Hall Ticket No: | | | | | | | | | | | | Question Paper Code: 18DECS103

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE
(UGC-AUTONOMOUS)
M.Tech I Year II Semester (R18) Regular End Semester Examinations – June 2019
(Regulations: R18)
ADVANCED DIGITAL SIGNAL PROCESSING
(DECS)

Time: 3Hrs   Max Marks: 60

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

Q.1(A)	Discuss briefly about Quadrature Mirror Filter with necessary block diagrams.	12M
	OR	
Q.1(B)	Explain the operation of Interpolation by a factor I in time domain and frequency domain with neat diagrams.	12M
Q.2(A)	Discuss any two methods for the Solution of Normal Equations.	12M
	OR	
Q.2(B)	Discuss briefly about applications of Adaptive filters.	12M
Q.3(A)	What is the need of Wiener filter? Explain the Wiener filter in detail with the help of block diagram	12M
	OR	
Q.3(B)	(i) Define the AR, MA and ARMA process.	12M
	(ii) Illustrate the filtering operation with ARMA Lattice structure.	
Q.4(A)	Explain the spectrum estimation using Eigen analysis algorithm.	12M
	OR	
Q.4(B)	What is the Estimation? Describe the Minimum variance spectral estimation.	12M
Q.5(A)	Write short notes on	12M
	(i) Short Time Fourier Transform	
	(ii) Daubechies Wavelets	
	(iii) Properties of Wavelets	
	OR	
Q.5(B)	Explain in detail about Haar wavelet Functions.	12M

*** END***

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M.Tech I Year II Semester (R18) Regular End Semester Examinations – June 2019

(Regulations: R18)

MICROCONTROLLERS AND PROGRAMMABLE DIGITAL SIGNAL PROCESSORS

(DECS)

Time: 3Hrs

Max Marks: 60

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

Q.1(A)	Discuss in detail about the instruction sets of ARM CORTEX M3 architecture with some examples.	12M
	OR	
Q.1(B)	Explain in detail about the Register set in ARM CORTEX M3 architecture and through light on the special registers.	12M
Q.2(A)	Discuss with necessary illustrations, the memory architecture of LPCXX microcontrollers	12M
	OR	
Q.2(B)	Explain in detail about the Timers used in LPCXX microcontrollers.	12M
Q.3(A)	Explain in detail about the multiport memory concept being used in DSP-P Processors	12M
	OR	
Q.3(B)	Explain the basic Van Neuman Architecture and discuss the evolution of Harvard architecture and modified Harvard architecture.	12M
Q.4(A)	Discuss in detail on TMS-C5x Processors Architecture with the block structure and through light on its advantages.	12M
	OR	
Q.4(B)	Discuss in detail about the different addressing modes of TMS-C5x Processors and also explain the special addressing modes.	12M
Q.5(A)	List out and discuss the various code generation tools used in CCS with necessary illustrations.	12M
	OR	
Q.5(B)	Write a program to develop assembly and C code for implementation of convolution operation.	12M

*** END***

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M.Tech I Year II Semester (R18) Regular End Semester Examinations – June 2019
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INTERNET OF THINGS

Time: 3Hrs   Max Marks: 60

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

Q.1(A)	i. Why do IoT systems have self-adapting and self – configuring. ii. Write short notes on IoT enabling techniques based on cloud computing. OR	12M
Q.1(B)	Explain how IoT network is designed logically	12M
Q.2(A)	i. Explain the functional blocks of M2M network. ii. List the difference between SDN and NFV for IoT. OR	12M
Q.2(B)	Describe in details of NFV architecture.	12M
Q.3(A)	Write short notes on service discovery and simple network management. OR	12M
Q.3(B)	Describe about ZigBee compact application protocol (CAP).	12M
Q.4(A)	Determine the types of data generated by a forest fire detection system. Describe alternative approaches for sorting data. OR	12M
Q.4(B)	Determine the IoT levels for designing home automation system including smart lighting and intrusion detection.	12M
Q.5(A)	Discuss in detail the privacy and security issues of IoT networks. OR	12M
Q.5(B)	Draw the architecture of Open IoT security access control via Trust-Mode (TM)	12M

<div align="center">*** END***</div>

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M.Tech. I Year II Semester (R18) Regular End Semester Examinations – June 2019
(Regulations: R18)
MARKOV CHAIN & QUEUING SYSTEM
(DECS)

Time: 3Hrs   Max Marks: 60

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

Q.1(A)   i) Discuss the properties of non-negative random variables and also comment on laws   12M
of large numbers.
ii) Write about Poisson distribution and also derive mean and variance for the same
distribution.

OR

Q.1(B)   i) State and prove Central limit theorem.   12M
ii) Prove that E[X] is the value of 'z' that minimizes $E[(X-z)]^2$

Q.2(A)   State and Prove Blackwell's theorem.   12M

OR

Q.2(B)   State and prove rewards and renewal reward theorem.   12M

Q.3(A)   Solve the Problem given below considering a Markov process: 12M
Suppose the entire cola industry produces only two colas. Given that a person last
purchased cola 1, there is 80% chance that their next purchase will be cola 1.Given
that a person last purchased cola 2, there is an 70% chance that their next purchase
will be cola 2.
Find the probabilities for the following conditions:
   i) If a person is currently a cola 2 purchaser, what is the probability that they will
   purchase cola 1 two purchases from now?
   ii) If a person is currently a cola 1 a purchaser, what is the probability that they will
   purchase cola 1 three purchases from now?

OR

Q.3(B)   i)   Explain about the matrix representation of Markov Chain.   12M
       ii)   Write the definitions of the Markov Chain (steady state) and explain the
           intuitive interpretation of steady state probabilities.
      iii)   Write about Markov Process in terms of steady- State Probabilities?

Q.4(A)   i) What is Poisson distribution and write the postulates of Poisson's distribution.   12M
i) Define birth-death process and write the expression for Global Balance equation.

OR

Q.4(B)   (a)Define State Holding Time and also Prove that the CTMC is memory less and Write   12M
the properties of CTMC. (b) Derive the expression for the short time behavior CTMC.

Q.5(A)   i) Assume the λ= 6/hr)and μ = 8/hr of single server infinite queue length   12M
           (M/M/1: ∞/ ∞ Model) then determine the following:
           ii) Probability of number of persons in the system.
           iii) Probability that at least one person is using the system.
           iv) Compare the above probabilities with the M/M/1: N/ ∞ Model and comment on
           the importance of each system.

                                              OR

Q.5(B)   i) Derive the expression for probability of n persons (p_n,) in single server infinite queue   12M
           length (M/M/1: N/ ∞ Model). Write the expressions for system length, queue length,
           waiting time in the system and waiting time in the queue.
           ii) Explain about Queuing Networks.

                                        *** END***