

Q.3(B) Write the algorithm for simulation of SMIB system with classical synchronous machine model. 10M

Q.4(A) Explain the importance of contingency analysis in power system. 10M

OR

Q.4(B) Draw the flow chart and explain the algorithm for contingency analysis. 10M

Q.5(A) Write briefly about the treatment of bad data in power system state estimation. 10M

OR

Q.5(B) Briefly explain the network observability and Identification of bad data. 10M

\*\*\*END\*\*\*





**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
(UGC-AUTONOMOUS)

**M.Tech I Year I Semester (R16) Regular End Semester Examinations –January 2017**  
**AUTOMATION IN MANUFACTURING**  
(Advanced Manufacturing Systems)

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.  
In Q.no 1 to 5 answer either Part A or Part B only.

Q.1(A) Explain the various types of automated manufacturing systems with respect to features and product configurations. Also explain their relative position with respect to production volume and product variety. 10M

**OR**

Q.1(B) i. Explain why the USA principle is considered as a common sense approach for dealing with automations projects. 5M  
ii. Explain the various phases of automation migration strategy for implementing automation. 5M

---

Q.2(A) Explain with appropriate reasons the factors that influence the design of the material handling system. . 10M

**OR**

Q.2(B) Where do material handling technologies stand in production system? Give a brief overview of various commercially available materials handling equipment 10M

---

Q.3(A) i. With an example explain the Charting technique for analyzing the material transport in an industry. 5M  
ii. Explain the various types of automated storage systems. 5M

**OR**

Q.3(B) i. Explain the various measures to assess the performance of a storage system. 5M  
ii. Explain the principle of operation of Bar code technology 5M

---

Q.4(A) A 30- station transfer line has an ideal cycle time  $T_c = 0.75\text{min}$ , an average downtime  $T_d = 6\text{ min}$  per line stop occurrence and a station failure frequency  $p = 0.01$  for all stations. A proposal has been submitted to locate a storage buffer between stations 15 and 16 to improve line efficiency. 10M

Using the upper-bound approach, determine:

- a. the current line efficiency and production rate and
- b. the maximum possible line efficiency and production rate that would result from installing the storage buffer.

**OR**

Q.4(B) i. Explain the line balancing problem. How do you overcome this problem? 5M  
ii. Explain the factors which may improve line performance beyond what the balancing algorithms provide. 5M

Q.5(A) What are the typical elements of an automated assembly system? Explain the various configurations of an automated assembly system. 10M

OR

Q.5(B) The table below defines the precedence relationships and element times for a new model toy. (a) Construct the precedence diagram for this job. (b) if the ideal cycle time = 1.1min, repositioning time = 0.1min and uptime proportion is assumed to be 1.0 what is the theoretical minimum number of workstations required to minimize the balance delay under the assumption that there will be one worker per station? (d) Compute the balance delay for your solution. 10M

Work element	$T_e$ (min)	Immediate Predecessors
1	0.5	-
2	0.3	1
3	0.8	1
4	0.2	2
5	0.1	2
6	0.6	3
7	0.4	4,5
8	0.5	3,5
9	0.3	7,8
10	0.6	6,9

---

\*\*\*END\*\*\*

Hall Ticket No:

Course Code: 16AMS102

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
(UGC-AUTONOMOUS)

**M.Tech I Year I Semester (R16) Regular End Semester Examinations –January 2017**

**ADVANCED MANUFACTURING PROCESSES**

(Advanced Manufacturing Systems)

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.  
In Q.no 1 to 5 answer either Part A or Part B only.

Q.1(A) Explain about diffusion coating, diamond coating and cladding process in detail. 10M

OR

Q.1(B) i. Discuss the effect of various process parameters of EDM. 5M

ii. Discuss the advantages and applications of WEDM. 5M

Q.2(A) i. Describe a Laser? Explain how it is used to machine the materials. 5M

ii. Enumerate the limitations of LBM. 5M

OR

Q.2(B) Explain the metal removal mechanism, process parameters, accuracy and surface finish of plasma machining. 10M

Q.3(A) i. State the functions of electrolyte used in ECM Process. 5M

ii. Explain the principle of ECM process with a neat sketch. 5M

OR

Q.3(B) i. Explain the working of electron gun used in EBM with a neat sketch. 5M

ii. Discuss the applications of EBM 5M

Q.4(A) i. Describe ceramic materials? Discuss their basic properties and their applications. 5M

ii. Explain in detail about finishing of ceramics. 5M

OR

Q.4(B) i. Discuss why composites are becoming more popular in replacing metals in many industrial applications? 5M

ii. Compare and contrast between MMCs and CMCs.

Q.5(A) Explain about various process involved in fabrication of microelectronic devices. 10M

OR

Q.5(B) Explain E-Manufacturing, nanotechnology and high speed machining. 10M

\*\*\*END\*\*\*

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
(UGC-AUTONOMOUS)

**M.Tech I Year I Semester (R16) Regular End Semester Examinations – January 2017**

**MATERIAL TECHNOLOGY**  
(Advanced Manufacturing Systems)

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.  
In Q.no 1 to 5 answer either Part A or Part B only.

- |        |   |     |
|--------|---|-----|
| Q.1(A) | Write short notes on<br>a. Elasticity in metals and polymers<br>b. Mechanism of plastic deformation                                 | 10M |
| OR     |   |     |
| Q.1(B) | Discuss the shear strength of perfect and real crystals, strengthening mechanism, work hardening.                                   | 10M |
| <hr/>  |   |     |
| Q.2(A) | Explain deformation of non-crystalline material.  | 10M |
| OR     |   |     |
| Q.2(B) | What are the advantages and disadvantages of poly phase matrix?   | 10M |
| <hr/>  |   |     |
| Q.3(A) | Write short notes on (a) HSLA (b) TRIP  | 10M |
| OR     |   |     |
| Q.3(B) | Distinguish between the hardness and hardenability of a steel. Describe a test determining the hardenability.                       | 10M |
| <hr/>  |   |     |
| Q.4(A) | What are the properties and applications of engineering polymers?   | 10M |
| OR     |   |     |
| Q.4(B) | Give the properties and applications, WC, TiC, TaC, Al <sub>2</sub> O <sub>3</sub> , SiC, Si <sub>3</sub> N <sub>4</sub> , and CBN. | 10M |
| <hr/>  |   |     |
| Q.5(A) | Classify the composite materials. Discuss fiber reinforced composites.  | 10M |
| OR     |   |     |
| Q.5(B) | What are the properties and limitations of composite materials?   | 10M |

**\*\*\*END\*\*\***

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
(UGC-AUTONOMOUS)

**M.Tech I Year I Semester (R16) Regular End Semester Examinations –January 2017**

**PRODUCT DESIGN AND DEVELOPMENT**

(Advanced Manufacturing Systems)

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.  
In Q.no 1 to 5 answer either Part A or Part B only.

Q.1(A) Explain the need for IPPD? Assess the strategic importance of Product Development using various case studies. 10M

OR

Q.1(B) How the involvement of customer show the impact on the product development and in competing? 10M

---

Q.2(A) Briefly explain the five step method in concept generation? 10M

OR

Q.2(B) What are various steps involved in robust Design? Explain? 10M

---

Q.3(A) Explain the methodology of assessing the need for industrial design and the quality of Industrial Design? 10M

OR

Q.3(B) Discuss briefly about the technology driven products and user driven products along with their merits and demerits? 10M

---

Q.4(A) What is system complexity? Justify how system complexity can be minimized through design for manufacturing? 10M

OR

Q.4(B) How can you elaborate the necessity of component and assembly cost reduction? How it can be addressed with respect to design for manufacture? 10M

---

Q.5(A) Define Prototyping? Discuss about its planning and economic analysis? 10M

OR

Q.5(B) Discuss briefly on 10M

- a. Baseline project planning.
- b. Accelerating the project execution.

---

\*\*\*END\*\*\*

--	--	--	--	--	--	--	--	--	--

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**

(UGC-AUTONOMOUS)

**M.Tech I Year I Semester (R16) Regular End Semester Examinations –January 2017**

**THEORY OF METAL CUTTING AND TOOL DESIGN**

(Advanced Manufacturing Systems)

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.  
In Q.no 1 to 5 answer either Part A or Part B only.

Q.1(A) Explain the importance and functions of different tool angles and other parameters associated with the geometry of a single point cutting tool. 10M

OR

Q.1(B) Derive an expression for the estimation of cutting force in turning operation 10M

Q.2(A) (i) Why is the determination of cutting forces important in grinding? 5M  
(ii) Explain grinding ratio and discuss its effect on the performance of grinding wheel. 5M

OR

Q.2(B) What do you understand from Grain, Grit, Structure and Grade of a grinding wheel? Explain. 10M

Q.3(A) Explain the effect of BUE on metal cutting. How to overcome this problem while machining? 10M

OR

Q.3(B) Explain the geometry of twist drill with a neat sketch. Indicate all the tool angles. 10M

Q.4(A) Describe the relationships among cutting speed, rate of production and production cost. 10M

OR

Q.4(B) Explain the various heat zones in turning operation. Explain the various techniques available for measuring the temperatures at tool-chip interface. 10M

Q.5(A) Explain the design procedure of single point cutting tool. 10M

OR

Q.5(B) What are the various types of cutting fluids? Explain the functions and characteristics of cutting fluids used in machining operations. 10M

\*\*\*END\*\*\*

Hall Ticket No:

--	--	--	--	--	--	--	--	--	--

Course Code: 14AMS404

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE  
(UGC-AUTONOMOUS)

M.Tech I Year I Semester (R16) Regular End Semester Examinations –January 2017  
Simulation & Modeling of Manufacturing Systems  
(Advanced Manufacturing Systems)

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.  
In Q.no 1 to 5 answer either Part A or Part B only.

- Q.1(A) Explain the sequential steps to be followed for Manufacturing System Simulation. 10M  
OR  
Q.1(B) Explain various advantages and disadvantages of simulation 10M
- 
- Q.2(A) Explain the terms : 10M  
a. Null hypothesis  
b. Alternative hypothesis  
OR  
Q.2(B) Define estimator and estimate. 10M
- 
- Q.3(A) Explain various techniques of verification of simulation program 10M  
OR  
Q.3(B) Based on what you know how would you explain the differences between continuous and discrete distributions? 10M
- 
- Q.4(A) Explain the characteristics of the following distribution 10M  
a. Exponential  
b. Binomial  
OR  
Q.4(B) Explain M / M / 1 queuing 10M
- 
- Q.5(A) What are the various types of simulations used in output data analysis? 10M  
OR  
Q.5(B) Explain the following: 10M  
a. Newboy paper problem  
b. Output data analysis

\*\*\*END\*\*\*





--	--	--	--	--	--	--	--	--	--

## MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

M.Tech I Year I Semester (R16) Regular End Semester Examinations – Jan 2017

(Regulations: R16)

### STRUCTURAL DIGITAL SYSTEM DESIGN

(Digital Electronics &amp; Communication Systems)

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.

In Q.no 1 to 5 answer either Part-A or B only

Q.1(A) Describe about Register building blocks used in Combination circuit design. 10M

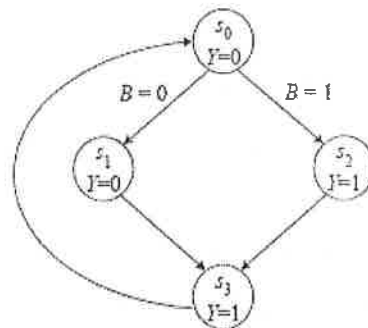
OR

Q.1(B) Explain the concept of Multiplexer and Demultiplexer with respect to designing constraints. 10M

Q.2(A) Discuss in detail the about the need for separation of Controller and Architecture. 10M

OR

Q.2(B) Design a FSM circuit from the state diagram given below. 10M



Q.3(A) What is Built-In-Self-Test? Discuss the issues and benefits of BIST. Describe BIST architecture and its operation. 10M

OR

Q.3(B) Discuss with suitable example the realization of digital design using ROM based method. 10M

Q.4(A) Discuss in detail the working of microprogram control for binary multiplier. 10M

OR

Q.4(B) Discuss the internal architecture of 2910 micro program sequencer and explain its functionality. 10M

Q.5(A) Write the dataflow VHDL program for a Traffic light Controller. 10M

OR

Q.5(B) Write the behavioral VHDL program for an 8 bit serial to parallel conversion. 10M

\*\*\* END\*\*\*

Hall Ticket No:

Question Paper Code: 16DECS102

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
(UGC-AUTONOMOUS)

M.Tech I Year I Semester (R16) Regular End Semester Examinations – Jan 2017

**ADVANCED COMPUTER NETWORKS**

(Digital Electronics & Communication Systems)

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.  
In Q.no 1 to 5 answer either Part-A or B only

Q.1(A) Explain functioning of Packet Switched and circuit switched networks? 10M

OR

Q.1(B) Explain TCP/IP models layers and their functions in detail. 10M

Q.2(A) Write note on Wireless LAN architecture. 10M

OR

Q.2(B) Explain the modifications made in Fast Ethernet and Gigabit Ethernet to increase internet bandwidth. 10M

Q.3(A) What is IP? Explain how IP over ATM is implemented. 10M

OR

Q.3(B) Explain ATM architectures and services. 10M

Q.4(A) Write note on functioning Simple Mail Transfer Protocol. 10M

OR

Q.4(B) Explain IPv6 protocol in detail. 10M

Q.5(A) Write note on i) Digital signatures ii) Fire walls 10M

OR

Q.5(B) Explain how cryptography plays an important role in internet. 10M

\*\*\* END\*\*\*

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**

(UGC-AUTONOMOUS)

**M.Tech I Year- I Semester (R16) Regular End Semester Examinations – Jan 2017**

(16DECS103)

**DIGITAL COMMUNICATION TECHNIQUES**

(Digital Electronics &amp; Communication Systems)

Time: 3Hrs

Max Marks: 50

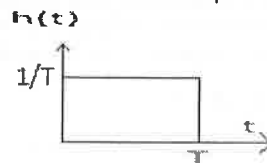
Attempt all the questions. All parts of the question must be answered in one place only.
--

In Q.no 1 to 5 answer either Part-A or B only
---

Q.1(A) Differentiate stationary process and wide-sense stationary process with examples. 10M

OR

Q.1(B) A stationary Gaussian process  $X(t)$  with zero mean and power spectral density  $S_x(f)$  is applied to linear filter whose impulse response  $h(t)$  is shown in figure. A sample  $y$  of the random process is taken at the filter out put at time  $t$  10M



- i) Determine the mean and the variance of  $Y$   
 ii) What is the probability density function (pdf) of  $y$ ?

Q.2(A) Explain the concept of Inter Symbol Interference. How is the Nyquist criterion useful for distortion less Baseband Binary Transmission? 10M

OR

Q.2(B) Explain the following processes in detail 10M  
 i) Zero-forcing linear equalization.  
 ii) Decision-feedback equalization.

Q.3(A) Explain with diagram, generation and demodulation of PSK. What are the advantages of DPSK over PSK? 10M

OR

Q.3(B) For binary sequence 01001111 draw waveform for:- 10M  
 (i)NZR (bipolar) (ii) BPSK (iii) QPSK

Q.4(A) Explain the generation and the detection of DPSK Signal with neat block diagrams. Obtain the DPSK the signal for the data 1001011101 considering the initial differential data as '1' ( $d_{k-1}$ ). Also, find the demodulated signal. 10M

OR

Q.4(B) Discuss the analysis and the design of an M-ary signaling scheme. What are the basic elements of an M-ary signaling scheme? 10M

Q.5(A) What do you understand by the term "Direct Sequence (DS) Spread Spectrum". Explain the DS spread spectrum for a Binary PSK signal. Also calculate its error probability. 10M

OR

Q.5(B) Explain the generation of Pseudo Noise (PN) sequence. Enlist the properties of PN sequences. 10M

\*\*\* END\*\*\*

Hall Ticket No:

--	--	--	--	--	--	--	--	--	--

Question Paper Code: 16DECS104

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**

(UGC-AUTONOMOUS)

**M.Tech I Year I Semester (R16) Regular End Semester Examinations – Jan 2017**

(Regulations: R16)

**ADVANCED DIGITAL SIGNAL PROCESSING**

(Digital Electronics & Communication Engineering)

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.  
In Q.no 1 to 5 answer either Part-A or B only

Q.1(A) Explain 15-point DFT computation using Cooley-Tukey algorithms. 10M

OR

Q.1(B) Explain linear filtering approach to compute DFT using Chirp z-transform and finally draw the block diagram illustrating the implementation of Chirp z- transform. 10M

Q.2(A) With the block diagrams explain the sampling rate conversion by a rational factor I/D. Obtain necessary equations. 10M

OR

Q.2(B) With necessary diagrams and equations explain the polyphase structures for FIR filter decimation and Interpolation. 10M

Q.3(A) What is modified periodogram? Explain how the spectral estimation is carried out using Welch method. 10M

OR

Q.3(B) Explain 10M  
(i) MA model for power spectrum estimation.  
(ii) ARMA model for power spectrum estimation.

Q.4(A) (i) Briefly write about ADC quantization noise and signal quantity. 10M  
(ii) An 8-bit ADC feeds a DSP system characterized by the following transfer function  
$$H(z) = 1 / (z + 0.5)$$
  
Estimate the steady state quantization noise power at the output of the system.

OR

Q.4(B) Briefly explain about the influence of filter structure on finite word length effects. 10M

Q.5(A) Write about the filter structures which can create chorus, flanging and phasing effects of music signals. 10M

OR

Q.5(B) Explain the working of oversampling D/A converters. 10M

\*\*\* END\*\*\*

Hall Ticket No: 

--	--	--	--	--	--	--	--	--	--

Question Paper Code: 16DECS105

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
(UGC-AUTONOMOUS)

**M.Tech I Year I Semester (R16) Regular End Semester Examinations - Jan 2017**  
(Regulations: R16)

**ADAPTIVE SIGNAL PROCESSING**  
(Digital Electronics & Communication Systems)

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.  
In Q.no 1 to 5 answer either Part-A or B only

- |        |  |     |
|--------|--|-----|
| Q.1(A) | Discuss any three applications of Adaptive filters.  | 10M |
| OR     |  |     |
| Q.1(B) | Explain about Adaptive Linear combiner.  | 10M |
| <hr/>  |  |     |
| Q.2(A) | Discuss in detail the principle of Orthogonally.   | 10M |
| OR     |  |     |
| Q.2(B) | Discuss about the Levinson-Durbin algorithm.   | 10M |
| <hr/>  |  |     |
| Q.3(A) | Derive the expression for the update equation for the LMS algorithm. Discuss about the convergence of LMS algorithm. | 10M |
| OR     |  |     |
| Q.3(B) | What are the factors that affect the stability of the Method of Steepest Descent algorithm?                          | 10M |
| <hr/>  |  |     |
| Q.4(A) | Explain in detail about the Matrix Inversion Lemma.  | 10M |
| OR     |  |     |
| Q.4(B) | Discuss about the adaptive equalization using Lattice Filters.   | 10M |
| <hr/>  |  |     |
| Q.5(A) | Write special cases of buss gang algorithm.  | 10M |
| OR     |  |     |
| Q.5(B) | Explain the theoretical considerations of Blienddeconvolution.   | 10M |

\*\*\* END\*\*\*

--	--	--	--	--	--	--	--	--	--

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
(UGC-AUTONOMOUS)

**M.Tech I Year I Semester (R16) Regular End Semester Examinations - Jan 2017**  
(Regulations: R16)

**TRANSFORM TECHNIQUES**

(Digital Electronics & Communication Engineering)

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.  
In Q.no 1 to 5 answer either Part-A or B only

- Q.1(A) i) What is the need for transforms, design Hadamard transform of order 4. 10M  
ii) Give the applications of Fourier series and also Explain the Gibb's phenomenon.
- OR
- Q.1(B) A speech signal is sampled at the 8 kHz rate. We wish to analyze, using the DFT the spectrum of the sampled speech of length 256. 10M
- i) If we take 256 point DFT of this segment, what would be the resolution of the DFT samples?  
ii) Describe a method to achieve a 128 Hz resolution using a minimum length DFT.
- 
- Q.2(A) i) Define window and Distinguish between STFT and Wavelet transforms. 10M  
ii) What is a selection criterion of mother wavelet during analysis of signals?
- OR
- Q.2(B) Briefly Explain the transforms 10M  
i) HAAR  
ii) SLANT  
iii) KL
- 
- Q.3(A) What is Multi-Resolution Analysis explain in details 10M
- OR
- Q.3(B) Explain DWT and wavelet packet transform. 10M
- 
- Q.4(A) i) Define wavelet and filter bank. 10M  
ii) Give the relationship between filter banks and wavelet basis.
- OR
- Q.4(B) Discuss the importance of Hilbert transform and its important properties. 10M
- 
- Q.5(A) Explain how to de-noising the signal/image using DCT and DWT. 10M
- OR
- Q.5(B) i) Why decimation and interpolation in signal processing. 10M  
ii) Decimate and Interpolate the given signal by a rate of 3  
 $x(n) = \{2 \ 3 \ 4 \ 5 \ 0 \ 3 \ 2 \ 4\}$

\*\*\* END\*\*\*

--	--	--	--	--	--	--	--	--	--

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**

(UGC-AUTONOMOUS)

**M.Tech I Year I Semester (R16) Regular End Semester Examinations – Jan 2017**

(Regulations: R16)

**ADVANCED OPERATING SYSTEMS**

(Computer Science & Engineering)

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.

**In Q.no 1 to 5 answer either Part-A or B only**

Q.1(A) What is mutual Exclusion? How vector locks use for generating a partial ordering of events in a distributed system? Explain in detail. 10M

**OR**

Q.1(B) Explain classification of agreement problem with system model. 10M

Q.2(A) List out symmetrically initiated algorithms. How sender initiated algorithms differ with receiver initiated algorithms? Explain in detail. 10M

**OR**

Q.2(B) i. Explain the role of memory coherence protocol in multi-processor system. 10M  
ii. Write a short note on load balancing issues.

Q.3(A) Explain classification of failures in detail. 10M

**OR**

Q.3(B) Write briefly about voting protocols and dynamic voting protocols. 10M

Q.4(A) What is Access matrix model? How can implement Access Control Matrix? Explain 10M

**OR**

Q.4(B) Explain Architecture of Multiprocessor System with neat diagram. 10M

Q.5(A) i. Differentiate two phase locking and non-two phase locking. 10M  
ii. Write a short on Data base system transaction processing and conflicts.

**OR**

Q.5(B) Explain problem of concurrency control. 10M

**\*\*\* END\*\*\***

--	--	--	--	--	--	--	--	--	--

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**

(UGC-AUTONOMOUS)

**M.Tech I Year I Semester (R16) Regular End Semester Examinations – Jan 2017**

(Regulations: R16)

**ADVANCED DATA STRUCTURES AND ALGORITHMS**

(Computer Science & Engineering)

Time: 3Hrs

Max Marks: 50

<p>Attempt all the questions. All parts of the question must be answered in one place only. In Q.no 1 to 5 answer either Part-A or B only</p>
---

Q.1(A) What is constructor? Explain different types of constructors. 10M

**OR**

Q.1(B) What is virtual function? Explain with suitable example. 10M

---

Q.2(A) Explain double linked list operations with example. 10M

**OR**

Q.2(B) Define ADT. Explain in detail about Sparse matrices. 10M

---

Q.3(A) Design and explain algorithms to Implement stack operations when stacks are represented using arrays. 10M

**OR**

Q.3(B) Explain briefly about priority ADT with an example. 10M

---

Q.4(A) Design and develop algorithm for Merge sort by considering an example. 10M

**OR**

Q.4(B) Write a note on a. virtual hashing b. Collision Resolution Methods. 10M

---

Q.5(A) i. What is binary search tree? Explain its routines. 10M

ii. Construct and explain binary search tree for the following elements

5 7 8 6 1 3 2

**OR**

Q.5(B) Design and explain recursive algorithms for traversal techniques for trees. 10M

**\*\*\* END\*\*\***



**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**

(UGC-AUTONOMOUS)

**M.Tech I Year I Semester (R16) Regular End Semester Examinations – Jan 2017**

(Regulations: R16)

**COMPUTER SYSTEM DESIGN**

(Computer Science &amp; Engineering)

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.  
In Q.no 1 to 5 answer either Part-A or B only

- Q.1(A) Explain in detail the Von-Neumann Architecture. 10M
- OR
- Q.1(B) Explain Booth's algorithm for multiplication of sign number with neat diagram. 10M
- 
- Q.2(A) What is the full set of IA-32 addressing modes? Explain in detail. 10M
- OR
- Q.2(B) (i) Explain the classification of buses and features of PCI bus. 10M  
(ii) Compare and contrast DMA with interrupt handlers.
- 
- Q.3(A) What is Pipelining? Explain the major difficulties that cause the instruction pipeline to deviate from its normal operation? Give solutions to these hazards. 10M
- OR
- Q.3(B) a) Compare and contrast Hardwired control and Micro Programmed control. 10M  
b) Explain about Address Sequencing capabilities in Micro Programmed Control Unit.
- 
- Q.4(A) What is Inter Process Communication? Explain different models for IPC with Examples. 10M
- OR
- Q.4(B) (i) Describe the evolution of the process concept and two basic characteristics of a process. 10M  
(ii) What is Dining philosopher problem? Give solution to the problem using Semaphores.
- 
- Q.5(A) (i) What are the various operations performed on a file? 10M  
(ii) Give note on Unix File System.
- OR
- Q.5(B) (i) What do you understand by a file directory? 10M  
(ii) Explain briefly the information elements of a file directory.  
(iii) Explain about tree-structured directory.

\*\*\* END\*\*\*

Hall Ticket No:

--	--	--	--	--	--	--	--	--	--

Question Paper Code: 16CSE104

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**

(UGC-AUTONOMOUS)

**M.Tech I Year I Semester (R16) Regular End Semester Examinations – Jan 2017**

(Regulations: R16)

**ADVANCED COMPUTER NETWORKS**

(Computer Science & Engineering)

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.

In Q.no 1 to 5 answer either Part-A or B only

Q.1(A) Explain briefly about Delay and Loss in Networks. 10M

OR

Q.1(B) Compare and Contrast the TCP/IP and OSI models. 10M

Q.2(A) Explain the Intra and Inter domain routing protocols with one Example. 10M

OR

Q.2(B) Discuss about Non-Least cost path algorithms with example. 10M

Q.3(A) Explain in detail about transport control protocol. 10M

OR

Q.3(B) Write a short note on i) DNS ii) FTP 10M

Q.4(A) Explain about Mobile IP in detail. 10M

OR

Q.4(B) Define the following i) Optical Switches 10M  
ii) Optical Routers

Q.5(A) Describe the Real Time media transport protocols. 10M

OR

Q.5(B) Explain the AODV protocol with neat Sketch. 10M

\*\*\* END\*\*\*

Hall Ticket No: 

--	--	--	--	--	--	--	--	--	--

Question Paper Code: 16CSE105

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**

(UGC-AUTONOMOUS)

**M.Tech I Year I Semester (R16) Regular End Semester Examinations – Jan 2017**

(Regulations: R16)

**OBJECT ORIENTED ANALYSIS & DESIGN PATTERNS**

(Computer Science & Engineering)

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.

**In Q.no 1 to 5 answer either Part-A or B only**

- Q.1(A) Explain How the UML addresses four aims of modeling. 10M
- OR
- Q.1(B) i) Explain in detail about structural things. 5M  
ii) Explain in detail about rules of UML. 5M
- 
- Q.2(A) i) Explain in detail about relationships in object oriented modeling. 5M  
ii) What are the common modeling techniques for common mechanism? Explain. 5M
- OR
- Q.2(B) Define Class Diagram. Explain about the Graphical Representation of Class diagram of UML in detail. 10M
- 
- Q.3(A) Write a short note on the following: 10M  
i) Sending and receiving events.  
ii) Time and change events.  
iii) Call event.  
iv) Signal event.
- OR
- Q.3(B) Explain about the following 5M  
(i) Collaboration in interaction. 5M  
(ii) Sequencing in interaction
- 
- Q.4(A) i) Define Design Pattern and explain the design patterns in Small Talk MVC. 5M  
ii) Explain the Catalog of Design Patterns. 5M
- OR
- Q.4(B) Explain about the Selection of a Design Pattern. 10M
- 
- Q.5(A) Elaborate in detail about the following 5M  
i) Formatting in Document Editor  
ii) Embellishing the User Interface in Document Editor 5M
- OR
- Q.5(B) Explain in details about the design problem and document structure in Document Editor. 10M

\*\*\* END\*\*\*

Hall Ticket No:

Question Paper Code: 16CSE401

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**

(UGC-AUTONOMOUS)

**M.Tech I Year I Semester (R16) Regular End Semester Examinations – Jan 2017**

(Regulations: R16)

**SOFTWARE ENGINEERING**

(Computer Science & Engineering)

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.

In Q.no 1 to 5 answer either Part-A or B only

Q.1(A) i) Define SDLC. 3M+7  
ii) Explain the levels of CMMI. M

OR

Q.1(B) i) What is Scrum? 3M+7  
ii) Explain Unified Process model in detail. M

Q.2(A) What is Software Requirement Specification (SRS)? Explain in Detail. 10M

OR

Q.2(B) i) Discuss about requirement elicitation techniques. 5M+5  
ii) Write a short note on Data Modeling? M

Q.3(A) Explain different architectural styles in detail. 10M

OR

Q.3(B) Explain about the various design concepts considered during design? 10M

Q.4(A) i) What do you mean by system testing? Explain in detail. 6M+4  
ii) Distinguish between verification & validation. M

OR

Q.4(B) Write short notes on 5M+5  
i) Data flow testing. M  
ii) Integration testing.

Q.5(A) Discuss in detail 5M+5  
i) Metrics for testing M  
ii) Software reengineering activities.

OR

Q.5(B) Write short note 5M+5  
i) Risk Management M  
ii) Software Quality Assurance.

\*\*\* END\*\*\*

Hall Ticket No:

--	--	--	--	--	--	--	--	--	--

Course Code: 14SPS11T04

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**

(UGC-AUTONOMOUS)

**M.Tech I Year I Semester (R14) Supplementary End Semester Examinations –January 2017**

**MODERN CONTROL THEORY**

(Solar Power Systems)

**Time: 3Hrs**

**Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.  
**In Q.no 1 to 5 answer either Part A or Part B only.**

- Q.1(A) i. Explain the properties of state transition matrix. 6M  
ii. Describe the significant of minimal realization process in SISO systems 6M
- OR**
- Q.1(B) Obtain the state model for inverted pendulum operation 12M
- 
- Q.2(A) Describe the following state space representation methods. 12M  
a. Controllable canonical form  
b. Observable canonical form
- OR**
- Q.2(B) Consider a linear system described by the T.F  $\frac{y(s)}{u(s)} = \frac{10}{s(s+1)(s+2)}$  design a feedback controller with a state feedback so that the closed loop poles are placed at -2,  $-1 \pm j1$ . 12M
- 
- Q.3(A) Explain in detail about the controller design using output feedback. 12M
- OR**
- Q.3(B) Describe the solution of algebraic riccati equation using eigen values and eigen vectors. 12M
- 
- Q.4(A) Explain the procedure to analysis the stability of non-linear system with the help of describing function. 12M
- OR**
- Q.4(B) Write short notes on (i) Lyapunov stability analysis (ii) Popov's stability analysis. 12M
- 
- Q.5(A) Explain in detail about the real time estimation of the state of a power system. 12M
- OR**
- Q.5(B) Explain in detail about the design of stabilizing controllers of power system using pole assignment technique. 12M

**\*\*\*END\*\*\***



Hall Ticket No:

Course Code: 14VES11T01

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**

(UGC-AUTONOMOUS)

**M.Tech I Year I Semester (R14) Supplementary End Semester Examinations – Jan 2017**

(Regulations: R14)

**VLSI Technology**

(VLSI & Embedded Systems)

**Time: 3Hrs**

**Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.  
In Q.no 1 to 5 answer either Part-A or B only.

Q.1(A) i) Explain the pMOS fabrication process with neat diagrams. 6M  
ii) Why n-well CMOS circuits are superior to p-well CMOS circuits? 6M

**OR**

Q.1(B) i) Define  $V_t$ ,  $G_m$  and  $G_{ds}$ ? 6M  
ii) Explain about Latch-Up in CMOS Circuits 6M

Q.2(A) i) Write the design rules for wires, transistor and contacts. 6M  
ii) Draw the various transistor structures and explain any one of their layout design procedure? 6M

**OR**

Q.2(B) Write about resistive & inductive inter connect delays in detail? 12M

Q.3(A) i) What is meant by testing in combinational logic? Explain gate testing? 6M  
ii) Explain about combinational network testing? 6M

**OR**

Q.3(B) i) Design a CMOS shift register cell and draw its layout. 6M  
ii) Compare the one-phase and two-phase clocking disciplines. 6M

Q.4(A) i) Explain the process of placement of blocks in floor planning. 6M  
ii) Give the salient features of SOCs. 6M

**OR**

Q.4(B) Write short note on Architecture testing? 12M

Q.5(A) Explain in detail about Layout synthesis and Layout Analysis? 12M

**OR**

Q.5(B) i) What is meant by Hardware/software Co-Design? 6M  
ii) Write about CAD Systems? 6M

**\*\*\* END\*\*\***





Hall Ticket No:

Course Code: 14VES11T03

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**

(UGC-AUTONOMOUS)

**M.Tech I Year I Semester (R14) Supplementary End Semester Examinations –Jan 2017**

(Regulations: R14)

**STRUCTURAL DIGITAL SYSTEM DESIGN**

(VLSI & Embedded Systems)

**Time: 3Hrs**

**Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.

**In Q.no 1 to 5 answer either I or II only.**

Q.1(A) Explain operation of ALU and implement 12-bit ALU using Carry look ahead circuit. 12M

**OR**

Q.1(B) Explain the operation of decoder and encoder with suitable application. 12M

---

Q.2(A) Explain the concept of separation of controller and architecture. 12M

**OR**

Q.2(B) Clearly explain refining architecture and control algorithm. 12M

---

Q.3(A) Explain briefly about design for testability and test vectors. 12M

**OR**

Q.3(B) Explain traditional synthesis from a suitable ASM chart. 12M

---

Q.4(A) Explain the concepts of cross talk and reflections. 12M

**OR**

Q.4(B) Discuss about the micro-program sequencer 2910 and its advantages. 12M

---

Q.5(A) Define the meaning of simulator and Explain the functionality of the any one simulator? 12M

**OR**

Q.5(B) Explain the design of traffic light controller with ASM. 12M

**\*\*\* END\*\*\***



Hall Ticket No:

Question Paper Code: 14AMS12T10

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**

(UGC-AUTONOMOUS)

**M.Tech I Year II Semester (R14) Supplementary End Semester Examinations – Jan 2017**

(Regulations: R14)

**ADVANCED PRODUCTION AND OPERATIONS MANAGEMENT**

(AMS)

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.  
In Q.no 1 to 5 answer either Part-A or B only

Q.1(A) State the importance of operations management and explain various historical milestones in evolution of POM. 12M

OR

Q.1(B) i) Explain the importance of Flexible manufacturing system (FMS) for mass production of components and also state its advantages. 12M

ii) What are the main requirements of an effective automated material handling system and explain them briefly?

---

Q.2(A) What is the significance of value analysis and explain the procedure for value analysis using Matrix Method? 12M

OR

Q.2(B) Explain the concept of line balancing and state its advantages and disadvantages. 12M

---

Q.3(A) Explain the differences between MRP-I and MRP-II systems with suitable examples. 12M

OR

Q.3(B) Explain various strategies of aggregate planning and also mention guidelines for aggregate planning. 12M

---

Q.4(A) State the differences between motion study and time study and explain various symbols used in process chart. 12M

OR

Q.4(B) What are the benefits of ISO 9000 series standards and explain the steps involved in ISO 9000 registration? 12M

---

Q.5(A) What are the principles of scheduling and explain various scheduling Strategies. 12M

OR

Q.5(B) (i) Differentiate PERT and CPM techniques? 12M

(ii) Draw the project network and determine critical path and maximum duration of the project using CPM technique for below given set of activities?

Activity	Duration (days)
1-2	5
1-3	6
2-3	3
2-4	8
3-5	2
3-6	11
4-5	0
4-6	1
5-6	12

\*\*\* END\*\*\*

--	--	--	--	--	--	--	--	--	--

## MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

**M.Tech I Year II Semester (R14) Supplementary End Semester Examinations – Jan 2017**

(Regulations: R14)

### TOTAL QUALITY MANAGEMENT

(AMS)

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.

**In Q.no 1 to 5 answer either Part-A or B only**

Q.1(A) Explain the difference between feedforward and feedback (final inspection) control. 12M  
Why is feedforward more appropriate for TQM?

OR

Q.1(B) List the characteristics of excellent leadership for TQM. Describe how leadership by top management is the driver of quality. 12M

Q.2(A) A company uses a process to paint refrigerators with a coat of enamel. During each shift, a sample of 5 refrigerators is selected (1.4 hours apart) and the thickness of the paint (in mm) is determined. If the enamel is too thin, it will not provide enough protection. If it's too thick, it will result in an uneven appearance with running and wasted paint. Table below lists the measurements from 20 consecutive shifts. What are the values of the  $\bar{x}$  and R chart control limits? The necessary constants are provided in the table below? 12M

(Subgroup) Shift no.	Thickness (in mm)				
1	2.7	2.3	2.6	2.4	2.7
2	2.6	2.4	2.6	2.3	2.8
3	2.3	2.3	2.4	2.5	2.4
4	2.8	2.3	2.4	2.6	2.7
5	2.6	2.5	2.6	2.1	2.8
6	2.2	2.3	2.7	2.2	2.6
7	2.2	2.6	2.4	2.0	2.3
8	2.8	2.6	2.6	2.7	2.5
9	2.4	2.8	2.4	2.2	2.3
10	2.6	2.3	2.0	2.5	2.4
11	3.1	3.0	3.5	2.8	3.0
12	2.4	2.8	2.2	2.9	2.5
13	2.1	3.2	2.5	2.6	2.8
14	2.2	2.8	2.1	2.2	2.4
15	2.4	3.0	2.5	2.5	2.0
16	3.1	2.6	2.6	2.8	2.1
17	2.9	2.4	2.9	1.3	1.8
18	1.9	1.6	2.6	3.3	3.3
19	2.3	2.6	2.7	2.8	3.2
20	1.8	2.8	2.3	2.0	2.9

contd....page 2 of 2

$n$	$d_1$	$d_2$	$(\frac{3}{d_1\sqrt{n}})$ $A_1^b$	$(\frac{3}{d_2\sqrt{n}})$ $A_2^b$	$D_3$	$D_4$	$B_3$	$B_4$
2	1.7725	1.1284	1.1968	1.8800	0.0000	3.2665	0.0000	10.8276
3	1.3820	1.6926	1.2533	1.0233	0.0000	2.5746	0.0010	6.9078
4	1.2533	2.0588	1.1968	0.7286	0.0000	2.2820	0.0081	5.4221
5	1.1894	2.3259	1.1280	0.5768	0.0000	2.1145	0.0227	4.6167
6	1.1512	2.5344	1.0638	0.4832	0.0000	2.0038	0.0420	4.1030
7	1.1259	2.7044	1.0071	0.4193	0.0757	1.9243	0.0635	3.7430
8	1.1078	2.8472	0.9575	0.3725	0.1362	1.8638	0.0855	3.4746
9	1.0942	2.9700	0.9139	0.3367	0.1840	1.8160	0.1071	3.2656

OR

Q.2(B) What is total quality management in the supply chain? How is this important in TQM implementation? 12M

Q.3(A) Identify any two functions or activities, other than product characteristics, that could be benchmarked by: 12M

(i) A manufacturer

(ii) A service company

OR

Q.3(B) "Organizing for TQM requires a different approach to keep employees motivated which is absolutely essential for successful TQM implementation." Comment. 12M

Q.4(A) What are the benefits of a cost-of-quality measuring system? 12M

OR

Q.4(B) How can improved quality lead to improved productivity? 12M

Q.5(A) Write briefly about the documents associated with ISO 9000 quality standards with special emphasis on "Requirements". 12M

OR

Q.5(B) What is the relation between ISO 9000 and TQM? Is it true that ISO 9000 should be a company's guidepost, and not TQM? Justify. 12M

\*\*\* END\*\*\*

--	--	--	--	--	--	--	--	--	--

# MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

M.Tech I Year II Semester (R14) Supplementary End Semester Examinations – Jan 2017

(Regulations: R14)

## INTELLIGENT MANUFACTURING SYSTEMS

(AMS)

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.

In Q.no 1 to 5 answer either Part-A or B only

- Q.1(A) Explain in brief the nature and role of the elements of the CIM system. 12M
- OR**
- Q.1(B) Explain with neat sketch the structure and functional area of CIM system. 12M
- 
- Q.2(A) Draw the architecture of the intelligent manufacturing systems and explain the system operation? 12M
- OR**
- Q.2(B) Answer the following 12M
- i) What is the need of manufacturing automation protocol and technical office protocol in implementing the networks?
  - ii) Difference between conventional and intelligent manufacturing systems.
- 
- Q.3(A) Explain the three rules of learning in neural network? Explain the concept of artificial intelligence and state its applications? 12M
- OR**
- Q.3(B) Distinguish between artificial intelligence and artificial technique? Explain in brief different AI techniques. 12M
- 
- Q.4(A) What are the different methods of matrix formulation? Discuss briefly? 12M
- OR**
- Q.4(B) What are the major factors that influence the process of equipment selection? Explain in detail. 12M
- 
- Q.5(A) How the features of the components are recognized and sequence of operations for process planning be done. 12M
- OR**
- Q.5(B) What is the importance of group technology and mention the algorithms for cluster analysis method. 12M

\*\*\* END\*\*\*

