LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
L.B. Reddy Nagar :: Mylavaram-521 230 :: Krishna Dist. :: A.P
Approved by AICTE, New Delhi. Affiliated to JNTUK, Kakinada
EXAMINATION SECTION

R17

M.Tech.(II Semester) (R17) Regular/Supplementary Examinations, November 2020

TIME TABLE

TIME : 10.00 AM To 01.00 PM

Date	Computer Science and Engineering	Power Electronics and Drives	Thermal Engineering	VLSI and Embedded Systems
09-11-2020 (Monday)	17CO10 - Big Data Analytics	17PE10 - Modern Control Theory	17TE10 - Computational Fluid Dynamics	17VE10 - Analog VLSI Design
11-11-2020 (Wednesday)	17CO11 - Internet of Things	17PE11 - Switched Mode Power Conversion	17TE11 - Renewable Energy Technology	17VE11 - Real Time Operating Systems
13-11-2020 (Friday)	17CO12 - Cryptography and Network Security	17PE12 - Control of Motor Drives-II	17TE12 - Design of Thermal Systems	17VE12 - DSP Processors and Architecture
16-11-2020 (Monday)	17CO13 - Advanced Data Mining	17PE13 - Power Quality Engineering ***17PE14 - Hybrid Electrical Vehicles***	17TE15 - Gas Turbine Theory	17VE14 - Embedded Software Design ***17VE15 - VLSI Testing and Verification***
18-11-2020 (Wednesday)	17CO16 - Neural Networks	17PE17 - Applications of Artificial Intelligence Techniques	17TE16 - Refrigeration and Cryogenics	17VE18 - Wireless Communications & Networks ***17VE16 - VLSI Architecture for Signal Processing***
20-11-2020 (Friday)	**Add-on-Course-2** 17CO91 - Information Retrieval Systems	**Add-on-Course-2** 17PE91 - Integration of Renewable Sources	**Add-on-Course-2** 17TE91 - Fuels, Combustion and Environment	**Add-on-Course-2** 17VE91 - ASIC Design

NOTE: (i) Any omissions or clashes in this time table may please be informed to the Controller of Examinations immediately.
(ii) Even if government/JNTUK/College declares holiday on any of the above dates, the examinations shall be conducted as notified only.
(iii) For any clarification in respect of the above examinations, please contact the Controller of Examinations.

CONTROLLER OF EXAMINATIONS

PRINCIPAL

Date : 21-10-2020
Copy to: 1. M.Tech. HoDs for N.A., 2. M.Tech. Notice Boards

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M.Tech (II Semester) Regular/Supplementary Examinations

17CO10-BIG DATA ANALYTICS
(CSE)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit.
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Describe different stages for analytical evolution.	6M	CO1	L2
(b)	How to build a model for data analytics?	6M	CO1	L2
	(OR)			
2(a)	Explain Data discovery and preparation techniques.	6M	CO1	L1
(b)	Discus industry verticals using Big data analytics.	6M	CO1	L2
3.	Distinguish between (i) Traditional Analytic Architecture (ii) Modern In-Database(In-Memory) Architecture	12M	CO2	L2
	(OR)			
4.	Explain about Analytic Data Set and its types, with suitable diagrammatic representations indicating the differences.	12M	CO2	L2
5(a)	Discuss in detail the role of Decaying Windows in data stream analysis.	6M	CO3	L2
(b)	Describe the importance of sampling data in a stream?	6M	CO3	L2
	(OR)			
6(a)	Explain Sampling in Data Streams and its types.	6M	CO3	L2
(b)	What can you say about the real time analytics platform applications?	6M	CO3	L2
7(a)	Illustrate how would you describe the various steps of CLIQUE clustering algorithm and its significances.	6M	CO4	L2
(b)	Explain Apriori algorithm and with an example show how association rules are generated from frequent item sets.	6M	CO4	L4
	(OR)			
8(a)	Evaluate the market basket data and its use in main memory.	6M	CO4	L2
(b)	Explain the counting frequent items in a stream.	6M	CO4	L2
9(a)	Highlight the features of Hadoop and explain the functionalities of Hadoop cluster.	6M	CO5	L2
(b)	Describe briefly about Hadoop input and output and write a note on data integrity.	6M	CO5	L2
	(OR)			
10(a)	Describe in detail about the issues in the development of IDA.	6M	CO5	L2
(b)	Define HDFS. Explain HDFS in detail.	6M	CO5	L2

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M.Tech (II Semester) Regular/Supplementary Examinations

17C011-INTERNET OF THINGS
(CSE)

Time : 3 hours Max. Marks : 60

Answer one question from each unit.
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	List different areas of Internet of things.	6M	CO1	L1
(b)	Compare Raspberry pi and Arduino.	6M	CO1	L2
	(OR)			
2(a)	Compare networks, communication and Data Management in IoT.	6M	CO1	L2
(b)	Illustrate Data Collection and Analysis (DCA).	6M	CO1	L2
3.	Outline the following terms:- (i) Global value chain. (ii) Ecosystems Vs. Value chain. (iii) Industrial structure.	12M	CO2	L2
	(OR)			
4(a)	Draw the layered architecture of IoT.	6M	CO2	L1
(b)	Build a Raspberry Pi GPIO application for PICAM.	6M	CO2	L3
5(a)	Analyze I-GVC using figure	6M	CO3	L4
(b)	Build a Raspberry application using distance sensor.	6M	CO3	L3
	(OR)			
6(a)	Analyze functional view of IoT reference architecture.	6M	CO3	L4
(b)	Analyze information view of IoT reference architecture.	6M	CO3	L4
7(a)	Identify challenges faced by industry related IoT applications.	6M	CO4	L1
(b)	Develop eHealth IoT application.	6M	CO4	L3
	(OR)			
8.	Build a Raspberry Pi Moisture Sensor to monitor your plants.	12M	CO4	L3
9(a)	Construct IoT For Oil and Gas industry.	6M	CO5	L3
(b)	Summarize the Brownfield of IoT.	6M	CO5	L2
	(OR)			
10(a)	Differentiate data aggregation for the IoT in smart cities.	6M	CO5	L2
(b)	Classify all aspects in your business to master IoT.	6M	CO5	L2

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M.Tech (II Semester) Regular/Supplementary Examinations

17CO12-CRYPTOGRAPHY AND NETWORK SECURITY

(CSE)

Time : 3 hours Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Relate various Substitution Techniques.	6M	CO1	L2
(b)	Design and explain the model for Network Security.	6M	CO1	L2
	(OR)			
2(a)	Discuss the characteristics of block and stream ciphers.	6M	CO1	L1
(b)	Elaborate the symmetric cipher model with neat diagram.	6M	CO1	L3
3(a)	Summarize process for Random Number Generation.	6M	CO2	L2
(b)	How keys are distributed in conventional cryptography? Justify.	6M	CO2	L3
	(OR)			
4.	Analyze IDEA encryption and decryption process with Key generation.	12M	CO2	L2
5(a)	Compute cipher text for M=88, p=17 and q=11 using RSA algorithm.	6M	CO3	L3
(b)	Describe the Euler Totient function with an example.	6M	CO3	L2
	(OR)			
6(a)	Demonstrate Diffie –Hellman key exchange protocol in detail.	6M	CO3	L1
(b)	What are two assertions made by Chinese Remainder Theorem? Demonstrate each assertion.	6M	CO3	L2
7(a)	List and interpret basic requirements for hash function.	6M	CO4	L2
(b)	Analyze Message Authentication Codes based on block ciphers.	6M	CO4	L2
	(OR)			
8(a)	Discuss the digital signature algorithm in detail.	6M	CO4	L3
(b)	Elaborate the X.509 directory authentication service.	6M	CO4	L1
9(a)	Draw and interpret the architecture of IP Security.	6M	CO5	L2
(b)	Elaborate the various headers appended to IP Packet for providing authentication and encryption.	6M	CO5	L2
	(OR)			
10(a)	Define firewall. Describe the design goals of firewall.	6M	CO5	L2
(b)	Analyze the taxonomy of Malicious Software.	6M	CO5	L2

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M.Tech. (II Semester) Regular/Supplementary Examinations

17C013-ADVANCED DATA MINING
(CSE)

Time : 3 hours Max. Marks : 60

Answer one question from each unit.
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Discuss frequent item set generation in the apriori algorithm.	6M	CO1	L2
(b)	Define classification. Explain general approach for solving a problem.	6M	CO1	L1
	(OR)			
2(a)	Explain the predictive and descriptive task of data mining with example.	6M	CO1	L1
(b)	Differentiate mining in multilevel and multidimensional associations.	6M	CO1	L2
3(a)	What is a kernel in support vector machine algorithms. Why do we use kernels in SVM?	6M	CO2	L2
(b)	Explain classification algorithm using frequent patterns with example.	6M	CO2	L1
	(OR)			
4(a)	Discuss the limitations of classification by back propagation.	6M	CO2	L2
(b)	Illustrate the steps involved in Genetic Algorithm.	6M	CO2	L1
5(a)	Elucidate in detail DBSCAN algorithm with example.	6M	CO3	L1
(b)	Write a note on clustering High-Dimensional Data.	6M	CO3	L1
	(OR)			
6(a)	Illustrate STING Grid based clustering technique.	6M	CO3	L1
(b)	Discuss Graph clustering algorithms.	6M	CO3	L2
7(a)	Describe in detail web mining.	6M	CO4	L2
(b)	Discuss the process of text data mining.	6M	CO4	L2
	(OR)			
8(a)	Write a note on the applications of web usage mining.	6M	CO4	L1
(b)	Outline episode rule discovery for text mining.	6M	CO4	L2
9(a)	Write a note on spatial data mining.	6M	CO5	L1
(b)	Describe sequence mining patterns.	6M	CO5	L1
	(OR)			
10(a)	Write sequential pattern mining for regular expression constraints	6M	CO5	L2
(b)	List the various applications of data mining for the retail industry.	6M	CO5	L2

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M.Tech. (II Semester) Regular/Supplementary Examinations

17CO16-NEURAL NETWORKS
(CSE)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit.
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	What are elements of neural network?	6M	CO1	L1
(b)	Provide an activation function and why to use them?	6M	CO1	L2
	(OR)			
2(a)	What is Adaline network?	6M	CO1	L1
(b)	Discuss Madaline network.	6M	CO1	L2
3(a)	Outline single layer feed forward neural network.	6M	CO2	L2
(b)	Give an example of Hop field network.	6M	CO2	L2
	(OR)			
4.	What is objective of Boltzmann machine and discuss its architecture?	12M	CO2	L2
5(a)	What are support vector machines?	6M	CO3	L1
(b)	Discuss about SVM for non linear regression.	6M	CO3	L2
	(OR)			
6(a)	Discuss about SVM in case of linearly separable patterns.	6M	CO3	L2
(b)	Discuss about SVM in case of nonlinear separable patterns.	6M	CO3	L2
7.	Explain in detail about unsupervised learning.	12M	CO4	L2
	(OR)			
8.	Discuss how SOM works with an example.	12M	CO4	L2
9(a)	Describe architecture of ART.	6M	CO5	L2
(b)	What are types of ART?	6M	CO5	L1
	(OR)			
10(a)	How ART is applied in facial recognition?	6M	CO5	L1
(b)	How ART is applied in signature verification?	6M	CO5	L1

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M.Tech. (II Semester) Regular/Supplementary Examinations

17CO91-INFORMATION RETRIEVAL SYSTEMS
(CSE)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit.
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Differentiate between Boolean Retrieval and Tolerant Retrieval	6M	CO1	L2
(b)	Explain(i) Dictionaries (ii) Index Construction	6M	CO1	L2
	(OR)			
2.	Illustrate about (i) Vocabulary & Posting lists (ii) Index Compression (iii) Components and Applications of Information Retrieval.	12M	CO1	L2
3(a)	Draw the flow diagram for relevance feedback query processing model and Discuss.	6M	CO1	L2
(b)	How Relevance feedback method is used in query Expansion? Discuss.	6M	C01	L2
	(OR)			
4.	Discuss in detail about vector-space retrieval models with an example.	12	C02	L2
5.	Define Probabilistic model. What are the Fundamental assumptions for probabilistic principle? Explain in detail.	12M	C03	L2
	(OR)			
6(a)	What do you know about XML retrieval? What are requirements of XML information retrieval systems?	6M	C03	L2
(b)	Describe Vector space Classification.	6M	C02	L2
7.	Summarize about Latent Semantic Indexing method.	12M	CO4	L2
	(OR)			
8(a)	Define Clustering. Explain Flat Clustering in detail.	6M	CO4	L2
(b)	Describe(i) Machine Learning (ii) Hierarchical Clustering	6M	CO4	L2
9(a)	Define web search engine. What are the Main challenges posed by Web?	6M	CO5	L1
(b)	Discuss in detail about Web Crawling .	6M	CO5	L2
	(OR)			
10.	Explain about link analysis in detail.	12M	CO5	L2

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M.Tech. (II Semester) Regular/Supplementary Examinations

17PE10-MODERN CONTROL THEORY
(PED)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit.
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Determine controllability and observability of the state model $\dot{X}=\begin{bmatrix}0 & 1\\ -4 & -1\end{bmatrix}X+\begin{bmatrix}1\\ 1\end{bmatrix}u$ $Y=\begin{bmatrix}1 & 0\end{bmatrix}X$	6M	CO1	L3
(b)	Consider the system with state model $\dot{X}=\begin{bmatrix}0 & 1 & 0\\ 3 & 2 & 0\\ 1 & 1 & 1\end{bmatrix}X+\begin{bmatrix}0 & 0\\ 1 & 0\\ 0 & 1\end{bmatrix}U$ $Y=\begin{bmatrix}1 & 2 & 0\\ 0 & 0 & 1\end{bmatrix}X$ Design a state feedback control law such that the closed-loop system has poles at the locations -1,-2,-3 in the s-plane.	6M	CO1	L3
	(OR)			
2.	The closed loop transfer function of a plant is $\frac{C(s)}{U(s)}=\frac{7}{s^3+2s^2+5s+9}$ With the help of state feedback control u=-kx, It is desired to place the closed loop poles at -1±j3.5 and -4. Calculate the necessary state feedback gain matrix 'K'.	12M	CO1	L3
3.	Explain the describing function analysis of the following non-linearties (i) saturation non-linearity (ii) Dead zone non-linearity.	12M	CO1	L2
	(OR)			
4(a)	List out the common physical non-linearities with an example.	6M	CO1	L1
(b)	Explain the stability analysis of Non-Linear systems through describing functions.	6M	CO1	L2
5(a)	Linear second order servo is described by the equation is described by the equation $\ddot{y}+2\xi\omega_n\dot{y}+\omega_n^2 y=\omega_n^2$ where $\omega_n=1\ rad/\sec,\ y(0)=2,\ \dot{y}(0)=0$. Determine the singular point when $\xi=0$. Construct the phase trajectory, using the method of isoclines.	6M	CO3	L3

(b)	What are Singular points and how are they classified? Sketch them and explain.	6M	CO3	L2
	(OR)			
6(a)	Explain the construction of phase trajectory by isoclines method.	6M	CO3	L2
(b)	Draw the phase trajectory of the system described by the equation $\ddot{x}+\dot{x}+x^2=0$ Comment on the stability of the system.	6M	CO3	L3
7(a)	Consider a nonlinear system described by the equations $\dot{x}_1=-3x_1+x_2$ $\dot{x}_2=-x_1-x_2-x^3{}_2$. Investigate of the equilibrium state using Krasovskii's method.	6M	CO2	L3
(b)	State and explain Lyapunov's stability theorems	6M	CO2	L1
	(OR)			
8(a)	Define stability in the sense of Lyapunov.	6M	CO2	L1
(b)	Investigate the stability of the following nonlinear $\dot{x}_1=x_2$ $\dot{x}_2=-x_1-x_1^2x_2$ system using direct method of Lypanov.	6M	CO2	L3
9(a)	Write short notes on (i) Minimum energy problem (ii) Minimum time problem.	6M	CO4	L1
(b)	Explain about output regulator problem.	6M	CO4	L2
	(OR)			
10(a)	Consider the system $\dot{x}_1=x_2$ $\dot{x}_2=u$ $y=x_1$ Find the optimal control law which minimizes $J=\frac{1}{2}\int_0^\infty (y^2+u^2)dt$	6M	CO4	L3
(b)	Explain about state regulator problem.	6M	CO4	L2

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M.Tech (II Semester) Regular/Supplementary Examinations

17PE11-SWITCHED MODE POWER CONVERSION
(PED)

Time : 3 hours Max. Marks : 60

Answer one question from each unit.
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Describe the operation of buck converter with neat circuit and waveforms in Continuous conduction mode.	6M	CO1	L2
(b)	Design a Buck converter to produce an output voltage of 18V across 10Ω load resistance. The output voltage ripple must not exceed 0.5 percent. The DC supply is 48V. Design for continuous inductor current. Find out the duty ratio, the values of inductance and capacitor.	6M	CO1	L3
	(OR)			
2(a)	Obtain the input-output voltage and current relation as a function of duty ratio for a Buck-Boost DC-DC converter in continuous conduction mode.	6M	CO1	L3
(b)	In a buck-boost converter operating at 20 kHz, L = 0.05 mH. The output capacitor is sufficiently large and Vd = 15 V. The output is to be regulated at 10V and converter is supplying a load of 10 W. Calculate the duty ratio D.	6M	CO1	L3
3(a)	Describe the operation of fly back converter with neat circuit and waveforms	6M	CO2	L2
(b)	The push-pull converter has the following parameters: Vs =50 V, Np/Ns =2, Lx= 60μH, C =39μF, R =8, f=150 kHz, and D= 0.35. Determine (i) the output voltage, (ii) the maximum and minimum inductor currents, and (iii) the output voltage ripple.	6M	CO2	L3
	(OR)			
4(a)	Summarize the operation of half-bridge DC-DC converter with neat circuit and waveforms.	6M	CO2	L2
(b)	Describe forward converter operation with suitable diagrams.	6M	CO2	L2
5.	Summarize the principle and operation of ZCS resonant switch converters with neat diagrams.	12M	CO3	L2
	(OR)			
6(a)	Compare ZVS and ZCS topologies.	6M	CO3	L2
(b)	Interpret the concept of ZVS technique.	6M	CO3	L2
7(a)	Discuss about passive power factor correction techniques.	6M	CO4	L2
(b)	Compare the advantages of active power factor correction techniques over passive power factor correction techniques.	6M	CO4	L2
	(OR)			
8(a)	What are the basic types of active power factor correction circuits? Explain.	6M	CO4	L2
(b)	Discuss CCM shaping technique.	6M	CO4	L2
9.	Derive the transfer function and Obtain the gain and phase plot of the non-ideal boost converter.	12M	CO2	L3
	(OR)			
10(a)	Illustrate state space averaging technique for boost converter.	6M	CO2	L2
(b)	Obtain the transfer function of a buck converter using state- space modelling technique.	6M	CO2	L2

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M.Tech. (II Semester) Regular/Supplementary Examinations

17PE12-CONTROL OF MOTOR DRIVES-II
(PED)

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Time : 3 hours Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1.	Draw and discuss model reference adaptive system method for estimating the speed of induction motor.	12M	CO1	L1
	(OR)			
2(a)	Discuss the slip calculation method for estimating the speed of induction motor.	6M	CO1	L2
(b)	List the applications of sensor less vector control.	6M	CO1	L2
3(a)	Describe the motoring and regeneration operation of synchronous motor along with phasor diagrams.	6M	CO2	L1
(b)	Sketch the characteristics of synchronous motor and discuss in detail.	6M	CO1	L2
	(OR)			
4.	Analyze the flux weakening operation of synchronous motor drive.	12M	CO2	L2
5(a)	Sketch the torque – speed characteristics of switched reluctance motor.	6M	CO2	L2
(b)	Explain the split power supply converter topology of switched reluctance motor with waveforms.	6M	CO3	L1
	(OR)			
6(a)	Discuss the microprocessor based control of Switched reluctance motor.	6M	CO3	L2
(b)	Deduce the expression for torque equation of Switched reluctance motor.	6M	CO2	L2
7(a)	Draw the simple block diagram and explain the working principle of BLDC.	6M	CO3	L1
(b)	Describe operation of current controlled brushless dc motor servo drive.	6M	CO3	L2
	(OR)			
8(a)	Discuss the working and operation of three phase full wave brushless dc motor drive.	6M	CO3	L2
(b)	Discuss in detail about optical position sensor and hall effect sensor of BLDC.	6M	CO3	L2
9(a)	Draw and explain the equivalent circuit of linear induction motor.	6M	CO3	L2
(b)	Sketch the schematic diagram of a linear induction motor and its mmf waveforms. Also explain the working principle.	6M	CO3	L2
	(OR)			
10(a)	Write the advantages and disadvantages of linear induction motor.	6M	CO3	L1
(b)	Discuss in detail about the construction and working of tubular LIM.	6M	CO3	L2

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M.Tech. (II Semester) Regular/Supplementary Examinations

17PE13-POWER QUALITY ENGINEERING
(PED)

JC4

Time : 3 hours Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Discuss about transients and waveform distortion related to power quality.	6M	CO1	L1
(b)	Illustrate short duration and long duration power quality events.	6M	CO1	L1
	(OR)			
2(a)	Discuss the standards of power quality.	6M	CO1	L2
(b)	Outline spikes and voltage fluctuations.	6M	CO2	L1
3.	What is the need of estimating voltage sag performance? Describe different methods of estimating voltage sag performance.	12M	CO2	L2
	(OR)			
4(a)	Describe the procedure of estimating motor starting voltage sags.	6M	CO2	L2
(b)	Illustrate active series compensators for suppression of voltage sag.	6M	CO2	L2
5(a)	Explain the process of locating harmonic sources.	6M	CO3	L1
(b)	Illustrate the harmonic sources from commercial and industrial loads.	6M	CO3	L2
	(OR)			
6(a)	What are the devices used for controlling harmonic distortion and explain their functions?	6M	CO3	L2
(b)	Illustrate the benefits of active harmonic filters.	6M	CO3	L2
7(a)	Describe the power quality analyzer used for power quality measurements.	6M	CO4	L2
(b)	Outline instrument setup and various guidelines to be followed for monitoring power quality.	6M	CO4	L1
	(OR)			
8(a)	How are the intelligent systems useful for power quality measurement? Explain.	6M	CO4	L2
(b)	Elaborate power quality monitoring standards.	6M	CO4	L2
9.	Discuss the bench marking power quality process in detail.	12M	CO5	L2
	(OR)			
10(a)	How is state estimation helpful in monitoring power quality? Explain.	6M	CO5	L2
(b)	Illustrate various grounding problems.	6M	CO5	L2

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L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.:: A.P.

M.Tech (II Semester) Regular/Supplementary Examinations

17PE17-APPLICATIONS OF ARTIFICIAL INTELLIGENCE TECHNIQUES
(PED)

JCY

Time : 3 hours Max. Marks : 60

Answer one question from each unit.
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Illustrate the architectural graph of a Hopfield network consisting of N=4 neurons.	6M	CO1	L3
(b)	Determine the weight matrix and test the network for the following pattern pairs using Bidirectional Associative Memory topology. A1=(1 0 0 0 0 1), B1=(1 1 0 0 0) A2=(0 1 1 0 0 0), B2=(1 0 1 0 0) A3=(0 0 1 0 1 1), B3=(0 1 1 1 0)	6M	CO2	L3
	(OR)			
2(a)	Calculate the responseof every neuron in hidden layer and output layer for the ANN with 3 input neurons, 3 hidden neurons and 3 output neurons. Use binary step function (with threshold zero) as activation function for the following data $X=\begin{bmatrix}0\\1\\1\end{bmatrix}$, weights $W=V=\begin{bmatrix}0 & 1 & 1\\1 & 0 & 1\\1 & 0.5 & 1\end{bmatrix}$	6M	CO1	L3
(b)	Illustrate feed forward and recurrent topologies of ANN.	6M	CO2	L2
3(a)	Fuzzy sets A and B defined on the interval X=[0,5] of real numbers by membership grade functions. $\mu_A(x)=\frac{x}{x+1}$; $\mu_B(x)=2^{-x}$ Determine the mathematical formula and graphs of the membership grade functions of each of the following sets i) A^c, B^c ii) A ∪ B iii) A ∩ B iv) $(A \cup B)^c$	6M	CO3	L3
(b)	Illustrate the applications of Fuzzy Logic.	6M	CO3	L2
	(OR)			
4.	Illustrate the operation of fuzzy logic control system for automatic washing machines with dirty and grease as input and time for washing machine as output.	12M	CO3	L3
5(a)	Discuss about optimization of controllers in electrical application using Genetic algorthim.	6M	CO4	L2

(b)	Suppose a genetic algorithm uses chromosomes of the form X = abcdefgh with a fixed length of eight genes. Each gene can be any digit between 0 and 9. Let the fitness of individual x, calculate f(x) and let the initial population consist of four individuals with the following chromosomes: x1 = 6 5 4 1 3 5 3 2 x2 = 8 7 1 2 6 6 0 1 x3 = 2 3 9 2 1 2 8 5 x4 = 4 1 8 5 2 0 9 4 $f(x) = (a + b) - (c + d) + (e + f) - (g + h)$	6M	CO4	L3
	(OR)			
6(a)	What are the two requirements necessary for solving problem using GA?	6M	CO4	L1
(b)	Distinguish between a genotypic representation and a phenotypic representation. Give an example of each.	6M	CO4	L1
7(a)	Outline the PSO algorithm and discuss in detail.	6M	CO1	L1
(b)	List out the PSO applications to power converters.	6M	CO1	L2
	(OR)			
8(a)	What are the topologies in PSO Algorithm?	6M	CO1	L1
(b)	When and how are particles reinitialized in PSO algorithm?	6M	CO1	L2
9(a)	Mention the kind of meta heuristic is more appropriate for discrete optimization problem in general and specifically binary problems.	6M	CO1	L1
(b)	Classify the meta heuristic techniques.	6M	CO1	L1
	(OR)			
10(a)	Discuss the application of fuzzy and meta-heuristic optimization in manufacturing environment.	6M	CO1	L2
(b)	Illustrate about the parallel meta heuristic technique.	6M	CO1	L2

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M.Tech. (II Semester) Regular/Supplementary Examinations

17PE91-INTEGRATION OF RENEWABLE SOURCES
(PED)

Time : 3 hours Max. Marks : 60

Answer one question from each unit.
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Derive the model of an equivalent circuit of a solar cell.	6M	CO1	L3
(b)	Explain V-I and P-V characteristics with changing irradiance.	6M	CO2	L2
	(OR)			
2(a)	Describe the flow chat for perturb and observe Method.	6M	CO2	L2
(b)	Classify MPPT methods and list out the comparison of various techniques.	6M	CO2	L2
3(a)	Explain the working of boost converter with PV system.	6M	CO2	L2
(b)	Explain stand-alone PV system with neat sketch.	6M	CO2	L2
	(OR)			
4(a)	Classify inverters and explain any one method with neat sketch.	6M	CO2	L2
(b)	Explain string and central inverter working of PV system with neat sketch.	6M	CO2	L2
5(a)	Explain operating principle of standalone self-excited induction generator driven by a wind turbine.	6M	CO2	L2
(b)	Discuss the performance of DFIG wind energy system.	6M	CO2	L2
	(OR)			
6(a)	List out wind turbine MPPT techniques and discuss any one technique.	6M	CO2	L2
(b)	List out wind energy conversation systems parts and write a short note of each part.	6M	CO2	L1
7(a)	Discuss the characteristics single leg interleaved boost converter.	6M	CO2	L2
(b)	Explain modeling of the three-level Neutral point clamped converter.	6M	CO2	L2
	(OR)			
8(a)	Explain the operation of grid-connected inverter control circuit with neat sketch.	6M	CO3	L2
(b)	Explain the working of voltage control of boost converter with neat sketch.	6M	CO3	L2
9(a)	Discuss the construction of lead acid batteries.	6M	CO4	L2
(b)	Describe the operation of superconducting magnetic storage system.	6M	CO4	L2
	(OR)			
10(a)	Explain operation of flywheel systems with neat sketch.	6M	CO4	L2
(b)	Compare ultracapacitor and lead-acid batteries.	6M	CO4	L2

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M.Tech. (II Semester) ~~Regular~~/Supplementary Examinations

17PE14-HYBRID ELECTRICAL VEHICLES
(PED)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit.
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Write a short note on social and environmental importance of hybrid electric vehicles.	6M	CO1	L1
(b)	What are the various types of power plants used in a vehicle? Explain in brief.	6M	CO1	L1
	(OR)			
2.	Explain about the following in brief: (i) maximum cruising speed (ii) Gradeability (iii) Acceleration performance.	12M	CO1	L2
3.	Illustrate a general electric configuration.	12M	CO1	L3
	(OR)			
4(a)	Describe the configuration of a parallel hybrid electric drive train and explain the role of each component.	6M	CO1	L2
(b)	Mention the advantages and disadvantages of parallel hybrid electric drive train.	6M	CO2	L1
5(a)	Draw the functional block diagram of a typical electric propulsion system and explain the factors to be considered while choosing a propulsion system.	6M	CO1	L2
(b)	Classify electric motor drives used for electric vehicles and hybrid electric vehicle applications.	6M	CO1	L4
	(OR)			
6(a)	Mention the advantages offered by commutatorless motor drives over conventional commutator motor drives for the electric propulsion of electric and hybrid electric vehicles.	6M	CO1	L4
(b)	Explain about torque control scheme for a BLDC motor drive.	6M	CO1	L2
7.	How is the size of internal combustion engine and motors in a hybrid electric vehicle interrelated?	12M	CO2	L5
	(OR)			
8(a)	Compare the characteristics and performance of batteries and fuel cells for electric vehicle application.	6M	CO2	L2
(b)	What are the power electronic circuits generally used in hybrid vehicles? List the factors that affect size of these circuits.	6M	CO2	L1
9(a)	Write a short note on energy management strategies used in electric and hybrid electric vehicles.	6M	CO3	L1
(b)	State and explain the design considerations for the battery, electric motor and power converter to be used in battery electric vehicle.	6M	CO3	L6
	(OR)			
10(a)	Mention the benefits of energy management in electric and hybrid electric vehicles.	6M	CO3	L4
(b)	What are the factors affecting performance of batteries used in electric vehicles?	6M	CO3	L4

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M.Tech (II Semester) Regular/Supplementary Examinations

17TE10-COMPUTATIONAL FLUID DYNAMICS
(TE)

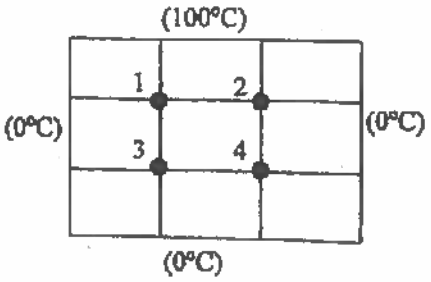
Time : 3 hours Max.Marks : 60

Answer one question from each unit.
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Describe about CFD and list atleast five applications of the CFD.	6M	CO1	L2
(b)	Elaborate on: (i) Divergence of velocity and (ii) Cross product of velocity.	6M	CO1	L2
	(OR)			
2.	Develop the following Energy equation for a fluid flow: $$u\frac{\partial T}{\partial x}+v\frac{\partial T}{\partial y}+w\frac{\partial T}{\partial z}=\alpha\left(\frac{\partial^2 T}{\partial x^2}+\frac{\partial^2 T}{\partial y^2}+\frac{\partial^2 T}{\partial z^2}\right)$$	12M	CO1	L3
3(a)	Define Quasi-Linear Partial Differential Equation. Describe the procedure to classify the Quasi-Linear Partial Differential Equations based on Crammer's Rule.	6M	CO2	L2
(b)	Discuss about the Parabolic type of Partial differential Equations.	6M	CO2	L2
	(OR)			
4.	The following governing partial differential equations are applicable for an irrotational, two-dimensional, inviscid, steady flow of a compressible gas. $$(1-M^2)\frac{\partial u}{\partial x}+\frac{\partial v}{\partial y}=0$$ $$\frac{\partial u}{\partial y}-\frac{\partial v}{\partial x}=0$$ Here, M is the Mach number of the flow. Based on the Eigen Value method, classify these systems of equations for (i) subsonic, (ii) sonic and (iii) supersonic flows.	12M	CO2	L3
5.	Consider the velocity profile, U = $1582xe^{(-Y/L)}$.Where, L = 1m. The 'U' values are given in the following table at various Y-values.	12M	CO3	L3

SI No.	Y (m)	U (m/s)
1	0.0	0
2	0.1	150.54
3	0.2	286.77
4	0.3	410.03

Evaluate the value of dU/dY at Y = 0.1 m by (i) Forward difference scheme, (ii) Backward difference scheme, and (iii) Central difference scheme. Also compare the values obtained from these schemes with the exact value.

	(OR)			
6.	Derive the finite difference expressions for the second order derivatives: (i) $\frac{\partial^2 U}{\partial X^2}$ and (ii) $\frac{\partial^2 U}{\partial Y^2}$with a neat diagram. Also state the order of error in each scheme.	12M	CO3	L3
7(a)	Illustrate the Checker board velocity condition in a fluid flow scenario with a neat sketch.	6M	CO4	L2
(b)	State the stability criterion for the (i) Explicit and (ii) Implicit schemes in the case of Couette flows.	6M	CO4	L2
	(OR)			
8.	Describe about the Couette flow and deduce the X and Y-momentum equations for 2-D, steady Couette flow.	12M	CO4	L2
9.	Consider a bar of 0.1 m long and uniform cross-section of a material of thermal conductivity 45 W/m-^{0}C. Heat is uniformly generated at the rate of 10^6 W/m^3. The two ends of the bar are maintained at 30 ^{0}C. Estimate the steady-state temperature distribution in the bar by finite difference using 2 cm long elements. Compare the finite difference solution with the exact solution.	12M	CO5	L3
	(OR)			
10.	Estimate the temperatures at the node points 1, 2, 3 and 4 indicated in the square slab shown in the figure. Assume the steady state heat conduction in the slab with the specified temperature boundary conditions.  	12M	CO5	L3

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M.Tech. (II Semester) Regular/Supplementary Examinations

17TE11-RENEWABLE ENERGY TECHNOLOGY
(TE)

Time : 3 hours Max. Marks : 60

Answer one question from each unit.
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	What are the prospects of renewable energy sources in India?	6M	CO1	L2
(b)	List the advantages and limitations of renewable energy sources.	6M	CO1	L1
	(OR)			
2(a)	What is the principle of conversion of solar energy into heat?	6M	CO1	L2
(b)	Illustrate the operation of MHD power generator.	6M	CO1	L2
3(a)	Classify the methods of solar energy storage.	6M	CO3	L2
(b)	Describe the working principle of solar water heater.	6M	CO3	L2
	(OR)			
4(a)	Illustrate the working of solar desalination system.	6M	CO3	L2
(b)	Explain the energy transmission system with suitable sketch.	6M	CO2	L2
5(a)	Evaluate the maximum power output of a turbine if wind speed of 8 m/s and density of 1.2 kg/m^3 and rotor diameter is 60 m.	6M	CO4	L3
(b)	Define the terms related to wind mills (i) wind velocity (ii) blade velocity (iii) Angle of attack (iv) Pitch angle.	6M	CO2	L1
	(OR)			
6(a)	Explain the working principle of solar pond.	6M	CO3	L2
(b)	Describe the working principle of solar cooker with neat sketch.	6M	CO3	L2
7(a)	What are the factors to be considered while locating a biogas plant?	6M	CO2	L1
(b)	Why biogas plants are not successful in India even after the subsidies provided by the Government of India?	6M	CO2	L2
	(OR)			
8(a)	What do you mean by biomass direct combustion? State its major limitations.	6M	CO5	L2
(b)	List the main applications of biomass.	6M	CO5	L1
9(a)	Illustrate the working principle of tidal power plant.	6M	CO5	L2
(b)	A tidal power plant has reservoir of area 50x10^6 m^2. The tidal range of 10 m. The turbine can be operated with a head of 3 m. The turbine generator has efficiency of 80%. Estimate the total power in one filling and empting cycle.	6M	CO4	L3
	(OR)			
10(a)	Describe the hot dry rock geothermal resource power plant.	6M	CO5	L2
(b)	List the merits and demerits of geothermal energy source.	6M	CO5	L1

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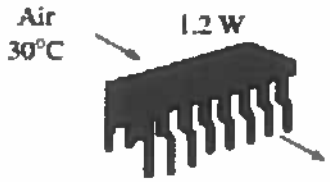
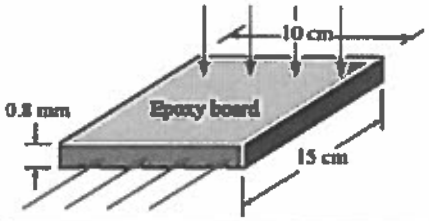
M.Tech (II Semester) Regular/Supplementary Examinations

17TE12-DESIGN OF THERMAL SYSTEMS
(TE)

Time : 3 hours Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Distinguish between recuperation and regenerative heat exchangers with examples.	6M	CO1	L2
(b)	An oil cooler for a large diesel engine is to cool engine oil from 60° C to 45° C, using sea water at an inlet temperature of 20° C with a temperature rise of 15° C. The design heat load is Q = 140 kW, and the mean overall heat transfer coefficient based on the outer surface area of the tubes is 70 W/m² °C. Calculate the heat transfer surface area for single pass (i) counter flow and (ii) parallel flow arrangements.	6M	CO1	L3
	(OR)			
2(a)	Illustrate the compact heat exchangers.	6M	CO1	L2
(b)	A cross flow heat exchanger with both fluids unmixed type of arrangement having a heat transfer area A = 8.4 m² is to heat air (C_{pc}=1005 J/kg. °C) with water (C_{ph}=4180 J/kg. °C). Air enters at $T_{c,in}$ = 15 °C and m_c = 2.0 kg/s, while water enters at $T_{h,in}$ = 90 °C and m_h = 0.25 kg/s. The overall heat transfer coefficient is U_m = 250 W/m² °C. Calculate the exit temperatures of both air and water as well as the total heat transfer rate Q.	6M	CO1	L3
3(a)	Outline the significance of water cooled condensers.	6M	CO2	L2
(b)	Elaborate the influence of air inside condensers.	6M	CO2	L1
	(OR)			
4.	Determine the length of tubes in a 3-pass, shell and tube R 22 condenser with 108 tubes for 40 TR chiller. The condensing temperature is 43 °C. The heat rejection ratio is 1.25. Water is cooled to 30 °C in the cooling tower. The temperature rise of water may be taken as 4.8 °C. Use integral fin copper tubes with an O.D of 1.59 cm and an I.D of 1.37 cm with 748 fins/m length of tube. Fins are 1 mm thick and 1 mm high over tubes. Also determine the length for plain tube as well. Allow for 10 bottom tubes for sub cooling.	12M	CO2	L3
5(a)	List the types of direct expansion evaporators and explain about direct expansion chiller.	6M	CO3	L1
(b)	Discuss the forced convection boiling with flow regimes.	6M	CO3	L2
	(OR)			
6(a)	Distinguish between extended surface evaporators and cooling, dehumidified coils.	6M	CO3	L2
(b)	Interpret the augmentation of boiling heat transfer using roughened surfaces and swirl flow generators.	6M	CO3	L2

7(a)	Describe the dry cooling towers.	6M	CO4	L1
(b)	Water at 30°C flows into a cooling tower at the rate of 1.15 kg per kg of air. Air enters the tower at the DBT of 20°C and a relative humidity of 60 % and leaves it at a DBT of 28°C and 90% relative humidity. Makeup water is supplied at 20°C. Determine (i) the temperature of water leaving the tower, (ii) the fraction of water evaporated, and (iii) the approach and range of cooling tower.	6M	CO4	L3
	(OR)			
8.	Warm water at 45°C enters a cooling tower at the rate of 6 kg/s. An ID fan draws 10 m^3/s of air through the tower and absorbs 4.9 kW. The air entering the tower is at 20°C DBT and 60% relative humidity. The air leaving the tower is assumed to be saturated and its temperature is 26°C. Calculate the final temperature of the water and the amount of makeup water required per second. Assume that the pressure remains constant throughout the tower at 1.013 bar.	12M	CO4	L3
9(a)	List the types of printed circuit boards and explain each.	6M	CO5	L2
(b)	A fan blows air at 30°C and a velocity of 200 m/min over a 1.2-W plastic DIP with 16 leads mounted on a PCB, as shown in Figure. The junction-to-ambient thermal resistance of the device with 16leads corresponding to an air velocity of 200 m/min is 55 °C/W, determine the junction temperature of the electronic device. What would the junction temperature be if the fan were to fail? 	6M	CO5	L3
	(OR)			
10(a)	What are the parameters taken into account for fan selection in case of forced convective air cooling of electronic equipment?	6M	CO5	L1
(b)	Consider a 10-cm X 15-cm glass–epoxy laminate (k = 0.26 W/m· °C) whose thickness is 0.8 mm, as shown in Figure. Determine the thermal resistance of this epoxy layer for heat flow (i) along the 15-cm-long side and (ii) across its thickness. 	6M	CO5	L3

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M.Tech. (II Semester) Regular/Supplementary Examinations

17TE15-GAS TURBINE THEORY
(TE)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit.
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Illustrate the different types of gas turbines.	6M	CO1	L1
(b)	A gas turbine unit has a pressure ratio of 6:1 and maximum cycle temperature of 627⁰ C .The isentropic efficiency of compressor and turbine are 0.82 & 0.85 respectively. Calculate the power output in KW of an electrical generator geared to the turbine when the air enters the compressor at 15°C , 1 bar pressure with flow rate of 18 Kg/sec.	6M	CO1	L2
	(OR)			
2(a)	Explicate the methods to improving gas turbine cycle efficiency.	6M	CO1	L1
(b)	Air enters the compressor of a gas-turbine power plant, at 290 K, 0.1 MP a. The ratio of the maximum to minimum pressure in the cycle is 4.0 and the maximum cycle temperature is 1200 K. Compressor and turbine isentropic efficiencies are 0.85. The compression process occurs in two stages, each having a pressure ratio of 2.0 with inter cooling to 300 K in between. A 75% effective regenerator reduces fuel costs. (i) Determine the net work transfer [kJ/kg] (ii) Determine the thermal (first law) efficiency.	6M	CO1	L2
3(a)	Elaborate the methods of accounting for component losses.	6M	CO2	L1
(b)	Elucidate the comparative performance of practical cycles.	6M	CO2	L2
	(OR)			
4(a)	Give importance of combined cycle power plant.	6M	CO2	L2
(b)	In a combined cycle power plant. Compressor takes 1500 tones air /hour at 26°C and 1 bar pressure. The maximum temperature of gas turbine is limited to 850°C. The pressure ratio is 8. The exhaust gases coming from gas turbine is heated further to 700°C before entering into heat recovery steam generator. The steam is generated at 50 bar & 500°C. The exhaust gas temperature is limited to 200°C to avoid the condensation of corrosive gases. The condenser pressure is 0.07 bar. Assume isentropic compression in compressor and isentropic expansion in both turbines. Calculate (i) power generated in each unit of the cycle (ii) Specific fuel consumption (iii) Thermal efficiency of each cycle & combined cycle. Take Cp=1 kJ/kg K & isentropic const 1.4 for air & gas and calorific value of fuel=41000 kJ/kg.	6M	CO2	L3

5(a)	Define the following (i) Slip factor (ii) Surging (iii) choking.	6M	CO3	L1
(b)	Explain the construction, principle of centrifugal compressors.	6M	CO3	L2
	(OR)			
6(a)	A simple Impulse turbine has a mean blade ring diameter of 75cm and run at 3000 RPM. The blade speed ratio is 0.46. and the discharge is axial the nozzle angle is 20° and blade friction is 0.94. Determine: (i) Blade angles (ii)Theoretical specific power output.	6M	CO3	L3
(b)	Draw and explain the performance characteristics of centrifugal compressors.	6M	CO3	L1
7(a)	Describe the factors affecting combustion chamber design.	6M	CO4	L1
(b)	Explain the different types of combustion chambers.	6M	CO4	L1
	(OR)			
8(a)	Discuss in detail practical problems gas turbine emissions.	6M	CO4	L2
(b)	Elaborate importance of flame stabilization.	6M	CO4	L2
9(a)	Explain the construction of axial flow turbine.	6M	CO5	L1
(b)	Differentiate between axial and radial flow turbine.	6M	CO5	L2
	(OR)			
10(a)	What are the methods of displacing the equilibrium running line?	6M	CO5	L2
(b)	Outline off-design performance of single shaft gas turbine.	6M	CO5	L2

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M.Tech (II Semester) Regular/Supplementary Examinations

17TE16-REFRIGERATION AND CRYOGENICS
(TE)

JCH

Time : 3 hours Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	What are desirable properties of a good refrigerant? Explain briefly .	6M	CO1	L2
(b)	The capacity of a refrigerator is 200 TR when working between -6°C and 25°C , Determine the mass of ice produced per day from water at 25°C. Also find the power required to drive the unit. Assume that the cycle operates on reversed carnot cycle and latent heat of ice is 336kj/kg.	6M	CO1	L3
	(OR)			
2(a)	Discuss the advantages of the dense air refrigeration system over an open air refrigeration system.	6M	CO1	L2
(b)	The capacity of a refrigerator is 150 TR when working between -6°C and 25°C. Determine the mass of ice produced per day from water at 25°C. Also find the power required to drive the unit. Assume that the cycle operates on reversed carnot cycle. Latent heat of ice can be taken as 336 KJ/Kg.	6M	CO1	L3
3(a)	Illustrate the working of simple vapour compression refrigeration system with the help of T-S and P-h diagrams.	6M	CO2	L2
(b)	A vapour compression refrigerator works between the pressure limits of 60 bar and 25 bar. The working fluid is just dry at the end of the compression and there is no under cooling of the liquid before the expansion. Determine i) COP of the cycle and ii) Capacity of the refrigerator if the fluid flow is at the rate of 5 kg/min.	6M	CO2	L3
	(OR)			
4(a)	Differentiate between the Actual VCR cycle and ideal VCR cycle with the help of P-h diagram	6M	CO2	L2
(b)	A 5 ton vapour compression refrigeration system using ammonia works between 40°Cand -10°C. There is no sub cooling and the gas is dry and saturated at the end of compression. Calculate the COP and the flow rate of refrigerant. Properties of ammonia are as follows.	6M	CO2	L3

Pressure (bar)	Saturation Temp (K)	Enthalpy (kJ/kg)		Entropy (kJ/kg.K)	
		Liquid	Vapour	Liquid	Vapour
60	295	151.96	293.29	0.554	1.0332
25	261	56.32	322.58	0.226	1.2464

Temp(°C)	Enthalpy KJ/Kg		Entropy KJ/Kg.K	
	Liquid (h_f)	Vapor(h_g)	Liquid (s_f)	Vapor(s_g)
-10°C	154.0	1450	0.8296	5.735
40°C	390.5	1490	1.6440	5.156

5(a)	List out the various non-conventional refrigeration systems, and briefly discuss about the Adiabatic Demagnetization refrigeration system.	6M	CO3	L1
(b)	Write a short note on Vortex tube refrigeration system.	6M	CO3	L2
	(OR)			
6(a)	Outline the Electro-lux refrigeration system with a neat sketch. What is the purpose of hydrogen in it?	6M	CO3	L2
(b)	Make a comparative list between vapour absorption and vapour compression refrigeration system.	6M	CO3	L2
7(a)	Briefly Discuss about the process of heating and humidification.	6M	CO4	L2
(b)	The pressure, temperature, relative humidity of air at a place are 1.013bar, 32^{0}C and 65% respectively. Find (i) The dew point temperature (ii)Specific volume of the constituent (iii) The humidity ratio. The universal gas constant R_U=8.3143KJ/Kg mole.	6M	CO4	L3
	(OR)			
8(a)	What are the various psychrometric processes used in Air Conditioning systems? Describe the each process with the help of psychrometric chart.	6M	CO4	L2
(b)	Outdoor air at 24^{0}C DBT and 15^{0}C WBT passes through air washer in which water is recirculated. The washer has humidifying efficiency of 70% .It is then heated by a coil with coil surface temperature of 27^{0}C and by pass factor of 0.3. Find DBT and RH of air leaving the heater and also find capacities of humidifier and heating coil if the circulation of outdoor air is 50m^3/minute.	6M	CO4	L3
9.	List out the difficulties encountered in the production of low temperature with the help of single or Multi stage vapour compression refrigeration systems.	12M	CO5	L
	(OR)			
10.	Discuss the method used in Liquefication of Helium with neat sketches.	12M	CO5	L2

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(AUTONOMOUS)
L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.:: A.P.

M.Tech. (II Semester) Regular/Supplementary Examinations

17TE91-FUELS,COMBUSTION AND ENVIRONMENT
(TE)

Time : 3 hours Max. Marks : 60

Answer one question from each unit.
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Give the detailed classification of fuels.	6M	CO1	L2
(b)	Define the following (i) Carbonization (ii) Gasification (iii) Liquification	6M	CO1	L1
	(OR)			
2(a)	What are the factors affecting coal gas generation?	6M	CO1	L1
(b)	What are the problems associated with very low calorific value gases?Explain.	6M	CO1	L2
3(a)	What do you understand by "dew point of products"?	6M	CO2	L2
(b)	What is the principle of combustion stoichiometry?	6M	CO2	L2
	(OR)			
4(a)	Enunciate the flue gas analysis according to Orsat's apparatus with a neat sketch.	6M	CO2	L2
(b)	What are the factors Considered in the flue gas analysis?	6M	CO2	L1
5(a)	Differentiate complex reactions and chain reactions.	6M	CO3	L2
(b)	Explain in detail about General oxidation behavior of HC's.	6M	CO3	L2
	(OR)			
6(a)	Discuss the components involved in chemical kinetics.	6M	CO3	L2
(b)	Differentiate between Molecularity and zeroeth order reactions.	6M	CO3	L2
7(a)	What do you understand by equilibrium composition of gaseous mixtures? Explain.	6M	CO4	L2
(b)	Differentiate between Laminar and Turbulent flames.	6M	CO4	L2
	(OR)			
8(a)	Discuss the factors affecting flame stability?	6M	CO4	L2
(b)	How do you measure the burning velocity? Discuss.	6M	CO4	L2
9(a)	What are the problems associated in environmental considerations? Explain.	6M	CO5	L1
(b)	List out the sources of air pollution and how they extravagate the pollution hazards?	6M	CO5	L1
	(OR)			
10(a)	Explain in detail legislative measures of government on environmental concerns.	6M	CO5	L2
(b)	What are the factors affecting human health in terms of environmental concerns?	6M	CO5	L2

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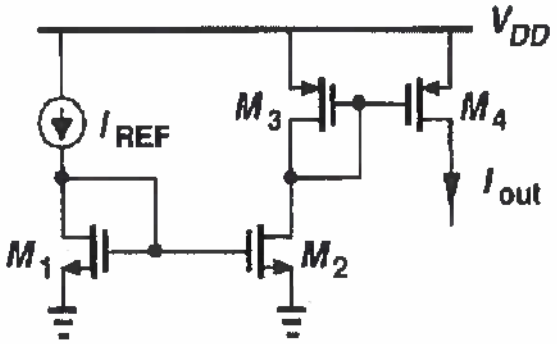
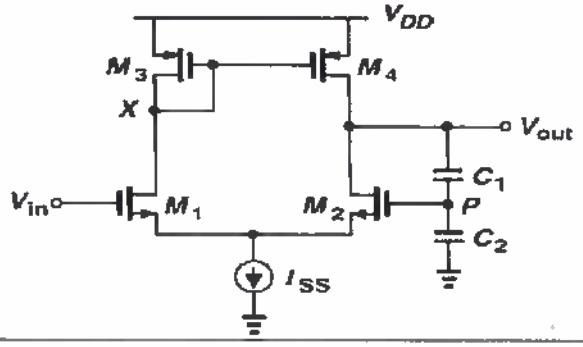
M.Tech. (II Semester) Regular/Supplementary Examinations

17VE10-ANALOG VLSI DESIGN
(VLSI&ES)

Time : 3 hours Max.Marks : 60

Answer one question from each unit.
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Explain the relation between voltage and current in MOSFET with neat diagrams.	6M	CO1	L2
(b)	Define different MOS device models.	6M	CO1	L1
	(OR)			
2(a)	Summarize the common source amplifier with current source load.	6M	CO1	L2
(b)	Illustrate common gate amplifier and cascode stage.	6M	CO1	L2
3(a)	Construct Gilbert cell.	6M	CO2	L3
(b)	Identify the drain current of M4 if all of the transistors are in saturation. 	6M	CO2	L3
	(OR)			
4.	Analyze the qualitative and quantitative view of differential amplifier.	12M	CO2	L3
5(a)	Describe about "slewing" in op-amps.	6M	CO3	L2
(b)	Evaluate the low frequency PSRR of feedback circuit shown in figure. 	6M	CO3	L3
	(OR)			
6(a)	Discuss the telescopic and folded cascade topologies of op-amps.	6M	CO3	L2

(b)	Analyze the VCO by using mathematical equations.	6M	CO3	L3
7(a)	Discuss the working of MOSFET Sampling Switch.	6M	CO4	L2
(b)	Summarize the general considerations for bandgap references.	6M	CO4	L2
	(OR)			
8	Illustrate Switched Capacitor Amplifiers.	12M	CO4	L2
9(a)	Describe charge scaling DAC.	6M	CO5	L2
(b)	Explain the successive approximation ADC.	6M	CO5	L2
	(OR)			
10.	Analyze 3-bit Flash converter, listing the values of the voltages at each resistor tap, and draw the transfer curve for v_{IN} = 0 to 5 V. Assume V_{REF} = 5 V. Construct a table listing the values of the thermometer code and the output of the decoder for v_{in} =1.5, 3.0, and 4.5 volts.	12M	CO5	L4

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M.Tech (II Semester) Regular/Supplementary Examinations

17VE11-REAL TIME OPERATING SYSTEMS
(VLSI&ES)

Time : 3 hours Max. Marks : 60

Answer one question from each unit.
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Compare Unix and Linux operating systems.	6M	CO1	L2
(b)	Discuss about 'exit function' of process Control.	6M	CO4	L2
	(OR)			
2(a)	Explain the following Unix/Linux commands. (i) Creating and Viewing files (ii) Deleting files.	6M	CO3	L2
(b)	Examine the File I/O-read and write functions.	6M	CO2	L2
3(a)	Elaborate any two uses of message queues with an application.	6M	CO4	L2
(b)	Discuss the following related to scheduler (i) Schedulable entities (ii) Multitasking (iii) Context Switch.	6M	CO4	L2
	(OR)			
4(a)	Summarize the following operations of semaphores (i) Creating and deleting semaphores (ii) Acquiring and releasing semaphores.	6M	CO1	L2
(b)	Analyze the message queue states with a neat diagram.	6M	CO2	L3
5(a)	Explain the concept of signals of RTOS kernel with a neat sketch.	6M	CO1	L2
(b)	Describe the common building blocks of micro kernel with a neat sketch.	6M	CO2	L2
	(OR)			
6(a)	Discuss the operation of an event register with neat diagram.	6M	CO4	L2
(b)	Categorize typical 'pipe' operations of an RTOS kernel.	6M	CO2	L2
7(a)	Elaborate the applications of Exceptions and Interrupts.	6M	CO4	L1
(b)	Illustrate the importance of Programmable Interval Timers.	6M	CO1	L2
	(OR)			
8.	List and explain the timer related operations of soft timers.	12M	CO2	L2
9.	Describe the architecture of an Android with a neat sketch.	12M	CO4	L2
	(OR)			
10(a)	Explain the Vx Works communication options.	6M	CO3	L2
(b)	Explain the architectures of Linux and Real time Linux.	6M	CO3	L2

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M.Tech. (II Semester) Regular/Supplementary Examinations

17VE12-DSP PROCESSORS AND ARCHITECTURE
(VLSI&ES)

JCH

Time : 3 hours Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	List the advantages of Digital Signal Processing.	6M	CO1	L1
(b)	Illustrate the necessity of FFT with respect to computational complexity.	6M	CO1	L1
	(OR)			
2(a)	Predict the use of down sampler and up sampler and mention the applications.	6M	CO1	L2
(b)	Analyze how to design an IIR filter.	6M	CO1	L3
3(a)	What are the techniques to prevent overflow and underflow conditions from occurring in DSP processors?	6M	CO2	L2
(b)	Outline about the program sequencing.	6M	CO2	L2
	(OR)			
4.	Discuss how to improve the speed of operation and large throughputs in DSP architectures.	12M	CO2	L2
5.	Elaborate the onchip peripherals of the DSP processors.	12M	CO3	L2
	(OR)			
6.	Discuss in brief about Instructions and programming of TMS320C54XX DSPs.	12M	CO3	L2
7(a)	Discuss about Micro signal architecture.	6M	CO4	L2
(b)	How the shifters are useful in DSP? Discuss the functionality of barrel shifter.	6M	CO4	L2
	(OR)			
8(a)	Write a brief note on base architecture of ADSP 2181.	6M	CO4	L1
(b)	Describe about address arithmetic unit of Blackfin processor in detail.	6M	CO4	L2
9(a)	Design a data memory system with address range 00080h-000FFFh for a C6416 processor. Use 2Kx8 SRAM memory chips.	6M	CO5	L3
(b)	Summarize briefly about parallel I/O interface.	6M	CO5	L2
	(OR)			
10.	Discuss about timing sequence for external memory access with timing cycle diagram.	12M	CO5	L2

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M.Tech. (II Semester) Regular/Supplementary Examinations

17VE14-EMBEDDED SOFTWARE DESIGN
(VLSI&ES)

JCY

Time : 3 hours Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	What are the services of the RTOS?	6M	CO1	L1
(b)	With an example explain preemptive scheduling model.	6M	CO3	L2
	(OR)			
2(a)	Write kernel services in operating system.	6M	CO1	L1
(b)	Process or task creation and management are most important functions of kernel. Why?	6M	CO4	L2
3(a)	Write different options of RTOS.	6M	CO1	L1
(b)	Describe the properties and Windows CE functions for databases.	6M	CO2	L2
	(OR)			
4(a)	Elaborate different memory allocation related functions.	6M	CO2	L2
(b)	Write short notes on RTOS Vx Works.	6M	CO2	L1
5(a)	Draw the state diagram of ACVM functions.	6M	CO2	L2
(b)	What are the requirements of a smart card communication system with a host?	6M	CO3	L1
	(OR)			
6(a)	Draw the class diagram of controller_Tasks for digital camera.	6M	CO2	L2
(b)	Illustrate the hardware architecture of ACC system.	6M	CO2	L2
7(a)	Outline the process of porting an RTOS on a custom-built development board.	6M	CO2	L2
(b)	List file manipulation commands of Linux.	6M	CO2	L1
	(OR)			
8(a)	How target image creation in Windows XP embedded?	6M	CO4	L3
(b)	What are the function calls for semaphore management in Linux?	6M	CO4	L2
9(a)	What is RT Linux module?	6M	CO4	L1
(b)	Discuss the use of mutex with an example.	6M	CO4	L2
	(OR)			
10(a)	Interpret functions calls provided for timer management in RT Linux.	6M	CO3	L2
(b)	Write the process to control an appliance using RTLinux system.	6M	CO5	L3

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M.Tech. (II Semester) Regular/Supplementary Examinations

17VE18-WIRELESS COMMUNICATIONS & NETWORKS
(VLSI&ES)

Time : 3 hours Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Discuss the advantages and disadvantages of infra-red transmission and radio transmission.	6M	CO1	L1
(b)	Explain about infrastructure –based wireless networks with example.	6M	CO1	L2
	(OR)			
2(a)	Compare IEEE 802.11 and Bluetooth with regard to their ad-hoc capabilities. Where is the focus of these technologies?	6M	CO1	L3
(b)	If Bluetooth is a commercial success, what are remaining reasons for the use of infra-red transmission for WLANs.	6M	CO1	L4
3(a)	Which types of different services does GSM offer? Give some examples and reasons why these services have been separated.	6M	CO2	L1
(b)	Name the main elements of the GSM system architecture and describe their functions. What are the advantages of specifying not only the radio interface but also all internal interfaces of the GSM system?	6M	CO2	L2
	(OR)			
4(a)	Give reasons for a handover in GSM and the problems associated with it. Explain the typical steps for handover, what types of handover can occur?	6M	CO2	L3
(b)	Compare SDMA, TDMA, FDMA and CDMA.	6M	CO2	L2
5(a)	Name the requirements for a mobile IP and justify them. Does mobile IP fulfill them all.	6M	CO3	L2
(b)	List the entities of mobile IP and describe data transfer from a mobile node to a fixed node and vice versa.	6M	CO3	L2
	(OR)			
6(a)	What is the basic purpose of DHCP? Name the entities of DHCP and How can DHCP be used for mobility and support of mobile IP.	6M	CO3	L4
(b)	Mention the routing algorithms and discuss about one algorithm in brief.	6M	CO3	L2
7(a)	Discuss the advantages and dis advantages of Snooping TCP.	6M	CO4	L2
(b)	Compare Classical TCP improvements.	6M	CO4	L3
	(OR)			
8(a)	Outline about Transmission/time-out freezing and discuss its advantages and dis advantages.	6M	CO4	L2
(b)	Explain about Mobile TCP and discuss its advantages and dis advantages.	6M	CO4	L2
9(a)	Discuss about Cyclical repetition of data.	6M	CO5	L2
(b)	Discuss about simple broadcast scenario.	6M	CO5	L1
	(OR)			
10(a)	Discuss about Digital Audio broadcasting scenario.	6M	CO5	L2
(b)	Compare UMTS, DAB and DVB.	6M	CO5	L2

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M.Tech. (II Semester) Regular/Supplementary Examinations

17VE91-ASIC DESIGN
(VLSI&ES)

Time : 3 hours Max. Marks : 60

Answer one question from each unit.
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Explain ASIC design flow with neat diagram.	6M	CO1	L2
(b)	Discuss the economics of ASIC.	6M	CO1	L2
	(OR)			
2(a)	What is an ASIC? Explain the different types of ASIC.	6M	CO1	L2
(b)	What are the choices of ASIC cell library? Explain.	6M	CO1	L2
3(a)	What is an Antifuse? List the different types of Antifuse. Explain about Metal-Metal Antifuse.	6M	CO2	L2
(b)	Describe Gate-Array based ASIC's with neat diagram.	6M	CO2	L2
	(OR)			
4(a)	Discuss how an EPROM can be used to realize a sequential circuit.	6M	CO2	L2
(b)	Identify the performance and characteristics for the following design styles: (i) Standard cells (ii) Cell based ASIC.	6M	CO2	L1
5(a)	Describe the design flow of the Half-Gate ASIC.	6M	CO3	L2
(b)	Discuss about Low Level Design Languages.	6M	CO3	L2
	(OR)			
6(a)	Enumerate on schematic entry tools for ASIC based design.	6M	CO3	L2
(b)	What is PLA? With a diagram explain a 4X3 PLA with six product terms.	6M	CO3	L2
7.	Differentiate between Verilog logic synthesis and VHDL logic synthesis.	12M	CO4	L2
	(OR)			
8(a)	Discuss how interconnect delay is estimated.	6M	CO4	L2
(b)	Describe the steps involved in the logic synthesis of Comparator Mux,wich transfer input of smaller in magnitude to the output.Inputs and outputs of comparator Mux are three bits. Two inputs are applied to the comparator Mux.	6M	CO4	L2
9.	What are the various placement algorithms in ASIC design? Explain in brief any one of them. State the goals and objectives of placement.	12M	CO5	L2
	(OR)			
10(a)	Write the sequence of global routing and explain.	6M	CO5	L2
(b)	Summarize the goals and objectives of Floor planning.	6M	CO5	L2

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