AR16 **Set-02**

Code: 16MTE1019

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech. II Semester Regular & Supplementary Examinations, August-2018
REFRIGERATION AND AIRCONDITIONING
(Thermal Engineering)

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

Answer any FIVE questions
All questions carry equal marks

1. a) Sketch and explain how the actual vapour compression cycle is different from the theoretical cycle.
   b) What are the desirable characteristics of a refrigerant? Can water be a refrigerant? Justify your statement. (6M+6M)

2. A two stage compression ammonia refrigeration system operates between limits of 14 bar and 2 bar. The temperature of desuperheated vapor and subcooled liquid refrigerant are limited to 30°C, the flash tank separates dry vapor at 5 bar pressure and liquid refrigerant then expands to 2 bar. Estimate the C.O.P of the machine and power required to drive the compressor, if the mechanical efficiency of the drive is 80% and load on the evaporator is 10 TR. (12M)

3. a) Explain modified aqua- ammonia system with a neat sketch.
   b) Derive an expression for the COP of an ideal vapour absorption system. (6M+6M)

4. For a bootstrap air-refrigeration system of an aircraft flying at an altitude 2000m (ambient there 0.8 bar and 0°C), the ram air temperature and pressure are 17 °C and 1.05 bar respectively. At the end of isentropic compression the air is at 4.0 bar and is cooled to 27°C using ram air. At this temperature air is, further, compressed in the auxiliary compressor driven by the cooling turbine (directly coupled to compressor).the compressed air from the bootstrap is again cooled to 27°C in another auxiliary heat exchanger .finally, expansion takes place upto cabin pressure 1.01 bar cabin temperature is 25°C.obtain maximum pressure in the system and COP if air leaves the cabin at 25°C. (12M)

5. The outdoor summer design conditions for a bank for 100 persons at a place is DBT= 310 K and WBT= 300 K. the required inside conditions are DBT=295 K and φ= 60%.The room sensible heat 4,00,000 kJ/h. The room latent heat 2,00,000 kJ/h.Ventilation requirement per person 0.0047 m^3/h. The bypass factor is 0.15. Evaluate a) grand total heat b)ESHF c)apparatus dew-point d) volume flow rate of dehumidified air. (12M)

6. a) Describe the principle of production of hot and cold air from a Vortex tube. List the applications.
   b) Sketch and explain Linde system for liquefaction of air. (6M+6M)

7. Water is used in a Standard Single Stage vapour compression refrigeration system. The system operates at an evaporator temperature of 4.5°C (pressure = 0.8424 kPa) and a condenser temperature of 38°C (pressure = 6.624 kPa). Assume that the water vapour behaves as an ideal gas with C_p/C_v= 1.322 and calculate the discharge temperature if compression is isentropic. Also calculate COP if the refrigeration effect is 2355 kJ/kg. (12M)

8. a) Represent various psychrometric processes on psychrometric chart.
   b) Explain the concept of removal of Flash gas using flash tank. (6M+6M)

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AR16

CODE: 16MPE1015 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech. II Semester Regular & Supplementary Examinations, August-2018

POWER QUALITY MANAGEMENT
(Power Electronics and Drives)

Time: 3 Hours Max Marks:60

Answer any FIVE questions
All questions carry EQUAL marks

1.	What is power quality? Explain the basic power quality measures?	(12)
2.	Discuss about the computer Business Equipment Manufactures Associations (CBEMA) and ITI curves, Explain about the events described in the curves.	(12)
3.	i) Define Voltage sag. ii) How do you classify the voltage sag? iii) What are the usual causes for producing voltage sag?	(12)
4.	Explain the sources and protection of transient over voltages	(12)
5.	Discuss the voltage regulating devices in use on utility and industrial power systems.	(12)
6.	What is meant by international power quality standards? Where are they used? Explain IEEE standard corresponding to harmonics.	(12)
7.	Explain various devices for controlling harmonic distortion.	(12)
8.	Discuss in detail about the Power Quality Measuring Instruments	(12)

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AR16 **Set-01**

Code No: 16MVL1015

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech. II Semester Regular & Supplementary Examinations, August-2018
CPLD AND FPGA ARCHITECTURES AND APPLICATIONS
(VLSI System Design)

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

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish the features of PAL, PLA and ROM devices? Mention their applications.
   b) With the help of sketches describe the ALTERA FLEX logic- 10000 series CPLD. [6+6]

2. a) Explain about Advanced Micro Devices CPLDs (Mach 1 to 5). Depict about AMD Mach 4 PAL – like block.
   b) Explain in detail about Cypress FLASH 370 technology. [6+6]

3. a) Explain about Technology mapping for FPGAs.
   b) Explain about AT&T ORCA FPGAs with its AT&T Programmable Function Unit(PFU) [6+6]

4. a) Explain about the concept and properties of petrinets for state machines.
   b) What is meant by Meta stability and Synchronization? Explain. [6+6]

5. a) Explain about Linked state Machines and encoded state machine.
   b) Describe about design of state machines centered around shift registers. [6+6]

6. a) Describe the methodology of Architectures centered around non- registered PLDs.
   b) With an example explain about One - Hot design Method using ASMs. [6+6]

7. a) Explain about Top Down Design flow of FSM
   b) Explain System level design approach using FPGAs with respect to controller, data path and functional partition. [4+8]

8. Write notes on the following [6+6]
   a) Mentor Graphics EDA Tool FPGA Advantage
   b) Parallel adder design using FPGA.

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AR16

CODE: 16MCS1021 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech. II Semester Regular & Supplementary Examinations, August-2018

DIGITAL IMAGE PROCESSING
(Computer Science and Engineering)

Time: 3 Hours Max Marks:60

Answer any FIVE questions
All questions carry EQUAL marks

1.	(a)	Explain fundamental steps in image processing.	6M
	(b)	Explain the basic relations between pixels	6M
2.	(a)	Describe Histogram equalization. Obtain histogram equalization for the following image. [5 5 5 5 5 3 4 4 4 3 3 5 5 5 3 3 4 5 5 3 4 4 4 4 4]	6M
	(b)	Explain various sharpening filters.	6M
3.	(a)	Explain about any three morphological algorithms.	6M
	(b)	Explain about skeletons and convex hull in detail.	6M
4.	(a)	Explain various gray level transformations.	6M
	(b)	Explain in detail image averaging and image subtraction.	6M
5.	(a)	Explain how the image gradient is useful in edge detection.	6M
	(b)	Explain threshold based segmentation with example.	6M
6.	(a)	What is meant by error free compression? Explain the variable length coding.	6M
	(b)	A source emits three symbols A, B, C with probabilities {0.50, 0.25, 0.25} respectively. Construct an arithmetic code to encode the word C A B	6M
7.	(a)	How a color image can be converted to gray scale image. Explain.	6M
	(b)	Explain about CMY and CMYK color models in detail.	6M
8.	(a)	Discuss various redundancies	6M
	(b)	Explain (i) Low pass Filtering (ii) Median filtering	6M

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AR16

Code No: 16MSE1020 SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech. II Semester Regular & Supplementary Examinations, August-2018

DESIGN OF SUBSTRUCTURES

(Structural Engineering)

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

Answer any FIVE questions
All questions carry equal marks

1. What is the difference between sub structure and super structure? What is the role of foundation engineer in the substructure design?

2. What is the difference of dock and harbour? What are the different types of break water? Explain with neat sketches.

3. Briefly explains about design procedure for cellular cofferdams?

4. What ate the different types of sheet pile structures and explain them with neat sketches.

5. Briefly explain about design procedure for impact machine foundation?

6. Explain about design procedures for wall type and rubble mound break waters

7. Briefly explain about various forces acting on the tower foundation?

8. Explain the different anchorage methods in sheet pile?

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