Q.P. Code : 793102

(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 the structure of ERP.	5
	(b)	Explain the various business modules of an ERP system.	5
	(c)	Explain the various types of supply chain.	5
	(d)	Differentiate between data warehouse and data mart with an example.	5
2.	(a)	Explain business process engineering in detail.	10
	(b)	Explain do you mean by bill of material with an example.	10
3.	(a)	Explain CRM in detail.	10
	(b)	What are benefits of ERP? Discuss how ERP helps in better decision-making?	10
4.	(a)	Explain Electronic Data Interchange along with its benefits.	10
	(b)	Explain e- procurement mechanism in details.	10
5.	(a)	Specify the characteristics of Agile Supply chain and explain how agility in supply chain can be achieved.	10
	(b)	Explain SCOR model in detail.	10
6.		Write a short note on any **two** of the following :-	20
	(a)	News paper supply chain	
	(b)	Considerations in modeling system with example (if any)	
	(c)	Enterprise application Integration (EAI)	
	(d)	ERP business module (any one)	

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

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

Q1   Attempt an four (4)

[A]   What are PEAS descriptors? Give PEAS descriptors for a robot meant   [05]
for cleaning the house.

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

[C]   Compare and Contrast problem solving agent and planning agent   [05]

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

[E]   Represent the following statement into FOPL.   [05]

(i) Every tree in which any aquatic bird sleeps is beside some lake.

(ii) People try to assassinate rulers they are not loyal to.

Q2 [A]   Consider the given instance of 8-puzzle.   [10]

1	2	3
4	5	6
7	8	

| 1	2	3
4	6	
7	5	8

Goal State   Initial state

Compare and contrast uninformed search strategies with respect to
solving 8-puzzle problem.

[B]   Draw and describe the architecture of goal based agent.   [06]

[C]   Convert the following propositional logic statement into CNF   [04]
$(A \leftrightarrow B) \rightarrow C$

Q3 [A]   The law says that it is a crime for an American to sell weapons to
hostile nations. The country Nono, an enemy of America, has some
missiles, and all of its missiles were sold to it by Colonel West, who is
an American.

(i) Represent the above sentences in first order predicate   [04]
logic (FOPL).

(ii) Convert them to clause form   [04]

(iii) Prove that **"West is Criminal"** using resolution   [04]
technique

[B]   What are the basic building blocks of Learning Agent? Explain each of   [08]
them with a neat block diagram.

[TURN OVER]

Q4 [A] Apply alpha-Beta pruning on following example considering first node as MAX [10]
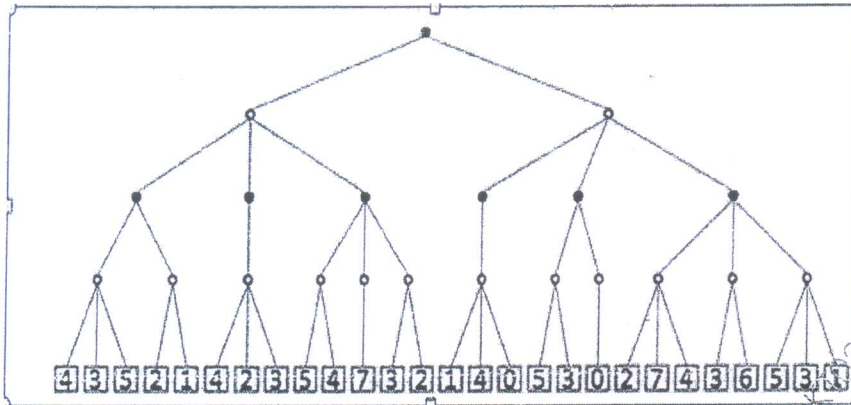
[B] Draw general architectural diagram of Expert system. Explain every component in detail of this block with an example. [10]

Q5 [A] Give the initial state, goal test, successor function, and cost function for the travelling salesperson problem (TSP). There is a map involving N cities some of which are connected by roads. The aim is to find the shortest tour that starts from a city, visits all the cities exactly once and comes back to the starting city. [06]

[B] Prove the admissibility of A* [06]

[C] Explain a partial order planner with an example [08]

Q6 [A] Given a full 4-gallon jug and an empty 3- gallon jug, the goal is to fill the 4-gallon jug with exactly 2- gallons of water. Give state space representation. [10]

[B] The gauge reading at a nuclear power station shows high values if the temperature of the core goes very high. The gauge also shows high value if the gauge is faulty. A high reading in the gauge sets an alarm off. The alarm can also go off if it is faulty. The probability of faulty instruments is low in a nuclear power plant. [10]

    (i) Draw the Bayesian Belief Network for the above situation
    (ii) Associate a conditional probability table for each node

(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   Perform convolution operation between given function in time domain if   05

         $x_1(n) = (-3)^n$ for n = 0, 1, 2, 3

                  0   otherwise   and

         $x_2(n) = u(n) - u(n-4)$

     B   Find whether the given signal is energy signal or not $x(n) = u(n)-u(n-6)$.   05

     C   State the stability criteria of discrete time system and determine the given IIR 05

         system is stable or not $y(n) = 5x(n) + 12$.

     D   Find IDFT of X(k)={2, 1-j, 0, 1+j}.   05

Q2   A   Consider the following analog signal   10

              $x(t)=2\sin(100 * \prod * t)$

         The signal x(t) is sampled with a sampling rate **Fs=50Hz.** Determine the
         discrete time signal. Plot the discrete time signal. And also calculate total
         number of samples.

     B   If $x_1(n) = \{1, 2, 3, 6\}$ find $X_1(K)$ and $p(n) = \{1, 6, 3, 2\}$ Find P(K) using $X_1(K)$.   10

Q3   A   Check whether following systems are :   10

         i)Static or Dynamic   ii)Linear or Non-linear

         iii)Shift invariant or variant   iv)Causal or Non-causal.

         a) $y(n) = 2^n u(n)$ b) $y(n) = 4x(n) + x(n-2)$

     B   For $x(n) = \{8, 5, 2, 4, 2, 1\}$, plot the following Discrete Time signals: 10

            1.) x(n+2)   2.) x(n)u(-n)   3.) x(n-1)u(-n-2)

            4.) x(n-1)u(n)   5.) x(2n-1)

Q4   A   State any five DFT properties.   10

     B   Draw the radix 2 DIT FFT and find the DFT of the sequence   10

         x(n) = {2, 3, 4, 1, 0, 0, 0, 0} using FFT flow graph.

                                                        [TURN OVER]

Q5 A Compute Linear Convolution of causal sequence $x(n) = \{5, 6, 2, 4, 1, 4, 5, 2, 3\}$ 10

        and $h(n) = \{2, 1, 3, 1\}$ using fast overlap add method.

    B For the FIR digital filter with impulse response given by   10

        $h(n) = \delta(n) + 2\delta(n-2) + 3\delta(n-3)$ sketch the magnitude response of the filter.

Q6 A Write a detailed note on TMS 320.

    B Write a detailed note on Carls' Correlation Coefficient Algorithm.   10

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Course: B.E. (Sem VII) (CBSGS&OLD) (All Branch)

QP Code: 622700

Correction:

Q1 A Read as "Perform linear convolution....."

Instead of

Q1 A "Perform convolution....."

Query Update time: 24/11/2016 11:55 AM

Q.P. Code : 811502

(3 Hours) [Total Marks : 80]

1. Question No 1 is compulsory.
2. Attempt any three out of the remaining five questions.

Q1. (a) What are block ciphers? Explain with examples the CBC and ECB modes of block ciphers.   05

(b) Encrypt the string "This is an easy task" using a playfair cipher with key "monarchy".   05

(b) Define authentication and non-repudiation and show with examples how each one can be achieved.   05

(d) Describe triple DES with two DES keys. Is man in the middle attack possible on triple DES?   05

Q2. (a) A and B decide to use Diffie Hellman algorithm to share a key. They choose p=23 and g=5 as the public parameters. Their secret keys are 6 and 15 respectively. Compute the secret key that they share.   10

(b) Compare DES and IDEA. Explain the round key generation scheme in both these algorithms.   10

Q3. (a) What are the different types of viruses and worms? How do they propogate?   10

Q3. (b) What are the various ways for memory and address protection in Operating systems? How is authentication achieved in O.S?   10

Q4. (a) Explain briefly with examples, how the following attacks occur: i)Salami attack ii) Denial of Service attack iii) session hijacking attack iv) Cross-cite scripting attack   10

Q4. (b) How is security achieved in the transport and tunnel modes of IPSec? Describe the role of AH and ESP.   10

Q5. (a) How is confidentiality achieved in emails using either S/MIME or PGP?   05

Q5. (b) A and B wish to use RSA to communicate securely. A chooses public key (e,n) as (7,247) and B chooses public key (e,n) as (5,221). Calculate their private keys. What will be the cipher text sent by A to B if A wishes to send message m=5 securely to B?   10

Q5. (c) What is a digital signature? Explain any digital signature algorithm.   05

Q6. (a) Compare and contrast (any two):   10
     i) Block and stream ciphers
     ii) MD-5 versus SHA
     iii) KDC versus CA

Q6. (b) What are firewalls. Explain the different types of firewalls and mention the layer in which they operate.   10