

M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech. II Semester**

**ADVANCED POWER SYSTEM PROTECTION  
(Power Systems)**

Time : 3 hours

Max. Marks : 60

*Answer FIVE Questions, Choosing ONE Question from each section  
All Questions carry equal marks*

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**SECTION - I**

- 1 (a) What are the basic functional blocks of static relays? Explain them briefly.  
(b) Derive the general equation for two input amplitude comparator.
- 2 Explain the following with neat diagrams :  
(i) Mixing Circuits (ii) Replica Impedance (iii) Level detectors

**SECTION - II**

- 3 Explain in detail the techniques used to measure the period of coincidence in phase comparators.
- 4 With relevant wave forms discuss about coincidence type phase comparator.

**SECTION - III**

- 5 Explain about the definite and inverse definite time over current relays with necessary block diagrams.
- 6 Draw the circuit diagram of instantaneous static over current relay and explain its operation.

**SECTION - IV**

- 7 Explain about static relay schemes.
- 8 Write in brief about static differential relays.

**SECTION - V**

- 9 Write in brief about Three input amplitude comparator and Hybrid comparator.
- 10 Describe the realization of a direction over current relay using a microprocessor.



M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech. II Semester**

**POWER SYSTEM DYNAMICS & STABILITY  
(Power Systems)**

Time : 3 hours

Max. Marks : 60

*Answer FIVE Questions, Choosing ONE Question from each section  
All Questions carry equal marks*

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**SECTION - I**

- 1 a) Find the steady state power limit of a system consisting of a generator equivalent reactance 0.50 pu connected to an infinite bus through a series reactance of 1.0 pu. The terminal voltage of the generator is held at 1.20 pu and the voltage of the infinite bus is 1.0 pu.  
b) Explain in detail equal area criterion.
- 2 a) A 50 Hz, four pole turbo generators rated 100 MVA, 11 kV has an inertia constant of 8.0 MJ/MVA. (i) Find the stored energy in the rotor at synchronous speed. (ii) If the mechanical input is suddenly raised to 80 MW for an electrical load of 50 MW, find rotor acceleration, neglecting mechanical and electrical losses.  
b) Explain the methods of improving transient stability.

**SECTION - II**

- 3 a) Derive voltage equation of generator.  
b) Derive torque equation two pole machine.
- 4 a) Derive power invariant transformation.  
b) Explain park's transformation with equation.

**SECTION - III**

- 5 a) Derive the state equation from transfer functions.  
b) Explain briefly about hydraulic turbine model.
- 6 a) Explain briefly about speed governing system.  
b) Explain briefly about the self excited DC generators.

**SECTION - IV**

- 7 a) Derive the model 1.1 to stator equivalent circuit  
b) With the help of phasor diagram, explain the procedure for the calculation of initial conditions of the synchronous machine equations.
- 8 a) Derive the model 1.1 to rotor equations  
b) Derive equivalent circuit of typical network diagram.

SECTION - V

- 9 a) Write notes on small signal stability. Also show the nature of small disturbance response.  
b) Write notes on block diagram of static exciter.
  
- 10 a) Explain the small signal stability of single machine infinite bus system for generator represented by classical model.  
b) Write notes on block diagram of PSS.

**Code : 17PS1207**

M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech. II Semester**

**AI TECHNIQUES IN POWER SYSTEMS  
(Power Systems)**

Time : 3 hours

Max. Marks : 60

*Answer FIVE Questions, Choosing ONE Question from each section  
All Questions carry equal marks*

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**SECTION - I**

- 1 (a) Explain the structure of a brain and describe biological neuron.  
(b) Explain the activation and synaptic dynamics of artificial neuron.
  
- 2 (a) Compare and contrast artificial neural networks with conventional computer system.  
(b) What are the three models of artificial neuron. Explain them in detail.

**SECTION - II**

- 3 (a) With an example explain how a pattern can be trained and classified using discrete perceptron algorithm.  
(b) Distinguish about Multi-layer Perceptron and Multi-layer feed forward neural network.
  
- 4 (a) Explain in detail about back-propagation algorithm.  
(b) Draw the architecture of Hopfield network and explain its algorithm.

**SECTION - III**

- 5 (a) Draw basic flow chart for genetic algorithms and Illustrate fitness function.  
(b) Explain reproduction in genetic algorithms by taking example.
  
- 6 (a) Explain crossover and mutation.  
(b) Explain convergence of genetic algorithms by taking one example.

**SECTION - IV**

7 (a) Given that  $A=0.2/3 + 0.5/4 + 0.8/5$  and  $B=0.3/3 + 0.2/4 + 0.7/5 + 0.6/6$ , determine the algebraic product of the two sets.

(b) Discuss the reflexivity properties of the following fuzzy relation:

$$\tilde{R} \quad x_1 \quad x_2 \quad x_3$$

$x_1$	1	.8	.3
$x_2$	.4	.5	.7
$x_3$	.7	.5	1

8 (a) Explain the terms (i) fuzzy sets. (ii) Membership function

(b) Write the limitations and properties of the fuzzy sets.

**SECTION - V**

9 Explain the following Defuzzyfication methods.

a) Center of Gravity Method.

b) Weight average Method.

c) Height Method.

10 Explain load frequency control problem using AI Techniques.

Code : 17PS1208

M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech. II Semester**

**VOLTAGE STABILITY  
(Power Systems)**

Time : 3 hours

Max. Marks : 60

*Answer FIVE Questions, Choosing ONE Question from each section  
All Questions carry equal marks*

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**SECTION - I**

- 1 (a). What are voltage stability problems and define voltage instability, voltage collapse and voltage security .  
(b). List out and describe the voltage instability scenarios.
- 2 Draw the PV and QV curves at different loading conditions with respect to voltage stability analysis and write the advantages of it.

**SECTION - II**

- 3 What is significance of generator reactive power capability curve in voltage stability studies? Explain.
- 4 Discuss the power impacts on system response in detail.

**SECTION - III**

- 5 Assess the dynamic performance considering under voltage load shedding.
- 6 Discuss the voltage control strategies for voltage stability in detail.

**SECTION - IV**

- 7 Illustrate the static and dynamic characteristics of load components.
- 8 Distinguish the following components  
(a). Static VAR compensators  
(b). Distribution voltage regulators

## SECTION - V

- 9 Explain the steady state static real power stability and steady state reactive power stability in detail.
- 10 Discuss the reactive power limitations in voltage stability of an EHV system.



M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech. II Semester**

**REACTIVE POWER CONTROL  
(Power Systems)**

Time : 3 hours

Max. Marks : 60

*Answer FIVE Questions, Choosing ONE Question from each section  
All Questions carry equal marks*

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**SECTION – I**

- 1 Give the reasons for tap changing on transformer and explain the effect of reactive loading on a Distribution transformers.
- 2 Explain the performance and limitations of reactive capability of a synchronous generator.

**SECTION – II**

- 3 Define stability of power system and explain the effect of capacitors on stability.
- 4 Briefly explain the varieties of Static Var Controllers.

**SECTION – III**

- 5 Explain the economic justification of reactive power planning.
- 6 Explain about retrofitting of capacitor banks.

**SECTION – IV**

- 7 Give the reactive power requirements of lighting load in India.
- 8 Write short notes on harmonics and other loads.

**SECTION – V**

- 9 Write the conditions for which APFC relays are susceptible and malfunction.
- 10 Explain different methods for harmonic reduction.



Code : 17PS12E4

M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech. II Semester**

**ADVANCED DIGITAL SIGNAL PROCESSING  
(Power Systems)**

Time : 3 hours

Max. Marks: 60

*Answer **FIVE** Questions, Choosing **ONE** Question from each section  
All Questions carry equal marks*

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**SECTION - I**

1. (a) What are the properties of DFT ?  
(b) Explain about Gabor transform
- 2 (a) Discuss about DTFT.  
(b) Explain about uniform DFT filter bank

**SECTION - II**

- 3 (a) What do you understand by adaptive filter ?  
(b) Discuss minimum MSE criterion to develop adaptive FIR Filter
- 4 (a) Why LMS is Normally Preferred over RLS  
(b) Write the Error Criterion for LMS algorithm

**SECTION - III**

- 5 Derive and explain the relationship between Wavelets and Filter banks
- 6 Explain the Analysis and Synthesis Section of a Filter bank structure

**SECTION - IV**

- 7 (a) Write about the interrupts available and its properties in TMS320C24X Processor  
(b) Compare the Functional Units and their Operations in TMS320C24X Processor
  - 8 Explain the architecture Overview of TMS320C240 DSP controller
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**SECTION - V**

- 9 (a) Write about TREG, PREG  
(b) Write about Control Instructions
  
- 10 Explain about Assembly Language Instruction Set Summary, description

M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech. II Semester**

**QUALITY ENGINEERING IN MANUFACTURING  
(Advanced Manufacturing Systems)**

Time : 3 hours

Max. Marks : 60

*Answer FIVE Questions, Choosing ONE Question from each section  
All Questions carry equal marks*

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**SECTION - I**

- 1 (a) What is quality in manufacturing and explain about an overall quality system?  
(b) Differentiate between system design and Tolerance design which affect the quality.
- 2 (a) Quality is viewed differently by different people. How would you view if you were Customer and an Engineer.  
(b) Explain in detail N-type, S-type and L-type tolerances.

**SECTION - II**

- 3 Distinguish between system design, parameter design and tolerance design and explain their role in reducing the effects of noise factors during product and process design stages.
- 4 Write about Quality Evaluations and type of Tolerances with multiple components applications.

**SECTION - III**

- 5 (a) Describe four level and multiple level experiments are used in the Analysis and Interpretation by ANOVA technique.  
(b) How the F- test gives the factor effects which are statistically significant?

- 6 An engineer respects that the surface finish of a metaql part is influenced by feed rate & depth of cut. He selects three feed rates & four depths of cut. He then conducts three replicates of each experiment and obtain the following data on surface roughness.

	Depth of cut			
Feed rate	0.15	0.18	0.20	0.25
0.20	74,64,60	76,68,73	82,88,92	99,104,102
0.30	92,86,88	98,88,104	99,108,100	104,110,98
0.35	99,99,102	104,100,99	101,102,100	114,111,117

Prefer ANOVA and draw conclusions  $\alpha = 0.05$

#### SECTION - IV

- 7 Explain with examples the importance of OA in design of experiments and indicate the stages involved in selective appropriate OA's.
- 8 (a) Give the procedure adopted in conducting and analyzing the experiments orthogonal arrays.
- (b) What are the various interpretation methods used in orthogonal arrays?

#### SECTION - V

- 9 Briefly explain six sigma philosophy and benefits of its use in organizations.
- 10 Write Short Notes on
- Six- Sigma.
  - Six- Sigma in Services and Small organizations

Code : 17MME202

M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech. II Semester**  
**RAPID PROTOTYPING**  
**(Advanced Manufacturing Systems)**

Time : 3 hours

Max. Marks :60

*Answer FIVE Questions, Choosing ONE Question from each section*  
*All Questions carry equal marks*

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**SECTION - I**

1. (a) Discuss the Evolution Rapid prototyping systems indicating the history and their growth rate in the Industrial sector.  
(b) List the classification of Rapid prototyping systems and name the key aspects of Rapid prototyping.
2. (a) Briefly explain the stereo lithography process with a neat sketch and what are the process parameters of SLA systems that influence the part quality.  
(b) Describe applications of stereo lithography system.

**SECTION - II**

3. Describe fused Decomposition modeling with a neat sketch and explain its applications and explain how FDM is used in RPT.
4. Explain Laminated object manufacturing with neat sketch, List the materials used in LOM and categorise the merits and demerits of LOM.

**SECTION - III**

5. Explain with a neat sketch the following concept of modeling techniques
  - a) Sander's model maker
  - b) 3D printer
  - c) Thermal jet printer
6. With a neat sketch discuss the selective laser sintering process, process details and describe its applications.

**SECTION - IV**

7. (a) Differentiate soft tooling and hard tooling. Compare direct tooling and indirect tooling.  
(b) Explain Laminate tooling with a neat sketch.
8. (a) Explain Arc spray metal tooling with a neat sketch.  
(b) Discuss the principle of sand casting tooling.

**SECTION - V**

9. Describe the applications of vaccum casting process and explain surface digitizing
10. Explain the principle of surface generation from point cloud.





M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech. II Semester****PRODUCTION AND OPERATIONS MANAGEMENT  
(Advanced Manufacturing Systems)**

Time : 3 hours

Max. Marks : 60

Answer **FIVE** Questions, Choosing **ONE** Question from each section  
All Questions carry equal marks

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**SECTION - I**

- 1 Define operations management. Explain about various types of intermittent type production systems. Also list the characteristics of each system.
- 2 (a) What is the need for organizations to design and develop new products? Explain.  
(b) Explain the steps in new product design.

**SECTION - II**

- 3 (a) Explain with a graph various stages of product life-cycle.  
(b) "Value engineering is a cost reduction technique but with a difference." Explain.
- 4 Consider the following assembly network relationships of a product. The number of shifts per day is 2 and the number working hours per shift is 8. The company aims to produce 48 units of the product per day. Group the activities into work stations using Ranked Positional Weight method and compute Balancing Efficiency.

Activity	1-2	1-3	2-6	3-4	3-5	4-6	5-6	5-7	6-7
Duration (Min)	4	6	8	7	4	6	5	9	10

**SECTION - III**

- 5 (a) Define aggregate planning. Explain about various strategies used in aggregate planning.  
(b) Distinguish between push system and pull system.
- 6 (a) Explain about Just-in-Time.  
(b) A company manufactures Iron Box. The MPS of the final assembly is as shown below:

Month	1	2	3	4	5	6	7	8
Projected Requirement	--	3500	3000	4500	--	1000	4000	5500

The initial stock on hand is '0' and ordering cost per order as Rs. 10,000. The carrying cost is Rs. 2.5 per unit/month and the lead-time is one month. Find MRP solution using the Minimum Cost Per Period (MCP) method and calculate the total relevant cost.

### SECTION - IV

- 7 (a) What is 'no passing' rule? Explain the method of sequencing while processing 'n' jobs through 'two' machines.  
 (b) Find the sequence that minimizes the total elapsed time required to complete the following tasks :-

Tasks	A	B	C	D	E	F	G
<b>Machine I</b>	3	8	7	4	9	8	7
<b>Machine II</b>	4	3	2	5	1	4	3
<b>Machine III</b>	6	7	5	11	5	6	12

- 8 Use graphical method to minimize the time needed to process the following jobs on the machines shown, i.e., for each machine find the job which should be done first. Also, calculate the total time needed to complete both the jobs.

		Machines				
<b>Job 1</b>	<b>Sequence</b>	A	B	C	D	E
	<b>Time</b>	3	4	2	6	2
<b>Job 2</b>	<b>Sequence</b>	B	C	A	D	E
	<b>Time</b>	5	4	3	2	6

### SECTION - V

- 9 A small project is composed of seven activities . Time estimates are listed in the table are as follows:

Activity	Estimated duration (weeks)		
	Optimistic	Most likely	Pessimistic
1-2	1	1	7
1-3	1	4	7
1-4	2	2	8
2-5	1	1	1
3-5	2	5	14
4-6	2	5	8
5-6	3	6	15

- (a) Draw the project Network  
 (b) Find the expected duration and variance of each activity  
 (c) Calculate the variance and standard deviation of project length. What is the probability that the project will be completed:  
 (i) At least four weeks earlier than expected?  
 (ii) No more than 4 weeks later than expected?
- 10 Given the cost and time data for a particular project. Determine the optimal cost schedule for the project by drawing project schedule Vs total cost. Overhead cost is Rs. 50 per day.

Activity	Normal time	Normal cost (Rs)	Crash time	Crash Cost (Rs)
1-2	3	180	1	220
2-3	4	130	2	180
2-4	7	80	1	120
3-4	5	80	1	140

Code : 17MME204

M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech. II Semester**

**CUTTING TOOL TECHNOLOGY & TOOL DESIGN  
(Advanced Manufacturing Systems)**

Time : 3 hours

Max. Marks : 60

*Answer FIVE Questions, Choosing ONE Question from each section  
All Questions carry equal marks*

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**SECTION - I**

- 1 (a) What do you understand by 'red hardness'? How do you indicate it? List any four cutting tool materials with increasing red hardness.  
(b) Briefly explain about nonferrous tooling materials.
  
- 2 (a) Define machinability of a tooling material? How does spheroidizing increase the machinability of a tool-steel?  
(b) What is the difference between stress relieving and stabilizing?

**SECTION - II**

- 3 (a) What are the two main areas of heat generation during chip formation in metal cutting? Explain.  
(b) Discuss the variables which favour the formation of continuous chips. What are the disadvantages of them? Suggest the ways to overcome them.
  
- 4 (a) Sketch a high speed steel single point cutting tool with the following tool signature: 0-7-7-7-15-15-1/32  
(b) Distinguish between form relieved milling cutter and profile relieved milling cutter.

**SECTION - III**

- 5 (a) What are the four essential requirements of clamps and clamping devices?  
(b) What is a drill jig? Discuss any three types of drill jigs.

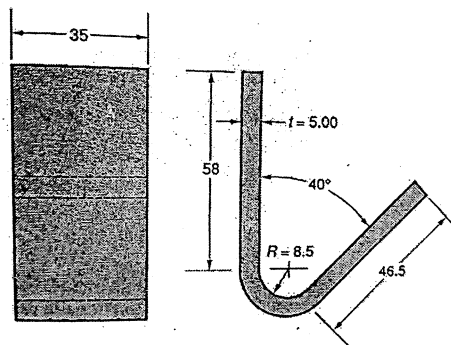
- 6 With the help of sketches explain various types of lathe fixtures.

#### SECTION - IV

- 7 (a) What is meant by die clearance? How do you express it? Explain the result of excessive and insufficient die clearance.  
(b) What is a progressive die? Explain with a neat sketch. Name the products which can be made by it.
- 8 Discuss the methods of reducing cutting forces during blanking or piercing operation with sketches.

#### SECTION - V

- 9 A bending operation is to be performed on 5 mm thick cold rolled steel. The part drawing is shown in the figure. Determine the blank size required if the bend is to be performed in a V-die with a die opening dimension of 40 mm. the material has a tensile strength of 600 MPa and shear strength of 430 MPa.



- 10 Elaborate the effect of following variables on metal flow during drawing operation:
- Punch radius
  - Draw radius on die
  - Friction and
  - Material to be drawn

**Code : 17MME205**

M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech. II Semester**

**SIMULATION MODELING OF MANUFACTURING SYSTEMS  
(Advanced Manufacturing Systems)**

Time : 3 hours

Max. Marks : 60

*Answer FIVE Questions, Choosing ONE Question from each section  
All Questions carry equal marks*

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**SECTION - I**

- 1 Elaborate the ways of studying a system.
- 2 (a) Explain the following terms: (i) Experiment (ii) Random variable  
(iii) Distribution function
- (b) Explain the strong law of large numbers.

**SECTION - II**

- 3 Describe the ways of validating a simulation model.
- 4 Explain the significance of probability distribution in simulation. Also distinguish between discrete and continuous probability distribution.

**SECTION - III**

- 5 Explain composition and convolution techniques to generate random variates.
- 6 (a) What are the desirable features of simulation software? Explain.
- (b) Compare the simulation packages with programming languages as regards to simulation studies.

#### SECTION - IV

- 7 What are the performance measures of a manufacturing system? Discuss the possibility of observing them during simulation studies.
- 8 (a) What is meant by steady state behavior of a system? Explain.
- (b) Outline the replication method for the output data analysis with its importance.

#### SECTION - V

- 9 Justify the statement "Simulation is more widely applied to manufacturing systems than to any other application area"
- 10 Discuss the various issues that can be addressed by carrying out simulation studies on a job shop system.

Code : 17MME2E3

M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech. II Semester**

**METAL FORMING PROCESSES  
(Advanced Manufacturing Systems)**

Time : 3 hours

Max. Marks :60

*Answer FIVE Questions, Choosing ONE Question from each section  
All Questions carry equal marks*

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**SECTION - I**

1. (a) What is flow curve? Draw the flow curve for a perfectly plastic material with flow stress  $\sigma_0$  and fracture strain of  $E_f$ .  
(b) With the help of slab method derive the expression of axial stress at die exit using problem of the drawing of a strip through wedge dies
2. (a) State the classification of metal forming processes based on the type of forces applied to the work piece.  
(b) Discuss the cold and hot working process and explain the effect of friction and lubrication in these methods.

**SECTION - II**

3. (a) What is angle of bite? Derive the expression for angle of bite interns of draft and the radius of the roll.  
(b) Write in brief with neat sketch about the theory of cold rolling and derive the Von-Karman equation.
4. Explain the force and geometrical relationship in rolling process. Describe the effect of rolling load and rolling variable.

**SECTION - III**

5. (a) What are the functions of flash and gutter in impression die forging?  
(b) With neat sketch explain the various forging equipment's used in closed die forging
6. Prove that the variation of pressure along the length of a slab in forging with flat dies is exponential with a peak value at centre in case of shipping condition.

**SECTION - IV**

7. (a) Explain about the forward extrusion and backward extrusion processes with neat sketches.  
(b) Explain the analysis of hot extrusion process and describe various defects.

8. (a) What are various methods of lubrication in wire drawing process?
- (b) What are various types of tube drawing processes? Explain them with neat sketches.

**SECTION - V**

9. Explain the following :
- (a) Forming limit diagram
  - (b) Defects in formed parts
  - (c) Advanced metal forming process
10. (a) What is spring back? What is the effect of young's modulus and yield strength on spring back.
- (b) Explain about spinning process with a neat sketch.



M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech II Semester**

**WIRELESS COMMUNICATION  
(Digital Electronics & Communication Systems)**

Time : 3 hours

Max Marks: 60

*Answer FIVE Questions, Choosing ONE Question from each section*

*All questions carry equal marks*

\* \* \*

**SECTION – I**

- 1 Explain in detail about the evolution of wireless communication system with suitable examples.
- 2 What is meant by WLL in mobile communication system and explain in detail.

**SECTION – II**

- 3 Explain the impulse response model of a multi path channel.
- 4 a) Explain any two parameters of mobile multipath channels.  
b) List the various types of small scale fading.

**SECTION – III**

- 5 Mention the types of diversity techniques in wireless communication system and explain in detail.
- 6 Explain the combining methods related to diversity branches and signal paths.

**SECTION – IV**

- 7 Explain about CDMA Systems in wireless communication
- 8 What are the different types of hand off strategies and explain in detail.

**SECTION – V**

- 9 Explain the performance of the MIMO systems
- 10 Discuss about UMTS & CDMA 2000 standards and specifications.



Code : 17EC1202

M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech. II Semester**

**DIGITAL COMMUNICATION TECHNIQUES  
(Digital Electronics & Communication Systems)**

Time : 3 hours

Max. Marks :60

*Answer FIVE Questions, Choosing ONE Question from each section  
All Questions carry equal marks*

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**SECTION - I**

1. Explain matched filter receiver and derive the expression for signal to noise ratio for a matched filter receiver.
2. Illustrate the Gram- Schmidt orthogonalization procedure with example

**SECTION - II**

3. Derive the likelihood equation of ML estimation.
4. Write the difference between Correlation receiver and a Matched filter receiver.

**SECTION - III**

5. Discuss about statistical model of fading channels
6. Compare between Rayleigh and Ricean fading channels in digital communication.

**SECTION - IV**

7. What is ISI? What is the reason for ISI? Explain the Nyquist criterion for Band binary transmission.
8. Explain the need for equalization. Explain different types of equalization techniques. Compare the equalization techniques.

**SECTION - V**

9. Draw the transmitter, receiver block diagrams of BFSK system. Also signal constellation points and also draw the signal space diagram.
10. Discuss the synchronization techniques in detail?



Code : 17 EC1203

M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech. II Semester**

**MODERN RADAR SYSTEMS**

**(Digital Electronics & Communication Systems)**

Time : 3 hours

Max. Marks :60

*Answer FIVE Questions, Choosing ONE Question from each section  
All Questions carry equal marks*

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**SECTION - I**

- 1 (a) Discuss about Radar frequencies and list out the Applications of Radars.  
(b) Derive radar range equation in terms of minimum detectable signal.
- 2 (a) Obtain the SNR at the output of IF amplifier of Radar Receiver for a specified probability of detection without exceeding a specified probability of false alarm.  
(b) What is clutter? Explain about volume clutter and obtain an expression for detection range in volume clutter.

**SECTION - II**

- 3 (a) Discuss in detail about the Amplitude fluctuations and how its effects are minimized.  
(b) Explain Mono pulse tracking in two angle coordinates.
- 4 (a) Derive the expression for the frequency response of a Matched filter receiver with non white noise input.  
(b) Write short notes on CFAR detection.

**SECTION - III**

- 5 (a) Explain the operation of Monopulse tracking radar with a Block Diagram.  
(b) Write the differences between a Conical scanning Radar and a Monopulse Radar.
- 6 (a) Compare the tracking techniques.

- (b) Draw and explain the wave front phase relationships in phase comparison Monopulse radar.

**SECTION - IV**

- 7 Explain about synthetic aperture radar.
- 8 (a) Discuss about HF Over The Horizon Radar

**SECTION - V**

- 9 (a) Explain about ECM and ECCM  
(b) Briefly explain about Detection Range in Noise Jamming
- 10 Explain about Prevention & Delay of Acquisition.

M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech. II Semester**

**MICRO COMPUTER SYSTEMS DESIGN  
(Digital Electronics & Communication Systems)**

Time : 3 hours

Max. Marks : 60

*Answer FIVE Questions, Choosing ONE Question from each section  
All Questions carry equal marks*

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**SECTION - I**

- 1 a) Explain Data transfer, arithmetic and branch instructions of 8086.  
b) Explain the register organization of 8086.
- 2 a) With neat internal diagram, explain the architecture of 80286.  
b) Explain instruction sets of 80286 with some examples.

**SECTION - II**

- 3 a) Explain the architecture features of 80386 processor.  
b) Explain the pin description of 80486.
- 4 a) Explain the control and debug registers of 80386 microprocessor.  
b) Explain how a linear address is translated into a physical memory address using paging mechanism?

**SECTION - III**

- 5 a) Contrast the Pentium and Pentium Pro with the 80386 and 80486 microprocessors.  
b) Briefly explain input / output system.
- 6 a) Explain the improvements in the Pentium Pro when compared with the Pentium.  
b) What are the special registers available in Pentium processor?

**SECTION - IV**

- 7 Briefly explain the following interfacing techniques:  
a) Programmed I/O  
b) Interrupt I/O
- 8 a) What is meant by virtual memory? Briefly explain the virtual memory concept of 80286.  
b) With neat diagram, explain memory management.

## SECTION - V

- 9 What is an instruction set briefly explain different instruction sets available for advanced coprocessor.
- 10 Write short note on the following technologies
- a) MMX
  - b) SIMD



M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech. II Semester**

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

Time : 3 hours

Max. Marks : 60

*Answer FIVE Questions, Choosing ONE Question from each section  
All Questions carry equal marks*

\* \* \*

**SECTION - I**

- 1 (a) Write about the characteristics and applications of adaptive system.  
(b) Explain about gradient and mean square error in adaptive systems.
- 2 (a) Describe the performance function of the adaptive linear combiner.  
(b) Derive an alternative expression of the gradient function.

**SECTION - II**

- 3 Discuss the conditions for the optimum operation of the filter and derive Wiener - Hopf equations.
- 4 (a) What are the methods used for searching the performance surface.  
(b) Derive the equation for simple gradient algorithm and its solution.

**SECTION - III**

- 5 (a) Write about gradient search by the method of steepest descent.  
(b) Compare performance of Newton's and steepest descent method.
- 6 (a) Discuss the properties of Eigen values and Eigen vectors  
(b) Discuss the comparison of learning curves.

**SECTION - IV**

- 7 (a) Explain the principle and operation of LMS algorithm  
(b) With suitable diagrams explain the role of LMS algorithm in noise cancelation
- 8 (a) Explain the convergence of LMS algorithm  
(b) Derive the expression for the steady -state noise in the weight vector solution.

### SECTION - V

- 9 (a) Explain how RLS algorithm is used in adaptive equalization.  
(b) Write about statement of Kalman filtering problem and explain it.
  
- 10 (a) Define innovation Process and Kalman Gain.  
(b) Write about convergence analysis of RLS algorithm.

Code : 17EC12E1

M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech. II Semester**

**DSP PROCESSORS & ARCHITECTURE**  
**(Digital Electronics & Communication Systems)**

Time : 3 hours

Max. Marks : 60

*Answer FIVE Questions, Choosing ONE Question from each section*  
*All Questions carry equal marks*

\* \* \*

**SECTION - I**

- 1 (a) Show that the upsampler and downsampler are time-variant systems.
- (b) Discuss about the frequency sampling method of designing FIR filter.
- 2 (a) Write a MATLAB program to find the output of a system using  
a)convolution b)circular convolution
- (b) Determine the input and output relation of a factor -2 upsampler in frequency domain.

**SECTION - II**

- 3 Discuss in detail about the number formats for signals and coefficients in DSP system.
- 4 Write a short note on 1) A/D conversion error 11)D/A conversion error.

**SECTION - III**

- 5 Explain in detail about pipelining operation of TMS320C54XX.
- 6 Explain about data addressing modes of TMS320C54XX DSP.

**SECTION - IV**

- 7 (a) Derive the optimum scaling factor for the DIF-FFT butterfly structure.
- (b) Write a DSP program for 4-point DFT computation.
- 8 Write a DSP program to implement an FIR filter.

**SECTION - V**

- 9 Write a short note on a) programmed I/P b) Interrupts and I/P

10

Write a TMS320C54XX code to transfer a block of data from the program memory to the data memory. Following are the specifications.

Source address: 6000h in program space

Destination address: 8000h in data space

Transfer size : 800h single (16-bit) words

Channel use ;DMA channel #1

**Code : 17CS1201.**

**M.TECH. DEGREE EXAMINATION, AUGUST 2019**

**M.Tech II Semester**

**ADVANCED COMPUTER NETWORKING  
(Computer Science & Engineering)**

Time : 3 hours

Max Marks: 60

*Answer FIVE Questions, Choosing ONE Question from each section*

*All questions carry equal marks*

**\*\*\***

**SECTION - I**

- 1 Explain the functionalities of the various layers in TCP/IP reference model. Also compare the TCP/IP reference model with OSI reference model.
- 2 (a) Write short notes on interfaces, protocols, and services in networking.  
(b) Write short notes on ATM reference model.

**SECTION - II**

- 3 Discuss the error detection and correction in data link layer.
- 4 Explain with examples, go back N and selective repeat protocols.

**SECTION - III**

- 5 Write short notes on ARP and ICMP.
- 6 Explain with example, distance vector routing mechanism.

**SECTION - IV**

- 7 Discuss motivation and system architecture for distributed systems.
- 8 Explain the interaction primitives of remote object invocation.

**SECTION - V**

- 9 How to implement RPC in distributed systems? Explain it.
- 10 Write short notes on secret key and public key encryptions.



**Code : 17CS1202**

M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech. II Semester**

**SERVICE ORIENTED ARCHITECTURE  
(Computer Science & Engineering)**

Time : 3 hours

Max. Marks : 60

*Answer FIVE Questions, Choosing ONE Question from each section  
All Questions carry equal marks*

\* \* \*

**SECTION - I**

- 1 (a) Explain how services relate, communicate, designed and built?  
(b) Discuss about continuing evolution of SOA.
- 2 (a) Discuss about the anatomy of Service Oriented Architecture.  
(b) What is service layer abstraction? Explain.

**SECTION - II**

- 3 (a) Explain correlation with respect to web services and contemporary SOA.  
(b) Briefly explain about the technologies of SOA
- 4 (a) Explain briefly about the Design Activities of SOA.  
(b) What is a Business case? Explain the Business case of SOA.

**SECTION - III**

- 5 (a) What is Governance? Explain Event –driven architecture.  
(b) Discuss about strategy and development of SOA
- 6 (a) Explain some of the best practices of SOA with example.  
(b) Discuss about process orchestration.

**SECTION - IV**

- 7 (a) Explain about advanced messaging.  
(b) Write a short note on SAML and XACML.
- 8 Demonstrate WS-Security framework in terms of the 'security' element with an example.

**SECTION - V**

- 9 (a) What is a Transaction processing? Explain.  
(b) Explain about transaction specification.
- 10 Explain in detail about Protocols and coordination.





**Code : 17CS1203**

M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech. II Semester**

**SOFTWARE ARCHITECTURE  
(Computer Science & Engineering)**

Time : 3 hours

Max. Marks : 60

*Answer FIVE Questions, Choosing ONE Question from each section*

*All Questions carry equal marks*

\* \* \*

**SECTION – I**

1. Define Software Architecture. What is Architecture Business Cycle? Explain with a neat diagram.
2. Explain various process recommendations as used by an architect while developing Software Architectures.

**SECTION – II**

3. (a) Explain Pipes and Filters in detail  
(b) Write notes on Event-based Implicit Invocation
4. (a) Explain the Process Control Paradigm with various process control definitions  
(b) Write basic requirements for Mobile Robot Architecture

**SECTION – III**

5. (a) Explain Structural Patterns  
(b) Write notes on patterns for distribution
6. (a) Explain the various rules implemented for designing user interface architecture  
(b) How the web e-commerce architecture achieves its quality goals?

**SECTION – IV**

7. (a) What is an ADL? What are the advantages of ADL?  
(b) What are the applications of ADL's in a system development?
8. Illustrate Architectural Description Language with suitable example

**SECTION – V**

9. (a) Write notes on organizational Implications of a product line  
(b) Explain Legacy system.
10. (a) Explain component based system  
(b) How to achieving system architecture from architecture to system?



**M.Tech. II Semester**

**DATA MINING & DATA WAREHOUSING  
(Computer Science & Engineering)**

Time : 3 hours

Max. Marks : 60

*Answer FIVE Questions, Choosing ONE Question from each section*

*All Questions carry equal marks*

\* \* \*

**SECTION - I**

- 1 a) Explain different Data Mining Functionalities.  
b) Discuss issues to consider during data integration.
- 2 a) Explain Three-Tier Data Warehouse Architecture with neat diagram.  
b) Why data cleaning is needed and how it can be performed?

**SECTION - II**

- 3 Explain different data mining Primitives?
- 4 Explain in detail about data mining query language?

**SECTION - III**

- 5 What is data characterization? How it can be performed?
- 6 Discuss why relevance analysis is beneficial and how it can be performed into the characterization process?

**SECTION - IV**

- 7 Give the algorithm to generate a decision tree from the given training data and explain?

8 Discuss about back propagation classification.

SECTION – V

9 Explain the Categorization of Major Clustering Methods,

- 10 a) Briefly discuss about mining the world wide web.  
b) Describe similarity search in time series analysis.

Code : 17CS1205

M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech. II Semester**

**GRID COMPUTING  
(Computer Science & Engineering)**

Time : 3 hours

Max. Marks :60

*Answer FIVE Questions, Choosing ONE Question from each section  
All Questions carry equal marks*

\* \* \*

**SECTION – I**

- 1 Compare Parallel and Cluster Computing.
- 2 Discuss in detail the WS Resource Framework of OGSA.

**SECTION – II**

- 3 Explain Grid Monitoring Architecture.
- 4 Peek at the monitoring systems  
(a) Grid Mon (b) Hawkeye

**SECTION – III**

- 5 Describe Grid Security in detail.
- 6 Justify Grid Scheduling with QoS.

**SECTION – IV**

- 7 Illustrate Categories and Origins of Structured Data.
- 8 How Grid Portals helpful? Explain.

**SECTION – V**

- 9 List globally available Middlewares. Explain in detail.
- 10 Explain in detail about gLite.



**Code :17CS12E3**

M.TECH. DEGREE EXAMINATION, AUGUST 2019

**M.Tech. II Semester**

**SOFTWARE QUALITY ASSURANCE & TESTING  
(Computer Science & Engineering)**

Time : 3 hours

Max. Marks : 60

*Answer FIVE Questions, Choosing ONE Question from each section  
All Questions carry equal marks*

\* \* \*

**SECTION - I**

1. (a) Discuss the role of SQA components in software project life cycle.  
(b) Give a brief overview on software reviews.
2. (a) Write in detail about quality factors of SQA.  
(b) Explain about Contract Review of SQA.

**SECTION - II**

3. (a) Discuss briefly the minimization for regression testing.  
(b) Explain test adequacy, assessment and enhancement.
4. (a) Explain in detail about Test Selection in Software Testing.  
(b) What is software testing? Discuss the role of finite state models in requirements.

**SECTION - III**

5. (a) Describe how integration testing is useful for testing the product.  
(b) Discuss in detail about System and Acceptance Testing.
6. (a) What is web testing? Explain the role of software automation and tools  
(b) List various test planning techniques. Explain test management.

**SECTION - IV**

7. (a) Give a brief overview on Software Product Quality.  
(b) Discuss about Software Maintenance Quality.
8. (a) Explain SCM.  
(b) Write short notes on (i) Procedure and work instructions (ii) Certifications

## SECTION – V

9. (a) Explain about Computerized tools for software progress control.  
(b) Write briefly about progress control of internal projects and external participants.
  
10. (a) Explain classic and extended cost models for software quality with example.  
(b) Discuss the proposed model for SQA Unit's organizational Structure.