AR13 SET-02

13MTE1002

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech. I Semester Regular/Supplementary Examinations, March,2015
ADVANCED THERMODYNAMICS
(Thermal Engineering)

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

Answer any FIVE questions
All questions carry equal

1. a) What do you understand by entropy principle?
   b) What are max wells relations and what is their necessity?

2. Steam at 0.8 MPa,250°C and flowing at the rate of 1 kg/sec passes in to a pipe carring wet steam at 0.8Mpa, 0.95 dry. After adiabatic mixing the flow rate is 2.3 kg/sec.Determine the condition of steam after mixing.

3. a) Derive Clausius –Clapeyronequation .
   b) Write down the vander-Waals equation of state.How does it defer from the ideal gas equation of state

4. a) Define (i) Enthalpy of formation
      (ii) Enthalpy of combustion
      (iii) Adiabatic flame temperature
   b) Determine the enthalpy of combustion of liquid octane (C8H18) with 100% theoretical dry air. Both products and reactants are at 1 atm and 298K.

5. a) Explain fuel cell technology with a neat diagram.
   b) Explain the working principle of thermionic generator with a neat sketch

6. An air water vapour mixture enters an adiabatic saturator at 30 °C and leaves at 20 °C, which is the adiabatic saturation temperature. The pressure remains constant at 100Kpa. Determine the relative humidity and the humidity ratio of the inlet mixture

7. A reversible heat engine operates between two reservoirs at a temperature of 600 °C and 40 °C. The engine drives a reversible refrigerator which operates between reservoirs at a temperature of 40 °C and -20 °C. The heat transfer to the engine is 2000kJ and the network output of the combined engine refrigerator plant is 360 kJ. Evaluate the heat transfer to the refrigerant and the net heat transfer to the reservoir at 40 °C

8. a) Explain the concept of co-generation with examples
   b) Write short notes on Binary vapour cycle and Second law analysis of the cycle.

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AR13 SET 1

Code No: 13MIT1002

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

ADVANCED UNIX PROGRAMMING
(Information Technology)

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

Answer any FIVE questions
All questions carry equal marks

1.	Explain UNIX Layered architecture with neat diagram	[12M]
2.	Explain in detail about File and Directory Maintenance utilities	[12M]
3.	Explain orphan and Zombie Processes with program	[12M]
4.	Explain IPC Mechanisms in detail	[12M]
5.	Write about Semaphore and shared memory with program	[12M]
6.	Write client server program by using sockets	[12M]
7.	Write about signal handling for alarm signal with example program	[12M]
8.	Differentiate dup() and dup2() , fork() and v fork() with example programs	[12M]

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AR13 **Set 01**

Code No:13MPE1002

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

ANALYSIS OF POWER ELECTRONIC CONVERTERS
(Power Electronics and Electric Drives)

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

Answer any FIVE questions
All questions carry equal marks

1.	a)	Explain the operation of synchronous tap changer with R-L load,with a nea sketch.	[6M]
	b)	Discuss the effect of source inductance on the operation of AC voltage controllers.	[6M]
2.		Explain the operation of 3-phase AC-voltage controller when connected to a delta connected resistive load.	[12M]
3.	a)	What are the various P.F. improvement methods in converter. Discuss any two of them with relative merits and demerits.	[6M]
	b)	Derive the expression for input PF for extinction angle control.	[6M]
4.	a)	With the help of a circuit diagram and waveform explain the operation of 3-phase fully controlled converter feeding RL-load. Derive the expression for average load voltage.	[6M]
	b)	For the above circuit derive the expression for input P.F and harmonic factor.	[6M]
5.	a)	Discuss and analyze the need for P.F correction / improvement in converter.	[4M]
	b)	Explain the operation of 3-phase boost PFC converter.	[8M]
6.		Explain the voltage control methods of phase displacement control, multiple PWM for 1- phase inverter.	[12M]
7.		Explain about the voltage control of a 3 phase inverter with the help of space vector modulation technique.	[12M]
8.		Explain the operation of flying capacitor type multi level inverter and discuss its advantages and disadvantage	[12M]

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AR13 **Set-01**

Code No: 13MVL1002

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech. I Semester Regular/Supplementary Examinations, March, 2015
VLSI TECHNOLOGY AND DESIGN
(Common to VLSI System Design and Digital Electronics & Communication Systems)

Time: 3 hours **MaxMarks:60**

Answer any FIVE questions
All questions carry indicated marks

1.	a) Explain the various steps in NMOS fabrication with neat diagrams?	[7M]
	b) Compare CMOS over Bipolar Technologies?	[5M]
2.	a) Discuss about Latch-up in CMOS Circuits?	[5M]
	b) Explain the Latch-up effect in P_well structure with characterstics between current Vs Voltage?	[7M]
3.	a)Describe the Scalable design rules?	[5M]
	b) Design and Explain an inverter with Layout?	[7M]
4.	a)Design and describe NOR and NAND static complementary gates with neat diagrams?	[6M]
	b)Explain Multiple Threshold CMOS and Variable Threshold CMOS Low power gates?	[6M]
5.	a)Analyse left-edge algorithm with example and neat diagrams?	[6M]
	b) Explain the types of simulations?	[6M]
6.	a)Explain the different clock rules?	[4M]
	b) Describe the two phase systems for Latches?	[8M]
7.	a)Explain Interdigitated power and ground trees?	[6M]
	b)What are the necessary design and methods to improve clock distribution?	[6M]
8.	a)Describe the two modes of architectures for low power?	[6M]
	b)Discuss the Hardware/Software co-design?	[6M]

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AR13 **Set 02**

Code No: 13MCS1002

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech. I Semester Regular/Supplementary Examination, March,2015
Computer Organization and Architecture
(Computer Science and Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

1. Write in brief about
   a) Bus Structures 6M
   b) Fixed Point Representation with example. 6M

2. What are different Addressing Modes? Explain with examples. 12M

3. a). Design a 4- bit Arithmetic Circuit to perform all Arithmetic Operations. 8M
   b). Write in brief Stack Organization. 4M

4. Explain Addition and Subtraction of Signed numbers with flowchart and example. 12M

5. What is Vector Processing? Explain how matrix multiplication is performed using Vector Processing. 12M

6. What is Multi-Processor? Explain different Interconnection Structures for Multi-Processor Systems. 12M

7. Explain various Memory Mapping Techniques in cache memory with examples. 12M

8. a). What is Priority Interrupt? Explain about Daisy Chaining Priority? 6M
   b) Write short notes on Asynchronous Data Transfer. 6M

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