Robotics Sem VII
Robotics & AI

1/12/14.

QP Code **15421**

(3 Hours) [Total Marks : 100

N.B.: (1) Question No. 1 is **compulsory**.
(2) Attempt any **four** questions out of remaining **six** questions.
(3) Assume **suitable** data wherever **necessary**.

1. (a) Explain Heuristic function with example. **5**
   (b) Explain Robot workspace. **5**
   (c) Describe unsupervised learning with suitable example. **5**
   (d) List and define kinetic parameters. **5**

2. (a) Describe the following sensors – **10**
      (i) Sonar
      (ii) Infrared
   (b) Explain A* algorithm with example. **10**

3. (a) Obtain Inverse kinematic solution for 4-axis SCARA robot. **10**
   (b) Compare different uniformed search strategies. **10**

4. (a) Describe Hill climbing algorithm. What are it's limitations. **10**
   (b) Explain various methods of knowledge representation with example. **10**

5. (a) Define partial order planner. Explain STRIPS representation of planning problem. **10**
   (b) Give steps in designing the reactive behavioral system. **10**

6. (a) What are PEAS descriptors ? Give PEAS discriptors for **10**
      (i) Part-picking Robot
      (ii) WUMPUS world.
   (b) Explain supervised, unsupervised and reinforcement learning with example. **10**

7. Write short note on following (any **four**) :– **20**
   (a) PROLOG
   (b) Belief network
   (c) Forward and inverse kinematics
   (d) Crypt Arithmatic
   (e) GPS
   (f) Uniform and Inform search.

B.E Comp Sem VII Rev.

DSIP 27/11/2014

QP Code :15363

(3 Hours) **[Total Marks : 100**

N. B. : (1) Question No. 1 is **compulsory**.
(2) Attemp any **four** questions out of remaining **six** questions.
(3) **All** questions carry **equal** marks.
(4) Assume suitable data wherever necessary and state them clearly.

1. (a) Explain classification of Discrete time systems. **5**
(b) Prove that DFT is orthogonal transform. **5**
(c) Explain image fidelity criteria. **5**
(d) Unit step signal is a power signal. Justify. **5**

2. (a) Check whether the following systems are linar/nonlinar and Time variant/Time invariant. **10**
(i) $y(n) = e^{x(n)}$
(ii) $y(n) = n\ x(n)$

(b) Find the Z transform of following signals and sketch ROC. **10**
(i) $x(n)=\left(\frac{1}{4}\right)^n u(n)$
(ii) $x(n)=\left(\frac{1}{2}\right)^n u(-n-1)$

3. (a) Explain Decimation is time FFT algorithm with signal flow graph. **10**
(b) Determine circular convolution of two sequences **10**
$x_1(n) = \{1, 2, 3, 1\}$
$x_2(n) = \{4, 3, 2, 2\}$

4. (a) Explain region based image segmentation techniques. **10**
(b) Explain image enhancement techniques in spatial domain. **10**

5. (a) Explain various types of redundancies in an image. Specify techniques to remove redundancies. **10**
(b) Construct improved gray scale quatization code for given data **10**
{100, 110, 124, 124, 130, 200, 210}

6. (a) Explain trimmed average filtering and median filtering with example. **10**

(b) Compute DFT of the given image 10

0	1	2	1
1	2	3	2
2	3	4	3
1	2	3	2

7. Write short notes on (any **four**) :– 20
   (a) Hough transform
   (b) Histogram Equalization
   (c) Wiener filter
   (d) Noise models
   (e) Walsh Hadamard Transform.

Soft Computing (Elective).
BE comp Sem VII (R) 21/11/14.

QP Code : 15297

(3 Hours) **[Total Marks : 100**

N.B. : (1) Question No.**1** is **compulsory**.
(2) Attempt any **four** questions out of remaining **six** questions.

1. (a) Model the following as fuzzy set using suitable membership function. "Number close to 6". **6**
(b) Explain different fuzzy membership function. **8**
(c) Explain fuzzy extension principle with the help of example. **6**

2. Design a fuzzy controller to determine the wash time of a domestic washing machine. Assume that the inputs are dirt and grease on clothes. Use three descriptors for each I/P variable. Device a set of rules for control action and defuzzification. The design should be supported by figures wherever possible. Clearly indicate that if the clothes are soiled to a larger degree the wash time required will be more. **20**

3. (a) Explain Hebbian learning rule with the help of an example. **10**
(b) Explain with an example Genetic Algorithm. **10**

4. (a) What is learning in neural network ? Differentiate between supervised and unsupervised learning. **10**
(b) Explain the Architecture of ANFIS with the help of a diagram. **10**

5. (a) Explain RBF Network and give the comparison between RBF and MLP. **10**
(b) Explain error back propogation training algorithm with the help of flow chart. **10**

6. (a) Explain different methods of defuzzification. **10**
(b) Describe the basic Hopfield model and give the theory of energy minimization in autoassociative Hopfield Network. **10**

7. Write short notes on any **two** :– **20**
(a) Kohonen's self organizing network
(b) Character recognition using neural network
(c) TSP using simulated Annealing.

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E Commerce (Elective) 21/11/14.
BE comp Sem VII (R).

QP Code : 15291

(3 Hours) **[Total Marks : 100**

N.B. : (1) Question No. **1** is **compulsory**.
(2) Solve any **four** Questions from remaining **six** questions.

1. (a) Write a note on Rich Internet Application and Web 2.0 **10**
(b) Explain working of SET in detail. Also explain the advantages of dual signature in SET? **10**

2 (a) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce **5** **5**
(b) What do you understand by reverse auction? **5**
(c) Differentiate between Web Service and Web Site. **5**
(d) Differentiate between E-commerce and E-business

3. (a) What do you mean by session management? Explain various ways of session management. **10**
(b) Explain the role and support of E-commerce in the following applications: **10**
(i) Real estate business (ii) Insurance Sector

4. (a) What is Web Mashup Architecture? **5**
(b) Explain working of RSS? **5**
(c) What types of electronic payment systems are required in E-Commerce? Why are there different types of payment systems? Explain the necessary characteristics of each type of payment system and give an example ,each of where it is used **10**

5. (a) Explain revenue models for web portals and virtual communities? **10**
(b) Explain SOA, How SOA used in E-business, explain it with an example. **10**

6. (a) Describe the strategy used by designers of web sites for getting a page added in search engines, and getting it ranked high for target keywords **5**
(b) Write note on hadoop? **5**
(c) Explain in brief the different types of E-commerce from the perspective of the buyer and seller relationship by giving suitable example for each **10**

7 Write short note on :– **20**
(1) Cloud computing
(2) Working of Search Engine

LM-Con.:6959-14.

BE (COMP) sem VII 21/11/14.

Elective : CSM computer simulation & modeling

QP Code : 15288

(3 Hours) **[Total Marks : 100**

N.B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions from the **remaining** questions.
(3) Use suitable **data** wherever **necessary**.
(4) **Maximum** marks is shown at the end of **each** question.

1. (a) What is simulation and modeling? When is it appropriate to use simulation and when not ? **10**
   (b) Explain the concepts in discrete event system simulation with examples. **10**

2. (a) Explain the features that need to be considered while selecting simulation software. **10**
   (b) Explain useful statistical models for Queuing systems. What are the various costs associated with queuing systems. **10**

3. (a) Six dump trucks are used to haul the coal from the entrance of a small mine to the railroad. Each truck is loaded by one of the two loaders. After loading truck moves to a scale for weighing. Both loader and scale have FCFS queue for trucks. After weighing the truck travels to unload and empty truck returns to loader queue. Initially two trucks are at the loaders and one on the scale and other three are in loader queue. The activity times for all the three are given below. **10**

Loading Time	10	5	5	5	10	15	10	10
Weighing Time	12	12	12	16	12	16		
Travel Time	60	100	40	40	80			

Simulate the dump truck operation and give the system snapshot for the first 5 clock times.

   (b) Joe Co ledge is the third-string quarterback for the university of lower Alatoona. The probability that Joe gets into any game is 0.40. **10**
      (i) What is the probability that the first game Joe enters is the fourth game of the season ?
      (ii) What is the probability that Joe plays in no more than two of the first five games ?

4. (a) State the steady state parameters of M/M/1 queue. A tool crib has exponential interarrival and service times and serves a very large group of mechanics. The mean time between the arrivals is 4 minutes. It takes 3 minutes on an average for a tool crib attendant to service a mechanic. The attendant is paid $10 per hour. Would it be advisable to have a second tool crib attendant ? **10**
   (b) Explain the various steps in the development of useful model of input data. **10**

5. (a) Explain Inverse Transform technique for generating random variates. **10**
   (b) Explain the tests for checking uniformity property of random numbers. **10**

6. (a) Explain in detail the method of Batch means for interval estimation in steady state simulation. **10**
   (b) Explain the Naylor and Finger approach for validation of a simulation model. **10**

7. Write short notes on any **two** :— **20**
   (a) Issues in simulation of a manufacturing system.
   (b) Cobweb Model.
   (c) Output analysis of terminating simulation.

———V———

BE/COMPN/ VII CREDIT 29/11/14.
Elective - Project Management

QP Code : 15294

(3 Hours) **[Total Marks : 100**

N.B. : (1) Question No.1 is **Compulsory**
(2) Attempt any **four** questions out of remaining **six** questions.
(3) Figures to the **right** indicate **full** marks.

1. (a) Define a project.Explain project management & various characteristics of management. **10**
   (b) Define organizational structure. Explain different organizational structure. **10**

2. (a) What are the different phases of the project life cycle? Explain with diagram. **10**
   (b) What are the different project selection methods? Explain Net Present value (NPV) analysis and Payback Analysis. **10**

3. (a) Explain Work break down structure with example. **10**
   (b) What are the different schedule developing techniques? Explain any one in details. **10**

4. (a) Explain estimation techniques in cost management. **10**
   (b) List and explain tools and techniques for quality control. **10**

5. (a) Explain Human resource management processes. **10**
   (b) What is importance of project communication management? **10**

6. (a) Explain different Risk handling mechanisms. **10**
   (b) Explain trends affecting in IT projects. **10**

7. Write short note on any **four:**-- **20**
   (a) Role of Project Manager
   (b) Requirement collection techniques
   (c) Project procurement management
   (d) Project Charter
   (e) RISK management plan.

B.E. Computer Sem VII (R). 9/12/14.
Mobile Computing

QP Code :15490

(3 Hours) **[Total Marks : 100**

N.B. (1) Question No. **1** is **compulsory.** Solve any **four** questions from remaining **six** questions.
(2) Assume suitable **data** wherever **necessary**.
(3) **Figures** to the **right** indicate **full** marks.

1. (a) Consider a mobile user who is migrating from a place to another place provide him a seamless service by satellite system, also sketch the architecture. **10**
(b) A certain city has an area of 1300 square miles and is covered by a cellular system using a seven cell reuse pattern" Each cell has a radius of 4 miles and the city has 40 MHz spectrum with a full duplex channel bandwidth of 60KHz. Find : **10**
(i) The number of cells in the service area.
(ii) The number of channels per cell.
(iii) Total number of subscribers that can be served.

2. (a) Write about types of antennas and their radiation pattern ? **10**
(b) Describe how data encryption is done in GSM system, with diagram explaining the role of SIM, A3, A5 and A8 algorithm. **10**

3. (a) What are various types of satellites are used ? Describes there functionality and also explain the concept of localization, routing and handover in them. **10**
(b) The channel access control sublayer of HIPERLAN offers a connectionless data transfer service to the higher MAC layer. Justify the above statement with related references. **10**

4. (a) What is the fundamental difference of WML compared to HTML ? Why is this difference important with respect to handheld devices ? What is specified in addition to save bandwidth ? **10**
(b) What are the general problems of mobile IP regarding security and support of quality of service ? **10**

5. (a) Explain the transaction classes provided by Wireless Transaction Protocol (WTP) ? Also explain Services provided by Wireless Session Protocol (WSP) ? **10**
(b) What are the modifications require to an existing GSM network to be upgraded to GPRS ? Explain with the help of diagram. **10**

6. (a) Discuss the PHY frame format of an IEEE 802.11 using the spread spectrum technique which separates by code. **10**
(b) Discuss IMT 2000 system. **10**

7. (a) Explain in short Wireless Security Threats. **5**
(b) What do you mean by WiMAX ? In what way it is similar to DSL ? **5**
(c) Discuss about Link Management in Wireless A TM. **5**
(d) What is handoff ? What is roaming ? How do you perform handoff during roaming ? **5**

LM-Con.:10488-14.

BE - Comp - SEM VII (REV)

15| Dec 2016

S.S.

QP Code :15608

(3 Hours) **[Total Marks : 100]**

N.B. : (1) Question 1 is compulsory.
(2) Attempt any four out of remaining six questions.
(3) Assumptions made should be clearly stated.
(4) Assume suitable data whenever required but justify the same.

1 (a) What is Multilateral Security? **5**
(b) Compare Stream and Block encryption algorithms. **5**
(c) Distinuish between attack, vulnerability and access control. **5**
(d) What is Buffer overflow and incomplete mediation in Software Security? **5**

2 The following questions are based on scenario in which encrypted data are passed between Alice and Bob using RSA algorithm. Alice's public key is { 17, 23} and Bob's public key is { 5, 23} Assume that no one knows the private keys but the original owners. **20**
(a) Encrypt the message M=7 using Bob's public key.
(b) What should Alice have to do to decrypt the message from Q-2 a?
(c) What would Bob have to do to decrypt the message from Q-2 a?
(d) What is Alice's private key?
(e) What is Bob's private key?

3. (a) Explain how threat precursors are used for Reconnaissance of network. **10**
(b) Upon reception of a digital certificate, how one can decide whether to trust that or not. **10**

4. (a) Explain Physiological and Behavioral biometric techniques with example. **10**
(b) Write short note on Access control List (ACL) and Capabilities. **10**

5. (a) What is a firewall? Expalin different types of firewall. **10**
(b) Explain various types of port scan. **10**

6. (a) What is spoofing? Explain ARP spoofing. **5**
(b) What is SQL Injection? Give Example. **5**
(c) Compare packet sniffing and packet spoofing. Expalin the session hijacking attack. **10**

7. Write short note on (Any **Two**) **20**
(a) Compare AES and DES
(b) Explain different Security Mechanisms.
(c) Various ways for Memory and Address Protection
