

Subject code: 1800109

K.S.R.M COLLEGE OF ENGINEERING, KADAPA

M.TECH. I SEMESTER (PS)

MODEL PAPER

SUBJECT: **Research Methodology and IPR**
(GTE,PS,CAD/CAM,DECS & CSE)

Time: 3 Hrs.

Max.Marks:60

Answer any five questions.
All questions carry equal marks

Unit I

1. a) Explain nature, meaning and characteristics of research
- b. Explain scientific method of research

OR

2. Explain different types of data and explain different sources of data collection

Unit II

3. Explain literature review and explain different types of literature review

OR

4. a) Explain plagiarism and plagiarism analysis
- b) Explain various research ethics

Unit III

- 5 a) Define research proposal and Explain Importance of research proposal
- b) Explain main Components of research proposal

OR

- 6 a) what is technical writing
- b) Explain various types of technical writing assignments

Unit IV

- 7 What is patent? Explain steps required to patent an idea

OR

- 8 a) Explain technology Transfer and Licensing
- b) Explain trademark and copy right

Unit V

- 9 Explain computer software patents

OR

- 10 a) Explain geographical indication and its benefits
- b) What is Biotechnology, bioinformatics and Biological data bases?

K S R M College of Engineering (Autonomous), KADAPA – 516 003
M.Tech 1st Year 1st Semester (R 18) Regular Examinations, 2019
ADVANCED SOIL MECHANICS
(Geo-Technical Engineering)

Time: 03:00 Hrs.

Max. Marks: 60

Note: All questions will carry equal marks

Unit – 1

- | | | | |
|---|---|---|---------|
| 1 | a | Explain about the determination of coefficient of consolidation by Casagrande method? | 6 Marks |
| | b | Explain about the degree of consolidation under time-dependent loading? | 6 Marks |

Or

- | | | | |
|---|--|---|----------|
| 2 | | Explain about the Terzaghi's theory of one dimensional consolidation? | 12 Marks |
|---|--|---|----------|

Unit – 2

- | | | | |
|---|---|---|---------|
| 3 | a | Give general comments on direct shear test? | 6 Marks |
| | b | Explain about the consolidated drained triaxial test? | 6 Marks |

Or

- | | | | |
|---|---|---|---------|
| 4 | a | Explain about the consolidated undrained triaxial test? | 6 Marks |
| | b | Give the interpretation of the triaxial test results? | 6 Marks |

Unit – 3

- | | | | |
|---|--|---|----------|
| 5 | | Explain about the stress path for consolidated drained and undrained triaxial test? | 12 Marks |
|---|--|---|----------|

Or

- | | | | |
|---|--|--|----------|
| 6 | | Explain about the stress path with respect to different initial state of the soil? | 12 Marks |
|---|--|--|----------|

Unit – 4

- | | | | |
|---|--|---|----------|
| 7 | | Explain about the significance of Roscoe and Hvorslev state boundary surface? | 12 Marks |
|---|--|---|----------|

Or

- | | | | |
|---|---|--|---------|
| 8 | a | Explain about critical void ratio? | 6 Marks |
| | b | Explain about effect of dilation in sands? | 6 Marks |

Unit – 5

- | | | | |
|---|--|---|----------|
| 9 | | Explain about yield curves and stable-state boundary surface? | 12 Marks |
|---|--|---|----------|

Or

- | | | | |
|----|--|--|----------|
| 10 | | Explain about the associated and non associated flow rule? | 12 Marks |
|----|--|--|----------|

K S R M College of Engineering (Autonomous), KADAPA – 516 003
M.Tech 1st Year 1st Semester (R 18) Regular Examinations, 2019
ADVANCED FOUNDATION ENGINEERING
(Geo-Technical Engineering)

Time: 03:00 Hrs.

Max. Marks: 60

Note: All questions will carry equal marks

Unit - 1

- 1 a Explain about the scope and objectives of exploration? 6 Marks
b What are the stages involved in sub surface investigation? 6 Marks

Or

- 2 a Describe open excavation methods of exploration. What are their advantages and disadvantages? 6 Marks
b Describe various methods of drilling holes for subsurface exploration? 6 Marks

Unit - 2

- 3 a Explain about the selection of footing in detail? 6 Marks
b What are the Requirements for Satisfactory Performance of Foundations 6 Marks

Or

- 4 a Explain about the Terzaghi's bearing capacity theory? 6 Marks
b A square footing of width 1.5 m carries a load intensity of 900 kN/m² at a depth of 1.0 m in sand. The saturated unit weight of sand is 19 kN/m³ and unit weight above water table is 16.5 kN/m³. The shear strength parameters are $c = 0$ kN/m² and $\phi = 30^\circ$. Determine the factor of safety with respect to shear failure for the following cases of location of water table by using Terzaghi's theory.
a) Water table is 4.0 m below ground level
b) Water table is 3.5 m below ground level
c) Water table is 2.5 m below ground level
d) Water table is 1.0 m below ground level
e) Water table is at ground level it-self
Bearing Capacity factors: $N_c = 37.2$, $N_q = 22.5$, $N_\gamma = 19.7$

Unit - 3

- 5 a Explain about the pile loads tests in detail. 6 Marks
b Design a friction pile group to carry a load of 3000 kN including the weight of the pile cap at a site where the soil is uniform clay to a depth of 20 m, underlain by rock. Average unconfined compressive strength of the clay is 70 kN/m². The clay may be assumed to be of normal sensitivity and normally loaded, with liquid limit of 60%. A factor of safety of 3 is required against shear failure. From the design data compute the settlement of the group assuming the load to be transferred at 2/3 length of the pile 6 Marks

Or

- 6 a Discuss about the Terzaghi's analysis of well foundation in detail. 6 Marks
 b A circular well has an external diameter of 7.5 m and is sunk into a sandy soil to a depth of 20 m below the maximum scour level. The resultant horizontal force is 1800 kN. The well is subjected to a moment of 36,000 kN.m about the maximum scour level due to the lateral force. Determine whether the well is safe against lateral forces, assuming the well to rotate (a) about a point above the base, and (b) about the base, Assume $\gamma' = 10 \text{ kN/m}^3$, and $\phi = 36^\circ$. Use Terzaghi's analysis, and a factor of safety of 2 against passive resistance. Explain about the vibration isolation and control in detail? 6 Marks

Unit - 4

- 7 a Discuss about the computation of collapse settlement. 6 Marks
 b A footing of size 10 x 10 ft is founded at a depth of 5 ft below ground level in collapsible soil of the loessial type. The thickness of the stratum susceptible to collapse is 30 ft. The soil at the site is normally consolidated. In order to determine the collapse settlement, double oedometer tests were conducted on two undisturbed soil samples. The e-logp curves of the two samples are shown in Figure 01. The average unit weight of soil $\gamma = 106.6 \text{ lb/ft}^3$ and induced stress Δp , at the middle of the stratum due to the foundation pressure, is 4400 lb/ft² (= 2.20 t/ft²). Estimate the collapse settlement of the footing under a soaked condition. 6 Marks

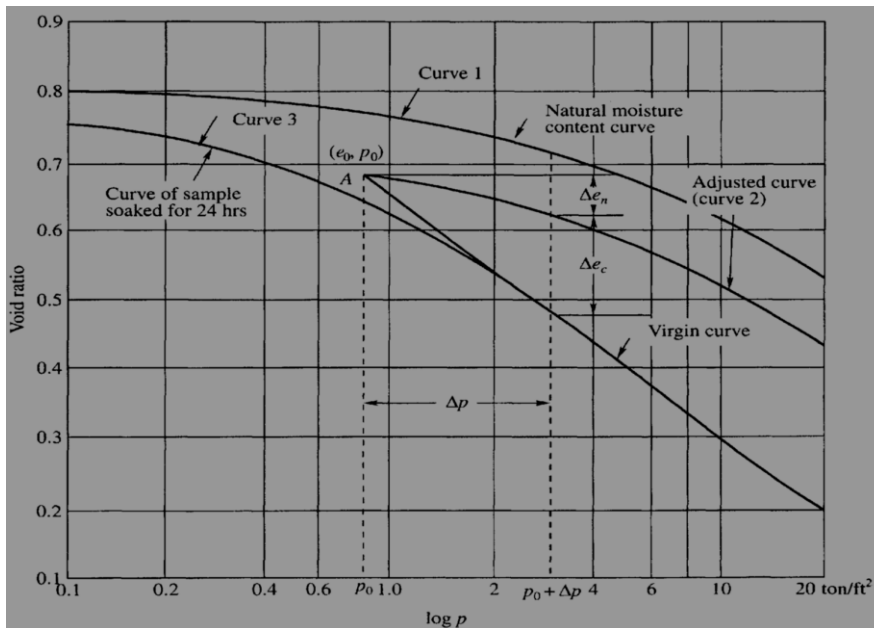


Figure 01

Or

8 a Discuss about estimating the magnitude of swelling? 6 Marks

b A footing for a building is founded 0.5 m below ground level in an expansive clay stratum which extends to a great depth. Swell tests were conducted on three undisturbed samples taken at different depths and the details of the tests are given below. 6 Marks

Depth (m) below GL	1	2	3
Swell (%)	2.90	1.75	0.63

Determine (a) the total swell under structural loadings, and (b) depth of undercut for an allowable swell of 1 cm.

Unit - 5

9 Discuss about the design of cellular coffer dams on rocks? 12 Marks

Or

10 Design a circular cellular coffer dam of total height 15 m resting on rock as shown in Figure 02. Take allowable interlock tension of 1500 kN/m, $\phi = 30^\circ$, $\delta = 25^\circ$, $K = 0.60$, $f = 0.30$ and $\gamma_{sat} = 10 \text{ kN/m}^3$. 12 Marks

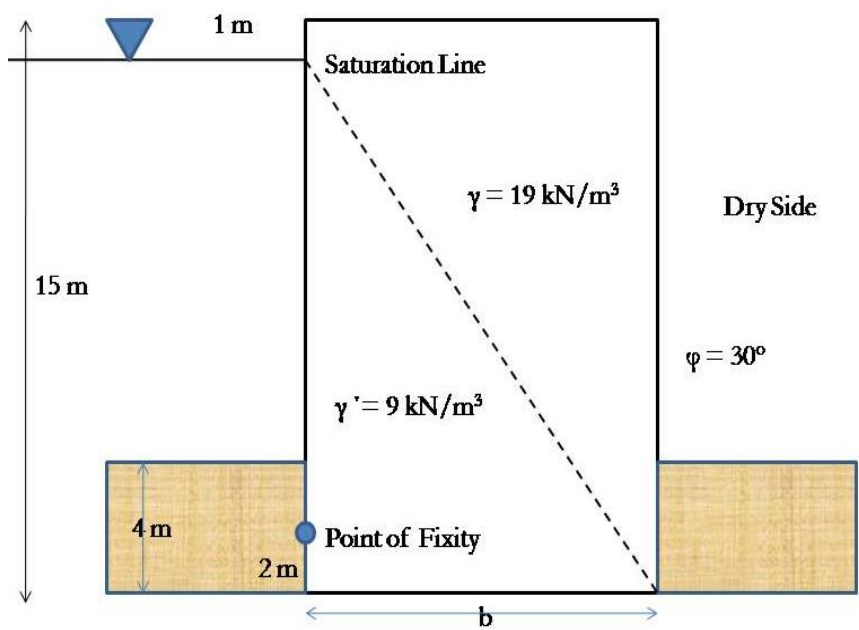


Figure 02.

K S R M College of Engineering (Autonomous), KADAPA – 516 003
M.Tech 1st Year 1st Semester (R 18) Regular Examinations, 2019
PAVEMENT ANALYSIS AND DESIGN
(Geo-Technical Engineering)

Time: 03:00 Hrs.

Max. Marks: 60

Note: All questions will carry equal marks

Unit - 1

1 Explain flexible and rigid pavements and bring out the points of differences. 12 Marks

Or

2 List the factors affecting design performance of pavements 12 Marks

Unit - 2

3 a Discuss the vertical stress distribution under the pavement 6 Marks

b List different methods of design of flexible pavement and state the principles. 6 Marks

Or

4 a Sketch the structure of a flexible pavement. The analysis of sub-grade soil of a proposed highway give the following data: 6 Marks

Passing No.200 in ASTM 15 microns sieve is 60%

Liquid limit 45% and plastic limit 25%

Daily traffic intensity 1000 heavy vehicles per day. List the design procedure for a suitable flexible pavement.

b Explain Burmister's two layer and three layer theory. 6 Marks

Unit - 3

5 What are the different approaches in Flexible Pavement Design? Bring out salient features of each approach. 12 Marks

Or

6 a What are the different types of stresses that are to be considered in flexible pavement design? 6 Marks

b Explain the brief concepts of layered system in flexible pavements. 6 Marks

Unit - 4

7 Discuss Westergaard's concept of temperature stresses in concrete pavements. Find the spacing between contraction joints for a 3.75 m slab width having a thickness of 25 cm for Reinforced cement concrete slab. Take allowable tensile stress values in concrete and steel are 0.80 and 1400 kg/cm², coefficient of friction is 1.50. 12 Marks

Or

8 a Define ESWL. How ESWL is determined for dual wheel load assembly using equal stress criteria and equal deflection criteria? Explain briefly. 6 Marks

b Design the pavement section by triaxial test method using the following data: 6 Marks
Wheel load = 50 kN, tyre pressure = 0.7 N/mm², traffic coefficient $x = 1.25$, rainfall coefficient $y = 0.9$, design deflection $\Delta = 2.5$ mm, E value of sub-grade soil $E_s = 10$ N/mm², E value of base course material $E_b = 40$ N/mm², E value of 70 mm thick bituminous concrete, surface course = 100 N/mm².

Unit - 5

9 Estimate the thickness of cement concrete pavement using the method suggested by IRC (old method) and take the following data: modulus of elasticity of concrete = 3×10^5 kg/cm², modulus of rupture of concrete = 45 kg/cm², Poisson's ratio of concrete = 0.15, modulus of sub-grade reaction = 6.5 kg/cm³, design wheel load = 5100 kg and radius of contact area = 16 cm 12 Marks

Or

10 What is the significance of temperature stresses in rigid pavement design? Describe various recommended temperature differences suggested by IRC based on the concept of Zones. 12 Marks

K S R M College of Engineering (Autonomous), KADAPA – 516 003
M.Tech 1st Year 1st Semester (R 18) Regular Examinations, 2019
ENVIRONMENTAL GEO-TECHNOLOGY
(Geo-Technical Engineering)

Time: 03:00 Hrs.

Max. Marks: 60

Note: All questions will carry equal marks

Unit - 1

- 1 a Explain the source of contaminants in soils? 6 Marks
b Write a note on agricultural wastes? 6 Marks

Or

- 2 a Write a short note on radioactive contamination? 6 Marks
b Explain about the surface impoundments? 6 Marks

Unit - 2

- 3 a Briefly explain the functional elements of solid waste management? 6 Marks
b Explain the sources and classification of solid wastes? 6 Marks

Or

- 4 a Explain the various factors to be considered in the selection of site for a sanitary land fill? 6 Marks
b Write short notes on land filling? 6 Marks

Unit - 3

- 5 What are the various process of transport contamination and explain the advection process in detail? 12 Marks

Or

- 6 a Define terms advection, diffusion and dispersion? 6 Marks
b Explain about the slurry ponds? 6 Marks

Unit - 4

- 7 Explain in detail the various contaminant retention and transport mechanism of soil? 12 Marks

Or

- 8 a Write about emerging remediation technologies? 6 Marks
b Explain the remediation method of soils? 6 Marks

Unit - 5

- 9 Explain about the engineering properties of wastes? 12 Marks

Or

- 10 a Explain about the waste characteristics in detail? 6 Marks
b Write a note on geo-synthetic clay liners? 6 Marks

K.S.R.M.College of Engineering, Kadapa (Autonomous)

M.Tech I Sem R(18) – Examinations Model Paper

Sub: **Power System Analysis**

(Power Systems)

Time:3:00 hrs

Max Marks: 60M

Note: Answer All Questions. Each question carries equal marks.

UNIT-I

1. a) With the help of a neat flow chart, explain the Newton-Raphson method of load flow solution when the system contains voltage controlled busses in addition to swing bus and load bus. [8M]

b) Compare G-S method and N- R methods of load flow solutions. [4M]

OR

2. a) Explain the control of voltage profile by transformers. [6M]

b) Discuss in detail the DC system model used in AC-DC load flow analysis. [6M]

UNIT-II

3. a) What are the various types of faults? Discuss their frequency of occurrence and severity? Find the fault current when an L-L-G fault occurs at the terminals of an unloaded generator. [6M]

b) Derive an expression for the positive sequence current I_{a1} of an unloaded generator when it is subjected to a double line to ground fault. [6M]

OR

4. What are open conductor faults? Give the Classification. Derive an expression for fault voltage for line to line fault. Draw the sequence network. [6M]

UNIT-III

5. Define sensitivity factors used for contingency analysis of a power system. Also discuss with the help of a flow-chart how contingency analysis is carried out using sensitivity factors. [12M]

OR

6. Explain the Contingency selection procedure with flow chart. [12M]

UNIT-IV

7. Discuss Network Observability and Pseudo-measurements with one example. [12M]

OR

8. Explain the Orthogonal Decomposition Algorithm of state estimation. [12M]

UNIT-V

9. Discuss how P-V & Q-V curves are used to study the voltage instability. [12M]

OR

10. Discuss in detail the system design and operating measures to prevent voltage collapse. [12M]

Sub. Code: 1852102

K.S.R.M. College of Engineering, Kadapa (Autonomous)

M.Tech R(18) I Sem End Examinations Model Paper

Sub: Power System Dynamics -I

(Power Systems)

Time:3:00 hrs
60M

Max Marks:

Note: Answer All Questions. Each question carries equal marks.

UNIT-I

1. Explain Park's Transformation with necessary equations.

OR

2. Explain the performance of a synchronous machine under steady state conditions by applying per unit quantities.

UNIT-II

3. Write the steady state voltage, current and flux linkage relationships of a synchronous machine.

OR

4. Formulate the state space model for synchronous machine.

UNIT-III

5. Explain the concept of Sub-transient inductance of a synchronous machine with necessary equations.

OR

6. Obtain the simplified model of a synchronous machine with necessary equations.

UNIT-IV

7. Explain the power system stabilizer with AVR.

OR

8. Obtain the state space model of rotating rectifier system.

UNIT-V

9. Obtain the modeling of prime movers to analyze the stability of the system.

OR

10. Explain the modeling of loads and induction machines.

K.S.R.M.College of Engineering, Kadapa (Autonomous)
M.Tech R(18) I Sem Examinations Model Paper
Sub: RENEWABLE ENERGY SYSTEMS

(Power Systems)

Time:3:00 hrs
Marks: 60M

Max

Note: Answer All Questions. Each question carries equal marks.

UNIT-I

1. a) Compare Distributed Vs Central Station Generation ? [6M]
- b) Explain about various non-conventional energy sources? [6M]

OR

2. a) Explain about the availability of non-conventional energy sources? [6M]
- b) Explain merits and demerits of non-conventional energy sources? [6M]

UNIT-II

3. a) Explain the different materials used to make Solar Cell ? [4M]
- b) Explain the Principle and operation of Solar Thermal Power Plant? [8M]

OR

4. a) Explain types of Solar collectors in detail with neat diagram [8M]
- b) Explain the theory of solar energy and solar cells. [4M]

UNIT-III

5. a) What are the various factors considered to establish wind power plant [6M]
- b) Explain about the classification of rotors in wind mill in detail [6M]

OR

6. a) Explain What are the characteristics of wind ? [6M]
- b) Explain the performance and limitations of energy conversion systems? [6M]

UNIT-IV

7. a) What are the resources of geothermal energy ? [6M]

b) Explain Thermo Dynamics of Geothermal Energy Conversion? [6
M]

OR

8. a) Explain the methods of electrical conversion? .
[6M]

b) Explain the methods of Non-electrical conversion?
[6M]

UNIT-V

9. a) Explain the principle of Tide and Wave energy.
[6M]

b) Explain about biomass energy and conversion theory [6
M]

OR

10. a) Explain the principle and construction of Fuel Cells
[6M]

b) Explain the types of Fuel Cells, performance and its limitations [6
M]

Subject Code:1852106

K.S.R.M.College of Engineering, Kadapa (Autonomous)

M.Tech R(18) I Sem I – Examinations Model Paper

Sub: Electric Power Distribution System

(Power Systems)

Time:3:00 hrs

Max

Marks: 60M

Note: Answer All Questions. Each question carries equal marks.

Unit-I

1. Describe various load forecasting Technique in Power systems?
(12)

OR

2. Explain Decentralized Power generation and Distributed Energy supply system?
(12)

Unit –II

3. Explain with suitable block diagram Distribution automation and its control function?
(12)

OR

4. Explain Feeder automation technique?
(12)

Unit-III

5. Why SCADA integrate with DA system? and list out advantage of SCADA through DA?(12)

OR

6. Discuss Communication protocols in SCADA systems?
(12)

Unit –IV

7. Discuss various methodology used for Automated Meter Reading System?
(12)

OR

8. Explain Optimal Switching Device placement in Radial distribution system (12)

Unit -V

9. Discuss about implementation of genetic algorithm for Distributed automation? (12)

OR

10. Explain urban and rural distribution systems? (12)

K.S.R.M. COLLEGE OF ENGINEERING (Autonomous), KADAPA

M.Tech I Semester (CAD/CAM)
SUB: **GEOMETRIC MODELING**
(Model question paper)

Time: 3 hrs.

Max Marks: 60

NOTE: Answer any 5 Questions, choosing one question from each unit
All questions carry Equal marks.

UNIT-I

1. Briefly discuss the parametric representation of a 3D curve
(or)
2. Briefly discuss the Implicit & Explicit equations

UNIT-II

- 3 Describe the Algebraic and Geometric form of Cubic Spline
(or)
- 4 Briefly discuss about subdividing of curves

UNIT-III

5. Derive the equations of Bezier curve and mention their properties?
(or)
6. Derive the equations for the B-Spline curve and also mention their properties and Derivatives?

UNIT-IV

7. Briefly discuss a) Coon's Surface
b) Sweep Surface
c) Tabulated Cylinder Surface
(or)

8. Briefly discuss a) Bezier Surface
b) B-Spline Surface

UNIT-V

9. Derive the Algebraic and geometrical form of Tricubic Solid
(or)
10. Briefly discuss a) Half Space Modeling
b) Cell decomposition

K.S.R.M. COLLEGE OF ENGINEERING (Autonomous), KADAPA
M.Tech I Semester Regular Examinations, Feb 2018
SUB: COMPUTER INTEGRATED MANUFACTURING
(CAD/CAM)
(Model paper)

Time: 3 hrs
Marks: 60

Max

NOTE: *Answer any 5 Questions, choosing one question from each unit*
All questions carry Equal marks.

UNIT-I

1. Briefly Explain the following
 - a) Economic analysis in production
 - b) Product life cycle

(or)

2. Briefly explain the basic components and procedure of an NC-System

UNIT-II

- 3 a) Explain NC part programming
 - b) Explain Tape code format

(or)

- 4 Explain manual part programming with suitable example

UNIT-III

5. Briefly explain the Components & Benefits of FMS?

(or)

6. Briefly explain the Concept & Benefits of GT?

UNIT-IV

7. What is CAPP? Briefly explain the Retrieval CAPP System?

(or)

8. Briefly explain the Mechanism & Benefits of MRP?

UNIT-V

9. Briefly explain the Adaptive control machining system?

(or)

1. Briefly explain the hierarchical structure of computers in manufacturing and computer process control?

Subject code: 1853103

K.S.R.M COLLEGE OF ENGINEERING, KADAPA

M.TECH. I SEMESTER (CAD/CAM)

SUBJECT: COMPUTER AIDED PROCESS PLANNING

MODEL QUESTION PAPER

Time: 3 Hrs.

Max. Marks: 60

Answer any **five** questions.

All questions carry equal marks

Unit I

1. a. List out various processes planning techniques
b. Explain Manual process planning

OR

2. a. Explain criteria for selecting a CAPP system
b. What are the benefits of CAPP?

Unit II

3. What is group technology? Describe the methods of grouping the parts into part families

OR

4. Explain various components of retrieval process planning using flow Chart

Unit III

5. Explain various components of generative process planning using flow Chart

OR

6. Explain pockets. What are the various types of pockets?

Unit IV

7. Explain different methods of solving feed and speed selection problems

OR

8. Explain various components of FMS.

Unit V

9. a. Explain Tolerance Analysis and Tolerance Allocation.
b. Explain various methods of tolerance allocation

OR

10. a. What are the advantages of simulation in manufacturing?
b. Explain steps in simulating machining process using software

Subject code: 1853106

K.S.R.M COLLEGE OF ENGINEERING, KADAPA
M.TECH. I SEMESTER (CAD/CAM)
MODEL PAPER

SUBJECT: **ADVANCED OPTIMIZATION TECHNIQUES**(Elective II)

Time: 3 Hrs.

Max.Marks:60

Answer any **five** questions.
All questions carry equal marks

Unit I

1. Solve using two phase method

Minimize $z = 5x_1 - 6x_2 - 7x_3$

Subject to the constraints

$x_1 + 5x_2 - 3x_3 \geq 15$

$5x_1 - 6x_2 + 10x_3 \leq 20$

$x_1 + x_2 + x_3 = 5$

$x_1 \geq 0; x_2 \geq 0; x_3 \geq 0$

OR

2. A company has 5 jobs to be done. The following matrix shows the returns in rupees on assigning i^{th} machine to the j^{th} job. Assign the five jobs to the five machines so as to maximize the total profit.

Machine/Jobs	A	B	C	D	E
1	5	11	10	12	4
2	2	4	9	3	5
3	3	12	5	14	6
4	6	14	4	11	7
5	7	9	8	12	5

Unit II

3. Maximize $z = 2x_1 + 3x_2$

Subject to:

$x_1^2 + x_2^2 \leq 20$

$x_1x_2 \leq 8$

$x_1, x_2 \geq 0$

Use Kuhn- tucker conditions

OR

4. Solve the following nonlinear programming problem using Lagrange multipliers method

Minimize $z = 2x_1^2 - 24x_1 + 2x_2^2 - 8x_2 + 2x_3^2 - 12x_3 + 200$

Subject to :

$x_1 + x_2 + x_3 = 11$

$x_1, x_2, x_3 \geq 0$

PTO

Unit III

5. Maximize $Z = 2x_1 + 3x_2$

Subject to

$$6x_1 + 5x_2 \leq 25 \quad (1)$$

$$x_1 + 3x_2 \leq 10 \quad (2)$$

$x_1, x_2 \geq 0$ and integers

Use branch and bound technique

OR

6. Maximize $z = x_1 - x_2$

Subject to:

$$x_1 + 2x_2 \leq 4$$

$$6x_1 + 2x_2 \leq 9$$

$x_1, x_2 \geq 0$ and integers . Use Gomory cutting plane method

Unit IV

7. Find a tour of a given set of cities so that each city is visited once and only once. The total distance traveled is shortest. Use genetic algorithm

To→ From↓	1	2	3	4	5
1	-	3	6	2	3
2	3	-	5	2	3
3	6	5	-	6	4
4	3	2	6	-	6
5	3	3	4	6	-

OR

- 8
- Describe terminals and functions in genetic programming
 - Explain the steps and methods to generate initial population in genetic programming

Unit V

9. Explain optimization of welding parameters

OR

10. Explain general procedure in optimizing machining operation sequence

**KSRM COLLEGE OF ENGINEERING, KADAPA
(AUTONOMOUS)**

SUB: DIGITAL SYSTEM DESIGN

SUB CODE: 1854101

Model Paper

**Time: 3 Hrs
60**

Max. Marks:

Note: Answer five questions choosing one from each unit
All questions carry equal marks

UNIT-I

1. Explain in detail about ASM charts.

(Or)

2. Explain the design procedure of sequential circuits using FPGAs.

UNIT – II

3. List various fault models and explain in detail about each.

(Or)

4. Write a short note on Kohavi algorithm.

UNIT – III

5. Explain about PODEM and Random testing.

(Or)

6. Explain about D-algorithm.

UNIT- IV

7. What is PLA minimization? Explain with an example.

(Or)

8. What is test generation? Explain about testable PLA design.

UNIT-V

9. Explain the fundamental mode model of asynchronous sequential machine.

(Or)

10. Write short notes on cycles and hazards.

K.S.R.M. College of Engineering(Autonomous), Kadapa

M.Tech I Semester (DECS, R18)

MODEL PAPER

Sub: **Digital Communication Techniques**

Time: 3Hrs

Max.Marks:60

Answer the following questions

All questions carry equal marks

Unit-I

1. (a) Define the distribution function and the probability density function, also write their properties.
(b) Explain about stationary random process.

(OR)

2. (a) List out Gram-Schmidt Orthogonalization procedure..
(b) State and prove central limit theorem.

Unit-II

3. What is adaptive equalization? Explain about different types of equalizations.

(OR)

4. (a) Explain Optimum receiver for channels with ISI and AWGN.
(b) State and derive Nyquist criterion for zero ISI.

Unit-III

5. (a) Discuss M-ary Quadrature Amplitude Modulation.
(b) Write about probability of error for envelope detection of M-ary orthogonal signals.

(OR)

6. (a) Explain the DPSK with neat block diagram.
(b) Derive the expression for probability of error in case of FSK digital modulation scheme..

Unit-IV

7. (a) Explain costas loop with a neat block diagram.
(b) Write about symbol synchronization.

(OR)

8. Explain synchronization with continuous phase modulations (CPM).

Unit-V

9. (a) Discuss about OFD multiplexing.
(b) Write the advantages of OFDM.

(OR)

10. Write about Multichannel and Multicarrier Systems.

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA.

M.TECH I YEAR I SEMESTER (R18) END EXAMINATIONS

BRANCH: DECS

Model Paper

Subject: LOW POWER VLSI DESIGN

Time: 3 Hours

Max. Marks:

60

Answer any five questions, choosing **ONE** question from each unit.
All questions carry equal marks.

UNIT-I

1. (a) Write about sources of power dissipation in digital ICS. 6M
(b) Explain the impact of scaling in circuit design levels. 6M

(OR)

2. Clearly explain low power VLSI design limits . 12M

UNIT-II

3. (a) Explain about power consumption in low power circuits . 6M

- (b) Explain about high capacitance nodes in low power circuits. 6M

(OR)

4. Clearly explain reversible pipelines in low power circuits. 12M

UNIT-III

5. Explain power dissipation in CMOS circuits and their types. 12M

(OR)

6. Explain low power clock distribution process. 12M

UNIT-IV

7. Write about circuit design styles for logic synthesis process. 12M

(OR)

8. Write about logic power optimization for low power. 12M

UNIT-V

9. Explain about high density memory elements. 12M

(OR)

10. (a) Write about low power DRAM circuits
6M

- (b) Explain reduction of power dissipation in memory subsystem.
6M

Subject Code: 1854106/R18

K. S. R. M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

M. Tech – I Semester Regular Examinations, January, 2019

DIGITAL IMAGE AND VIDEO PROCESSING (DECS)

Time: 3 Hours

Max Marks: 60

**Answer any FIVE questions
All questions carry EQUAL marks**

UNIT - I

1. a) Explain the functional block diagram of image processing system and List out the major applications of Digital Image Processing? 6 M

b) Explain the method of Image Sampling and Image Quantization? 6 M

(OR)

2. a) Define 2-D discrete Fourier transform and Properties? 6 M

b) Define Walsh transform and Hadamard Transform for $N=8$? 6 M

UNIT - II

3. Explain the following fundamentals spatial filtering techniques with an example each

(i) smoothing and (ii) sharpening. 12 M

(OR)

4. Explain the following color models (i) RGB (ii) HSI and (iii) CMY. 12 M

UNIT - III

5. (a) Explain the about Point detection, Line detection and Edge detection in an image using corresponding filters. 6 M

(b) Explain the following terms in image processing (i) Region growing and (ii) Region splitting 6 M

(OR)

6. Explain Image degradation model and explain various noise models 12 M

UNIT - IV

7. Explain the following terms in image compression (i) Redundancies in images, (ii) Fidelity criteria, Image compression models. 12 M

(OR)

8. Explain bit plane coding and Huffman coding with respective examples. 12 M

UNIT - V

9. Define the following terms in video compression (i) Video signal, (ii) Analog video and digital video and (iii) Digital video applications. 12 M

(OR)

10. Explain the motion estimation algorithm and Block Matching in motion estimation. 12 M

K.S.R.M.COLLEGE OF ENGINEERING (AUTONOMOUS) , KADAPA
M.Tech. I Sem (CSE) (R18) Degree Examinations
(1855101) MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE
Model Question Paper

Time: 3Hrs

Max.Marks:60

Note: Answer all the questions.

All questions carry equal marks.

UNIT-I

1. a) Explain about Statements and Notations. (6M)
b) Write about Propositional Logic. (6M)

(OR)

- 2 a) Explain in detail about Normal forms. (8M)
b) Mention the Rules of Inference. (4M)

UNIT- II

- 3 a) Explain in detail about Set operations. (6M)
b) Write the properties of Binary Relations. (6M)

(OR)

- 4 a) What is a Function. (4M)
b) What is Inverse Function (4M)
c) Mention the types of Functions. (4M)

UNIT-III

5. a) Write about Graph Models and special types of Graphs (6M)
b) Explain Euler and Hamiltonian Paths. (6M)

(OR)

6. a) What is a Tree. Write the applications of Trees. (6M)
b) Explain about Spanning Trees. (6M)

UNIT-IV

7. Define and Explain the Properties of the following. (4x3=12M)

- A) Groups.
B) Monoids.
C) Rings.
D) Vector spaces

(OR)

8. a) Write about Counting Techniques. (6M)
b) Explain Pigeon-Hole Principles and its applications. (6M)

UNIT -V

9. Explain Euclidean Algorithm and Modular Arithmetic. (12M)

(OR)

10. a) Write about Chinese remainder Theorem. (6M)
b) Explain Fermats and Eulers Theorem. (6M)

K.S.R.M.COLLEGE OF ENGINEERING (AUTONOMOUS) , KADAPA
M.Tech. I Sem (CSE) (R18) Degree Examinations
(1855102) ADVANCED DATA STRUCTURES
Model Question Paper

Time: 3 Hrs
Max.Marks:60

Note: Answer all the questions.

All questions carry equal marks.

UNIT-I

1. a) Define Stack and Discuss any two applications.
(6M)
- b) Implement stack data structures using linked list.
(6M)

(OR)

2. Discuss Tree Traversal algorithms with one suitable example.
(12M)

UNIT-II

3. a) Define Binary Search Tree and discuss its operations.
(6M)
- b) Define AVL tree and construct an AVL search tree for the following.
{ 8, 9, 12, 4, 6, 3, 5 }
(6M)

(OR)

4. Explain in detail about Red –Black trees.
(12M)

UNIT-III

5. Define dictionary and discuss the operations performed on dictionary.
(12M)

(OR)

6. Define Skip List. Discuss Search, Insertion and Update operation on Skip List.
(12M)

UNIT-IV

7. a) Define Hashing and Construct a hash table using the following list of elements.
(6M)
{ 12, 3, 5, 6, 10, 18, 7, 9, 1, 4 }
- b) Discuss collision Resolution techniques in Hashing.
(6M)

(OR)

8. Explain Linear Probing method in hashing. Discuss its performance analysis.
(12M)

UNIT-V

9. Define B+ trees. Discuss various operations on B+ trees.
(12M)

(OR)

10. Construct a 2-3 tree for the list { 8, 7, 2, 3, 4, 1, 5, 6 } and by successive insertion.
(12M)

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
M.Tech. I Sem (CSE) (R18) Degree Examinations
(1855104) WIRELESS SENSOR NETWORKS
Model Question Paper

Time: 3 Hrs.

Max. Marks: 60

Note: Answer all the questions.

All questions carry equal marks.

UNIT-I

1. a) Define sensor. Write the different types of sensors and give examples for each type of sensor. (6M)
- b) Explain the various design issues of wireless sensor network. (6M)

(OR)

2. a) Write about wireless sensor network model. (6M)
- b) List and explain the advantages and disadvantages of sensor networks. (6M)

UNIT-II

3. a) Explain hardware component overview of sensor node. (6M)
- b) Explain about Analog-to-Digital converter. (6M)

(OR)

4. a) Write about the framework to achieve QoS in WSN. (6M)
- b) Explain scalability and robustness in WSN. (6M)

UNIT-III

5. a) Explain geographic energy aware routing. (8M)
- b) What do you mean by location driven protocols and connectivity driven protocols. Give examples for both. (4M)

(OR)

6. Discuss about address and name management in WSN. (12M)

UNIT-IV

7. Write short notes on the following. (12M)
 - (i) Network structure based protocols.
 - (ii) Routing protocols based on protocol operation.

(OR)

8. a) Explain sensor protocols for information via negotiation (SPIN). (6M)
- b) Write in brief about MECN and GPSR. (6M)

UNIT-V

9. a) Write about sensor node hardware. (6M)
- b) Write about any two simulation tools used in WSN. Mention their merits and limitations. (6M)

(OR)

10. a) List the various security prerequisite for WSN. Explain any three of them. (6M)
- b) Write short notes on security vulnerabilities in WSN. (6M)

K.S.R.M.COLLEGE OF ENGINEERING (AUTONOMOUS) , KADAPA

M.Tech. I Sem (CSE) (R18) Degree Examinations

(1855106) DATA SCIENCE

Model Question Paper

Time: 3 Hrs

Max.Marks:60

Note: Answer all the questions.

All questions carry equal marks.

UNIT-I

1. a) What Is Data Science? Explain the Current Landscape of Data Science. (6M)
b) What Is a Data Scientist? Write about the Meta-Definition. (6M)

(OR)

2. a) What is Exploratory Data Analysis? Write about the Data Science Process. (6M)
b) What is Statistical Thinking in the Age of Big Data. (6M)

UNIT- II

3. Write about the Machine Learning Algorithms
a) Linear Regression (6M)
b) k-Nearest Neighbors (k-NN). (6M)

(OR)

4. a) Why won't Linear Regression Work for Filtering Spam? (6M)
b) Write about Spam Filter for Individual Words and Spam Filter That Combines Words. (6M)

UNIT-III

5. a) Write about the history of Data Visualization. (6M)
b) Write about Mark's Data Visualization Projects (6M)

(OR)

6. Explain about Data Science and Risk, Data Visualization at Square (12M)

UNIT-IV

7. What is R? Why use R for analytics? How to run R? (12M)

(OR)

8. Write about the important R data structures? (12M)

UNIT -V

9. a) Write about Social Network Analysis (6M)
b) Write about Terminology from Social Networks. (6M)

(OR)

10. a) Write about Morningside Analytics (6M)
b) Write about Data Journalism. (6M)

