

**M.SC. {I.T.} (PART-II)**  
**SOFTWARE TESTING & INFORMATION SECURITY**  
**PAPER – I (JAN- 2020)**

rs)

[Total Marks: 75]

Please check that you have got the correct question paper.

- N. B.: (1) All questions are compulsory.  
(2) Make suitable assumptions wherever necessary and state the assumptions made.  
(3) Answers to the same question must be written together.  
(4) Numbers to the right indicate marks.  
(5) Draw neat labeled diagrams wherever necessary.  
(6) Use of Non-programmable calculators is allowed.

**SECTION – I**

1. **Attempt the following.**
- a. What is testing policy? Discuss the different methods to establish testing policy. 7
  - b. Distinguish between defect and failure with example. 6

**OR**

1. **Attempt the following.**
- a. Write short note on Eight considerations in developing Testing Methodology. 7
  - b. What is risk? Discuss the types of strategic risk associated with computer system. 6

2. **Attempt the following.**
- a. Compare and contrast between Structural versus functional testing. 7
  - b. What is a Tool? What are the advantages of integrating a tool in the test process? 6

**OR**

2. **Attempt the following.**
- a. Explain with the help. of diagram the 'V' Concept of Testing and explain the significance of verification and validation in the software development process. 7
  - b. Write a note on Functional testing and Analysis. 6

3. **Attempt the following.**
- a. What is documentation? Write advantages of documentation and explain different types of test documentation. 6
  - b. What are the concerns of Acceptance Testing? Enlist the objective of the Acceptance testing. 6

**OR**

3. **Attempt the following.**
- a. What is RAD? With the help of the workbench explain the RAD based testing. 6
  - b. What is multiplatform testing? Explain the major concerns in multiplatform testing. 6

**SECTION II**

- 4. Attempt the following.**
- a. What is meant by vulnerabilities? Explain in detail the various types of vulnerabilities. **6**
- OR**
- 4. Attempt the following.**
- a. What are the different types of computer crimes? Explain. **7**
- b. What is threat? Explain different types of threats with example. **6**
- 5. Attempt the following.**
- a. What is IDS? Explain the types of IDSs. **6**
- b. State and explain different forms of file protection mechanism. **6**
- OR**
- 5. Attempt the following.**
- a. Explain different designs for multilevel secure database. **6**
- b. What is firewall? Explain types of firewall. **6**
- 6. Attempt the following.**
- a. What are the characteristics of good security plan? What are the contents of a security plan? **6**
- b. Write short note on copy right and patent. **6**
- OR**
- 6. Attempt the following.**
- a. Explain risk analysis and steps in risk analysis. **6**
- b. Explain information law and ethical issues in computer society **6**
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**M.SC. {I.T.} (PART-II)**  
**ARTIFICIAL INTELLIGENCE & ROBOTICS**

**PAPER – II (JAN- 2020)**

rs)

[Total Marks: 75]

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**SECTION – I**

1.  
 a. Distinguish the characteristics of abduction and deduction with suitable example. 7  
 b. Explain the various Inference Rules of Predicate Calculus. 6

**OR**

1.  
 a. Write a lisp code that computes a factorial of a number. Explain the execution of the program. 7  
 b. What is Internal representation? State the characteristics of Internal representation. 6

2.  
 a. Consider the List L1 {A,B,C,P,Q,R} and L2 {M,N,O,P,R}. And give the output for the following: 7  
     i. (set-Intersection L1 L2)  
     ii. (reverse(cdr L2))  
     iii. (caddr L2)  
     iv. (Length(cons 'A L1))  
     v. (equal L2 L1)  
 b. Explain Forward Chaining and Backward Chaining. 6

**OR**

2.  
 a. Justify the statement, “ Fuzzy Logic creates bivalent paradoxes”. 7  
 b. Write a note on Best first Search in context to A\* algorithm. 6

3.  
 a. Explain the working mechanism of a Genetic Algorithm. 6  
 b. Define Crossover. Explain different types of Crossover methods with example. 6

**OR**

3.  
 a. Compare and contrast between online and offline performance derived by De Jong model. 6  
 b. What is mutation? Show the effect of mutation over schema with an example. 6

[TURN OVER]

**SECTION II**

4.  
 a. Explain any three types of grippers with diagrams. 7  
 b. What is Robotics? What are three laws of Robotics? What are the goals of AI and Robotics? 6

**OR**

4.  
 a. The relative position and orientation of the axes of two successive joints be specified by two link parameters. Explain 7  
 b. Define Direct Kinematics .With the help of a block diagram explain the relation between the direct and inverse kinematics. 6

5.  
 a. Compute the joint variable vector  $q = [q_1 \ q_2 \ q_3 \ q_4]^T$  for the tool configuration vector of SCARA robot ,where  $w(q) = [203.4 \ 662.7 \ 557.0 \ 0 \ 0 \ -1.649]^T$  6  
 b. Explain the joint interpolation trajectory planning method. 6

**OR**

5.  
 a. E Explain the following types of work envelopes: 6  
     i. JSWE  
     ii. Dexterous  
 b. Explain the Bounded Deviation Algorithm for a straight line motion and its basic principle. 6

6.  
 a. What are moments? What are invariant moments? How are they made invariant to scaling, translation and rotation? Illustrate with examples. 6  
 b. Write a short note on method of qualifying uncertainty in task planning. 6

**OR**

6.  
 a. Explain the merits of NC, CNC machines and robots used in industrial automation. 6  
 b. Explain the following in brief : 6  
     i. Gravity fed part feeders  
     ii. Conveyors and carousels

**M.SC. {I.T.} (PART-II)**  
**INTELLIGENT SYSTEMS & NEURAL**  
**NETWORKS & FUZZY SYSTEMS**  
**PAPER - III (JAN- 2020)**

me: 3 hours)

[Total Marks: 75]

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**SECTION - I**

- |           |  |   |
|-----------|--|---|
| 1.        |  |   |
| a.        | Differentiate Artificial and Human Intelligence  | 7 |
| b.        | What is an Intelligent agent? How it functions?  | 6 |
| <b>OR</b> |  |   |
| 1.        |  |   |
| a.        | Write a note on "Informed Search Methods".   | 7 |
| b.        | Explain "The Wumpus world problem" and what is the motive behind the problem.                      | 6 |
| 2.        |  |   |
| a.        | What is forward and backward chaining mechanism?   | 7 |
| b.        | What is internal representation? explain how First Ordered Logic helps in internal representation. | 6 |
| <b>OR</b> |  |   |
| 2.        |  |   |
| a.        | Mention the importance of "Planning" in AI.  | 7 |
| b.        | Define "Uncertainty". Give one example to explain Uncertainty in AI based applications.            | 6 |
| 3.        |  |   |
| a.        | Discuss the applications of AI in the field of robotics.   | 6 |
| b.        | Write a note on "Knowledge engineering".   | 6 |
| <b>OR</b> |  |   |
| 3.        |  |   |
| a.        | Explain reinforcement learning with an example.  | 6 |
| b.        | Explain "Expert system shell".   | 6 |

**SECTION II**

4.  
a. Define "Artificial Neural Networks". What are the applications of Neural Networks? 7  
b. Differentiate Supervised and Unsupervised learning. 6  
**OR**
4.  
a. What are different of "Activation functions" in neural network. 7  
b. Write a note on "K-means clustering". Mention its applications. 6
5.  
a. Write a note on "Boltzmann machine" 6  
b. What is a fuzzy system? Explain with one application of fuzzy systems. 6  
**OR**
5.  
a. What is a multilayer perceptron? Explain. 6  
b. Write a note on "Hopfield networks". 6
6.  
a. What is defuzzification? Explain in brief. 6  
b. Differentiate Single layer perceptron and Multilayer perceptron. 6  
**OR**
6.  
a. Explain the relation and similarities of biological neurons with McCulloch and Pitts Artificial Neural Network model. 6  
b. Explain Radial Basis Function Network in brief. 6
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**M.SC. {I.T.} (PART-II)**

**MULTIMEDIA SYSTEMS & CONVERGENCE OF  
TECHNOLOGIES & JAVA TECHNOLOGY**

**PAPER - IV (JAN- 2020)**

(Time: 3 hours)

[Total Marks: 75]

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**SECTION - I**

1.  
a. Explain Multimedia, Contiguous Media and Hypermedia. 7  
b. How multimedia system is helpful in Geographical Information System? 6  
**OR**
1.  
a. Explain compression techniques with the help of neat block diagram. 7  
b. Explain the time varying aspects of multimedia. 6
2.  
a. Write a short note on additive and subtractive color mixing. 7  
b. Explain the transform coding technique with example. 6  
**OR**
2.  
a. Explain the application of multimedia in healthcare and education. 7  
b. Write short note on the BISDN reference model. 6
3.  
a. Explain the concept of HDTV. What are the problems faced to put it into practice? 6  
b. Explain speech production, perception and synthesis. 6  
**OR**
3.  
a. Define color fringing, jitter and flag waving. 6  
b. Write a short note on MIDI. 6

[TURN OVER]

**SECTION II**

- 4.
- a. Write an application to demonstrate how COM is integrated in Java. 7
  - b. What is Exception? Explain any six Exception Classes. 6
- OR**
- 4.
- a. Java is portable and scalable. Comment. 7
  - b. Write a program in Java to copy contents of one file to another. 6
- 
- 5.
- a. Explain Middleware in detail. 6
  - b. Explain Applet Life Cycle. 6
- OR**
- 5.
- a. Explain RPC paradigm. 6
  - b. Explain TCP/IP protocol suite. 6
- 
- 6.
- a. Explain the steps involve in implementing JDBC. 6
  - b. Write a short note on CORBA. 6
- OR**
- 6.
- a. What is Cassette? Explain instrument cassette. 6
  - b. Write client/server socket program to send message from server to client. 6
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