Code No: 13MTE1007
ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech. I Semester Regular / Supplementary Examinations, March 2015
SOLAR ENERGY TECHNOLOGY
(Thermal Engineering)

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Explain why solar energy is considered as an alternate option and give its potential in context to India.
   b) Describe the working of Pyrheliometer used for the measurement of beam radiation, with a neat diagram.

2. Calculate the overall loss coefficient for an evacuated glass tube cylindrical parabolic focusing concentrating collector system with the following data. Absorber tube inner tube diameter 6.0 cm and outer diameter 6.5 cm. glass cover inner diameter 15.0 cm, outer diameter 15.8 cm, aperture 3.50 m, length of concentrator 3.50 m. emissivity of absorber tube surface is 0.22, emissivity of glass is 0.88, mean temperature of absorber tube is 200°C, ambient temperature is 20°C, wind velocity is 1.5 m/s.

3. With help of neat a diagram, describe a solar heating system using water heating solar collectors. What are advantages and disadvantages of this method?

4. What is the principle of collection of solar energy used in non convective solar pond? What are the main applications of a solar pond?

5. Classify the methods of solar energy storage and describe thermal energy storage system.

6. a) Explain principles of different types of solar cells
   b) Explain the conversion efficiency and power output of solar cells.

7. a) Explain the economic analysis of ADD-ON solar systems
   b) What is payback period and how it is calculated.

8. a) A solar PV street lighting system consisting of two lamps, three PV modulus, a battery and other associated component costsRs.55,000/-. The cost of conventional energy saved due to its installation is Rs. 4000/- in the first year and these costs inflates at the rate of 5% per year. Calculate the payback period, with and without discount of the system. Assume discount rate of 9%.
   b) Mention different types of collectors used in solar radiation, and describe the constructional details of liquid flat plate collector with a neat diagram.

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AR13 SET -01

Time: 3 Hours   **Max. Marks: 60**
Answer any Five Questions
All Questions carry equal marks

1. a) Explain about placement of Optimizations in Aggressive optimizing compilers. (6M)
    b) Explain the structure of a compiler.   (6M)

2. Elaborate the procedure of Prologues, Epilogues, Calls & Returns.   (12M)

3. a) Explain the Intermediate languages of MIR, HIR and LIR   (9M)
    b) Discuss about Run time stack.   (3M)

4. a) List the approaches of control flow analysis.   (6M)
    b) Discuss the Iterative Data flow analysis.   (6M)

5. Explain Dependencies in loops with an example.   (12M)

6. Discuss in detail about Algebraic simplification & Re-association with examples.   (12M)

7. a) Explain about priority based Graph coloring.   (8M)
    b) Discuss dead code elimination in brief.   (4M)

8. a) Explain procedure integration in procedure optimization.   (5M)
    b) Briefly explain Inter procedural alias analysis.   (7M)

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AR13   SET 1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech. I Semester Regular / Supplementary Examinations, March 2015
NON-CONVENTIONAL ENERGY SOURCES AND APPLICATIONS
(POWER ELECTRONICS AND ELECTRIC DRIVES)

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is meant by solar distillation? Explain briefly with a neat sketch. (6M)
    b) What is a solar cell? Explain its principle of operation. (6M)

2. a) What is the basic principle of wind energy conversion and derive the expression for power developed due to wind? (6M)
    b) Explain briefly vertical type wind mills with neat sketches. (6M)

3. a) Explain various methods of power generation from OTEC plant with neat sketches (6M)
    b) Explain the principle of wave energy conversion with a neat sketch. (6M)

4. a) Compare the relative performance of a floating drum and fixed drum type bio-gas plants. (6M)
    b) Explain the operation of anaerobic digestion with respect to biogas power generation. (6M)

5. Explain the operation of open cycle and closed cycle systems of MHD power generation with a neat sketch. (12M)

6. Describe the process of geo thermal energy extraction in detail. (12M)

7. a) Briefly explain high level reservoir wave machine (6M)
    b) What are the various advantages of anaerobic digestion for biogas? (6M)

8. a) Write short notes on simple single pool tidal system. (6M)
    b) Briefly explain the factors affecting the wave energy. (6M)

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AR13   SET-01

1. a) Explain basic architecture of general purpose processors with neat sketch.

    b) What are the design challenges in the development of an embedded system?

2. a) Illustrate finite state machines with data path model (FSMD) by giving suitable Example.
    b) Explain the role of programming languages in system design.

3. a) Explain the basic functions of a real time Kernel.
    b) Given an overview of different Inter process communication mechanisms adopted by various real time operating systems.

4. a) Explain RS422/RS485 communication interface.
    b) Explain one of the wireless communication interfaces.

5. a) Discuss memory management functions of RTOS.
    b) Explain Embedded Linux-Real Time operating Systems.

6. a) What is hardware/software co-simulation and explain.
    b) What is synthesis? and Explain RT Synthesis.

7. a) Compare   Models Vs Languages?
    b) What is an interrupt? Explain about interrupt service routines.

8. Explain in detail about the customization of single purpose processros.

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Code No: 13MCS1005

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMUS)
I M.Tech. I Semester Regular / Supplementary Examinations, March 2015
Operating Systems
(Computer Science and Engineering)

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a. What is an Operating System? List and explain briefly about the various functions or components of an Operating System   [10M]
    b. List some of the salient features of Linux   [2M]

2. a. Describe and Differentiate Multitasking, Multiprogramming and Multithreading techniques   [8M]
    b. Write a short note on awk and cp UNIX commands with respective syntaxes   [4M]

3. a. What is a process? Describe the various states of a process with the help of a diagram   [6M]
    b. Draw a figure of UNIX architecture illustrating the relationship between the various components   [6M]

4. a. Explain the functionality of monitor construct and write a solution to dining philosophers problem using monitors   [10M]
    b. Define signal in UNIX. Explain the usage of kill function with syntax   [2M]

5. a. Consider the following page reference string : 5, 4, 3, 2, 1, 4, 3, 5, 4, 3, 2, 1, 5………
    Show how FIFO works. Also calculate the total number of page faults when allocated blocks are 3 and 4 respectively   [6M]
    b. Describe about Interrupted System Calls   [6M]

6. Explain Inter Process Communication applications such as message queues and shared memory   [12M]

7. a. List and describe the three common methods used for allocating disk space with the help of diagrams.   [8M]
    b. Write about the file access permissions in UNIX relating to read and write functions   [4M]

8. What is the difference between preemptive and non preemptive scheduling? Explain an algorithm for each scheduling type with the help of an example   [12M]

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