[Total Marks: 75]

N.B.
1. All questions are compulsory.
2. Answers to the two sections must be written in the same answer books and should be submitted together.
3. Write answers to same question together.

SECTION – I

Q 1.   a   Compare the following :   6
Dynamic and static testing, Manual and automated testing
       b   Explain the economics of testing. What is optimal testing?   6

OR

Q 1.   a   "Too little testing is a crime. Too much testing is a sin". Discuss.   6
       b   Why is it required to appoint a tool manager? Explain the three steps using a   6
manager for the use of IT tools.

Q 2.   a   What do you understand by functional and structural testing? What are its   6
advantages and disadvantages of each?
       b   What is a testing policy? What are the criteria? What are the different methods to   7
establish a testing policy?

OR

Q 2.   a   What is an inspection? Explain different roles of an inspection team.   6
       b   Write the functions of a test team?   7

Q 3.   a   What is RAD? List its characteristics.   6
       b   State and explain the verification activities that should be carried out during a   7
lifecycle phase.

OR

Q3.   a   What are the concerns in multiplatform testing? Explain.   6
       b   How is system security tested? Explain in detail.   7

SECTION – II

Q 4.   a   Explain the terms vulnerabilities, threats and controls with respect to internet
security.
       b   List and explain different types of viruses.

OR

Q 4.   a   List various basic forms of file protection. Explain any one.
       b   Explain the concept of paging with respect to memory protection.

Q 5.   a   Explain the integrity of database with example.
       b   What do you mean by sensitive data? What are the factors that make data sensitive?

OR

Q 5.   a   What are the various ways of attacks on passwords? Explain any one.
       b   List and explain the characteristics of good security plan.

Q 6.   a   Write a short note on masquerade.
       b   List various message confidentially threats.

OR

Q6.   a   What is risk analysis? Explain.
       b   Compare copyrights, patent and trade secret.

WT-Con. 1932-16

M.Sc. (Information Technology) Part – II
Artificial Intelligence
& Robotics
April: - 2016

QP Code : 33189

(3 Hours)

[Total Marks: 75]

N.B.
1. All questions are compulsory.
2. Answers to the two sections must be written in the same answer books and should be submitted together.
3. Write answers to same question together.

SECTION – I

Q 1.	a	Explain in brief the historical development of artificial intelligence.	6
	b	What is Internal representation? State the characteristics of Internal representation.	6

OR

Q 1.	a	What is LISP? Explain the features of LISP.	6
	b	Explain the following: i. sqrt ii. eq iii. List iv. setq v. defunc vi. rplaca	6

Q 2.	a	Write a LISP function for printing Fibonacci series.	6
	b	Justify the statement, "Fuzzy Logic creates bivalent paradoxes".	7

OR

Q 2.	a	What is neural network? Explain the architecture of neural network.	6
	b	Explain the subsethood theorem. Apply subsethood theorem for $X = R^3$ A(2/5,2/3,3/5) , B(3/7.3/5,2/5) , C(6/7,4/5,2/7)	7

Q 3.	a	Give comparison between supervised and unsupervised algorithm.	6
	b	Write a note on De Jong model.	7

OR

Q3.	a	What is genetic algorithm? Explain the crossover and mutation process.	6
	b	Explain Two – armed bandit problem in brief.	7

SECTION – II

Q 4.	a	Explain in brief about robotics? And state its applications	6
	b	Justify the statement: "Major axes of robot are used to position the tool and minor axes are used to orient the tool in work space".	6

OR

Q 4.	a	Name and explain with diagrams all the lower kinematic pairs. State those that cannot be used in an actuated robot joint with reasons.	6
	b	Develop the transformation matrix for a body rotating about an x-axis attached to its frame through 90° and an arbitrary axis through 180°. The arbitrary axis is aligned along a line joining the two origins. The origin of the arbitrary axis is positioned after translating the origin of the body frame along x by 5 units and along y by 10 units.	6

Contd...

Q 5.	a	Explain the joint interpolation trajectory planning method.	6
	b	Write a short note on : i. SCARA robots. ii. Robot programming	6

OR

Q 5.	a	Explain robot work envelope with formulae.	6
	b	Draw the link coordinate diagram for a 3 axis planar articulated robotic arm and obtain the arm matrix for the same.	6

Q 6.	a	How does moment of inertia of the robot affect the control and dynamic performance of a robot?	6
	b	Explain the following in brief: i. Gravity fed part feeders ii. Conveyors and carousels	7

OR

Q6.	a	`Arm matrix describes the tool configuration with respect to the base of robot. Explain.	6
	b	Differentiate between NC automation and hard automation.	7

M.Sc. (Information Technology) Part – II
Elective I - Intelligent
Systems and Neural Networks & Fuzzy
April: - 2016

ode : 18897

(3 Hours) [Total Marks: 75]

N.B.
1. All questions are compulsory.
2. Answers to the two sections must be written in the same answer books and should be submitted together.
3. Write answers to same question together.

SECTION – I

Q 1. a Write a short note on model based reflex agent.   6
     b Explain how utility–based agent is different than goal–based agent? Compare the characteristics of utility and goal based agent.   6

OR

Q 1. a Define following terms.   6
       i)   Agent   ii)   agent function
     b Write short note on A* algorithm. Comment on: "A* is optimal if h(n) is an admissible heuristic."   6

Q 2. a Write definitions for following: 6
       i)   Exhaustive Part Decomposition
       ii)   Bayesian network
     b What is UNIFICATION? Explain working of unification using examples.   7

OR

Q 2. a Distinguish between characteristics of forward and backward inference.   6
     b State steps require converting every sentence of first-order logic to equivalent CNF sentence.   7

Q 3. a State and explain importance of formal language and grammar necessary for communication. Also state component steps of communication.   6
     b Compare the characteristics between prior probability and conditional probability.   7

OR

Q3. a Explain following component steps of communication: 6
       i)   Disambiguation   ii)   Incorporation
     b Write a short note on expert system shell.   7

SECTION – II

Q 4. a Explain the least mean square algorithm.   6
     b Define Neural Network and explain the structure with suitable diagram.   6

OR

Q 4. a Describe the McCulloch and Pitts models of neuron.   6
     b Give comparison between implementation of supervised and unsupervised learning.   6

Q 5. a State and explain Perceptron convergence theorem.   6
     b What are MLP networks? How are they different from RBF networks?   6

OR

Q 5. a Explain with an example how neural networks can be used for solving problems.   6
     b Explain the error correction mechanisms.   6

Q 6. a What are the salient features of Boltzmann learning rule? Explain   6
     b Write a note on Membership function   7

OR

Q6. a Write a short note on energy function.   6
     b Explain the Hopfield networks in detail.   7

———————————— WT-Con. : 1925-16.

M.Sc. (Information Technology) Part – II
Elective II - Multimedia
Systems & Convergence of
Technologies & Java Technology
April: - 2016

QP Code : 19038

[Total Marks: 75

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

Q 1.   a   Write a short notes on Video on demand and Interactive cinema.   6
       b   Explain any three video performance measurements.   6

OR

Q 1.   a   Explain the time varying aspects of multimedia.   6
       b   Explain with the block diagram 3-sensor RGB colour video camera   6

Q 2.   a   Explain the application of multimedia in healthcare and education.   6
       b   Explain color fringing, jitter and flag waving.   6

OR

Q 2.   a   Explain the transform coding technique with example.   6
       b   Explain speech production, perception and synthesis.   6

Q 3.   a   Explain HDTV, ATV and EDTV.   6
       b   Define authoring and presentation. Discuss any three issues to the widespread use of authoring and presentation   7

OR

Q3.   a   Differentiate between raster scanning and interlace scanning.   6
       b   Explain artifacts. Explain the analog video artifacts noise, RF interference and smear.   7

SECTION – II

Q 4.   a   Write a code to copy characters from one file to another.   6
       b   What is an Applet? Give comparison between applet and applications.   6

OR

Q 4.   a   Explain the ByteStream Class.   6
       b   Write a program in java to demonstrate multi-threading.   6

Q 5.   a   What is internationalization? Write a java code to display the currency in the   6
different locale.

      b   What are MIB and its object names? Explain.   7

OR

Q 5.   a   Explain Middleware in detail.   6

      b   Explain Client, Servers, Managers and Agents.   7

Q 6.   a   Explain the MediaTracker class.   6

      b· Write a short note on CORBA.   7

OR

Q6.   a   What are the different methods of window object in JavaScript?   6

      b   Explain the servlet life cycle in detail.   7

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