

Code No: 13MTE1014

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

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

COMPUTATIONAL FLUID DYNAMICS

(Thermal Engineering)

Time: 3 Hours

Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the difference between Finite difference, Finite element and Finite volume methods (6M)
b) Explain about parabolic partial differential equation and give examples (6M)
2. Solve the following algebraic equations using Gauss Seidel iterative method (12M)

$$\begin{aligned} 4x_1 + 2x_2 + x_3 &= 7 \\ 3x_1 + 5x_2 + 2x_3 &= 11 \\ 6x_1 + 10x_2 + 3x_3 &= 23 \end{aligned}$$
3. Using Taylor series, define first order forward difference and backward difference expression for $\frac{\partial u}{\partial y}$ (12M)
4. a) Write the difference between FTCS and FTFS Schemes (6M)
b) Compute the solution of Equation $u_t + Cu_x = 0$, where $C = \text{Constant} > 0$ for first two steps with initial conditions (6M)

$$\begin{aligned} u(x,0) &= x - x^2 \quad \text{for } 0 < x < 1 \\ &= 0 \quad \text{for } x > 1 \end{aligned}$$
 And boundary conditions $u(0,t) = 0$ for all t , taking $x = \frac{1}{4}$ and $\vartheta = C \frac{\Delta t}{\Delta x} = \frac{1}{2}$
5. For initial boundary value problem $\frac{\partial u}{\partial t} = k \frac{\partial^2 u}{\partial x^2}$ where $k = \text{Constant}$ with initial conditions (12M)

$$\begin{aligned} u(x,0) &= \sin x \quad \text{for } 0 < x < 1 \\ u(0,t) &= 0, u(1,t) = 0 \quad \text{for all time } t > 0 \quad \text{and } r = k \frac{\Delta t}{\Delta x^2} = \frac{1}{2} \end{aligned}$$
 solve for three iterations by any method
6. Given $\nabla^2 u = f(x,y)$ with exact solution $u = 2x^2 + y^2$ dirichlet boundary conditions solved for u_5 u_8 using finite volume method via finite difference method. dirichlet boundary data for all exterior boundaries and source terms are calculated from exact solution (12M)

$$u_1, u_2, u_3, u_6, u_9, u_{12} = 0, u_4 = 8, u_7 = 32, u_{10} = 72, u_{11} = 18, f_5 = 8, f_8 = 20$$
7. a) Summarize incompressible Navier Stokes equations (6M)
b) Explain the difference between SIMPLE and SIMPLER methods (6M)
8. Write short notes on (4M)
 - a) Turbulant boundary layer (4M)
 - b) Multi Grid Method (4M)
 - c) Density Coupling (4M)

AR13

Set-02

Code No: 13MDE1006

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

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

CODING THEORY & PRACTICE

(Digital Electronics & Communication Systems)

Time: 3 hours

Max.Marks:60

Answer any FIVE questions

All questions carry equal marks

1. a) Mention the different wireless channel statistical models and explain any two models (6M)
b) Explain the BER performance of CDMA (6M)
2. a) Explain about weight distribution of BCH codes (6M)
b) Write a short notes on modified RS codes (6M)
3. a) Discuss the linear convolution encoder in detail (6M)
b) Discuss about structural properties of convolution codes (6M)
4. a) Discuss about soft decision decoding in convolution codes (6M)
b) Explain hard decision decoding for binary symmetric channel (6M)
5. a) Explain the concept of parallel concatenation in detail (6M)
b) Discuss about iterative decoding using BCJR algorithm (6M)
6. a) Discuss linear space time code in detail (6M)
b) Discuss trellis space time coding detail (6M)
7. a) Discuss about LDPC encoder in detail (6M)
b) Discuss about the performance analysis of RS and LDPC codes (6M)
8. Explain trellis encoding method of convolution codes with an example (12M)

AR13

Set-01

Code No:13MIT1010

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

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

**DATA MINING AND KNOWLEDGE DISCOVERY
(INFORMATION TECHNOLOGY)**

Time:3 hours

Max.Marks:60

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

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| 1. a) Describe the five primitives for specifying a data mining task | 4M |
| b) List data mining functionalities and explain with an example | 8M |
| 2. a) Discuss the classification of data mining | 4M |
| b) Explain OLAP operations with suitable example | 5M |
| c) How is a data warehouse different from a database? | 3M |
| 3. a) Explain three-tier data warehousing architecture with neat diagram | 6M |
| b) Describe schemas for Multidimensional databases | 6M |
| 4. a) Illustrate data reduction strategies | 8M |
| b) Discuss data generalization and data characterization | 4M |
| 5. a) Explain how to find frequent item sets without candidate generation | 8M |
| b) Briefly explain association rule mining | 4M |
| 6. a) Describe the methods to improve the efficiency of Apriori Algorithm | 8M |
| b) Write notes on market basket analysis | 4M |
| 7. a) Explain decision tree induction classification with a suitable example | 8M |
| b) Compare naïve Bayesian classifier with Bayesian Belief Networks | 4M |
| 8. a) Describe categories of major clustering methods | 4M |
| b) Write the DBSCAN algorithm for density based clustering method | 8M |

AR13**Code No: 13MPE1012****ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)****I M. Tech II Semester Regular/ Supplementary Examinations, August – 2015****ADVANCED DIGITAL SIGNAL PROCESSING AND APPLICATIONS
(Power Electronics & Electric Drives)****Time : 3 hours****Max Marks :60****Answer any FIVE questions
All questions carry equal marks**

- 1
 - a) Explain with the help of mathematical equations how signed numbers can be multiplied. The sequence $x(n) = [3, 2, -2, 0, 7]$. It is interpolated using interpolation sequence $b_k = [0.5, 1, 0.5]$ and the interpolation factor of 2. Find the interpolated sequence $y(m)$. [6M]
 - b) Explain the two method of sampling rate conversions used in DSP system, with suitable block diagrams and examples. Draw the corresponding spectrum. [6M]
- 2
 - a) Obtain the cascade realization of system function for FIR filter $H(z) = 1 + 5/2z^{-1} + 2z^{-2} + 2z^{-3}$. [6M]
 - b) An FIR filter is given by the difference equation $y(n) = 2x(n) + 4/5x(n-1) + 3/2x(n-2) + 2/3x(n-3)$. Determine its Lattice form. [6M]
- 3
 - a) Design an analog Butterworth filter that has a -2dB pass band attenuation at a frequency of 20 rad/sec and atleast -10 dB stop band attenuation at 30 rad/sec. [6M]
 - b) Design a Chebyshev filter with a maximum pass band attenuation of 2.5 dB, $\omega_p = 20$ rad/sec and the stop band attenuation of 30 dB at $\omega_s = 50$ rad/sec. [6M]
- 4
 - a) Discuss design of FIR Filter with least integral-Squared Error method [6M]
 - b) Discuss the design of linear phase low pass filter with Kaiser Adjustment window Function. [6M]
- 5
 - a) Explain the effects of coefficients on quantization and explain how analog signals are effected during sampling process [6M]
 - b) Explain Computer aided design of Equi-ripple linear phase FIR filters? [6M]
- 6
 - a) Explain the internal architecture of TMS320LF 2407A processor in detail [6M]
 - b) What are the components of Central Processing Unit and describe their functions? [6M]
- 7 Briefly describe different addressing modes of C2xx processor with an example? [12 M]
- 8 Explain in detail about
 - a) Quardrature Encoder Pulse (QEP) Circuit [4 M]
 - b) Event manager interrupts? [4 M]
 - c) PWM Waveform Generation [4 M]

AR13

Set-01

Code No: 13MVL1012

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
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I M.Tech II Semester Regular / Supplementary Examinations, August-2015

**DESIGN OF FAULT TOLERANT SYSTEMS
(VLSI System Design)**

Time:3 hours

Max.Marks:60

**Answer any FIVE questions
All questions carry equal marks**

1. a) Define Reliability and meantime between failure. Derive the relationship between these two parameters. (6M)
b) With neat diagrams discuss about Reliability of series, Parallel systems. (6M)
2. a) Explain the importance of fault tolerance. (6M)
b) Distinguish between static and dynamic redundancy. (6M)
3. a) Discuss about the self-purging redundancy. (6M)
b) Discuss about the Time redundancy. (6M)
4. a) Define the terms fault-secure and self testing of a circuit. (6M)
b) Explain totally self-checking checker for Berger codes. (6M)
5. a) Discuss about strongly fault-secure circuits. (6M)
b) Explain fail safe design of sequential circuits using partition theory. (6M)
6. a) Explain with example, three-level OR-AND-OR Design for Testable Combinational logic Circuits. (6M)
b) Explain with example, Design of Testable Combinational logic Circuits using syndrome-testable design. (6M)
7. a) Explain Scan based Design rules (LSSD). (6M)
b) Mention the advantages of the LSSD technique. (6M)
8. a) Discuss various test pattern generations for BIST exhaustive testing with example. (6M)
b) Explain theory and operation of LFSR. (6M)

AR13

Set-02

CODE: 13MCS1010

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

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

**WEB TECHNOLOGIES
(Computer Science & Engineering)**

Time: 3 hours

Max. Marks: 60

**Answer any FIVE questions
All questions carry equal marks**

- 1) a) Explain different HTML list tags with suitable example. [6M]
b) Write a JavaScript function Grade () to calculate student grade based on their average of 5 subjects Marks which reads a value from the user. Display the result in the browser. [6M]
- 2) a) Differentiate HTML and DHTML. [6M]
b) Explain in detail SAX. [6M]
- 3) Create a XML document for students mark list preparation. Write DTD for validating the XML document. [12M]
- 4) a) What is a java bean? Explain the advantages of a java bean. [6M]
b) Discuss in detail java beans API. [6M]
- 5) a) With suitable coding explain how a Servlet is used for server side programming. [6M]
b) How can we handle Http Request and Responses using a servlet? Explain in detail. [6M]
- 6) a) Compare and contrast servlet and JSP. [6M]
b) Explain sharing session and application data in JSP pages. [6M]
- 7) a) What are functions of a web server? Briefly explain Tomcat web server. [6M]
b) Discuss in detail JSP application development. [6M]
- 8) a) How to deploy java beans in a JSP page? Explain with example. [6M]
b) Write a short note on javax.sql.* package. [6M]
