BE-sem-VII – CO – CBSGS- DSP

(1)

15/5/17

Q. P. Code : 622701

(3 hours) Total Marks: 80

N.B. 1. Question **No. 1** is compulsory
2. Attempt any **three** out of remaining
3. Assume suitable data if **necessary** and justify the assumptions
4. Figures to the **right** indicate full marks

Q1 A Compare IIR systems with FIR systems. 05

B State whether $x[n] = \sin(n\pi/3)$ is an energy or power signal with proper justification. 05

C If $x[n] = \{1,2,2,1,3,1\}$ is a periodic signal. Plot it in circular representation for 05
i)x [-n] ii)x [n-2] iii)x [n+2] iv)x [-(n-2)] v)x [-(n+2)]

D State BIBO stability criterion for LTI systems. Determine the range of values of 'p' and 'q' for the stability of LTI system with impulse response: 05

$$h[n] = p^n \quad ; n < 0$$
$$= q^n \quad ; n \geq 0$$

Q2 A Check whether the system $y[n] = a^n u[n]$ is: 10
i) Static or Dynamic
ii) Linear or Non-linear
iii) Causal or Non-Casual
iv) Shift variant or Shift Invariant

B Check the periodicity of the following signals and if periodic, find their fundamental period. 10
i) $\cos(n/6) \cdot \cos(n\pi/6)$
ii) $\sin(2\pi n/3) + \cos(2\pi n/5)$

Q3 A Determine the output response of the LTI system using time domain method ,whose input is $x[n] = 3\,\delta[n+1] - 2\,\delta[n] + \delta[n-1] + 4\,\delta[n-2]$ and $h[n] = 2\,\delta[n-1] + 5\,\delta[n-2] + 3\,\delta[n-3]$. 10

B If a continuous time signal $x(t) = \sin(2\pi \times 2000t) + 2\sin(2\pi \times 1000t)$ is sampled at 8000 samples /sec. Find out the 4-point DFT of it. Sketch the phase and magnitude spectrum. 10

Q4 A Explain any five properties of DFT. 10

B Compute linear convolution of the causal sequences $x[n] = \{2,-3,1,-4,3,-2,4,-1\}$ and $h[n] = \{2,-1\}$ using overlap save method. 10

[TURN OVER]

Q5 A Compute circular convolution of the causal sequences x[n] = {1,-1,1,-1} and h[n] = {1,2,3,4} using radix- 2 DIT FFT method. 10

B If the DFT of x[n] is X (k) = {2,-j3,0,j3} using DFT properties ,find : 10
i) DFT of x[n-2]
ii) Signal energy
iii) DFT of x*[n]
iv) DFT of x^2 [n]
v) DFT of x[-n]

Q6 A Explain the significance of Carl's Correlation Coefficient Algorithm in digital signal processing. Evaluate Carl's Coefficient for two causal sequences x[n] = {2,4,4,8} and y[n] = {1,1,2,2}. 10

B i) Calculate the percentage saving in calculations in a 64 point radix-2 FFT systems with respect to the number of complex additions and multiplications required, when compared to direct DFT system. 5

B ii) Write a detailed note on DSP processor. 5

BE-sem-VII -CBSGS- COMPS- C&SS 19/5/17

QP Code:811500

3 hrs. 80 marks

Note :
1. **Question 1 is compulsory.**
2. **Attempt any 3 questions out of the rest.**
3. **Make suitable assumptions whenever necessary and justify them**
4. **Each question carries equal marks.**

Q1.

a) Use the Play fair cipher with the keyword : "MEDICINE" to encipher the message "The greatest wealth is health". (5)

b) Explain key rings in PGP. (5)

c) Briefly define idea behind RSA and also explain (10)

1) What is the one way function in this system?
2) What is the trap door in this?
3) Give Public key and Private Key.
4) Describe security in this system.

Q2)a) Explain DES, detailing the Feistel structure and S-block design (10)

b) Consider a Voter data management system in E-voting system with sensitive and non-sensitive attributes. (10)

1) Show with sample queries how attacks (Direct, Inference) are possible on such data sets
2) Suggest 2 different ways to mitigate the problem.

Q 3)

a) Explain Diffie-Hellman Key exchange algorithm with suitable example. Also explain the problem of MIM attack in it (10)

b) What are Denial of Service attacks? Explain any three types of DOS attacks in detail (10)

Q 4)

a) IPSec offers security at n/w layer. What is the need of SSL? Explain the services of SSL protocol? (10)

b) What are the types of firewalls? How are firewalls different from IDS (10)

Q 5)a) What are the various ways in which public key distribution is implemented. Explain the working of public key certificates clearly detailing the role of certificate authority. (10)

b) Why are Digital Signatures & Digital certificates required? What is the significance of Dual Signature. (10)

Q6 Attempt any 4 (20)

a) SHA-1
b) Timing and Storage Covert Channel
c) Session Hijacking and Spoofing
d) Blowfish
f) S/MIME

6

25/5/17

BE - sem - VII - CBSGS - COMPUTERS

Q. P. Code : 811600

(3 Hours) **Total Marks : 80**

N.B. 1. Question No. 1 is **compulsory**
2. Attempt any three (3) out of remaining five (5) questions
3. Assume suitable data if **necessary** and **justify** the assumptions
4. Figures to the **right** indicate full marks

Q1 Attempt an four (4) from the following

[A] Define AI. What are applications of AI? [05]

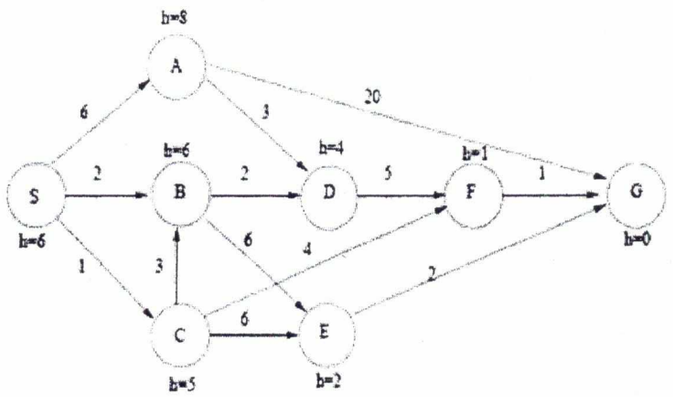
[B] Define heuristic function. Give an example heuristics function for 8-puzzle problem. Find the heuristics value for a particular state of the Blocks World Problem. [05]

[C] Compare Model based Agent with Utility based Agent. [05]

[D] What are the problems/frustrations that occur in hill climbing technique? Illustrate with an example [05]

[E] What is supervised learning and unsupervised learning? Give example of each. [05]

Q2 [A] Consider the search problem below with start state S and goal state G. The transition costs are next to the edges and the heuristic values are next to the states. What is the final cost using A * search. [10]



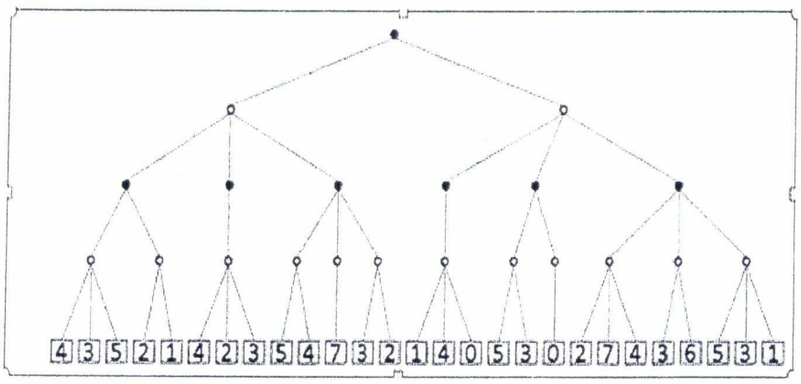
[B] Explain the architecture of Expert System. What are advantages and limitations of Expert System? [10]

Q3 [A] Explain with example various uninformed search techniques. [10]

[B] Illustrate Forward chaining and backward chaining in propositional logic with example [10]

[TURN OVER]

Q4 [A] Apply alpha-Beta pruning on following example considering first node as MAX [10]



[B] Explain a partial order planner with an example. [10]

Q5 [A] Consider the following facts about dolphins: [10]

Whoever can read is literate. Dolphins are not literate. Some dolphins are intelligent.

(i) Represent the above sentences in first order predicate logic (FOPL).
(ii) Convert them to clause form
(iii)Prove that **"Some who are Intelligent cannot read"** using resolution technique

[B] What is Uncertainty? Explain Bayesian Network with example [10]

Q6 Write short note on any two of the following: [20]

(i) Steps in Natural Language Processing

(ii) Decision Tree Algorithm with an example

(iv) Genetic Algorithms

01/06/17

Q.P. Code : 793101

(3 Hours) **[Total Marks : 80**

N.B. : (1) Question 1 (one) is compulsory.
(2) **Attempt** any three questions out of remaining.
(3) **Figures** to the **right** indicate **full** marks.

1. a. Explain Electronic Data Interchange and bring out its benefits. **5**
b. How will you achieve agility in SCM? **5**
c. How can we improve the power of ERP using business intelligence? **5**
d. Explain how BPR adds value to an organization? **5**

2. a. Describe configure-to-order concept. **10**
b. What do you mean by bill of material? Explain with an example. **10**

3. a. Explain distribution requirement planning. **10**
b. What is data warehousing? Explain how data warehousing and data mining are an integrated part of a successful ERP package? **10**

4. a. Explain material management system (in brief). **10**
b. What are the uses of ERP? Discuss how ERP helps in better decision-making? **10**

5. a. What is the impact of internet and www on the ERP products? **10**
b. What is customer retention? Explain briefly why it is necessary. How to evaluate a retention analysis? **10**

6. CASE STUDY : Select Comfort finds Comfort in ERP
Select comfort is the bed that invented the "sleep number" system, which provides a range of mattress firmness setting to accommodate sleeping preferences. Founded in 1987, the Minneapolis, Minnesota-based company delivered net sales of $691 million in 2005. The company has 32U.S.-issued or pending patents and was ranked by Furniture/Today as the top bedding retailer in the nation for the sixth consecutive year. Needless to say, a company of this size depends on enterprise-wide software systems to provide access to valuable information throughout the organization. A few years ago, Select Comfort began moving away from its hard-to-maintain legacy systems to integrated enterprise resource

[TURN OVER]

planning (ERP) software. The e-Business Suite from Oracle provides ERP services through a convenient Web-based interface. The suite helps Select Comfort coordinate its sophisticated made-to-order manufacturing operations in South Carolina and Utah, and keep mattress orders flowing smoothly from the store to the factory to the consumer's home. Select Comfort adopted several e-Business Suite modules to assist in varying parts of its business: an order management module to fulfill the hundreds of mattress orders it receives daily, a customer relationship management (CRM) module for keeping track of customer interaction, and modules that handle typical business needs such as assets management, general ledger, payables, purchasing and receivables. The ERP system ensures that all these modules and services are synchronized and centralized so they can provide up-to-date information. Seeking to make use of the latest technologies, Select Comfort adopted business intelligence (BI) software from Siebel Systems, Inc. BI software allows a business to combine its databases and extract useful information to apply to business strategies. The BI software from Siebel caught the interest of Select Comfort because of its power and ease of use. Select Comfort plans to deploy Siebel Business Analytics to 2,500 users company-wide by 2008. The software will deliver alerts and dashboard capabilities to show how the company's 400 stores are performing in real time. Select comfort had concerns about using enterprise-wide software from two vendors, Oracle and Siebel. When companies adopt new software, the software, the software must be able to integrate with existing systems. Select Comfort resigned itself to the fact that it would have to work with Siebel on integration issues. Shortly after Select Comfort purchased the Siebel software, Oracle announced that it was purchasing Siebel. The partnership means that the Siebel BI software will eventually be integrated with oracle's database and ERP software. David Dobrin, an analyst at B2B Analysts, Inc., in Cambridge, Massachusetts, said Select Comfort will likely have to wait for a strong link between the products. Integration "will take years and years, and probably Oracle will have to do a major revision to data systems," he said.

Questions **10**

1. What benefits does Select Comfort's ERP system provide that individual software solutions from a variety of vendors could not? **10**
2. What risk did Select Comfort assume when it chose software from a different vendor?
