BE (Comp) Sem VII CBGS first half May 2017
Sub: DSP Date: 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 : 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]	10
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 [Comp] Sem - VII CBGS May 2017
Sub: CSS Date: 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

BE comp Sem VII AI May 2017
[Credit based] 25/5/17 **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]

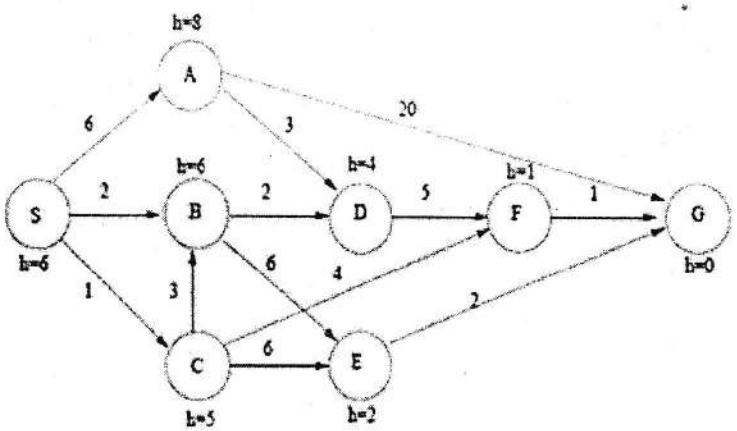
[B] Define heuristic function. Give an example heuristics function for 8-puzzle problem. Find the heuristics value for a particular state of the Blocks World Problem. [05]

[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]

First half 2017 01. 01/06/2017

Q.P. Code : 812001

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

N.B. : (1) Question number 1 is compulsory.
(2) **Attempt** any **three** questions out of the remaining five questions.
(3) Assume suitable data.

1. Design Domain-Specific Software Architecture (OSSA) for online shopping website Management System. Assume suitable entities, attributes etc. Domain Model must consists following :- **20**
   a) Domain Dictionary and Information Model.
   b) Feature Model and Operational Model.

2. a) Define Architectural analysis. Discuss various analysis types with an example. **10**
   b) Define the following terminology :- **10**
      1) Component
      2) Configuration
      3) Ambiguity
      4) Architectural Pattern
      5) Precision

3. a) Discuss Service-Oriented Architecture (SOA) and Web Service. **10**
   b) Explain with an example Software System Mobility and Architecture. **10**

4. a) Explain the distributed object style in connection with CORBA middleware. **10**
   b) What is C2 style? Explain its architecture. **10**

5. a) Discuss frameworks for the Pipe-and-Filter Architectural Style. **10**
   b) Discuss Elements of the Architectural Style. **10**

6. Write short notes on the following. **20**
   a) Peer-to-Peer style.
   b) Challenges in Migrating Code.
   c) System Stakeholders.
   d) Simulation-Based Analysis.
