**13MIT1010**
# ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
### (AUTONOMOUS)
### I M.Tech. II Semester Regular Examinations, July – 2014
### DATA MINING AND KNOWLEDGE DISCOVERY
### (Information Technology)

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

### Answer any Five Questions
### All Questions carry equal marks

01. What is KDD? Discuss in detail about the major issues of data mining.                    (12M)

02. (a) Discuss issues to consider during data integration.                    (6M)
    (b) In real-world data, tuples with missing values for some attributes are a common occurrence. Describe various methods for handling this problem.                    (6M)

03. (a) Briefly explain the following concepts. Use an example to explain your points.                    (6M)
        i. Snowflake schema, ii. fact constellation, and iii. starnet query model
    (b) By means of suitable examples, explain Multiway Array Aggregation cube computation technique.                    (6M)

04. (a) Write the basic attribute-oriented induction algorithm for mining data characteristics.                    (6M)
    (b) Outline a data cube-based incremental algorithm for mining analytical class comparisons.
                                                                                        (6M)

05. Consider an appropriate example and explain how to mine frequent patterns using FP-Growth algorithm.                    (12M)

06. (a) What is a belief network? Describe how it can be used for classification problem.                    (6M)
    (b) Write and explain the steps of back propagation technique for neural network training.    (6M)

07. Write short notes on the following:                    (12M)
        (a) Fuzzy set approach
        (b) CURE
        (c) Genetic Algorithms

08. (a) With the aid of a suitable example, explain the steps of K-Means clustering technique.    (6M)
    (b) What is clustering? How is it different from classification?                    (6M)

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Code No.13MPE1012
# ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TAKKALI
## (AUTONOMOUS)
### I M.Tech. II Semester Regular Examinations, July-2014
### ADVANCED DIGITAL SIGNAL PROCESSING AND APPLICATIONS
#### (Power Electronics and Electric Drives)

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

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

1.  a) Let $x(n) = \{A, 2,3,4,5,6,7,B\}$. If the frequency samples $X(0) = 20$ and $X(4) = 0$, find A and B.
    b) Explain how an analog signal is converted into digital signal with neat diagrams.

2.  An LTI system is described by the equation $y(n) + 2\ y(n-1) - y(n-2) = x(n)$. Determine the cascade and parallel realization structures of the system.

3.  Convert the following analog filter with transfer function
$$H(s) = \frac{s + 0.1}{(s + 0.1)^2 + 9}$$
    into a digital IIR filter by using Bilinear Transformation. The digital IIR filter is having a resonant frequency of $\omega_r = \pi/2$.

4.  Design an FIR linear phase digital filter approximating the ideal frequency response $H_d(\omega) =$
$$\begin{cases} 1, & for\ |\omega| \le \frac{\pi}{4} \\ 0, & for\ \frac{\pi}{4} < |\omega| \le \pi \end{cases}$$
    (i) Determine the coefficients of 9 tap filter based on the window method with a Rectangular window.
    (ii) Determine and plot the magnitude and phase response of the filter.

5.  Check whether the Upsampler and Down sampler are
    (i)     Linear or Non Linear
    (ii)    Time Variant or Time Invariant.

6.  Write short note on
    (a) Warping effect
    (b) Pre-warping
    (c) Phase distortion
    (d) Delay distortion

7.  Explain the functional block diagram of the TMS320LF2407A DSP controller with neat diagram.

8.  (a) Explain different event manager interrupts.
    (b) Explain Quadrature Encoder Pulse circuit.

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Code No: 13MDE1006
**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI**
**(AUTONOMOUS)**
**I M.Tech II Semester Regular Examinations,July-2014**
**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) Discuss about channel coding theorem in detail?                                        (6M)

2. a) Explain about design procedure of BCH codes?                                          (6M)
  b) Discuss the properties of RS codes?                                                    (6M)

3. a) Discuss the linear convolution encoder in detail?                                     (6M)
  b) Explain structural properties of convolution codes with help of state diagram?         (6M)

4. a) Discuss about Viterbi decoding algorithm of convolution codes?                        (6M)
  b) Explain hard decision decoding for binary memory less channel?                          (6M)

5. a) Explain the concept of turbo encoder with a neat block diagram?                        (6M)
  b) Discuss about iterative decoding using BCJR algorithm?                                  (6M)

6. a) Discuss linear space time code in detail?                                             (6M)
  b) Discuss space time codes with no CSI?                                                   (6M)

7. a) Discuss about LDPC decoder 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)

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**Code No: 13MTE1014**
# ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
## (AUTONOMOUS)
## I M. Tech. II Semester Regular Examinations, July – 2014
## COMPUTATIONAL FLUID DYNAMICS
### (Thermal Engineering)

Time: 3 Hours                                                                 Max Marks: 60

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

1. a) Explain about forward and central difference methods                    (6M)
   b) Explain about hyperbolic partial differential equation and give examples   (6M)

2. Solve the following algebraic equations using Gauss Seidel iterative method
   $2x_1 + x_2 + 3x_3 = 4$
   $4x_1 + 2x_2 + 5x_3 = 9$
   $3x_1 + 5x_2 + 4x_3 = 17$                                                   (12M)

3. Using Taylor series, derive second order central difference for $\frac{\partial u}{\partial y}$   (12M)

4. Show that FTCS scheme for its stability r should be ≤ ½                      (12M)

5. Solve for Heat conduction problem $\frac{\partial u}{\partial t} = k \frac{\partial^2 u}{\partial x^2}$ where k = Constant > 0 with initial conditions
   u(x,0) = x   for $0 \le x \le 0.5$
           = 1 - x   for $0.5 \le x \le 1$
   And boundary conditions u(0,x) = 0 = u(1,x) for all time $t \ge 0$ and k = 1, r = 1/2 Δx = 1/4 compute
   by FTCS Scheme for first four steps.                          (12M)

6. a) For which flow equation K – ε Model is used?                            (6M)
   b) Explain about LES and write advantage of LES over RANS                    (6M)

7. Explain step by step procedure for SIMPLE algorithm                        (12M)

8. Write short notes on
   a)  Truncation Error                                                        (4M)
   b)  Crank Nicholson Scheme                                                  (4M)
   c)  GRID Generation                                                         (4M)

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**Code No:13MVL1012**
## ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT,TEKKALI
### (AUTONOMOUS)
### I M.Tech II Semester Regular Examinations, July-2014
### DESIGN OF FAULT TOLERANT SYSTEMS
### (VLSI System Design)

**Time:3 hours**                                                    **Max.Marks:60**
### Answer any FIVE questions
### All questions carry equal marks

Define the following terms
   a)  Reliability                                                              (3M)
   b)  Failure rate                                                             (3M)
   c)  Maintainability                                                          (3M)
   d)  Availability                                                             (3M)


a) Explain the reliability of triple Modular redundancy.                        (6M)
   b) Explain the use of error correcting codes.                                (6M)


a) Discuss about the Siftout redundancy.                                        (6M)
   b) Discuss about the software redundancy.                                    (6M)


a) Define the terms fault-secure and self testing of a circuit.                 (6M)
   b) Explain totally self-checking checker for low-cost residue code.          (6M)


a) Discuss about strongly fault-secure circuits.                                (6M)
   b) Discuss about totally self checking PLA design.                           (6M)


a) Explain Reed Mullar's expansion technique for testable combinational circuits.   (6M)
   b)Explain the following terms related to Design For Testability (DFT).
         i)    Testability                                                      (3M)
         ii)   Controllability                                                  (3M)
         iii)  Observability                                                    (3M)


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 control logic.                                                      (6M)


a) Explain the operation of Multiple-input Signature register.                  (6M)
   b) Explain the operation of LFSR as signature analyzer.                      (6M)


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CODE: 13MCS1010
## ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
### (AUTONOMOUS)
### I M.Tech. II Semester Regular Examinations, July-2014

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

**Time 3 Hours**                                                                           **Max Marks: 60**
### Answer any FIVE Questions
### All Questions carry equal marks

1.  a) How can page content be formatted horizontally across the screen?            [6M]
    b) What are the most commonly encountered image types on the web? How does the
       browser cope if it cannot handle an image itself?            [6M]

2.  a) Explain Dynamic HTML with Java Script            [8M]
    b) Differentiate between XHTML and XML            [4M]

3.  a) Discuss on Java Bean API            [6M]
    b) Describe BDK introspection.            [6M]

4.  a) Comparison between DOM and SAX            [8M]
    b) Derive XML Schema.            [4M]

5.  a) Sketch the servlet  Lifecycle and explain the methods            [6M]
    b) Analyze the servlet API using HttpServlet program.            [6M]
6.  a) Classify the session tracking techniques and explain any two of the techniques. [8M]
    b)  In detail discuss web.xml file with example            [4M]

7.   Describe JSP standard actions. How does a standard action provide JSP
     implementers with access to several of the most common tasks performed in JSP.  [12M]

8.   Deploy your web application using Java Beans in JSP Page with the help of MVC2
     architecture?            [12M]

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