BE Comp Sem. VII (Rev) May. 2012

AGJ 1st half (h)-Con-Cod 61

Con. 3623-12.

**(REVISED COURSE)**

**GN–6302**

(3 Hours)

**[ Total Marks : 100**

D.S. & I.P.

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

1. Justify/contradict the following statements : 20

(a) Laplacian is better than gradient for detection of edges.

(b) For digital image having salt and pepper noise, median filter is the best filter.

(c) Unit Ramp signal is neither Energy nor Power Signal.

(d) Lossy compression is not suitable for compressing executable files.

2. (a) Perform Histogram Equalization for following. Obtain a plot of original as well as Equalized Histogram. 10

| Intensity | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| No of Pixels | 70 | 100 | 40 | 60 | 0 | 80 | 10 | 40 |

(b) *A* Casual FIR system has three cascaded block, first two of them have individual Impulse responses.$h_1(n)=\{1,2,2\}$ $h_2(n)=u(n)-u(n-2)$ Find Impulse response of third block $h_3(n)$,If an overall impulse response is $h(n)=\{2,5,6,3,2,2\}$ 10

3. (a) Explain in detail enhancement techniques in Spatial Domain used for images. 08

(b) Explain Homomorphic filtering in detail. 06

(c) Find the DFT of the given image. 06

| | | | |
|---|---|---|---|
| 0 | 1 | 2 | 1 |
| 1 | 2 | 3 | 2 |
| 2 | 3 | 4 | 3 |
| 1 | 3 | 2 | 3 |

4. (a) Define 10

i) Eucledean distance
ii) City block distance
iii) Chess board distance
(iv) m. connectivity

(b) Find DFT of given sequence (Use DITFFT Algorithm) $x(n)=\{1,2,3,4,4,3,2,1\}$ 10

**[ TURN OVER**

5. (a) Explain the method of segmentation of images by Region splitting and merging.

(b) Given below is the table of 8 symbols and their frequency of occurrences Give Huffman code for each symbol.

| Symbol | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 |
|---|---|---|---|---|---|---|---|---|
| Frequency | 0.25 | 0.15 | 0.06 | 0.08 | 0.21 | 0.14 | 0.07 | 0.04 |

6 (a) Perform the convolution of the following two sequences using Z-transforms.
$x(n) = (0.2)^n u(n)$ and $h(n) = (0.3)^n u(n)$

(b) Find inverse Z-Transform
. $H(z) = 1 / [1 - 3 z^{-1} + 0.5 z^{-2}]$ $|z| > 1$

(c) What is difference between image restoration and image enhancement? What do they have in common

7 Write short notes on :

(a) Discrete Cosine Transform

(b) Sampling and Quantization

(c) Hough Transform

(d) Wavelet Transform

Con. 3933-12. (REVISED COURSE) **GN–6296**

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

Mob. Computing

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

1. (a) List the entities of mobile IP and describe data transfer from a mobile node to a fixed node and vice versa. **5**
   (b) What advantages does the use of IPV6 offer for mobility ? **5**
   (c) How much of the original GSM network does GPRS need ? Which elements of the network perform the data transfer ? **5**
   (d) What is Hidden and Exposed terminal problem ? Discuss solutions to these problems. **5**

2. (a) Explain how the power management is done in IEEE 802.11 infrastructure based and adhoc networks. **10**
   (b) Draw and explain architecture of GPRS network. **10**

3. (a) Explain IP-in-IP, minimal and Generic encapsulation. Also discuss their merits and demerits. **10**
   (b) Explain snooping TCP and mobile TCP with their merits and demerits. **10**

4. (a) Why is routing in multi-hop adhoc networks complicated ? What are the special challenges ? **10**
   (b) What characteristics do the different orbits have ? What are their pros and cons ? **10**

5. (a) Explain Bluethooth protocol stack with neat diagram. **10**
   (b) What are the functions of Authentication and Encryption in GSM ? **10**

6. (a) Explain WATM reference model with several access scenarios. **10**
   (b) What are the main benefits of Spread Spectrum system ? Explain direct sequence spread spectrum in detail. How can DSSS systems benefit from multipath propagation ? **10**

7. Write short notes on any **four** of the following :— **20**
   (a) Mobile agents
   (b) UMTS architecture and its domain
   (c) WML
   (d) CDMA
   (e) HIPERLAN.

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Con. 4002-12.

(REVISED COURSE)

GN–6317

(3 Hours)

[Total Marks : 100

Robotics & A.I

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

1. (a) Find the inverse kinematic solution of 4-axis SCARA Robot. **10**
   (b) Explain WUMPUS World environment giving its PEAS description. Explain how percept sequence is generated ? **10**

2. (a) Formulate the Homogeneous Transformation Matrices (HTM) for rotations and translations and hence for screw transformations. **10**
   (b) Explain A* Algorithm. What is the drawback of A* ? Also shows that A* is optimally efficient. **10**

3. (a) Describe Hill climbing Algorithm. What are its limitations. **10**
   (b) With the help of suitable diagram describe the steps for designing a reactive behavioral system. **10**

4. (a) Explain with example Baye's Belief network and simple inference in belief network. **10**
   (b) What is TCV ? Explain the role of the tool configuration vector w(q) in inverse arm kinematics of robots. **10**

5. (a) Describe the following sensors :–
      (i) Sonar
      (ii) Infrared. **10**
   (b) Represent the following sentences in First Order Logic :–
      (i) Every gardener likes the sun
      (ii) You can fool some of the people all of the time
      (iii) All purple mushrooms are poisonous
      (iv) Every student who takes French passes it ?
      (v) No person buys on expensive policy. **10**

6. (a) Explain utility-based agent with the hlep of neat diagram. **10**
   (b) Explain partial-order planning with example. **10**

7. Write short notes on following :– **20**
   (a) Uncertainty
   (b) GPS
   (c) Problem formulation for 8-Queens
   (d) Crypt Arithmetic.

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Con. 4511-12.

(REVISED COURSE)

**GN–8492**

(3 Hours)

**[ Total Marks : 100**

Sys. Securi

N.B.: 1. Question No. 1 is **compulsory**.
2. Attempt any **four** questions from out of **six** questions remaining.
3. Assume data if required and state it clearly.

Q.1: a) What are eight security mechanisms to implement security? (5)
b) Distinguish between attack, vulnerability and access control (5)
c) What is Feistel Cipher? (5)
d) What is CAPTCHA? (5)

Q.2: a) What is race condition? Describe an example of a race conditions. (10)
b) What is distinction between a polymorphic and a metamorphic worm? (5)
c) What is a double transposition cipher? Describe it with example. (5)

Q.3: a) What are block cipher algorithmic modes? Describe any two modes. (10)
b) What are firewall design principles? (10)

Q.4: a) What is the principle behind One-Time-Pads (OTP)? Why they are highly secure? (10)
b) What is biometric authentication? What are two parameters defined for biometric measurement? (10)

Q.5: a) Describe the different vulnerabilities in enterprise network with real examples. (10)
b) What is Digital Rights Management (DRM)? Describe DRM for P2P application. (10)

Q.6: a) What are strengths and limitations Intrusion Detection System? (10)
b) Using the RSA algorithm, encrypt the following: (10)
i. p=3, q=11, e=7, M=12
ii. p=7,q=11, e=17, M=25
iii. Find the corresponding *ds* for (i) and (ii) and decrypt the ciphertexts.

Q.7: Solve the following: (any three) : (20)
a) AES
b) SSL/TLS
c) Honeypots
d) MD5

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Con. 4681–12.

(REVISED COURSE)

(3 Hours)

GN–9042

[Total Marks : 100

E-commerce

N.B. : (1) Question No. 1 is **compulsory**.

(2) Answer any **four** questions from remaining **six** questions.

1. a) Explain in brief the different type of E-commerce from the perspective of buyer and seller relationship by giving suitable example for each. (10)

b) Describe the E-Business. (5)

c) Explain revenue models for web portals and virtual communities. (5)

2. a) Explain Various technique of session management in E-commerce Web site. (10)

b) Company wants to host e-commerce web site, IT officer of the company has given three choice: 1) In house hosting with dedicated IT infrastructure 2) Cloud based hosting 3) Hosting on Web hosting company's Server. Compare with respect following parameter. (10)

i) cost ii) Security of e-commerce web site iii) Users experience iV) Storage V)Data privacy.

3. a) Describe web 1.0 , Web 2.0 and Web 3.0 with respect to Technology, features , characteristics . (10)

b) What is Web Mashup Architecture? (5)

c) Differentiate between Web site and Web services. (5)

4. Explain following Terms (20)

1) REST 2) RSS 3) Semantic Web 4) Digital Certificate.

5. a) What types of electronic payment systems are required in E-Commerce? Why are there difference 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)

b) Define CRM and explain its architecture. (10)

6. a) Explain different type of web based auction. (10)

b) Explain Service Oriented Architecture and EAI. (10)

7. Explain the role and support of E-Commerce in the following applications : (20)

(i) Real estate business (ii) Insurance sector (iii) jobs and employment site

(iv) Entertainment sites (v) Travel.