Q.P. Code: 2212201

SET - 2

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

M. Tech. II Semester (R22PG) Regular & Supply Examinations of August – 2024

SUB: EXPERIMENTAL GEOMECHANICS (GTE)

Time: 3 Hours **Max. Marks : 60**

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.	(a)	Explain about the scope and objectives of soil exploration?	6M	CO1	L1
	(b)	Explain Planning a subsurface exploration	6M	CO1	L2
		(OR)			
2.	(a)	Explain about the preliminary and detailed design of exploration?	6M	CO1	L2
	(b)	Explain various stages involved in Site investigation	6M	CO1	L2
		UNIT – II			
3.	(a)	Write a note on the following (i) Pits and Trenches ii) Drifts and Shafts	6M	CO2	L2
	(b)	Describe various methods of drilling holes for subsurface exploration?	6M	CO2	L3
		(OR)			
4.	(a)	Explain in detail about percussion drilling?	6M	CO2	L2
	(b)	Write the advantages and disadvantages of Wash Boring	6M	CO2	L2
		UNIT – III			
5.	(a)	What are the factors that affect the sample disturbance? How are these effects minimized?	6M	CO3	L4
	(b)	Write a note on Preservation and handling of samples	6M	CO3	L2
		(OR)			
6.	(a)	Mention various types of soil samplers for obtaining soil samples? With the help of neat sketch explain Piston sampler	6M	CO3	L2
	(b)	Explain about the classification of soil samples?	6M	CO3	L3
		UNIT – IV			
7.	(a)	Explain in detail about plate load test?	6M	CO4	L3
	(b)	The observed N value in a standard penetration test at 5 m depth was 18. The ground water level is at GL. The soil profile shows fine sand up to 7.5 m depth. Unit weight of sand is 19.5 kN/m^3.Find the corrected N value.	6M	CO4	L3
		(OR)			
8.	(a)	Write a note on Observation of Ground Water Table	6M	CO4	L4
	(b)	The size of the plate used for plate load test is 75x75cm square plate, The settlement at a pressure of 200 kpa is 10mm in sand. Find the settlement of square footing of size 3x3m at the same pressure in mm.	6M	CO4	L3
		UNIT-V			
9.	(a)	Explain in detail about Electrical Resistivity method	6M	CO5	L3
	(b)	Explain the following i) Electromagnetic Conductivity (EM), ii) Surface Resistivity (SR)	6M	CO5	L3
		(OR)			
10.	(a)	Explain in detail about Seismic refraction test	6M	CO5	L2
	(b)	Explain the following i) Boring Log ii) Sub Soil Profile	6M	CO5	L3

Q.P. Code: 2212202 | SET - 2

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

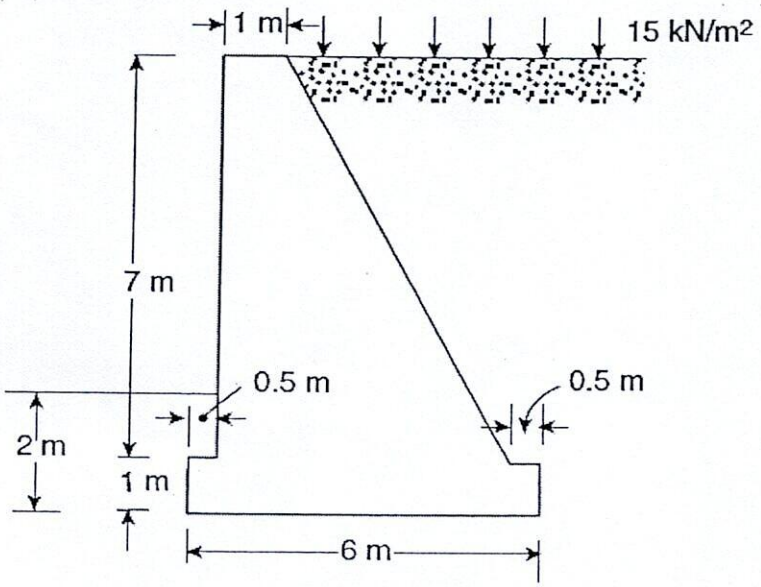
M. Tech. II Semester (R22PG) Regular & Supply Examinations of August – 2024

SUB: EARTH RETAINING STRUCTURES (GTE)

Time: 3 Hours **Max. Marks: 60**

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.	(a)	Differentiate critically between Rankine and Coulomb theories of earth pressure.	6M	CO1	L2
	(b)	A retaining wall with a smooth vertical back retains a purely cohesive fill. Height of wall is 12 m. Unit weight of fill is 20 kN/m^3 . Cohesion is 1 N/cm 2. What is the total active Rankine thrust on the wall? At what depth is the intensity of pressure zero and where does the resultant thrust act?	6M	CO1	L3
		(OR)			
2.	(a)	Explain about the Coulomb's earth pressure theory?	6M	CO1	L3
	(b)	A retaining wall, 7.5 m high, retains a cohsionless backfill. The top 3 m of the fill has a unit weight of 18 kN/m3 and $\varphi = 30°$ and the rest has unit weight of 24 kN/m and $\varphi = 20°$.Determine the pressure istribution on the wall.	6M	CO1	L4
		UNIT – II			
3.	(a)	Discuss the stability of retaining wall with neat sketch	6M	CO2	L2
	(b)	Check the stability of the concrete retaining wall shown in Figure. The backfill material is a mixture of sand and gravel with the following properties: $\gamma = 19.6$ kN/m^3 and $\varphi = 33°$. The tangent of the coefficient of friction between the concrete and the soil is 0.48. The unit weight of concrete is 2.5 kN/m. The retaining wall is placed on a very dense gravelly bed with an allowable soil pressure of 380 kN/m^2.	6M	CO2	L3



(OR)

4.	(a)	Discuss about the design considerations for a mechanically stabilized earth wall.	6M	CO2	L3
	(b)	Discuss the stabilized retaining and reinforced earth retaining walls	6M	CO2	L3

UNIT – III

5.		Discuss about the sheet piling in cohesive soils with granular backfill with a neat diagram.	12M	CO3	L3

(OR)

6.	(a)	A cantilever sheet pile retains soil at a height of 6m Find the depth to which the pile should be driven assuming two thirds of the theoretical passive resistance is developed on the embedded length g=19kN/m^3 and =30 use approximate method	12M	CO3	L3
	(b)	Discuss about the sheet piling in cohesive soils with granular backfill with a neat diagram.	12M	CO3	L3

UNIT – IV

7.	(a)	Discuss the bulkheads with fixed earth supports,	6M	CO4	L3
	(b)	Explain the resistance of anchor walls and spacing between bulkheads	6M	CO4	L3

(OR)

8.		Explain about the classification of bulkheads. Discuss the free earth support of cantilever sheet pile for clay soils	12M	CO4	L4

UNIT-V

9.		A long 5 m wide and 8 m high vertical channel has to be constructed in a deep cohesive soil with c = 36 kN/m^2 and γ = 18 kN/m^3. Before protecting the sides using sheet piles, it is intended to check the safety of the bottom of the channel against heave. Consider the excavation to be completed rapidly and find the factor of safety against heave. What will be the change in the factor of safety if a hard material is present at 2.5 m from the bottom of the channel?	12M	CO5	L4

(OR)

10.	(a)	Explain the design of various components of bracings	6M	CO5	L3
	(b)	Discuss the types of sheeting bracing system	6M	CO5	L3

Q.P. Code: 2212204

SET – 2

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

M. Tech. II Semester (R22PG) Regular & Supply Examinations of August – 2024

SUB: FOUNDATIONS ON EXPANSIVE SOILS (GTE)

Time: 3 Hours **Max. Marks: 60**

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.	(a)	Explain about Macro scale Aspects of Expansive Soil Behavior	6M	CO1	L1
	(b)	Discuss about Characteristics of Expansive Soil Profiles	6M	CO1	L2
		(OR)			
2.	(a)	Explain the effect of mineralogy on plasticity of soil	6M	CO1	L2
	(b)	Discuss about the effect of soil structure, water content, and density on expansion potential.	6M	CO1	L2
		UNIT – II			
3.		Discuss about the over excavation of expansive soil and replacement with non-expansive soil in detail.	12M	CO2	L3
		(OR)			
4.		Explain how expansive soil is treated by using Chemical Admixtures	12M	CO2	L3
		UNIT – III			
5.		Explain about the computation of footing heave with neat diagram.	12M	CO3	L3
		(OR)			
6.		What are the remedial measures for shallow foundations, explain in detail	12M	CO3	L2
		UNIT – IV			
7.		Explain in detail about Pier and Grade Beam Foundation in Expansive Soil.	12M	CO4	L3
		(OR)			
8.		The soil profile and properties are shown in Table. Drilled piers 0.3 m in diameter will be constructed with the top of the pier at the ground surface. The dead load on the pier will be 50 kN. Using the rigid pier design method, compute the required length of a straight shaft pier, and tensile force for straight shaft pier.	12M	CO4	L3

Depth (m)	0 – 8	8 – 15
Soil Type	Tan Claystone	Gray Claystone
Water Content (%)	12.3	11.0
Dry Density (kN/m^3)	18	17
CS % Swell, ε_{cs} @ 47.9 kN/m^2 (%)	4.3	3.6
CV Swelling Pressure, σ''_{cv} (kN/m^2)	217	96

		UNIT-V			
9.		Explain about the testing for measuring lateral swelling pressure.	12M	CO5	L4
		(OR)			
10.		Discuss the methods to reduce lateral swelling pressure of Expansive Soil	12M	CO5	L2

Q.P. Code: 2212207

SET - 2

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

M. Tech. II Semester (R22PG) Regular & Supply Examinations of August – 2024

SUB: DESIGN WITH GEOSYNTHETICS (GTE)

Time: 3 Hours **Max. Marks: 60**

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.	(a)	Explain the and necessity of geosynthetics in ground improvement	6M	CO1	L1
	(b)	What are some possible difference between the formulations of PVC geomembrane and a PVC pipe?	6M	CO1	L2
		(OR)			
2.	(a)	What are some possible difference between the formulations of HDPE geomembrane and a HDPE pipe?	6M	CO1	L1
	(b)	Explain the properties of geosynthetic Clay Liners	6M	CO1	L2
		UNIT – II			
3.	(a)	What are the mechanical properties of geotextiles that are most important when it is using as a separator in unpaved road situation	6M	CO2	L1
	(b)	Discuss the Functions of geotextiles, Explain with neat sketch	6M	CO2	L2
		(OR)			
4.	(a)	In a geotextile testing, what is an index test, performance test and how can typical laboratory test values be made into allowable values for design by function procedure?	6M	CO2	L3
	(b)	Discuss the mechanism of separation of geotextiles	6M	CO2	L3
		UNIT – III			
5.		What is the effect of high temperature on the following mechanical properties of geogrids? (i) modulus, (ii) tensile strength, (iii) elongation at failure, and (iv) creep behavior	12M	CO3	L1
		(OR)			
6.	(a)	List the basic difference between geotextiles and geogrids	6M	CO3	L1
	(b)	Flexible geogrids are coated with latex, bitumen, or polyvinyl chloride. What is the reason for such coating	6M	CO3	L2
		UNIT – IV			
7.		What are the long-term normal stress implications for a geonet's flow-rate capabilities?	12M	CO4	L1
		(OR)			
8.	(a)	When using geonets for drainage functions, what keeps the adjacent soil from getting in their apertures and blocking flow	6M	CO4	L1
	(b)	List the basic difference between geonets and geogrids	6M	CO4	L1
		UNIT-V			
9.	(a)	Discuss the properties required for survivability of geomembrane	6M	CO5	L3
	(b)	Describe the chemical interaction process by which organic solvents decrease the hydraulic conductivity of clay soils	6M	CO5	L2
		(OR)			
10.		A 30 m long slope has a tapered thickness cover soil of 150 mm at the crest extending at an angle w of 16° to the intersection of the cover soil at the toe. The soil thickness at the bottom, D is 300 mm. The unit weight of the cover soil is 18 kN/m3. The soil has a friction angle of 30° and zero cohesion. The interface friction angle with the underlying geomembrane is 22° and zero adhesion. What is the FS value at an underlying soil slope angle ß of 3H:1V which is equal to 18.4°?	12M	CO5	L4

Q.P. Code: 2252201

SET - 2

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

M. Tech. II Semester (R22PG) Regular & Supply Examinations of August – 2024

SUB: Power System Security & State Estimation(PS)

Time: 3 Hours **Max. Marks : 60**

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

			M	CO	BL
		UNIT – I			
1.		Explain formation of Bus admittance matrix by Singular transformation method.	12M	CO1	L1
		(OR)			
2.	(a)	Write an algorithm for formation of Bus Impedance matrix with addition of a branch..	6M	CO1	L2
	(b)	Discuss about Π representation of off nominal tap changing transformer in detail	6M	CO1	L2
		UNIT – II			
3.		Illustrate DC power flow method in detail.	12M	CO2	L2
		(OR)			
4.		What is meant by linear sensitivity? List the various factors influencing power system security.	12M	CO2	L2
		UNIT – III			
5.		What is meant by contingency analysis? Explain contingency analysis by detection of problems in power system.	12M	CO3	L1
		(OR)			
6.		Discuss AC power flow method with suitable example	12M	CO3	L2
		UNIT – IV			
7.	(a)	Explain power system state estimation by method of least square and orthogonal matrix.	6M	CO4	L2
	(b)	What is SCADA and give its Merits and demerits?	6M	CO4	L2
		(OR)			
8.	(a)	Explain Bad data detection with example and Pseudo measurements.	6M	CO4	L1
	(b)	List applications of power system state estimation	6M	CO4	L2
		UNIT-V			
9.	(a)	What is the need and conditions for deregulation?	6M	CO5	L3
	(b)	Explain power wheeling transactions in detail.	6M	CO5	L3
		(OR)			
10.		Explain in detail about system security deregulations	12M	CO5	L2

Q.P. Code: 2252202

SET - 2

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

M. Tech. II Semester (R22PG) Regular & Supply Examinations of August – 2024

SUB: POWER SYSTEM DYNAMICS - II (PS)

Time: 3 Hours **Max. Marks: 60**

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.		Define the stability and explain the classification of power system stability.	12M	CO1	L1
		(OR)			
2.		Explain the concept of synchronous machine characteristics.	12M	CO1	L4
		UNIT – II			
3.		Draw and explain the block diagram representation with AVR and PSS	12M	CO2	L3
		(OR)			
4.		Write short notes on mitigation using power system stabilizer	12M	CO2	L2
		UNIT – III			
5.		Explain about the resynchronization.	12M	CO3	L3
		(OR)			
6.		Explain the concept of small signal stability of multi machine system and draw the structure of complete power system model.	12M	CO3	L1
		UNIT – IV			
7.		Explain typical scenario of voltage collapse	12M	CO4	L5
		(OR)			
8.		What is voltage stability? What are the factors affecting voltage instability and collapse	12M	CO4	L3
		UNIT-V			
9.		Explain about (a) Frequency stability (b) Automation Generation control	12M	CO5	L2
		(OR)			
10.	(a)	Write the characteristics of series capacitor compensated transmission system	6M	CO5	L4
	(b)	Explain concept of self-excitation due to induction generator effect	6M	CO5	L1

Q.P. Code: 2252204

SET - 2

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

M. Tech. II Semester (R22PG) Regular & Supply Examinations of August – 2024

SUB: ENERGY AUDITING AND MANAGEMENT (PS)

Time: 3 Hours **Max. Marks: 60**

Answer any FIVE Questions choosing one question from each unit.

All questions carry Equal Marks

			M	CO	BL
		UNIT - I			
1.	(a)	What is energy audit? What are the different types of audit?	6M	CO1	L1
	(b)	Explain in detail about ECO assessment and Economic Methods.	6M	CO1	L2
		(OR)			
2.	(a)	Explain briefly the difference between preliminary and detailed energy audits?	7M	CO1	L3
	(b)	Explain in detail about various audit instruments.	5M	CO1	L1
		UNIT – II			
3.	(a)	Explain the Efficient Control strategies of Electric Motors?	8M	CO2	L2
	(b)	What is the loading of a transformer? Explain.	4M	CO2	L1
		(OR)			
4.		Which is the best location for capacitor banks for power factor improvement from energy conservation point of view? Give detail explanation.	12M	CO2	L4
		UNIT – III			
5.	(a)	What is peak demand control? Why is peak demand control important?	6M	CO3	L2
	(b)	What are different types of industrial loads? Explain in detail.	6M	CO3	L1
		(OR)			
6.	(a)	Explain Optimal Load scheduling with a case study	6M	CO3	L2
	(b)	What is Energy Efficient Lighting? What is the Need for it.	6M	CO3	L2
		UNIT – IV			
7.	(a)	What is cogeneration and its types? Explain	6M	CO4	L1
	(b)	Explain with a case study the Optimal operation of cool storage.	6M	CO4	L2
		(OR)			
8.	(a)	Write short notes on Electric loads of Air conditioning &Refrigeration	6M	CO4	L1
	(b)	Explain the Optimal operation of cogeneration plants	6M	CO4	L1
		UNIT-V			
9.	(a)	What is electrical water heating? Is it safe to use electric geyser?	6M	CO5	L2
	(b)	Explain the Energy conservation measures in heating	6M	CO5	L1
		(OR)			
10.	(a)	Write short notes on a) Geysers b) Solar Water Heaters	8M	CO5	L1
	(b)	Explain the Power Consumption in Compressors.	4M	CO5	L1

Q.P. Code: 2252207 | SET - 2

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

M. Tech. II Semester (R22PG) Regular & Supply Examinations of August – 2024

SUB: ELECTRICAL POWER QUALITY (PS)

Time: 3 Hours **Max. Marks: 60**

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.	**(a)**	What are the effects of over voltages? Discuss the main principle of over voltage protection.	6M	CO2	L1
	(b)	List and discuss different devices used for over voltage protection.	6M	CO2	L2
		(OR)			
2.		Explain the various sources of long duration and short duration voltage variation with relevant waveforms.	12M	CO2	L3
		UNIT – II			
3.		What are harmonics? What are main sources for power system harmonics? If fundamental frequency is 50Hz, what are the 3rd and 5th order harmonic frequencies?	12M	CO2	L1
		(OR)			
4.		Explain briefly about the phenomena of current distortion and the voltage distortion under the presence of harmonics.	12M	CO2	L2
		UNIT – III			
5.		Explain the modeling of shunt capacitor under non sinusoidal conditions with an example.	12M	CO2	L2
		(OR)			
6.		List out and explain loads that cause power quality problems	12M	CO2	L2
		UNIT – IV			
7.		With a neat sketch, explain the principle of operation of Shunt Active Harmonic Power Filter	12M	CO4	L3
		(OR)			
8.		Explain PFC based on Bilateral Single Phase and Three Phase Converter.	12M	CO2	L4
		UNIT-V			
9.		Discuss how the Dynamic Voltage Restorers are useful in reducing voltage sag and flicker problems	12M	CO3	L2
		(OR)			
10.	**(a)**	List and explain grounding requirements	6M	CO2	L2
	(b)	Explain the reasons for grounding in industry.	6M	CO2	L3

Q.P. Code: 2284201 | SET - 2

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

M. Tech. II Semester (R22PG) Regular & Supply Examinations of August – 2024

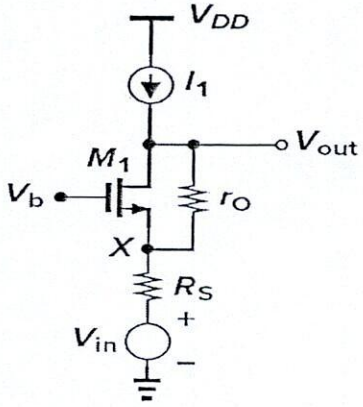
SUB: Analog and Digital CMOS VLSI Design (ES&VLSI)

Time: 3 Hours **Max. Marks: 60**

Answer any FIVE Questions choosing one question from each unit.

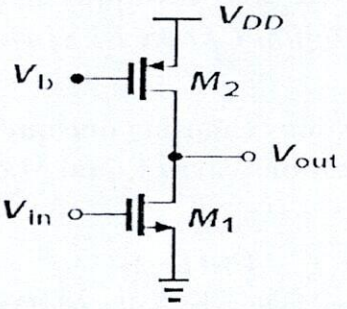
All questions carry Equal Marks.

			M	CO	BL
		UNIT – I			
1.	(a)	Derive the expression for Switching threshold of a CMOS Inverter.	6M	CO1	L3
	(b)	Explain the working of a static CMOS inverter with a neat diagram.	6M	CO1	L2
		(OR)			
2.	(a)	Explain the basic MOS structure with a neat diagram.	6M	CO1	L2
	(b)	Draw the stick diagram and Layout of 2 inputs CMOS AND gate.	6M	CO1	L1
		UNIT – II			
3.	(a)	What is ESD? Explain ESD protection circuit with a neat diagram.	6M	CO2	L1
	(b)	Explain the working of glitch generation circuit with a neat diagram.	6M	CO2	L2
		(OR)			
4.	(a)	List the properties of CPL gates.	6M	CO2	L2
	(b)	Explain the working of n-type Dynamic logic gate with neat diagram.	6M	CO2	L2
		UNIT – III			
5.	(a)	What is Oxide Break down and substrate current- Induced Body effect? Explain	6M	CO3	L2
	(b)	Explain the working of glitch generation circuit with a neat diagram	6M	CO3	L4
		(OR)			
6.	(a)	Implement a positive latch based on Multiplexer and Explain.	6M	CO3	L2
	(b)	. Explain Bi-stability principle with neat diagram	6M	CO3	L2
		UNIT – IV			
7.		Draw the circuit of Gilbert cell and explain why the gilbert cell can operate as an analog voltage Multiplier	12M	CO4	L2
		(OR)			
8.	(a)	Compare the maximum output voltage swings provided by a CS stage and a Differential pair.	6M	CO4	L5
	(b)	Calculate the voltage gain of a common gate stage with a current source load for the circuit shown in the below Figure.	6M	CO4	L3



UNIT-V

9. (a) Calculate the small signal voltage gain of the circuit shown in Figure . How does the performance of this circuit compare with that of a differential pair with active mirror? 6M CO5 L1

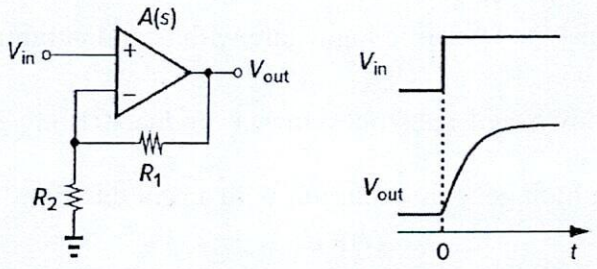


(b) Explain the basic concept of Common-mode feedback with neat diagram. 6M CO5 L2

(OR)

10. (a) Draw and explain the working of a five Transistor operational transconductance Amplifier. 6M CO5 L5

(b) In the circuit of Figure , assume that the Op-Amp is a single-pole voltage Amplifier. If V_{in} is a small step, calculate the time required for the output voltage to reach within 1% of its final value. What unity-gain bandwidth must the Op-Amp provide if $1 + R_1/R_2 \approx 10$ and the settling time is to be less than $5\ ns$? For simplicity, assume that the Low-frequency gain is much greater than unity. 6M CO5 L3



Q.P. Code: 2284202 | SET - 2

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

M. Tech. II Semester (R22PG) Regular & Supply Examinations of August – 2024

SUB: Embedded and Real Time Operating Systems (ES&VLSI)

Time: 3 Hours **Max. Marks: 60**

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.	(a)	Draw and explain an ideal top-down design process.	6M	CO1	L1
	(b)	Briefly discuss the design challenges of embedded systems.	6M	CO1	L2
		(OR)			
2.	(a)	Discuss in detail compilation/synthesis approach to improve the design process for increased productivity.	6M	CO1	L3
	(b)	Explain several common characteristics of an Embedded systems.	6M	CO1	L2
		UNIT – II			
3.	(a)	Illustrate the basic architecture of general-purpose processor and then explain each component briefly.	6M	CO2	L2
	(b)	Give the functionality of the following w.r.t Development environment: i. Assemblers ii. Compilers iii. Debuggers iv. Emulators	6M	CO2	L2
		(OR)			
4.	(a)	List and explain simple instruction set of general purpose processor.	6M	CO2	L2
	(b)	Write a sub-routine program that reads the state of the input pin, determining the on/off state of switch and asserts the output pin, turning the LED on/off accordingly.	6M	CO2	L3
		UNIT – III			
5.	(a)	Explore the difference between a state machine and sequential program models.	5M	CO3	L2
	(b)	With an example explain communication among processors using message passing.	7M	CO3	L2
		(OR)			
6.	(a)	Develop a general template for capturing a state machine in a sequential programming language.	6M	CO3	L3
	(b)	Illustrate a dataflow model of the computation z=(A+B)*(C-D). Also, illustrate nodes representing more complex transformations.	6M	CO3	L2
		UNIT – IV			
7.	(a)	What are the issues in hardware software codesign? Elaborate.	6M	CO4	L2
	(b)	What is codesign in embedded systems? Explain.	6M	CO4	L2
		(OR)			
8.	(a)	What is hardware software co-simulation? Why hardware software co-simulation? Explain.	6M	CO4	L2
	(b)	Discuss issues of hardware software co-simulation.	6M	CO4	L2
		UNIT-V			
9.	(a)	Discuss static and dynamic properties of a task.	6M	CO5	L2
	(b)	Explain the relation between tasks, ISRs and a message queue.	6M	CO5	L2
		(OR)			
10.	(a)	Explain the concept of task scheduling.	6M	CO5	L2
	(b)	Describe the interrupt latency interrupt response and interrupt recovery.	6M	CO5	L2

Q.P. Code: 2284204 | SET - 2

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

M. Tech. II Semester (R22PG) Regular & Supply Examinations of August – 2024

SUB: Advanced Computer Architecture (ES& VLSI)

Time: 3 Hours | Max. Marks: 60

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.	(a)	Explain the classification of Instruction set architecture.	6M	CO1	L1
	(b)	Suppose that we want to enhance the processor used for Web serving. The new processor is 10 times faster on computation in the Web serving application than the original processor. Assuming that the original processor is busy with computation 40% of the time and is waiting for I/O 60% of the time, what is the overall speedup gained by incorporating the enhancement?	6M	CO1	L2
		(OR)			
2.	(a)	How the Architect Can Help the Compiler Writer?	6M	CO1	L2
	(b)	Explain in detail about processor performance equation	6M	CO1	L2
		UNIT – II			
3.	(a)	Explain the Overcoming Data Hazards with Dynamic Scheduling	6M	CO2	L2
	(b)	Discuss about limitations of instruction level processor.	6M	CO2	L2
		(OR)			
4.	(a)	Explain how Branch Costs are may reduce with Advanced Branch Prediction	6M	CO2	L2
	(b)	Discuss about basic VLIW approach	6M	CO2	L2
		UNIT – III			
5.	(a)	Explain the impact of Virtual Machines on Virtual Memory and I/O	6M	CO3	L2
	(b)	Which block should be replaced on a cache miss?	6M	CO3	L2
		(OR)			
6.	(a)	Explain the protection and examples of virtual memory	6M	CO3	L2
	(b)	Explain Merging Write Buffer to Reduce Miss Penalty	6M	CO3	L2
		UNIT – IV			
7.	(a)	Explain about simultaneous multi threading.	6M	CO4	L2
	(b)	Discuss about the performance of symmetric shared memory	6M	CO4	L2
		(OR)			
8.	(a)	Explain the Limitations in Symmetric Shared-Memory Multiprocessors and Snooping Protocols.	6M	CO4	L2
	(b)	What is multiprocessor cache coherence? Explain in detail.	6M	CO4	L2
		UNIT-V			
9.	(a)	Explain about 6 types of RAID in brief.	6M	CO5	L2
	(b)	Distinguish the SRAM and DRAM	6M	CO5	L2
		(OR)			
10.	(a)	Explain the Practical Issues for Commercial Interconnection Networks	6M	CO5	L2
	(b)	Explain the cluster design with at least one example	6M	CO5	L2

Q.P CODE: 2284208 SET - 2

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

M. Tech. II Semester (R22PG) Regular & Supply Examinations of August – 2024

SUB: Network Security and Cryptography (ES & VLSI)

Time: 3 Hours **Max. Marks: 60**

Answer any five Questions choosing one question from each unit.
All questions carry Equal Marks.

		Questions	Marks	CO	BL
		UNIT - I			
1.		Explain in detail about (i) OSI Security Architecture (ii) Model for Network Security	12M	CO1	L2
		(OR)			
).		Explain in detail about Fermat's and Euler's Theorem	12M	CO1	L3
		UNIT – II			
3.	(a)	Explain in detail about Block and Stream Ciphers?	6M	CO2	L2
	(b)	Compare Linear and Differential Cryptanalysis?	6M	CO2	L5
		(OR)			
4.		Write in detail about (i) Block Cipher principles (ii) Triple DES	12M	CO2	L1
		UNIT – III			
5.		Explain in detail about Diffie -Hellman Key exchange and Elliptic Curve Cryptography	12M	CO3	L2
		(OR)			
6.		Explain in detail about Secure Hash algorithms, RIPEMD-160 and HMAC?	12M	CO3	L3
		UNIT – IV			
7.		Write short notes on (i) Digital Signature Standards (ii) Authentication Protocols	12M	CO4	L1
		(OR)			
8.		Illustrate (i) Secure Socket Layer (ii) Encapsulation Security Payload	12M	CO4	L4
		UNIT-V			
9.		Explain in detail about Worms, Viruses, and Trojans?	12M	CO5	L3
		(OR)			
10.		Explain in detail about Intruders, Intrusion Detection and Password management?	12M	CO5	L2

Q.P. Code: 2298201

SET - 2

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

M. Tech. II Semester (R22PG) Regular & Supply Examinations of August – 2024

SUB: Data Science (AI & DS)

Time: 3 Hours **Max. Marks: 60**

Answer any FIVE Questions choosing one question from each unit.

All questions carry Equal Marks.

			Marks	CO	BL
		UNIT - I			
1.	(a)	Explain the Big Data and Data Science Hype.	6M	CO1	L2
	(b)	Give a brief note on The Data Science Process.	6M	CO1	L4
		(OR)			
2.		What are the Key steps in a data science process? Explain. Also write the role of data scientist in data science process.	12M	CO1	L3
		UNIT – II			
3.		How Bayes law is useful to create a spam filter? Explain in detail.	12M	CO2	L2
		(OR)			
4.	(a)	Explain the k-Nearest Neighbors (k-NN).	6M	CO2	L1
	(b)	Discuss the Naive Bayes in detail.	6M	CO2	L3
		UNIT – III			
5.	(a)	Describe the Mark's Data Visualization Projects.	6M	CO3	L4
	(b)	Explain the Data Science and Risk.	6M	CO3	L1
		(OR)			
6.		What are the three areas for performance estimation? Explain in detail.	12M	CO3	L3
		UNIT – IV			
7.		Explain various data structures in R Programming with suitable examples.	12M	CO4	L2
		(OR)			
8.		What is R? Why use R for analytics? How to run R? Explain	12M	CO4	L3
		UNIT-V			
9.		Explain various ways to represent a network? Also explain Bernoulli's network and ERGM?	12M	CO5	L3
		(OR)			
10.	(a)	Discuss the Social Network Analysis.	6M	CO5	L3
	(b)	Describe the Data Journalism.	6M	CO5	L2

Q.P. Code: 2298202

SET - 2

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

M. Tech. II Semester (R22PG) Regular & Supply Examinations of August – 2024

SUB: DEEP LEARNING(AI&DS)

Time: 3 Hours **Max. Marks: 60**

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.	(a)	What is Over fitting and Under fitting? How it is related to Machine Learning?	6M	CO1	L1
	(b)	Explain regression problem with the help of a data set.	6M	CO1	L2
		(OR)			
2.	(a)	What is Artificial Neural Network? Draw the schematic diagram of a biological neuron and Explain it.	6M	CO1	L3
	(b)	What is Perceptron? Explain the working principle of the perceptron.	6M	CO1	L3
		UNIT – II			
3.		Discuss in detail the components of CNN Architecture.	12M	CO2	L3
		(OR)			
4.	(a)	How Flattening layer and fully connected layer help CNN? Discuss.	6M	CO2	L4
	(b)	List the different Architectures supported in CNN. Explain any two.	6M	CO2	L2
		UNIT – III			
5.	(a)	How Feed Forward Neural Network is different from RNN? Discuss.	6M	CO3	L2
	(b)	Illustrate BPTT with an example.	6M	CO3	L2
		(OR)			
6.		What is LSTM? Explain in detail the implementation procedure of LSTM.	12M	CO3	L3
		UNIT – IV			
7.	(a)	Define Autoencoder and Enumerate the features of Autoencoder.	6M	CO4	L2
	(b)	What is Vanilla Autoencoder? Draw the structure of Vanilla Autoencoder and explain it.	6M	CO4	L2
		(OR)			
8.		Is Convolution Autoencoder better than Multilayer Autoencoder? Justify your answer by discussing the pros and cons of these Autoencoders.	12M	CO4	L5
		UNIT-V			
9.	(a)	What is RBM? Discuss the types of RBM.	6M	CO5	L4
	(b)	What is the purpose of Gibbs Distribution in RBM Architecture? Discuss.	6M	CO5	L4
		(OR)			
10.		Discuss the different open source frameworks supported in python for deep learning.	12M	CO5	L4

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

M. Tech. II Semester (R22PG) Regular & Supply Examinations of August – 2024

SUB: EXPLORATORY DATA ANALYSIS USING R (AI&DS)

Time: 3 Hours **Max. Marks: 60**

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.	(a)	What is data refers to? Explain mtcars data frame in R with examples.	6M	CO1	L1
	(b)	Explain Tukey's five-number summary with examples.	6M	CO1	L2
		(OR)			
2.	(a)	Explain the Exploratory Data Analysis Environment.	6M	CO1	L2
	(b)	Explain the following graphics terminology i) Base Graphics ii) Grid Graphics	6M	CO1	L2
		UNIT – II			
3.	(a)	Distinguish between infographics and data visualizations	6M	CO2	L3
	(b)	Illustrate the flexibilities of the plot function in the sample R session.	6M	CO2	L3
		(OR)			
4.	(a)	Discuss about (i) Lattice Graphics (ii) The ggplot2 package	6M	CO2	L2
	(b)	Explain a few different plot types with a neat sketch.	6M	CO2	L2
		UNIT – III			
5.	(a)	Explain Descriptive statistics and Predictive Statistics with examples	6M	CO3	L2
	(b)	Describe the limitations of simple summary statistics.	6M	CO3	L2
		(OR)			
6.	(a)	Is the Guassian assumption reasonable? Explain.	6M	CO3	L1
	(b)	Give some differences between IQD and IQR with examples.	6M	CO3	L1
		UNIT – IV			
7.	(a)	Explain the steps that are involved in the interacting with internet.	6M	CO4	L2
	(b)	Discuss saving and retrieving R objects with examples.	6M	CO4	L2
		(OR)			
8.	(a)	Discuss a very brief introduction to HTML with examples	6M	CO4	L2
	(b)	How external data can be stored in many different file types.	6M	CO4	L1
		UNIT-V			
9.	(a)	Explain overfitting and data splitting in regression.	6M	CO5	L2
	(b)	Write about some useful tools for model validation	6M	CO5	L1
		(OR)			
10.		Explain the training/validation/holdout split.	12M	CO5	L2

Q.P. Code: 2298206

SET - 2

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

M. Tech. II Semester (R22PG) Regular & Supply Examinations of August – 2024

SUB: TEXT MINING & TIME SERIES DATA ANALYSIS (AI&DS)

Time: 3 Hours **Max. Marks: 60**

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.	(a)	Discuss about tokenization, part-of speech in Natural Language Processing	6M	CO1	L1
	(b)	Explain about automated text mining algorithms in detail.	6M	CO1	L2
		(OR)			
2.	(a)	Illustrate the working principle of Naive Bayes text categorization algorithm in detail.	6M	CO1	L2
	(b)	Explain about connectivity-based clustering algorithm in detail.	6M	CO1	L2
		UNIT – II			
3.	(a)	Demonstrate the Latent Dirichlet Allocation (LDA).	6M	CO2	L3
	(b)	Discuss about collaborative filtering, and hierarchical topical structure modeling inn topic modeling.	6M	CO2	L4
		(OR)			
4.		Describe in detail about Sentiment Analysis.	12M	CO2	L3
		UNIT – III			
5.	(a)	Explain about Autocorrelation and cross-correlation in time series.	6M	CO3	L2
	(b)	Illustrate the procedure to estimate the correlation in time series.	6M	CO3	L2
		(OR)			
6.		Discuss about Classical Regression in the time series context.	12M	CO3	L3
		UNIT – IV			
7.	(a)	Explain about Difference equation and forecasting in detail.	6M	CO4	L2
	(b)	Discuss about Autoregressive moving average models in detail.	6M	CO4	L3
		(OR)			
8.		Explain about ARIMA models and Multiplicative Seasonal ARIMA models in detail.	12M	CO4	L2
		UNIT-V			
9.		Discuss about the cyclic behavior of periodicity and spectral density in detail.	12M	CO5	L3
		(OR)			
10.		Explain briefly about Dynamic Fourier Analysis and wavelets in spectral analysis.	12M	CO5	L2