**MCI1C1**

# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

## First Semester

## Computer Science and Information Technology

## PRINCIPLES OF INFORMATION TECHNOLOGY

(CBCS—2008 onwards)

Time : 3 Hours                    Maximum : 75 Marks

**Part - A**          (10 × 2 = 20)

Answer **all** questions.

1.  What are the elements of communication?

2.  What is meant by interactivity?

3.  Name some presentation graphics software.

4.  List the four categories of Application Software

5.  What is Video Conferencing?

6. What is intranet?

7. What are optical disks?

8. What is data management?

9. Name the different generations of programming languages.

10. What is XML?

**Part - B**   (5 × 5 = 25)

Answer **all** questions.

11. (a) Write note on revolution of Computer Communication.

*Or*

(b) Write about the features of Information Technology.

12. (a) Write note on Spreadsheets.

*Or*

(b) Write about internet web browsers.

13. (a) Write note on 'The Internet'

*Or*

(b) Explain about workgroup computing.

14. (a) Explain about Optical Disks.

*Or*

(b) Write note on File Management Systems.

15. (a) Write about 'The Information Super Highway'

*Or*

(b) Write down the six phases of System Analysis and Design.

**Part - C**        (3 × 10 = 30)

Attempt any **three** questions.

16. Discuss about 'The Ethics of Information Technology'.

17. Explain in detail about Desktop accessories and Personal information managers.

18. Explain about

    (a) Electronic Data Interchange.

    (b) Cyberethics.

19. Discuss about

    (a) Hard Disks.

    (b) Magnetic Tapes.

20. Discuss the Security Issues related to internet programming and internet.

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# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

## First Semester

## Computer Science and Information Technology

## C AND DATA STRUCTURE

(CBCS—2008 onwards)

Time : 3 Hours                                   Maximum : 75 Marks

**Part - A**                    (10 × 2 = 20)

Answer **all** questions.

1.  Define an Identifier.

2.  Write some commonly used library functions.

3.  Give the syntax of goto with example.

4.  What is the use of continue statement?

5.  Write about pointers.

6. List any four string functions.

7. Specify the representation of stack.

8. Define Queue.

9. What is hashing?

10. List out the types of sorting.

**Part - B**    $(5 \times 5 = 25)$

Answer **all** questions.

11. (a) Explain the structure of C programming.

*Or*

(b) Write short notes on C character set and the delimiters.

12. (a) Differentiate *'while'* statement and *'do while'* statement.

*Or*

(b) Describe the *'for'* statement and nested *'for'* statement with example.

13. (a) Explain the characteristics of array.

*Or*

(b) Discuss about *sscanf*() and *sprintf*() functions.

14. (a) Write about the linked list with and without header.

*Or*

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(b) Explain the searching and retrieving an element from a list.

15. (a) Discuss about the various hashing techniques.

*Or*

(b) Explain about the binary tree traversal.

**Part - C**     $(3 \times 10 = 30)$

Attempt any **three** questions.

16. Describe the formatted and unformatted function with suitable example.

17. Explain in details about the various decision making statements with syntax and example.

18. Discuss about an Array and different types of array with suitable example.

19. Describe the single linked list and double linked list and its applications.

20. Explain any two types of sorting.

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## M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

### First Semester

### Computer Science and Information Technology

## OBJECT ORIENTED PROGRAMMING IN JAVA

(CBCS—2008 onwards)

Time : 3 Hours                              Maximum : 75 Marks

**Part - A**              (10 × 2 = 20)

Answer **all** the questions.

1.  Define Abstraction.

2.  State the three important object oriented programming principles.

3.  Define Constructor.

4.  What is the use of Throw Clause ?

5.  What is an Inter thread Communication ?

6.   Write down the Life Cycle of Thread.

7.   What is the use of Ensure Capacity method ?

8.   Write down the Character Stream Classes.

9.   What do you mean by Datagrams?

10.  Define EJB.

Answer **all** questions.

11.  (a)   Explain why JAVA is important to Internet.

*Or*

     (b)   Explain any two Iteration statements in JAVA.

12. (a) Explain Constructor with an example.

Or

(b) Explain about Exception Handling in detail.

13. (a) Explain about Implementation of Runnable.

Or

(b) Write notes on Thread Priority.

14. (a) Explain in detail about different Event classes.

Or

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(b)   Write notes on Menus and Menus bars.

15.   (a)   Discuss about TCP/IP Server/Client Sockets.

*Or*

(b)   Write notes on Servlets.

**Part - C**          (3 × 10 = 30)

Answer any **three** questions.

16.   Write a JAVA program to find largest and smallest elements.

17.   Discuss in detail about Interfaces with an example.

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18. Write a JAVA program that use suspending, resuming and stopping threads.

19. Explain Event Handling in detail with Event class and Interface.

20. What is the use of JSP? Explain in detail with an example.

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# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

## First Semester

## Computer Science and Information Technology

### Elective — DIGITAL COMPUTER FUNDAMENTALS

(CBCS—2008 onwards)

Time : 3 Hours                                     Maximum : 75 Marks

**Part - A**          (10 × 2 = 20)

Answer **all** questions.

1. List any two Flip-Flops.

2. What is an Integrated Circuit ?

3. Define Half-Adder.

4. What is a multiplexer ?

5. Define ROM.

6. List any two secondary memory.

7. What are character codes ?

8. What is an Interrupt ?

9. What is a Control Register ?

10. What is the use of Jump Shift instruction ?

**Part - B**            (5 × 5 = 25)

Answer **all** questions.

11. (a) Briefly explain the principle of operation of J.K Flip-Flop.

*Or*

(b) What is a state table? Briefly explain.

12. (a) Explain briefly about ALU.

*Or*

(b) Write a brief note on Integer Representation.

13. (a) What is a static RAM? Explain briefly.

*Or*

(b) Write a brief note on Cache memory.

14. (a) Write a brief note on input media.

*Or*

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(b) Briefly explain the characteristics of D/A converters.

15. (a) Explain briefly about controlling Arithmetic operations.

*Or*

(b) Write a brief note on microprogramming.

**Part - C**          (3 × 10 = 30)

Answer any **three** questions.

16. Explain the design of a sequential magnitude comparator.

17. Describe in detail about Full Adder

18. Describe in detail about Digital Recording Techniques.

19. Explain in detail about keyboard interfacing.

20. Describe in detail about Register Transfer language.

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# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

## First Semester

## Computer Science and Information Technology

### Elective — COMPUTER SYSTEM ARCHITECTURE

(CBCS—2008 onwards)

Time : 3 Hours                          Maximum : 75 Marks

**Part - A**          (10 × 2 = 20)

Answer **all** questions.

1.  What is the use of ALU?

2.  What is meant by data manipulation?

3.  Write any two control functions

4.  What do you mean by Interrupt?

5.  What is meant by Microprogram control?

6. State any two applications of Microprogramming.

7. What is the use of Virtual Memory?

8. What is Data Communication?

9. Define Pipelining.

10. What do you mean by vector processing?

**Part - B** (5 × 5 = 25)

Answer **all** questions.

11. (a) Discuss about Instruction formats

*Or*

(b) Write short notes on Data Transfer.

12. (a) Explain about Inter Register Transfer.

*Or*

(b) Discuss on Instruction Codes.

13. (a) Discuss the various applications of microprogramming.

*Or*

(b) Discuss on Microinstruction Formats.

14. (a) Explain about Priority Interrupts.

*Or*

(b) Write brief notes on Cache Memory.

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15. (a) Discuss on Arithmetic pipelining.

*Or*

(b) Write brief notes on Multiprocessing.

**Part - C** (3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about Processor Bus Organization.

17. Write in detail about Logical Shift Micro Operations.

18. Explain about Control Memory.

19. Write brief notes on:

   (a) Synchronous Data Transfer

   (b) Asynchronous Data Transfer

20. Describe in detail about Array Processing.

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# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

## First Semester

## Computer Science and Information Technology

## Elective—MICROPROCESSOR AND ASSEMBLY LANGUAGE PROGRAMMING

(CBCS—2008 onwards)

Time : 3 Hours                                   Maximum : 75 Marks

**Part - A**                   (10 × 2 = 20)

Answer **all** questions.

1.   8086 is a ———— bit CPU.

2.   BIU stands for ————.

3.   What is the role of assembler 86 ?

4.   Define machine cycle.

5.   What is RAM ?

6.   List the memory operation.

7.   What is pipelining ?

8.   What is the size of instruction byte Queue in 8086 and What is its role ?

9.   What is an Interrupt ?

10.  What is the function of DMA ?

**Part - B**                    $(5 \times 5 = 25)$

Answer **all** questions.

11.  (a)   List the instruction sets of 8086.

(*Or*)

(b)    List the addressing modes of 8086.

12.  (a)    What is meant by multibyte addition ? Explain it.

(*Or*)

(b)    What is meant by Reserved words ? Explain it.

13.  (a)    Briefly explain about memory section in 8086.

(*Or*)

(b)    Write notes on RAM.

14. (a) Write notes on I/O structure of 8086.

(*Or*)

(b) Draw the simple block diagram 8255-PPI.

15. (a) What is the use of 8259 ? Explain.

(*Or*)

(b) Write notes on 80486 - processor.

**Part - C**          (3 × 10 = 30)

Answer any **three** questions.

16. Describe with suitable diagram of the architecture of 8086.

17. Write an Assembly language program to find the biggest of *n* numbers.

18. Explain in detail the memory interface in Intel 8086.

19. With neat block diagram, explain the display controller 8279.

20. Explain in detail about Pentium II processor.

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# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

## Second Semester

## Computer Science and Information Technology

## DATABASE TECHNOLOGY

(CBCS—2008 onwards)

Time : 3 Hours                           Maximum : 75 Marks

**Part - A**                (10 × 2 = 20)

Answer **all** questions.

1.  Write down the types of Data Models.

2.  Mention any four components of DBMS.

3.  Expand DDL and DML.

4.  What are Data types in SQL ?

5.   What is deadlock ?

6.   Define Serializability.

7.   Give any two applications of Multimedia database.

8.   Specify the importance of Mobile database.

9.   List out the defense Mechanisms.

10.  Define KDD.

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**Part - B**   (5 × 5 = 25)

Answer **all** the questions.

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11.  (a)   What is the purpose of database systems ?

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(*Or*)

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(b)  Write about relational calculus in detail.

12.  (a)  Explain the Query processing in detail.

(*Or*)

(b)  Discuss in detail about SQL as standard.

13.  (a)  Describe in detail about Locking Mechanisms.

(*Or*)

(b)  What are the properties of transaction ? Explain.

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14. (a) Write note on distributed databases.

(*Or*)

(b) Compare and contrast Spatial and Multimedia databases.

15. (a) Write short notes on security threats.

(*Or*)

(b) Discuss in detail about statistical database security.

**Part - C** (3 × 10 = 30)

Answer any **three** of the questions.

16. Explain INF to 5NF in detail with an example for each.

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17. How cost estimates in Query Optimization is done ? Explain.

18. Discuss in detail about Two Phase Commit Protocol.

19. Describe in detail about Mobile and Web databases.

20. Write short notes on Data mining.

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# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

## Second Semester

## Computer Science and Information Technology

## OPERATING SYSTEM

(CBCS—2008 onwards)

Time : 3 Hours                          Maximum : 75 Marks

**Part - A**          (10 × 2 = 20)

Answer **all** the questions.

1.   What does an Operating system do ?

2.   What are the advantages of Distributed OS ?

3.   Define Process.

4.   Compare Pre-emptive and Non preemptive scheduling.

5.   Define Synchronization.

6.   What is mutual exclusion ?

7.   What is meant by swapping ?

8.   Define Fragmentation.

9.   Mention the different file types.

10.  What is bit vector ?

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**Part - B**          $(5 \times 5 = 25)$

Answer **all** questions.

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11.  (a)   Discuss the properties of Time Sharing system.

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(*Or*)

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(b) Explain the system components of OS.

12. (a) Describe the structure of a PCB.

(*Or*)

(b) State and define the different scheduling criteria in CPU scheduling.

13. (a) Describe the hardware solution to critical section problem.

(*Or*)

(b) Explain monitors and draw its schematic view.

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14. (a) Write short notes on virtual memory.

(*Or*)

(b) Explain the concept of thrashing. Why is it required ?

15. (a) With diagrams describe the various directory structure levels.

(*Or*)

(b) Write short notes on Disk management.

**Part - C** $(3 \times 10 = 30)$

Answer any **three** of the following questions.

16. Explain real time Operating System. Compare it with other Operating Systems.

17. With diagrams explain multi threading models.

18. Describe the various methods for deadlock prevention.

19. Describe demand paging with diagrams.

20. Explain indexed allocation of diskspace.

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# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

## Second Semester

## Computer Science and Information Technology

### COMPUTER NETWORKS

(CBCS—2008 onwards)

Time : 3 Hours          Maximum : 75 Marks

**Part - A**      (10 × 2 = 20)

Answer **all** questions.

1. What is router ?

2. What is MODEM ?

3. What are the features of ISDN ?

4. Define FSK.

5. Compare Bus and Star topology.

6. Define Cyclic Redundancy check.

7. What is Socket ?

8. What is Flooding ?

9. Define DNS.

10. Define Virtual Terminals.

**Part - B** $(5 \times 5 = 25)$

Answer **all** questions.

11. (a) Explain the services of OSI-reference model with a neat diagram.

(*Or*)

(b)   Explain the Network Architecture Model.

12.  (a)   Explain the procedure of Circuit and Hybrid Switching.

(*Or*)

(b)   Explain the concepts of gateway.

13.  (a)   Discuss about the Adaptive tree walk protocol.

(*Or*)

(b)   Write about the Error detecting Codes.

14. (a) Write the session layer design issues.

(*Or*)

(b) Write about the distance vector routing.

15. (a) Explain any two Fundamentals of Cryptographic principles.

(*Or*)

(b) Describe the Data Compression techniques.

**Part - C** (3 × 10 = 30)

Answer any **three** questions.

16. Explain the structure of a Computer Network.

17. Draw a neat diagram of ISDN system architecture and explain it in detail.

18. Describe about data link layer design Issues in detail.

19. Explain the Flow control and Buffering Techniques in detail.

20. Describe the issues of presentation layer design in detail.

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**M.Sc. DEGREE EXAMINATION, NOVEMBER 2010**

**Second Semester**

**Computer Science and Information Technology**

**Elective—COMPUTER ORIENTED NUMERICAL METHODS**

(CBCS—2008 onwards)

Time : 3 Hours　　　　　　　　　　　Maximum : 75 Marks

**Part - A**　　　　　　(10 × 2 = 20)

Answer **all** the questions.

1.  Explain Regula-Falsi method of getting a root.

2.  What is the rate of convergence in Newton Raphson method ?

3.  In what form is the coefficient matrix transform into when A X = B is solve by Gauss-elimination methods.

4.  Compare Gauss-Jacobi and Gauss Seidel methods.

5.  State Newton's backward interpolation formula.

6.  State Bessel's central interpolation formula.

7.  State Newton's formula to find $f'(x)$ using the forward differences.

8.  Evaluate $\int_{1/2}^{1} \frac{1}{x} dx$ by Trapezoidal rule, taking $h = \frac{1}{8}$.

9.  State Taylor's series algorithm for the differential equation $\frac{dy}{dx} = f(x, y)$.

10. Write Milne's predictor corrector formula.

Answer **all** the questions.

11 (a) Find a root of the equation $e^x = 3x$ by Regula falsi method.

(*Or*)

(b) Find a root of the equation $x^3 + x - 1 = 0$ using Newton Raphson method.

12. (a) Solve the following equations by Gauss elimination method : $x + y + z = 6$, $3x + 3y + z = 20$, $2x + y + 3z = 13$.

(*Or*)

(b) Solve the following system of equations by Crout's method : $2x + y + 4z = 12$, $8x - 3y + 2z = 20$, $4x + 11y - z = 33$.

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13  (a)  Find the value of $y$ from the following data at $x = 2.65$.

$x$ : –1  0  1  2  3
$y$ : –21  6  15  12  3

(*Or*)

(b)  Apply Lagrange's formula to find $u_5$ given that $u_1 = 4$, $u_2 = 7$, $u_4 = 13$ and $u_7 = 30$.

14  (a)  Given that :

| $x$ : | 1.0 | 1.1 | 12 | 1.3 | 1.4 | 1.5 | 1.6 |
|---|---|---|---|---|---|---|---|
| $y$ : | 7.989 | 8.403 | 8.781 | 9.129 | 9.451 | 9.750 | 10.031 |

Find $\dfrac{dy}{dx}$ at $x = 1.6$

(*Or*)

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(b) Apply Simpson's rule to find the value of $\int_0^2 \frac{dx}{1+x^3}$ dividing the [0, 2] into 4 equal parts.

15 (a) Solve $y' = y^2 + 1$ for $x = 0.2$ given $y(0) = 0$ by Taylor's series method.

(*Or*)

(b) Solve $y' = x^2 + y$ with $y(0) = 0.94$ for $x = 0.1$ by modified Euler's method.

**Part - C** (3 × 10 = 30)

Answer any **three** questions.

16. Find by Horne's method the root of the equation $x^3 - 4x^2 + 5 = 0$ which lies between 1 and 2.

17. Solve by Gauss Seidel method

$10\ x\ +\ 2y\ +\ z\ =\ 9,\ x\ +\ 10y\ -\ z\ =\ -22,$
$-2x\ +\ 3y\ +\ 10z\ =\ 22.$

18. Using Bessel's formula find $f(32)$ given that

$f(25) = 0.2707,\ f(30) = 0.3027,\ f(35) = 0.3386,$
$f(40) = 0.3794$

19. Evaluate $\int_{0}^{2} \dfrac{dx}{x^2 + 4}$ using Romberg's method.

20. Solve $y' = (1+x)y, y(0) = 1$ for $x = 0.2$ using Runge-Kutta fourth order method.

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# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

## Second Semester

## Computer Science and Information Technology

### Elective—APPLIED MATHEMATICS FOR COMPUTER SCIENCE

(CBCS—2008 onwards)

Time : 3 Hours            Maximum : 75 Marks

**Part - A**       (10 × 2 = 20)

Answer **all** questions.

1. Define a tautology.

2. Define functionally complete sets of connectives.

3. Define principal conjunctive normal form of a logical statement.

4. Show that $\rceil(P \rightarrow Q) \Rightarrow \rceil Q$

5. Define simple graph.

6. Define a bipartite graph.

7. What is an unbounded solution, and how is this condition identified in the graphical method.

8. Define basic feasible solution

9. What is slack variable ?

10. What is meant by unbalanced transportation problem ? Explain the method for solving such a problem.

Answer **all** questions.

11.  (a)   Show that $(P \rightarrow Q) \wedge (Q \rightarrow R) \Rightarrow (P \rightarrow R)$

*Or*

(b)   Express $P \rightarrow \left( \rceil P \rightarrow Q \right)$ interms of $\uparrow$ only.

12.  (a)   Find the principal disjunctive normal form of the formula

$$P \vee \left( \rceil P \rightarrow \left( Q \vee \left( \rceil Q \rightarrow R \right) \right) \right)$$

*Or*

(b)   Determine whether $\lnot (P \land Q)$ follows logically from the premises $\lnot P$ and $P \rightleftarrows Q$.

13. (a)   Draw the graph represented by the following adjacency matrix.

$$\begin{pmatrix} 1 & 2 & 0 & 1 \\ 2 & 0 & 3 & 0 \\ 0 & 3 & 1 & 1 \\ 1 & 0 & 1 & 0 \end{pmatrix}$$
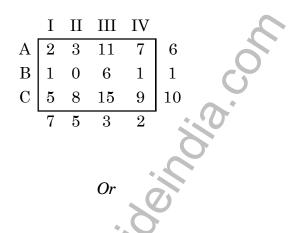
*Or*

(b)   Explain Prim's algorithm for constructing minimum spanning trees.

14. (a) A farmer has 1,000 acres of land on which he can grow corn, wheat or soyabeans. Each acre of corn costs Rs. 100 preparation, requires 7 man-days of work and yields a profit of Rs. 30. An acre of wheat costs Rs. 120 to prepare, requires 10 man-days of work and yields a profit of Rs. 40. An acre of soyabeans costs Rs. 70 to prepare, requires 8 man-days of work and Yields a profit of Rs. 20. If the farmer has Rs. 1,00,000 for preparation and can count on 8,000 man days work, formulate the L.P. model to allocate the number of acres to each Crop to maximize the total profit.

*Or*

(b) Solve Graphically

$$\text{Maximize } Z = 40\,x_1 + 100x_2$$
$$\text{subject to} \quad 12x_1 + 6x_2 \leq 3000$$
$$4x_1 + 10x_2 \leq 2000$$
$$2x_1 + 3x_2 \leq 900$$
$$x_1, x_2 \geq 0.$$

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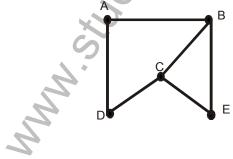15. (a) Find an initial basic feasible solution by least cost method for the following transportation problem.

|   | I | II | III | IV |    |
|---|---|----|-----|----|----|
| A | 2 | 3  | 11  | 7  | 6  |
| B | 1 | 0  | 6   | 1  | 1  |
| C | 5 | 8  | 15  | 9  | 10 |
|   | 7 | 5  | 3   | 2  |    |

*Or*

(b) Solve the following assignment problem.

|   | I  | II | III | IV | V  |
|---|----|----|-----|----|----|
| A | 11 | 17 | 8   | 16 | 20 |
| B | 9  | 7  | 12  | 6  | 15 |
| C | 13 | 16 | 15  | 12 | 16 |
| D | 21 | 24 | 17  | 28 | 26 |
| E | 14 | 10 | 12  | 11 | 13 |

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Answer any **three** questions.

16.   Show that $\{\downarrow\}$ is functionally complete set.

17.   Show that $R \rightarrow S$ can be derived from the premises $P \rightarrow (Q \rightarrow S)$, $\lnot R \lor P$ and Q.

18.   Find the number of paths of length 4 from the vertex D to the vertex E in the following graph using adjacency matrix.

19. Solve the LPP

$$\text{Maximize } Z = 6x_1 + 4x_2$$

$$\text{subject to} \quad 2x_1 + 3x_2 \leq 30$$

$$3x_1 + 2x_2 \leq 24$$
$$x_1 + x_2 \geq 3$$
$$x_1, x_2 \geq 0.$$

20. Solve the following transportation problem using MODI methods

|        | 1  | 2  | 3  | Supply |
|--------|----|----|----|--------|
| I      | 5  | 1  | 7  | 10     |
| II     | 6  | 4  | 6  | 80     |
| III    | 3  | 2  | 5  | 15     |
| Demand | 75 | 20 | 50 |        |

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# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

## Second Semester

## Computer Science and Information Technology

## Elective—PROBABILITY AND STATISTICS

(CBCS—2008 onwards)

Time : 3 Hours                    Maximum : 75 Marks

*Use of Statistical table is permitted.*

**Part - A**              (10 × 2 = 20)

Answer **all** questions.

1. If $P(A) = \frac{1}{3}$, $P(B) = \frac{3}{4}$, $P(A \cup B) = \frac{11}{12}$ find $P\left(\frac{A}{B}\right)$.

2. A is known to hit the target in 2 out of 5 shots, whereas B is known to hit the target in 3 out of 4 shots. Find the probability of the target being hit when they both try.

3. A problem in Statistics is given to three students whose chances of solving it are $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$ respectively. What is the probability that the problem will be solved.

4. Find K, so that $f(x)$ given below may be a p.d.f.

$$f(x) = \begin{cases} K & \text{for } 0 \leq x \leq b \\ 0 & \text{otherwise} \end{cases}.$$

5. A random variable X is given by

| X | : | −2 | 3 | 1 |
|---|---|----|---|---|
| P(X) | : | $\frac{1}{3}$ | $\frac{1}{2}$ | $\frac{1}{6}$ |

find E(X).

6. If X follows a Poisson distribution such that $P(X = 1) = \dfrac{1}{4}$ and $P(X = 2) = \dfrac{3}{8}$ find $P(X = 3)$.

7. A random sample of 500 oranges was obtained from a large consignment and 60 were bad. Find 95% confidence limits for the percentage number of bad oranges in the consignment.

8. The parameters of a binomial distribution are $n = 18$ and $p = \dfrac{1}{3}$. Find mean and variance.

9. What are the different method available for measurement of Trend.

10. Explain what do you understand by "Analysis of Variance".

**Part - B** (5 × 5 = 25)

Answer **all** questions.

11. (a) If A and B are independent events prove that $\overline{A}$ and $\overline{B}$ are independent events.

(*Or*)

(b) If A, B and C toss a coin, the one who get the head first wins. What is the probability for C wins the game.

12. (a) Find the value of K and mean of the following distribution $f(x) = \begin{cases} K(x - x^2), & \text{for } 0 < x < 1 \\ 0 & \text{otherwise} \end{cases}$.

(*Or*)

(b) Given the point p.d.f. of (x,y) as

$$f(x,y) = \begin{cases} 8xy, & 0 < x < y < 1 \\ 0, & \text{otherwise} \end{cases}$$
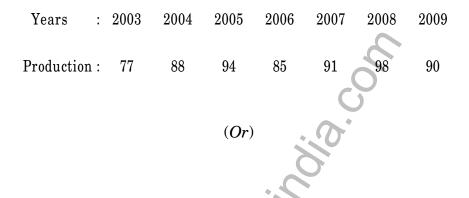
find the marginal p.d.f. of X and Y.

13. (a) Fit a Poisson distribution to the following.

| $x$ : | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| $f$ : | 43 | 38 | 22 | 9 | 1 |

(*Or*)

AF-2883

(b) In a normal distribution 7 percent of the items are below 35 and 11 percent of the items are above 63 find the mean.

14. (a) The wages of 10 workers taken at random from a factory are given as 578, 572, 570, 568, 572, 578, 570, 572, 596, 584. Is it possible that the mean wage of all workers of this factory could be Rs. 580 ?

(*Or*)

(b) Among 64 offsprings of a certain cross between pigs, 34 were red, 10 were black and 20 were white. According to the generic model these numbers should be in the ratio 9:3:4 are the data consistent with the model at 5% level?

AF-2883

15. (a) Fit a straight line trend by the method of least squares and tabulate the trend values.

| Years | : | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|-------|---|------|------|------|------|------|------|------|
| Production | : | 77 | 88 | 94 | 85 | 91 | 98 | 90 |

(*Or*)

(b) Three samples A, B, C have been obtained from normal populations with equal variances. Test whether the population means are equal at 5% level.

| A | 12 | 14 | 12 | 9 | 13 |
|---|----|----|----|---|----|
| B | 9 | 9 | 5 | 7 | 10 |
| C | 7 | 8 | 10 | 11 | 14 |

**Part - C**        (3 × 10 = 30)

Answer any **three** questions.

16. The contents of urns I, II and III are as follows : 2 white, 3 black and 4 red balls; 3 white, 2 black and 2 red balls and 4 white, 1 black and 3 red balls. An urn is chosen at random and two balls are drawn. They happen to be white and red. What is the probability that they come from urns I, II or III ?

17. Find the m.g.f. of the random variable X having the p.d.f. is $f(x) = K\, e^{-x}, 0 \le x < \alpha$ also find mean and variance.

18. Find the coefficient of correlation and obtain the lines of regression from the data given below :

| $x$ : | 92 | 89 | 87 | 86 | 83 | 77 | 71 | 63 | 53 | 50 |
|---|---|---|---|---|---|---|---|---|---|---|
| $y$ : | 86 | 83 | 91 | 77 | 68 | 85 | 52 | 82 | 37 | 57 |

     **AF-2883**

19. From the following two sample values, find out whether they have come from the same population.

Sample 1 :   17   27   18   25   27   29   27   23   17
Sample 2 :   16   16   20   16   20   17   15   21

20. A company appoints four salesman A, B, C and D and observe their sales in three seasons : Summer, winter and monsoon. The figures (in Laks of Rs.) are given in the following table :

|  | Salesman | | | |
|  | A | B | C | D |
| --- | --- | --- | --- | --- |
| Summer | 45 | 40 | 38 | 37 |
| Winter | 43 | 41 | 45 | 38 |
| Monsoon | 39 | 39 | 41 | 41 |

Carry out analysis of variance.

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AF-2883

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# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

## Second Semester

## Computer Science and Information Technology

## Elective—PARALLEL PROCESSING

(CBCS—2008 onwards)

Time : 3 Hours                         Maximum : 75 Marks

**Part - A**          (10 × 2 = 20)

Answer **all** questions.

1.  Define Speedup.

2.  What is meant by scalability ?

3.  What are loosely coupled systems ?

4.  Write down the links between nodes in a shuffle exchange network.

5.   Differentiate Message passing and Shared address space.

6.   Define Mapping granularity.

7.   Specify any two design issues of parallel algorithm.

8.   Write down any two complexities of parallel algorithms.

9.   Differentiate Shared bus and Cross bar systems.

10.   Define Cache coherence.

**AF-2884**

**Part - B** (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain in brief about the mechanisms of implementing parallel processing.

(*Or*)

(b) Discuss about the major issues in parallel processing.

12. (a) Differentiate Tightly coupled and Loosely coupled systems.

(*Or*)

(b) Draw and explain the two dimensional Mesh network.

13. (a) Differentiate data and control parallelism.

(*Or*)

(b) Explain in brief about precedence graph of a process.

14. (a) Discuss about the anomalies in parallel algorithm.

(*Or*)

(b) Write down and explain any one parallel search algorithm with an example.

15. (a)  Write notes on multipart memory.

(*Or*)

(b)  Explain how shared variables can be handled.

**Part - C**          (3 × 10 = 30)

Answer any **three** questions.

16.  Discuss about the demands and terminologies of parallel processing.

17.  With a neat sketch, explain hypercube network.

18.  Write notes on :

(a)  Temporal parallelism.

(b)  Message passing mechanisms.

AF-2884

19. Explain in detail about the performance measures and analysis of parallel algorithm.

20. Discuss about the memory contention and arbitration techniques.

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# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

## Second Semester

## Computer Science and Information Technology

## Elective—SOFTWARE TESTING AND QUALITY ASSURANCE

(CBCS—2008 onwards)

Time : 3 Hours                                    Maximum : 75 Marks

**Part - A**                    (10 × 2 = 20)

Answer **all** questions.

1.  Mention the uses of validation and verification.

2.  Give the needs for testing.

3.  What is meant by system testing ?

4.  Define Data flow coverage.

5.   Define testing Object-Oriented software.

6.   Define SRS.

7.   Give the benefits of SQA.

8.   What are the key concepts of Deming ?

9.   Define SQA.

10.   Give the principle of statistical process.

**Part - B**            $(5 \times 5 = 25)$

Answer **all** questions.

11.   (a)   Discuss the types of testing in detail.

(*Or*)

**2**                    AF-2885

(b) Explain the concept of SDLC.

12. (a) Explain briefly about robustness testing.

(*Or*)

(b) Discuss about boundary value analysis.

13. (a) Discuss the testing of Object Oriented software.

(*Or*)

(b) Explain the process of inspection.

3 AF-2885

14. (a) State the benefits of SQA concepts.

(*Or*)

(b) What are the components of TQM ? Explain.

15. (a) Describe the purpose and principle of SQA and control.

(*Or*)

(b) Briefly discuss on the Project quality team and SQA organization.

**Part - C** (3 × 10 = 30)

Answer any **three** questions.

16. Discuss in detail about software testing principles.

**AF-2885**

17. Explain in detail about the branch and condition coverage.

18. Explain in detail about SRS and design document specification.

19. Describe about Delineate standards for software quality.

20. Explain in detail about seven quality control tools.

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# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

## Second Semester

## Computer Science and Information Technology

### Elective—COMPUTER GRAPHICS

(CBCS—2008 onwards)

Time : 3 Hours                    Maximum : 75 Marks

**Part - A**          $(10 \times 2 = 20)$

Answer **all** questions.

1.   Write down any two uses of CAD.

2.   Define Image processing.

3.   What is meant by reflection transformation ?

4.   What is meant by bit-block transfer ?

5. What is a viewport ?

6. Differentiate choice and Pick input devices.

7. Write down the transformation to produce a $z$-axis shear in three dimension.

8. Mention any two three dimensional display methods and write down their mechanism.

9. Write down the equation for calculating the depth values for a surface position $(x, y)$

10. What is the drawback of the depth - buffer method ?

Answer **all** questions.

11. (a) Write short notes on graphical user interfaces.

(*Or*)

(b) Explain in brief about character generation.

12. (a) Discuss about the attributes for a line segment.

(*Or*)

(b) With suitable example, explain two - dimensional rotation.

13. (a) Explain briefly about windowing transformation.

(*Or*)

(b) Write short notes on interactive picture - construction techniques.

14. (a) Differentiate three - dimensional translation and scaling.

(*Or*)

(b) Write notes on three - dimensional graphics packages.

15. (a) Differentiate parallel and perspective projections.

(*Or*)

(b) Explain scan - line method of hidden - surface removal.

**Part - C** (3 × 10 = 30)

Answer any **three** questions.

16. With an example, explain circle generation algorithm.

17. Explain about homogeneous co-ordinates.

18. Write notes on physical input devices.

19. Discuss about the three-dimensional display techniques.

20. Explain in detail about 3D viewing.

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# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

## Third Semester

## Computer Science and Information Technology

### PRINCIPLES OF COMPILER DESIGN

(CBCS—2008 onwards)

Time : 3 Hours                    Maximum : 75 Marks

**Part - A**         $(10 \times 2 = 20)$

Answer **all** questions.

1. Define a token.

2. Give the regular expression far an identifier.

3. Differentiate Top-down and Bottom-up parsing.

4. Define a handle.

5. Draw the syntax tree of IF-THEN-ELISE statement.

6. Differentiate a syntax tree and a parse tree.

7. Give the triple representation of A : = B [I].

8. What is type checking ?

9. How do you measure the quality of an object program ?

10. What is a flow graph ?

**Part - B** $(5 \times 5 = 25)$

Answer **all** questions.

11. (a) Explain the role of Lexical analysers with transition diagram

(*Or*)

(b) Describe a one-pass compiler.

12. (a) Explain recursive descent algorithm.

(*Or*)

(b) State the actions of a Shift-reduce parser on the input string $id_1 + id_2 * id_3$ according to grammar

$$E \rightarrow E + E$$

$$E \rightarrow E * E$$

$$E \rightarrow (E)$$

$$E \rightarrow id$$

13. (a) Explain L-attributed definitions.

(*Or*)

(b) Give the syntax directed translation scheme permitting array references as operands.

14. (a) Write quadruples and triples for the expression.

$$-(a+b)*(c+d)-(a+b+c)$$

(*Or*)

(b) Explain storage allocation in block structured languages.

15. (a) Construct the DAG for the following basic block.

D : = B * C

E : = A + B

B : = B * C

A : = E – D

(*Or*)

(b) Discuss the applications of DAG.

AF-2887

**Part - C**       (3 × 10 = 30)

Answer any **three** questions.

16.  Construct a DFA for the regular expression

    R = (a / b)* abb.

17.  Explain the operator - precedence algorithm.

18.  How do you translate with a top - down parser ?

19.  Explain any four parameter passing technique with examples.

20.  Discuss the Code - Generation algorithm.

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# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

## Third Semester

## Computer Science and Information Technology

### SOFTWARE ENGINEERING

(CBCS—2008 onwards)

Time : 3 Hours                    Maximum : 75 Marks

**Part - A**                    (10 × 2 = 20)

Answer **all** questions.

1.  What is meant by Requirement Analysis ?

2.  What is software testing ?

3.  Define Data Dictionary.

4.  What do you mean by prototyping ?

5.  Define Staffing.

6.   What is Risk analysis ?

7.   Define Problem partitioning.

8.   What is Transaction Analysis ?

9.   What is Functional testing ?

10.   Write any two specifications for System Testing.

<div align="center">

**Part - B**          $(5 \times 5 = 25)$

Answer **all** questions.

</div>

11.   (a)   Discuss on Software Design.

<div align="center">

(*Or*)

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(b)    Write brief notes on Spiral Model.

12.  (a)    Write about Data flow Diagram.

(*Or*)

(b)    Discuss about Construction Scenarios.

13.  (a)    Discuss on COCOMO Model.

(*Or*)

(b)    Write brief notes on Software configuration and Management.

14. (a) Write short notes on System Design Partitioning.

(*Or*)

(b) Discuss on Structured Design.

15. (a) Write about Mutation Testing.

(*Or*)

(b) Discuss on Levels of Testing.

**Part - C**          (3 × 10 = 30)

Answer any **three** questions.

16. Explain about Water fall Model.

17. Discuss in detail about Problem Analysis.

18. Explain in detail about Risk Management.

19. Write brief notes on Cohesion.

20. Discuss about comparison of different V and V Techniques.

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# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

## Third Semester

### COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

### ·NET TECHNOLOGY

(CBCS—2008 onwards)

Time : 3 Hours　　　　　　　　　　Maximum : 75 Marks

**Part - A**　　　　(10 × 2 = 20)

Answer **all** questions.

1. What do you mean by CLR ?

2. What is ·Net garbage collection ?

3. List out operators in VB·Net.

4. Mention the difference between box and Input box.

5. Specify any four basic web controls.

6. Write down the usage of Logging.

7. Define Overriding.

8. What is Shadowing ?

9. State the characteristics of ADO·Net ?

10. How repeater is useful ?

**Part - B** $(5 \times 5 = 25)$

Answer **all** questions.

11. (a) Briefly discuss on assemblies.

(*Or*)

(b) Discuss in detail about ·Net frame work.

2

12. (a) Describe about MDI Forms.

(*Or*)

(b) Explain in detail about event handling with an example.

13. (a) Write note on Data controls.

(*Or*)

(b) How to create custom controls ? Explain.

14. (a) Give a brief account on inheritance.

(*Or*)

(b)   Write short notes on security model.

15. (a)   How to access database in the internet world ? Explain.

(*Or*)

(b)   Explain in detail about data binding control.

**Part - C**          (3 × 10 = 30)

Answer any **three** questions.

16.   Describe in detail about ·Net component.

17. Write short notes on the following :

   (a) Combo boxes.

   (b) Splitters.

   (c) Timers.

18. Compare and contrast the list controls and Rich Text box controls.

19. Explain in detail about poly morphism with an example.

20. Give an overview of ADO·Net.

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# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

## Third Semester

### Computer Science and Information Technology

### Elective—BIO–INFORMATICS

(CBCS—2008 onwards)

Time : 3 Hours  Maximum : 75 Marks

**Part - A**  (10 × 2 = 20)

Answer **all** questions.

1. What is central dogma ?

2. What is NCBI ?

3. Write the uses of matrices.

4. What is video conference ?

5. What is SWISS–PROT ?

1

6. What is OMIM ?

7. How global search is carried out ?

8. Write a short note on pairwise alignment.

9. Define BLAST.

10. What are ESTs ?

**Part - B**  (5 × 5 = 25)

Answer **all** the questions.

11. (a) Explain the role of computer in bioinformatics.

(*Or*)

(b) What are Industry wide Communication Standards ?

12. (a) Write about equipment selection in Telemedicine.

(*Or*)

(b) What do you mean by Electronic Patient Record ?

13. (a) What are primary databases ?

(*Or*)

(b) Explain protein databases.

14. (a) Write about global alignment.

(*Or*)

(b) What are statistical decision trees ?

15. (a) Explain the term genome.

(*Or*)

(b) Write the strategies for similarity search.

**Part - C**                    (3 × 10 = 30)

Answer any **three** questions.

16.    Write the applications of Bioinformatics.

17.    Write in detail about community networks.

18.    Explain about DNA databases.

19.    Write the principles of expert system.

20.    Explain protein structure prediction with a flow chart.

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# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010
## Third Semester
## Computer Science and Information Technology
## Elective—DIGITAL IMAGE PROCESSING

(CBCS—2008 onwards)

Time : 3 Hours　　　　　　　　　　　　Maximum : 75 Marks

**Part - A**　　　　　(10 × 2 = 20)

Answer **all** questions.

1. What is Euclidean distance ?

2. Specify the meaning of frequency domain representation of an image.

3. Mention the meaning of gray level slicing.

4. Define Primary color.

5. What is image degradation ?

6. Specify the meaning of interactive restoration.

7. What is the need for compression ?

8. Mention any two lossless compression techniques.

9. Specify the use of linear discriminant function.

10. Specify any two statistical approach for pattern recognition.

Answer **all** questions.

11.  (a)  Explain the image formation in the eye with an example.

(*Or*)

(b)  Explain the concept of sampling and quantization.

12.  (a)  Explain image subtraction and its use with an example.

(*Or*)

(b)  What is high pass filter ? Explain its use.

13. (a) Explain any one spatial domain methods for image restoration.

(*Or*)

(b) What is degradation model ? Explain.

14. (a) Explain the difference between objective and subjective fidelity criteria.

(*Or*)

(b) Explain the image compression standards.

15. (a) Explain the application of pattern recognition techniques.

(*Or*)

(b) Explain the concept of syntactic pattern recognition.

**Part - C** (3 × 10 = 30)

Answer any **three** questions.

16. Explain the properties of two dimensional Fourier transform.

17. Explain the method of computing histogram of an image and its equalization.

5

18. Discuss the uses of least mean square filtering for image restoration.

19. Explain any one lossy compression techniques.

20. Discuss the use of AI approach for solving pattern recognition problem.

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# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010
## Third Semester
## Computer Science and Information Technology
## Elective—EMBEDDED SYSTEM

(CBCS—2008 onwards)

Time : 3 Hours                                        Maximum : 75 Marks

**Part - A**              (10 × 2 = 20)

Answer **all** questions.

1.  What is an embedded system ?

2.  Why do we need an RTOS in embedded systems ?

3.  What is start up code ?

4.  What are the factors to be considered while selecting a processor for an embedded system ?

5.  What is the content of interrupt vector ?

6.  Define interrupt latency.

7.  What is synchronization ?

8.  What is a buffer ?

9.  What is PROM ?

10. What is beta testing ?

## Part - B           (5 × 5 = 25)

Answer **all** questions.

11. (a)  Discuss about the technical embedded environment.

(*Or*)

(b) Explain the concept of accessing the device hardware.

12. (a) Discuss the software modules in embedded system.

(*Or*)

(b) What are the issues to be considered while selecting the programming language for an embedded system ?

13. (a) Write a note on RS 232 Communication.

(*Or*)

(b) How will you invoke ISR from software ? Explain.

3

14. (a) Discuss the design philosophy of embedded system.

(*Or*)

(b) Explain IPC in detail.

15. (a) What is an emulator ? Explain about in circuit emulator.

(*Or*)

(b) Draw and explain the tool chain for building embedded software.

**4**

Answer any **three** questions.

16. List the applications of embedded system and explain any one of them in detail.

17. Describe an embedded system with intel example.

18. Discuss in detail the timer interrupts.

19. Discuss the development and testing phase of an embedded system.

20. Discuss linker and locator in detail.

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# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

## Third Semester

## Computer Science and Information Technology

## Elective — NEURAL NETWORKS

(CBCS—2008 onwards)

Time : 3 Hours                                  Maximum : 75 Marks

**Part - A**                    (10 × 2 = 20)

Answer **all** questions.

1.   Define Artificial Neural Network.

2.   What are the activations used in a Bidirectional Associative Memory?

3.   What is an auto associative net?

4.   State the significance of weights used in an Artificial Neural Network.

5. What is plasticity with reference to Neural network?

6. List the types of Optical Neural networks.

7. Define Universe of Discourse.

8. List some of the fundamental properties of crisp sets.

9. State the need for recognizing a pattern.

10. How do you specify the intersection of two fuzzy sets?

**Part - B**                    $(5 \times 5 = 25)$

Answer **all** questions.

11. (a) Discuss the different types of activation functions applied to an Artificial Neural Network.

*Or*

(b) Discuss the merits and demerits of using a Back propagation Network.

12. (a) Explain the two different types of Bi-directional Associative Memory.

*Or*

(b) How does a Cauchy training method differ from a Boltzmann machine?

AF-2893

13. (a) Discuss Holographic Correlators.

*Or*

(b) Describe the structure of a Cognitron.

14. (a) Describe the fuzzy techniques with example.

*Or*

(b) Discuss few of the fuzzy relations.

15. (a) Explain the steps in pattern Recognition.

*Or*

(b) How do you retrieve information from a fuzzy database ?

**Part - C** $(3 \times 10 = 30)$

Answer any **three** questions.

16. Compare a Biological Neuron and an Artificial Neuron.

17. Explain a multilayer recurrent network.

18. How do you implement Adaptive Resonance Theory ?

19. Distinguish Fuzzy and Crisp sets.

20. Explain Fuzzy Controllers.

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# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

## Third Semester

## Computer Science and Information Technology

## Elective—SECURITY IN COMPUTING

(CBCS—2008 onwards)

Time : 3 Hours　　　　　　　　　　　　Maximum : 75 Marks

### Part - A　　　　　(10 × 2 = 20)

Answer **all** the questions.

1. What do you mean by an auditability ?

2. Define Integrity.

3. Expand DIAMETER.

4. Expand VPN.

5. What are the different internet key distribution ?

6. What is Unique challenge ?

7. Expand MAC.

8. What is sensitive data ?

9. What are the different memory protection ?

10. What is Certification of Authority ?

**Part - B**                    (5 × 5 = 25)

Answer **all** the questions.

11. (a)   Discuss on types of security.

(*Or*)

(b) Write short notes on Internet security.
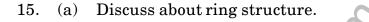
12. (a) Discuss about PAP.

(*Or*)

(b) Write down the weakness of firewalls.

13. (a) Discuss about ISpec architecture.

(*Or*)

(b) Write notes on transport security.

14. (a) Explain on IS-4-C specification.

(*Or*)

(b) Write notes on authentication of mobile station.

15. (a) Discuss about ring structure.

(*Or*)

(b) Write notes on kernal.

**Part - C** (3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about computer network security.

17. Discuss about firewalls.

18. Explain in detail about transport level security.

19. Write notes on :

    (a) unique challenge.

    (b) authentication of call to terminate a mobile station.

20. Explain in detail about penetration of OS.

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# M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

## Third Semester

## Computer Science

## ELECTIVE—SOFT COMPUTING

(CBCS—2008 onwards)

Time : 3 Hours                    Maximum : 75 Marks

**Part - A**          (10 × 2 = 20)

Answer **all** questions.

1.    What is Neural Network ?

2.    What is the use of hidden neuron ?

3.    What is single-layer perceptron ?

4.    Define Radial–basis function.

5.    What is self organizing network ?

6. What is hopfield network ?

7. Define Fuzzy set.

8. List the operations on fuzzy relations.

9. What is Reproduction ?

10. What is hybrid genetic algorithm ?

**Part - B** (5 × 5 = 25)

Answer **all** questions.

11. (a) Write a note on Biological neuron.

(*Or*)

(b) Explain the types of activation function.

**AF-2895**

12. (a) Explain the linearly Inseparable Problem with an example.

(*Or*)

(b) Write a note on multilayer Perceptron.

13. (a) Write a note on Lebbian learning.

(*Or*)

(b) What is Bidirectional Associative memory network ? Explain it.

14. (a) Explain the fuzzy set operations.

(*Or*)

**AF-2895**

(b)   Discuss the features of membership functions.

15.  (a)   Explain the Mutation Operation with example.

(*Or*)

(b)   Write a note on fitness function.

**Part - C**          (3 × 10 = 30)

Answer any **three** questions.

16.  Discuss in detail the Basic models of ANN.

17.  Explain the Back Propagation network architecture with an algorithm.

18. Explain Kohonen self organizing network architecture with neat diagram.

19. Explain in detail the concept of tolerance and Equivalence relation.

20. Explain in detail the simple genetic algorithm.

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