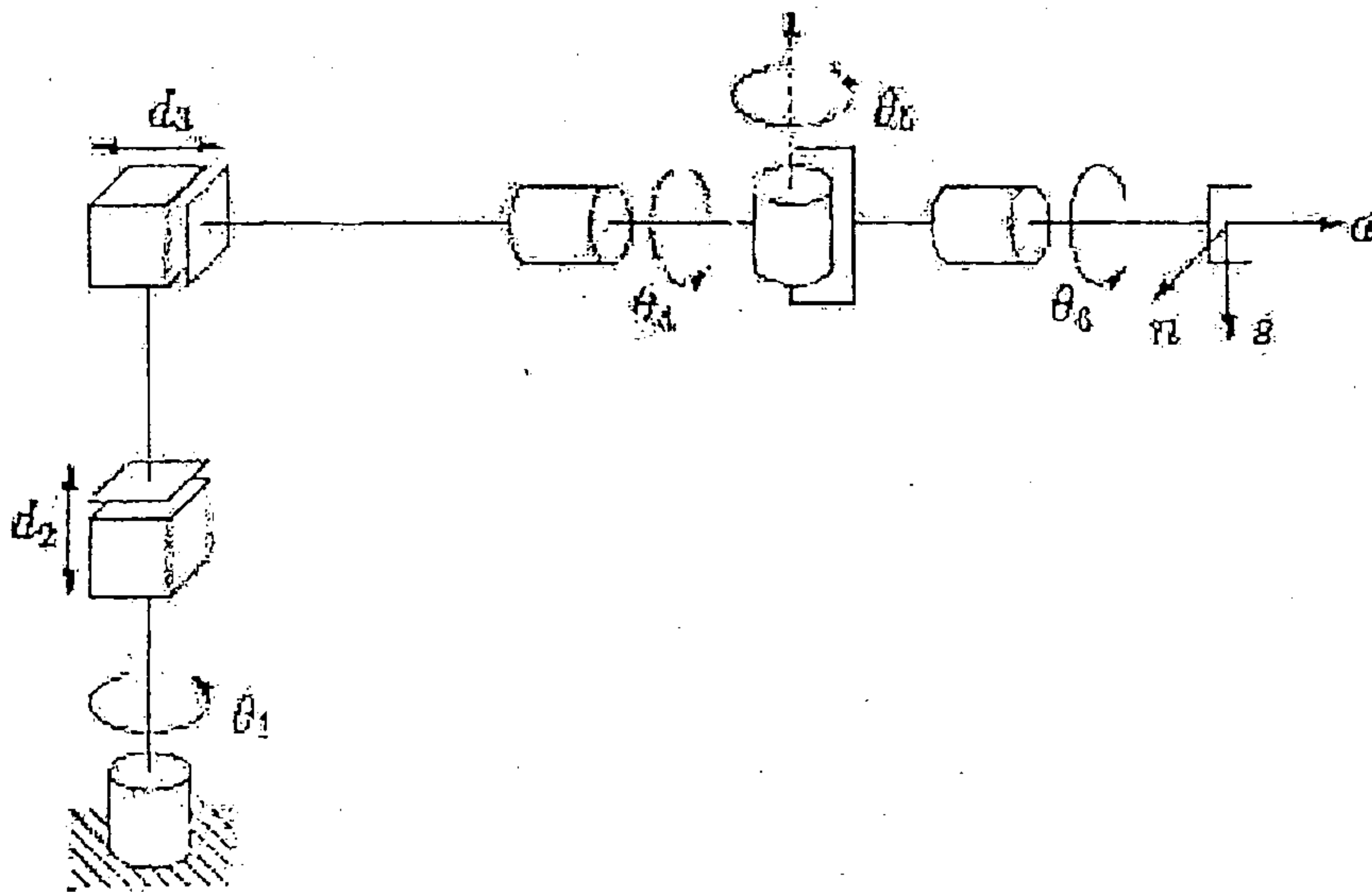


- N.B. : (1) Question No. 1. is compulsory.  
(2) Answer any four questions from remaining questions.  
(3) Assume suitable data if necessary.  
(4) Figures to the right indicate full marks.

1. (a) Describe robot workspace. 5  
(b) Explain homogeneous transformation matrix. 5  
(c) Discuss the heuristic function for 8-puzzle problem. 5  
(d) Discuss structure of learning agent. 5
2. (a) Explain A\* algorithm with example. 10  
(b) Explain breadth first algorithm. 10
3. (a) Explain resolution refutation using suitable example. 10  
(b) Explain backward chaining giving suitable example. 10
4. (a) Discuss the application of decision tree for restaurant example. 10  
(b) Why uncertainty occurs in AI systems? How probability theory can be applied for toothache problem? 10
5. (c) Using DH notation, write transformation matrix for following robot: 15



- (d) Explain different types of robots. 5

2.

**QP Code : MV-20102**

- |                        |   |    |
|------------------------|---|----|
| 6. (a)                 | Discuss various position sensors used in robots.        | 10 |
| (b)                    | Discuss partial order planning giving suitable example. | 10 |
| 7. Write short note on |   |    |
| (a)                    | Limitations of Hill-Climbing algorithm                  | 5  |
| (b)                    | Predicate Logic   | 5  |
| (c)                    | Properties of environment                               | 5  |
| (d)                    | Admissibility of A*                                     | 5  |
-

QP Code :MV-20045

(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 and state them clearly.

1. (a) Laplacian is not good edge detector. Justify. 5  
 (b) Discuss the properties of Region of Convergence. 5  
 (c) Convolution in one domain leads to multiplication in other domain. 5  
 (d) Walsh transform is nothing but sequence Orderd Hadamard Transform Matrix Justify. 5
2. (a) Construct improved gray scale quantization code for given level data set. 10  
 $\{100, 110, 124, 124, 130, 200, 210\}$   
 (b) Find the following sequences are periodic or not. If yes, find the fundametal time period. 10  
 (i)  $x_1(n) = 3\sin(0.01\pi n) + 4\cos(10n)$   
 (ii)  $x_2(n) = \cos(0.01\pi n)$
3. (a) Determine the system function and unit sarapie response of the given system 10  
 described by following difference equation :  

$$y(n) = \frac{1}{4}y(n-2) + \frac{1}{2}y(n-1) + x(n)$$
  
 (b) Find cross-correlation between given signals. 5  
 $x(n) = \{1, 0, 1, 2\}$   
 $y(n) = \{1, 2, 3, 4\}$   
 (c) Find auto-correlation of following signal 5  
 $x(n) = \{1, 1, 2, 3\}$
4. (a) Compute DFT of the given image using DIT-FFT technique 10
- |   |   |   |   |
|---|---|---|---|
| 0 | 1 | 2 | 1 |
| 1 | 2 | 3 | 2 |
| 2 | 3 | 4 | 3 |
| 1 | 2 | 3 | 2 |
- (b) Explain the process of image segmentation using different methods. 10

[ TURN OVER

5. (a) Specify DCT basis functions and construct transform matrix for an image. 10  
 (b) Obtain the digital negative of the following 8 bits per pixel image.

121	205	217	156	151
139	127	157	117	125
252	117	236	138	142
227	182	178	197	242
201	106	119	251	240

6. (a) Perform histogram equalization on the given image transform. 10

Gray Level	0	1	2	3	4	5	6	7
Number of Pixels	70	100	40	80	60	40	08	02

- (b) Write 8 x 8 Walsh transform matrix and draw its signal flow graph. 10

7. Write short notes on (any four) : - 20

- Hough Transform
  - Wavelet Transform
  - Classify and define discrete time systems
  - Homomorphic filter
  - State and prove convolution property of Z-transform.
-

- 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) Explain fuzzy extension principle with the help of an example. 6  
 (b) Model the following as a fuzzy set using suitable membership function - "numbers close to 10". 6  
 (c) Explain standard fuzzy membership functions. 8
2. Design a fuzzy controller to determine the wash time of domestic washing machine. 20  
 Assume that the inputs are dirt and grease on clothes. Use three descriptors for each input variable and five descriptors for the output 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.
3. (a) What is learning? Compare different learning rules. 10  
 (b) Explain error back propagation training algorithm with the help of a flowchart. 10
4. (a) Implement the perceptron rule training using  $f(\text{net}) = \text{sgn}(\text{net})$ ,  $c=1$ , and the following data specifying the initial weights  $W1$ , and the two training pairs. 10  
 $W1 = [0, 1, 0]^t$   
 $X1 = [2, 1, -1]^t$   $d1 = -1$ ;  
 $X2 = [0, 1, -1]^t$   $d2 = 1$ ;  
 Repeat the training sequence until two correct responses in a row are achieved.  
 (b) Explain Hebbian Learning with the help of an example. 10
5. (a) Explain with examples linearly separable and non-linearly separable pattern classification. 10  
 (b) Explain the architecture of ANFIS with the help of a diagram. 10
6. (a) Explain with an example Genetic Algorithm. 10  
 (b) Explain RBF network and give the comparison between RBF and MLP. 10
7. Write a short note on **any two** of the following 20  
 (a) Derivative based Optimization  
 (b) Learning vector quantization  
 (c) Character recognition using neural network  
 (d) Kohonen's self organizing network.

B.E. Comp sem VII (Rev) May - 19 19/5/14

Sub - E-comm.

QP Code : MV-19974

(3 Hours)

[ Total Marks : 100

- N.B. : (1) Question no 1 is compulsory.  
(2) Solve any **four** questions out of the **remaining**.  
(3) Assume suitable **data** wherever **required**.

1. (a) Differentiate between e commerce and e business. Also state the advantages and disadvantages of e commerce. 10  
(b) Explain SET protocol for electronic payments. 10
2. (a) State and explain electronic data Interchange (EDI) in detail. 10  
(b) Define CRM and hence explain its architecture in detail. 10
3. (a) Explain different types of web based auctions and explain any one in detail 10  
(b) Explain the important factors to be considered in server side programming. 10
4. (a) Explain what is meant by value chain and hence explain the various types of value chain that can be applied to an organization. 10  
(b) Explain any three types of e- business models used . 10
- 5 (a) Explain WAP architecture in detail. 10  
(b) For launching a new product on the web, explain the strategies for sales and promotions using e commerce site. 10
- 6 (a) Explain the complete cycle of credit card transactions. 10  
(b) Explain the different security measures that can be applied to protect a private intranet from public internet. Further explain the different types of firewalls that can be useful for an ecommerce website. 10
7. Write short notes on (any two):- 20
  - (a) REST
  - (b) Virtual communities
  - (c) Mobile Agents.

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Mobile Computing, B.E sem-VII (r)  
Comp  
May-June 2014.

**QP Code : MV- 20172**

**(3 Hours)**

**[Total Marks : 100**

Note:

1. Question No. 1 is compulsory.
2. Attempt any four questions out of remaining questions.
3. Make suitable assumptions whenever necessary.

Q.1:

- a) What is Spread Spectrum? [5]
- b) Compare between IEEE 801.11 and HiperLAN2 . [5]
- c) What is frequency reuse concept in cellular communication? [5]
- d) Compare 2G and 3G mobile communication systems. [5]

Q.2:

- a) Explain the GSM protocol architecture. [10]
- b) Describe the call initiation and call termination procedure in GSM systems. [10]

Q.3:

- a) Explain IEEE 802.11 MAC frame format in detail. [10]
- b) Describe tunneling and encapsulation in Mobile IP . [10]

Q.4:

- a) With respect to Bluetooth protocol explain piconet and scatternet [10]
- b) Explain merits and demerits of snooping TCP and indirect TCP? [10]

Q.5:

- a) Describe WAP transport layer security [10]
- B) Compare between MEO and GEO satellite systems. [10]

Q.6:

- a) Describe TETRA system architecture. [10]
- b) Compare between WCDMA and CDMA2000 [10]

Q.7: Write Short Notes on following: [20]

- a) Wireless Local Loop
- b) RFID
- c) Wireless ATM
- d) Mobile agents

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**Con. 13065-14.**

QP Code : **MV-20289**

(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 data if required and state it clearly.

1. (a) What are the different security goals? 5  
(b) What is Keyless Transposition Cipher? Give any example of rail fence cipher. 5  
(c) What are the different parameters used to measure the accuracy of biometric techniques? Also write the application of Biometric. 5  
(d) What are the various types of IP Spoofing? 5
2. (a) Explain the TCP/IP Vulnerabilities at each layer. 10  
(b) What are the typical characteristics of enterprise wide networks? Explain its different Router Vulnerabilities and Firewall Vulnerabilities. 10
3. (a) Explain A5/1 algorithm with an example. 10  
(b) What are Passive and Active attacks? Categorize these attacks and explain one example of each. 10
4. (a) What is SHA-1? Explain different steps of working of SHA-1. 10  
(b) What are the different methods of Malware (Malicious code) Detection? Explain with their advantages and disadvantages. 10
5. (a) What is Bell-La Padula? How Bell-La Padula model works? 10  
(b) Explain different methods used to Commit a Session Hijack and methods to prevent Session Hijacking. 10
6. (a) Why Secure Socket Layer (SSL) is needed? What are the different features SSL provides? Explain how SSL works? 10  
(b) How does Kerberos work? Explain with example. 10
7. Write short notes on the following:  
(i) Multiple DES 10  
(ii) Software Reverse Engineering (SRE) and prevention of SRE. 10