**AR13** **Set-02**

**Code No: 13MPE1015**

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI**
**(AUTONOMOUS)**
**I M.Tech. II Semester Regular Examinations, July – 2014**
**POWER QUALITY MANAGEMENT**
**(Power Electronics and Electric Drives)**

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

**Answer any FIVE questions.**
**All questions carry EQUAL Marks**

1. Discuss the following characteristics of power quality events (6M+6M)
   (i) Notching and Noise. (ii) Sags and Swells

2. (a ) Give a detailed account of the cures for low frequency disturbances (6M)
   (b) Discus the importance of voltage criterion during power frequency disturbances. (6M)

3. a) What are the basic principles of over voltages protection of load equipments? (6M)
   b) Explain in detail about the surge arrestors and surge suppressors (6M)

4. a) What are the different sources of transient over voltages? (6M)
   b) How do you manage the ferroresonance in lines? (6M)

5. a) Explain how a voltage regulator is used for line drop compensator (6M)
   b) Explain any one End User Capacitor application? (6M)

6. a) Give the principles of controlling Harmonics? (6M)
   b) What are the two Harmonic indices used in Power system, Explain them briefly? (6M)

7. Explain the operation of the following devices used for controlling harmonic Distortion (6M+6M)
   (i) Passive filters
   (ii) Active Filters

8. a) Explain any flicker measurement technique. (6M)
   b) Discus in detail about power quality monitoring standards. (6M)

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**AR13** **Set-01**

**Code No: 13MIT1016**

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI**
**(AUTONOMOUS)**
**I M.Tech II Semester Regular Examinations, July-2014**
**BIO-INFORMATICS**
**(Information Technology)**

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

**Answer any Five Questions**
**All questions carry EQUAL marks**

| | | |
|---|---|---|
| 01. | a) Define Bioinformatics and explain its scope in detail. | (6M) |
| | b) Write about LAN & WAN. | (6M) |
| 02. | Write an essay on DNA sequencing methods. | (12M) |
| 03. | Explain Homology in view of Sir Richard Owen and Alfred Russel Wallace. | (12M) |
| 04. | Define biological database and write on NCBI, PIR, PROSITE and PDBSUM organization and management. | (12M) |
| 05. | Differentiate primary and secondary databases and explain in detail on organization and management of SWISSPROT and KEGG. | (12M) |
| 06. | Define biochemical databases and write on EXGESCY, BRENDA and WIT. | (12M) |
| 07. | Write about the following file formats. | |
| | a) FASTA. | (3M) |
| | b) Swissprot sequence formats. | (3M) |
| | c) GCG. | (3M) |
| | d) Genbank. | (3M) |
| 08. | a) Write on protein structure and its types. | (4M) |
| | b) Write about structure prediction methods in detail. | (8M) |

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**AR13** **Set-01**

**Code No: 13MVL1015**

# ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

**(AUTONOMOUS)**

**I M.Tech. II Semester Regular Examinations, July – 2014**

**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) Describe Programmable Logic and Mention its Applications? [4M]
   (b) Realize the function F = ABC' + AD + AD'; G =ABC + ABC + AD' H =ABC + BD; J = B + AD using PLA? [4M]
   (c) Differentiate between PLA, PALand ROM with neat Block Diagram? [4M]

2. (a) Describe MAX 7000 Architecture with neat diagram? [6M]
   (b) Discuss the architecture of AMD's Mach 2 – CPLD with neat Diagram? [6M]

3. (a) Explain Logic blocks, Routing Architecture and Technology Mapping of an FPGA? [6M]
   (b) Explain ALTERA's FLEX 8000 Series FPGAs? [6M]

4. (a) Discuss in detail about Top Down Design approach with Finite State Machine? [6M]
   (b) Explain about Linked State Machine? [6M]

5. (a) Discuss in detail about State Transition Table with example? [6M]
   (b) Describe the State Machine for Petrinets with an example? [6M]

6. (a) Explain about the applications of Onehot Design Method? [6M]
   (b) Discuss the following [6M]
      (i) Metastability.
      (ii)Extended Petrinets for parallel controllers.

7. (a) List out the salient features of Mentor Graphics EDA Tool? [6M]
   (b) Discuss about front end digital design tools for FPGA & ASIC? [6M]

8. (a) Design a 4 bit Parallel Adder? [6M]
   (b) Design 16x1 Multiplexer using 8x1 and 2x1 Multiplexer? [6M]

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**AR13** **Set-02**

**Code No: 13MDE1008**

# ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

**(AUTONOMOUS)**

**I M.Tech. II Semester Regular Examinations, July -2014**

**IMAGE AND VIDEO PROCESSING**

**(Digital Electronics & Communications Systems)**

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

**Answer any FIVE Questions**

**All Questions carry EQUAL marks**

1. a. Discuss about the basic steps of Image Processing? [8M]
   b. Explain briefly about Sampling and Quantization of an Image. [4M]

2. a. What is Spatial Filter? Explain the mechanism of Spatial Filtering. [6M]
   b. Discuss about Sharpening Spatial Filters. [6M]

3. Define Image Segmentation. Explain about Region Based Segmentation. [12M]

4. a. What is meant by Image Compression? Discuss about different types of redundancies. [8M]
   b. Discuss in brief about Bit Plane Coding. [4M]

5. a. Describe Sampling Structures for analog and digital video. [6M]
   b. Briefly describe Intra Frame Filtering used in the video filtering [6M]

6. What is Optical Flow? Explaini) Waveform Based Coding
   ii) Block Based Coding
   iii) Predictive Coding [12M]
   iv)

7. Explain variousthresholding techniques for image segmentation. [12M]

8. Explain about i) Run Length Coding
   ii) JPEG Standards [12M]

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**AR13** **Set-01**

**Code: 13MTE1019**

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI**
**(AUTONOMOUS)**
**I M.Tech II Semester Regular Examinations, July-2014**
**REFRIGERATION AND AIR CONDITIONING**
**(Thermal Engineering)**

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

**Answer any FIVE Questions**
**ALL questions carry equal marks**

1. a. What are the advantages of using a flash chamber in parallel with evaporator? [4M]
   b. Explain the effect of change in the following operating conditions on the performance of vapour compression refrigeration cycle using p-h chart.
   (i) Evaporator pressure (ii) Condenser pressure [8M]

2. a. What are the factors considered in selecting the refrigerants in ice producing plant and mention the name of the refrigerant used in it. [6M]
   b. Suggest substitutes for CFC Refrigerants from the point of ODP & GWP. [6M]

3 a. List out the limitations of single refrigerant systems leading to cascade system in the production of low temperatures. [5M]
   b. With a neat sketch explain the cascade system. [7M]

4 a. draw a compact diagram of Lithium bromide water absorption refrigeration system and explain its working. [6M]
   b. With a neat sketch explain the working principle of a three fluid vapour absorption refrigeration system. [6M]

5. a. Even though the COP of air cycle refrigeration is very low, it is still found to be most suitable for aircraft refrigeration systems. Why? [5M]
   b. An air refrigerator working on the principle of Bell-Coleman cycle. The air into the compressor is at 1 atm at -10ºC. It is compressed to 10 atm and cooled to 40ºC at the same pressure. It is then expanded to 1 atm and discharged to take cooling load. The air circulation is 1 kg/s.
   The isentropic efficiency of the compressor = 80%
   The isentropic efficiency of the expander = 90%
   Find the following:
   i) Refrigeration capacity of the system
   ii) C.O.P of the system
   Take $\gamma = 1.4$, Cp = 1.00 kJ/kg ºC (Solution) [7M]

6. a. Draw the T-s and h-s diagrams representing steam jet refrigeration system. [6M]
   b. Explain working principle and components of thermo electric refrigerating system. [6M]

7. In an air conditioning system air at a flow rate of 2 kg/s enters the cooling coil at 25 $^{o}$C and 50% RH and leaves the cooling coil at 11 $^{o}$C and 90% RH. The apparatus dew point of the cooling coil is 7 $^{o}$C.

   Find a) The required cooling capacity of the coil,
   b) Sensible Heat Factor for the process, and
   c) By-pass factor of the cooling coil.

   Assume the barometric pressure to be 1 atm. Assume the condensate water to leave the coil at ADP ($h_w$ = 29.26 kJ/kg) [12M]

8. Explain various factors involved in the load estimation of a space to be Air conditioned [12M]

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**AR13** **Set-02**

**Code No: 13MCS1018**

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI**
**(AUTONOMOUS)**
**I M.Tech. II Semester Regular Examinations, July -2014**
**IMAGE PROCESSING**
**(Computer Science and Engineering)**

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

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

1. a. Discuss about Sampling and Quantization. [4M]
   b. Explain the components of Image Processing System. [8M]

2. What is histogram of an image? Explain Histogram Equalizationwith all mathematical derivations. [12M]

3. What is Morphological Operation? Explain about the following Morphological Operationsi) Opening ii) Closing iii) Dilation iv) Erosion [12M]

4. a. Discuss about Hit or Miss Transformation. [6M]
   b. Explain about i) Boundary Extraction.
   ii) Region Filling. [6M]

5. Explain in detailabout Region Based Segmentation. [12M]

6. a. Define Redundancy? Discuss about different types of data redundancies present in Digital Image. [6M]
   b. Discuss about Huffman Coding with suitable example. [6M]

7. a. Describe Chain Codes and Polygonal Approximations [6M]
   b. Explain in detail Boundary Descriptors. [6M]

8. What is Thresholding? Explain about i) Global Thresholding
   ii) Basic Adaptive Thresholding [12M]

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