

17/12/2011

B.E (I.T) Sem VII (R)
Wireless Network

~~As labours~~

Con. 6650-11.

(REVISED COURSE)

MP-5659

(3 Hours)

[Total Marks : 100

- N.B. :** (1) Question No. 1 is **compulsory**.
 (2) Answer any **four** questions from remaining **six** questions.

Q.1.

- (a) State the relationship between HYPERLAN-2 and WATM. (5)
- (b) What is meant by overlaid cell concept in cell splitting? (5)
- (c) In GSM network, there are some databases used for various purposes. What are these databases? What are their functions? (5)
- (d) Describe major research issue or challenge in 4G wireless network. (5)

Q.2.

- (a) Illustrate Frequency Hopping Spread Spectrum and Direct Sequence Spread Spectrum with suitable examples. (10)
- (b) Describe GSM architecture. Describe different elements in this architecture. (10)

Q.3.

- (a) Describe four major technologies for WLL systems. What are the advantages and disadvantages of these approaches? (10)
- (b) Explain possible attacks on wireless lan & Explain WEP in detail. (10)

Q.4.

- (a) Discuss the HIPERLAN-1 PHY and MAC layers in detail. (10)
- (b) Explain the reference model and protocol entities of WATM. (10)

Q.5.

- (a) Discuss the connection management followed in Bluetooth technology. And explain the frame format in Bluetooth technology. (10)
- (b) Explain Media access mechanism in Wireless LAN. (10)

Con. 6650-MP-5659-11.

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Q.6.

- (a) Draw network topology of IS-41 protocol? Explain inter system handoff and automatic roaming? (10)
- (b) Suppose that an AMPS operator would like to migrate its network to 3G directly. Which technology should be chosen? W-CDMA, cdma2000, or some third alternative? (5)
- (c) Explain VSAT system (5)

Q.7.

Write short notes on : (20)

- (1) CDMA2000
 - (2) Economics of wireless network
 - (3) OFDM
 - (4) Mobile IP.
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13/12/2011

BE ~~EE~~ IT Sem-VII (REV)
Simulation & modelling

Con. 6503-11.

(REVISED COURSE)

MP-5755

(3 Hours)

[Total Marks : 100

- N.B. : (1) Question No.1 is compulsory. Attempt any four out of the remaining questions.
(2) Assume suitable data wherever necessary.
(3) Figures to the right indicate full marks.

- Q1. a. Define :- system, event, simulation, delay and model 05
- b. Perform the simulation of the following inventory system, given daily demand is represented by the random numbers 4,3,8,2,5 and the demand probability is given by
Demand 0 1 2
Probability 0.2 0.5 0.3
If the initial inventory is 4 units, determine on which day the shortage condition occurs. 05
- c. Explain the properties of a Poisson process. 05
- d. Explain covariance and correlation. 05
- Q2. a. Explain the verification process. 10
- b. Distinguish between (two points of difference each):- 06
i) Terminating and non-terminating simulations
ii) Activity and delay
iii) Random numbers and random variates
- c. Explain the steps in the development of a model of input data. 04

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Con. 6503-MP-5755-11.

2

- Q3. a.** Describe briefly queueing, inventory and reliability systems. 10
- b.** Test the following random numbers for independence by poker test: 10
 $\{0.594, 0.928, 0.515, 0.055, 0.507, 0.351, 0.262, 0.797, 0.788, 0.442, 0.097, 0.798, 0.227, 0.127, 0.474, 0.825, 0.007, 0.182, 0.929, 0.852\}$ $\alpha=0.05$, $(\chi_{0.05,2})^2 = 5.99$
- Q4. a.** Draw the figures for service outcomes after service completion and potential unit actions upon arrival and the flow diagrams for unit-entering-system and service-just-completed flow for a queueing system. 05
- b.** Compare the event scheduling, process interaction and activity scanning approach. 05
- c.** Given the following data for utilization and time spent in system for the Able-Baker car-hop problem, calculate the overall point estimators, standard error and 95% confidence intervals for the same, given $t_{0.025,3} = 3.18$ 10
- | | | | | |
|------------------------------------|-------|-------|-------|-------|
| Run r : | 1 | 2 | 3 | 4 |
| Able's utilization ρ_r : | 0.808 | 0.875 | 0.708 | 0.842 |
| Average system time w_r (mins) : | 3.74 | 4.53 | 3.84 | 3.98 |
- Q5. a.** Give the steady-state equations for M/G/1 queue and derive M/M/1 from M/G/1. 10
- b.** A medical examination is given in three stages by a physician. Each stage is exponentially distributed with a mean service time of 20 minutes. Find the probability that the exam will take 50 minutes or less. Also determine the expected length of the exam. 05
- c.** In stock brokerage, the following twenty time gaps were recorded between customer buy and sell orders (in secs.): 1.95, 1.75, 1.58, 1.42, 1.28, 1.15, 1.04, 0.93, 0.84, 0.75, 0.68, 0.61, 11.98, 10.79, 9.71, 14.02, 12.62, 11.36, 10.22, 9.20. Assuming exponential distribution is a good model for the individual gaps, calculate the lag-1 autocorrelation. 05
- Q6. a.** Describe initialization bias in steady-state simulation. 10
- b.** Explain the AR (1) time series model along with the algorithm. 05
- c.** Why is it necessary to have program and process documentation in simulation study? 05
- Q7.** Write short notes on any four:- 20
- | | |
|---------------------------------|---|
| (i) Cobweb model | (iv) Characteristics desirable in a simulation software |
| (ii) Costs in queueing problems | (v) Kolmogorov-Smirnov test |
| (iii) Gap test | (vi) Network of queues. |

17/12/2011

Ind half-11-S.G. 69

B.E(CIT) Sem VII (Rev)

Multimedia Systems
(REVISED COURSE)

MP-5752

~~Library~~

Con.6651-11.

(3 Hours)

[Total Marks : 100

- N.B.:** (1) Question No. 1 is **compulsory**.
(2) Solve any **four** questions from the remaining **six** questions.
(3) Assume **suitable** data wherever **required**.
(4) Figures to **right** indicate **full** marks.

1. (a) Explain need for quantization during transmission of audio. 20
(b) Define various objects used in multimedia systems.
(c) Explain the need for segmentation in processing the image databases.
(d) Write in brief about TV-trees.
2. (a) Explain how RTP with RTCP and RSVP are used for multimedia data transmission. 10
(b) Draw neat labeled diagram for a decoder and encoder of H-261. 10
3. (a) What is ISDN ? Explain Windows Telephony. 10
(b) Explain various software tools available for carrying out tasks in MMS. 10
4. (a) For the input string ABCABCBBCABAB use LZW compression algorithm to create codes. (Use Dictionary based coding). 10
(b) Compare between RIFF and TIFF file formats. 10
5. (a) Explain in detail about MPEG-4 and also compare between MPEG-2 and MPEG-7. 10
(b) Explain speech coding using ADPCM and write in detail about G-726. 10
6. (a) Explain essential design steps (design methodology) for multimedia system design with example. 10
(b) Explain about JPEG compression in detail 10
7. Write short notes on the following :— 20
 - (a) Multimedia Networking and Multiplexing Technologies.
 - (b) Adaptive Huffman Coding
 - (c) Multimedia authoring system
 - (d) Algorithm used for CCITT group 3 standards.

8/12/2011

BE IT Sem - VII CRED
Software Testing & Quality Assurance
MP-5758

Con. 6303-11.

(REVISED COURSE)

(3 Hours)

[Total Marks : 100

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

(2) Attempt any four questions out of remaining six questions.

1.a) Draw the data flow graph of following code. (10)

```
public static double ReturnAverage(int value[], int AS, int MIN, int MAX){
    int i, ti, tv, sum;
    double av;
    i = 0; ti = 0; tv = 0; sum = 0;
    while (ti < AS && value[i] != -999) {
        ti++;
        if (value[i] >= MIN && value[i] <= MAX) {
            tv++;
            sum = sum + value[i];
        }
        i++;
    }
    if (tv > 0)
        av = (double)sum/tv;
    else
        av = (double) -999;
    return (av);
}
```

b) Explain dynamic unit testing. (10)

2.a) Draw the control flow graph of Q1. a) code. And show branch coverage criteria. (10)

b) Explain the following terms. (10)

i) verification ii) validation iii) error iv) fault v) defect.

3.a) Describe the difference between black box and white box testing with the help of example. (10)

b) Explain the characteristic of automated test cases. (10)

4.a) Explain McCall's quality factors and criteria. (10)

b) Explain boundary value analysis with the help of example. (10)

5.a) Explain the mutation testing with the help of example. (10)

b) What are the objectives of acceptance testing? Explain different types of acceptance testing. (10)

6.a) Describe the difference between unit testing and integration testing. (10)

b) Explain the characteristic of testable requirements. (10)

7.a) Explain ISO 9001:2000 requirements. (10)

b) Explain test design preparedness matrix with the help of example. (10)

Con. 6150-11.

(REVISED COURSE)

MP-5732

(3 Hours)

[Total Marks : 100

N.B. : (1) Question No. 1 is compulsory.(2) Solve any **four** from remaining **six** questions.

1. (a) A manufacturing company has a huge sales network. To control the sales, it is divided in the regions. Each region has multiple zones. Each zone has different cities. Each sales person is allotted different cities. The object is to track sales figure at different granularity levels of region and also to count the number of products sold. Create both data warehouse schema to take into consideration of above granularity levels for region, sales person and the quarterly, yearly and monthly sales. 10
- (b) Compare database and data warehouse. 05
- (c) Explain Business Intelligence issues. 05
2. (a) What are the Major issues in Data Mining? 05
- (b) Explain BIRCH method of clustering with an example. 05
- (c) Explain Data Integration and Transformation with an example 10
3. (a) Explain techniques of Web Structure Mining 10
- (b) Explain the KDD process in detail. 10
4. (a) How the FP tree is better than Apriori algorithm. 05
- (b) A database has four transactions. Let minimum support and confidence is 50%

D=

Tid	Items
100	1, 3, 4
200	2, 3, 5
300	1, 2, 3, 5
400	2, 5

Find out frequent item sets and strong association rules for above example. 05

- (c) Explain constraint based association rule mining. 05
- (d) Explain multilevel association rules. 05
5. (a) What is noise data? How to handle Noisy data 05
- (b) Explain Regression. Write short note on Linear Regression. 05
- (c) Explain K-means clustering and solve the following with k=3
{ 2, 3, 6, 8, 9, 12, 15, 18, 22 } 10

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Con. 6150-MP-5732-11.

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6. (a) Using given training data set. Create classification model using decision tree and hence classify following tuple. 10

Tid	Income	Age	Own House
1	Very High	Young	Yes
2	High	Medium	Yes
3	Low	Young	Rented
4	High	Medium	Yes
5	Very High	Medium	Yes
6	Medium	Young	Yes
7	High	old	Yes
8	Medium	Medium	Rented
9	Low	Medium	Rented

- (b) Suppose we have six objects (with name A, B, C, D, E and F) and each object have two measured features (X1 and X2)

	X1	X2
A	1	1
B	1.5	1.5
C	5	5
D	3	4
E	4	4
F	3	3.5

Apply Single linkage clustering and draw Dendrogram. 10

7. Write notes on (Any Two) 20

- (a) Applications of Web Mining
- (b) Outlier analysis
- (c) Market Basket Analysis and use of it.
- (d) Spatial Data mining.

Con. 6879-11.

(REVISED COURSE)

(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 required and clearly specify it.

Q.1 a) Classify the following DT systems on linearity,time invariance,casualty 20

- i) $y\{n\} - 2ny\{n-1\} = x\{n\}$
- ii) $y\{n\} = x^2\{n\}$
- iii) $y\{n\} = 2^{x\{n\}} x\{n\}$

- b) The first five DFT coefficient of a real eight point sequence $x\{n\}$ are $X\{0\}=0.5, X\{1\}= 2+j, X\{2\}=3+2j, X\{3\}=j, X\{4\}=3$ find the remaining coefficients.
- c) Show that the first difference of a chain code normalizes it to rotation.
- d) Median filter is the best solution to remove salt and pepper noise, justify.

Q.2 a) Obtain the Hadamard matrix of N=8 06

- b) List any two properties of 2D-DFT, prove any one of them 04
- c) Using 4-point FFT algorithm, evaluate 2D-DFT of the following image 10

0	1	2	1
1	0	1	2
2	1	0	1
1	2	1	0

Q.3 a) Explain the following operations 10

- i) Erosion ii) Dialation III) Skeletonization iv) Prunning

- b) Assuming that edge starts in the first row ant ends in the last row. For the following gray level image,Sketch all possible paths and determine edge. 10

7	2	2
5	7	2
5	1	0

Q.4 a) Explain JPEG baseline compression scheme in detail. 05

- b) Explain subband coding in image compression using Wavelet transform. 05

- c) What is coding redundancy? Compute coding redundancy for the following image using Huffman code 10

12	12	12	12	12	12	12	12
12	12	12	12	12	12	12	12
12	12	12	12	12	12	12	12
12	12	200	200	200	100	100	100
50	50	200	200	200	100	100	100
50	50	200	200	200	100	100	100
50	50	20	20	20	5	5	5
50	50	20	20	20	5	5	5

Con. 6879-MP-5738-11.**2**

Q.5 a) Find a difference equation of a DT causal LTI system which has $\delta\{n\}$ as input and $\cos(\pi/4 n)$ is output. Derive the necessary equation. 10

b) Impulse response of FIR filter is given by $h\{n\} = \{1, 1\}$. Find the response of the system to input $x\{n\}$ where $x\{n\} = \{2, 2, 4\}$ using FFT/IFFT 10



Q.6 a) For the given image perform the following operations 08

1	2	3	0
2	4	6	7
5	2	4	3
3	2	6	1

- i) Negation ii) Thresholding (T=4) iii) Intensity level slicing without background and with background $r_1=2$ and $r_2=5$ iv) Bit Plane slicing for MSB plane and LSB plane

b) If the 1-D DCT Kernel is 08

$$g(x, u) = \alpha(u) \cos\left(\frac{(2x+1)u\pi}{2N}\right)$$

For $x, u=0, \dots, N-1$

$$\text{Where } \alpha(u) = \begin{cases} \frac{\sqrt{1}}{N} & u=0 \\ \frac{1}{\sqrt{2N}} & u \neq 0 \end{cases}$$

Find the DCT of the given image

0	1	2	1
1	2	3	2
2	3	4	2
1	2	3	2

c) Discuss the limitations of Laplacian operator for detection of edges compared with the gradient operators. 04

Q.7 Write notes on any two 20

- a) Object detection using correlation principle
- b) Region based segmentation
- c) Content based image retrieval
- d) Copyright marking.