AR13 **Set-01**

Code: 13MTE1019

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech. II semester Regular Examinations, AUGUST, 2015
REFRIGERATION AND AIRCONDITIONING
(Thermal Engineering)

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the expression for COP of Carnot vapour compression refrigeration system. Why we study Carnot COP if it is practically impossible?
   b) What are the advantages of thermostatic expansion valve? Describe its operation. (6M+6M)
2. A two stage R-134a refrigerating system is operating between the pressure limits of 8 bar and 1.4 bar.The flash tank separates dry vapour at 3.2 bar pressure and liquid refrigerant then expands to 1.4 bar. The refrigerant leaves the condenser as a saturated liquid and is throttled to a flash chamber. Assuming the refrigerant leaves the evaporator as saturated vapour and both compressions are isentropic. Determine the fraction of refrigerant that evaporates as it is throttled to flash chamber and theCOP. (12M)
3. a) Sketch and explain Electrolux refrigeration system
   b) Compare Claude system and Linde system. (6M+6M)
4. a) The higher we go the cooler we find then why aircrafts need air-conditioning?
   b) An aircraft is cruising with a speed of 900 kmph at an altitude of 11,000 metre where the ambient conditions are 0.3 bar and -30°C.Assuming the compression ratio 5, cabin pressure 0.8 bar and air leaving the cabin at 27°C,obtain the power for pressurizationand refrigeration and COP. The flow rate through the system is 1.0 kg/s. (3M+9M)
5. A water cooler using R12 refrigerant works between 30ºC to 9ºC. Assuming the volumetric and mechanical efficiency of the compressor to be 80 and 90% respectively, and the mechanical efficiency of motor to be 90% , and 20% of useful cooling is lost into water cooler, find:1) The power requirement of the motor 2) Volumetric displacement of the compressor Given C_P (saturated vapour at 30ºC) = 0.7 kJ/kg K (12M)
6. a) Explain Steam Jet Refrigeration system and discuss the function of each component.
   b) Discuss why CFC refrigerants needs to be phased out. Explain the ozone depletion and global warming issues. (6M+6M)
7. A large warehouse located at an altitude of 1500 m has to be maintained at a DBT of 27^oC and a relative humidity of 50% using a direct evaporative cooling system. The outdoor conditions are 33^oC (DBT) and 15^oC (WBT). The cooling load on the warehouse is 352 kW. A supply fan located in the downstream of the evaporative cooler adds 15 kW of heat. Find the required mass flow rate of air. Assume the process in evaporative cooler to follow a constant WBT. (12M)
8. a) Explain the concept of optimum condenser pressure.
   b) Define sensible heat factor, by-pass factor, contact factor and apparatus dew point temperature. (6M+6M)

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SET-1

AR13

Code No: 13MDE1008

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech. II Semester Regular/ Supplementary Examinations, AUGUST – 2015

IMAGE AND VIDEO PROCESSING
(Digital Electronics & Communication Systems)

Time : 3 hours **Max Marks :60**

Answer any FIVE questions
All questions carry equal marks

1	a)	Explain the concept of digitizing coordinate values and amplitude values of a continuous image.	[5 M]
	b)	Draw the block diagram of image processing system and explain each block in detail.	[7 M]
2	a)	Explain following i) 2-D sampling theorem ii) Fourier Spectrum and Phase angle iii) Periodicity property of 2-D Fourier with example	[6 M]
	b)	Explain Discrete wavelet transform with an example.	[6 M]
3	a)	Explain Histogram Equalization discrete with example.	[6 M]
	b)	Explain nonlinear sharpening filters in spatial domain techniques to detect discontinuities in image.	[6 M]
4		Explain point, line and edge detection with example.	[12 M]
5	a)	List types of redundencies and explain how they can be identified and exploited.	[6 M]
	b)	Explain Huffman coding with example.	[6 M]
6	a)	Develop an LZW code for a given 4 x 4 8 bit image	[6 M]

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39	39	126	126
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	b)	Explain Lossless predictive coding with example.	[6 M]
7	a)	Write a short notes on analog and digital videos.	[6 M]
	b)	Briefly describe geometric image and photometric image formations.	[6 M]
8		Explain mesh based and global motion estimation algorithms in data	[12 M]

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AR13 **Set-02**

CODE : 13MIT1016

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech. II Semester Regular / Supplementary Examinations, August-2015
BIO-INFORMATICS
(Information Technology)

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

Answer any FIVE Questions
All Questions carry EQUAL marks

1. a) What is HTTP? Explain about the operation HTTP? [4M]
   b) Discuss the internet challenges in bio-informatics. [4M]
   c) What is the scope of bioinformatics? Why is it a multidisciplinary field? [4M]

2. Explain the standard process that is used in homology modeling? [12M]

3. What are the various protein databases? Which are the most important examples of these types? [12M]

4. a) Discuss about Database annotation and redundancy concepts? [6M]
   b) Explain the various pathways and data bases in KEGG [6M]

5. Define database? Give an overview of Bio-chemical databases. [12M]

6. a) Describe the Structure file formats in detail. [6M]
   b) Explain the salient features of PDB flat file. [6M]

7. Discuss about the following [12M]
   a) Structure of GenBank record
   b) Services offered by NCBI and EBI
   d) Data submission and retrieval

8. Explain the introduction to structure prediction methods. [12M]

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AR13 **Set-01**

Code: 13MPE1015

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I M.Tech II Semester Regular/Supplementary Examinations, August, 2015

POWER QUALITY MANAGEMENT

(Power Electronics and Electric Drives)

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

Answer any FIVE Questions

All Questions carry EQUAL marks

1. a) Define the following terms. (i) Triplen harmonics (ii) Voltage dip. (iii) Synchronous closing (iv)ITI curve (v) Flicker (vi) Oscilatary transient
   b) What is power Quality? Explain in detail the causes of power quality problems. (6M+6M)

2. Explain in detail about the Impedance –based fault location methods and Error sources. (12M)

3. a) Discuss in detail about switching transient problems related to loads and load switching
   b) Explain in detail about the computer tools for transient analysis. (8M+4M)

4. Explain the following (i)Lightning (ii) Ferroresonance (6M+6M)

5. a) Explain about the utility voltage regulator application.
   b) Explain in detail about the regulating utility voltage with distributed Resources. (6M+6M)

6. Explain about various Harmonic sources from Commercial and Industrial loads. (12M)

7. a) Explain the various steps involved in designing a Harmonic filter.
   b) Explain the overview of IEC standards on Harmonics. (7M+5M)

8. Discuss in detail about the Power Quality Measurement Instruments. (12M)

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SET-1

AR13

Code No: 13MVL1015

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech. II Semester Regular/ Supplementary Examinations, AUGUST – 2015

CPLD AND FPGA ARCHITECTURE AND APPLICATIONS
(VLSI System Design)

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

Answer any FIVE questions
All questions carry equal marks

1.	a)	State various types of PLDs available and differentiate between PLA and PAL?	[7M]
	b)	Mention the features of Altera Flex logic-1000 series CPLD?	[5M]
2.	a)	Compare Altera Series Max-5000 and 7000 Series PLDs?	[6M]
	b)	Give the Design flow for Xilinx FPGAs?	[6M]
3.	a)	Give the Routing Architectures and Technology mapping for FPGAs?	[6M]
	b)	Explain the Block Diagram and Specifications of Altera Flex 10K FPGAs?	[6M]
4.	a)	Explain about State transition tables and State Assignments for FPGAs?	[6M]
	b)	Write short notes on Linked State Machines?	[6M]
5.	a)	Explain about Architectures centred around nonregistered PLDs?	[6M]
	b)	Describe the extended Petrinets for Parallel Controllers?	[6M]
6.	a)	Explain the concept of Meta stability and how to avoid metastable state in FSM?	[6M]
	b)	With an example explain about one hot design method using ASMs?	[6M]
7.	a)	List out Salient features of Mentor graphics EDA Tool “FPGA Advantage”?	[5M]
	b)	Compare FPGA Design flow and ASIC Design flow?	[7M]
8.		Give the Design flow for Multiplexers and Parallel controllers using Mentor graphics EDA Tool?	[12M]

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SET-1

AR13

Code No: 13MCS1016

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech. II Semester Regular/ Supplementary Examinations, AUGUST – 2015

NETWORK SECURITY AND CRYPTOGRAPHY

(Computer Science and Engineering)

Time : 3 hours **Max Marks :60**

Answer any FIVE questions
All questions carry equal marks

1	a)	Explain the various security attacks?	[5M]
	b)	Explain the model of conventional crypto systems?	[4M]
	c)	What is hijacking? Explain about the UDP hijacking with an example?	[3M]
2	a)	What is cryptanalysis? Explain the types of attacks possible on Encrypted messages?	[3M]
	b)	Discuss about the strength of DES algorithm?	[3M]
	c)	Explain the cipher block modes of operation with neat diagrams.	[6M]
3	a)	What are the principal elements of a public key cryptosystem?	[5M]
	b)	Perform the RSA algorithm on given data and explain how encryption & decryption are performed on the message p=3, q=11, e=7 and M=5	[7M]
4	a)	Explain the operation of HMAC with a neat diagram	[6M]
	b)	Give Kerberos version-4 authentication dialogue and explain in brief.	[6M]
5	a)	Explain ESP in transport and tunnel modes with the help of neat diagrams	[6M]
	b)	Explain the various PGP Cryptographic function with neat sketch.	[6M]
6	a)	Draw a neat diagram of SSL architecture and explain the operation of SSL record protocol	[6M]
	b)	What are the steps involved in SET Transaction? What is the role of dual signature in SET?	[6M]
7	a)	What is a firewall? Explain packet filter router with its advantages & disadvantages.	[6M]
	b)	Explain about various malicious programs.	[6M]
8	a)	Explain the key management in public key cryptography?	[8M]
	b)	Discuss the Basic concepts of SNMP.	[4M]

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