B.E IT VII (Rev)
Elective I. Wireless Network

Con. 3472-11.   (REVISED COURSE)   RK-3507

(3 Hours)   [Total Marks : 100

N.B. : (1) Question No. 1 is **compulsory**.
      (2) Attempt any **four** questions out of remaining **six** questions.
      (3) Make **suitable** assumptions wherever **necessary** and state them.

1.   (a)   What are challenges of wireless network and explain how wireless
          Network has evolved?   10

    (b)   Explain in brief the following: -   10
          i)   Diversity Techniques
          ii)   Coding
          iii)   Equalization
          iv)   Power Control.

2.   (a)   Explain GSM Network Architecture?   10

    (b)   Draw network topology of IS-41 protocol? Explain Inter system handoff
          and automatic roaming?   10

3.   (a)   Compare Distributed coordination Function vs. Point coordination
          Function.   10

    (b)   Compare Frequency Hopping Spread Spectrum vs. Direct Sequence
          Spread Spectrum.   10

4.   (a)   Elaborate the following in terms of 3G:-   10
          i)   Spectrum Allocation
          ii)   Service classes and Applications

    (b)   Draw cdma2000 protocol stack. Explain cdma2000 MAC Sub layer
          Enhancement and logical Channels?   10

5. (a) Draw wireless ATM architecture and specify physical layer requirement for Wireless ATM for low and high speed? 10

   (b) Explain Virtual Private Network along with tunneling protocol? 10

6. (a) Compare Wireless Local Loop vs. Wired Access? 10

   (b) Explain Bluetooth protocol stack? 10

7. Write short note on:(Any Four) 20

   i) VSAT System
   ii) Wired Equivalent Privacy Protocol
   iii) Orthogonal Frequency Division multiplexing
   iv) Table driven Routing protocol
   v) IEEE 802.16 Standards.

71: 1st Half-Exam.-11 mina-(c).

Con. 3233-11.   (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.

1. (a) Give any five classifications of Discrete time systems with examples.
    (b) What is an Unitary matrix ? Prove that two dimensional DFT matrix is an Unitary
         matrix.
    (c) Let $x(n) = \{1, 2, 3, 4\}$, Find $X(k)$, FFT using DIT FFT. Using $X(k)$ and not otherwise
         find FFT of $x_1(n) = \{4, 1, 2, 3\}$.
    (d) If $x(n) = \{2, -1, 4, 3\}$ and $h(n) = \{-2, 1\}$. Find linear convolution using circular
         convolution.

2. (a) Differentiate between point operations and neighbourhood operations.   10
    (b) If :—   10

Gray level	0	1	2	3	4	5	6	7
Number of pixels	100	90	85	70	0	0	0	0

    Perform histogram stretching so that new image has a dynamic range of $[0, 7]$.

3. (a) Find the DFT of the image :—   10

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

    (b) Explain separability property of DFT.   5
    (c) What are blurring and ringing effects ? How can they be avoided ?   5

4. (a) If x(n) = {2, −1, 3, 0, 4} obtain following :— 10

      (i) x(−n)   (iv) x(−n + 2)

      (ii) x(n − 1)   (v) x(2n)

      (iii) x(n + 1)

(b) For a Discrete time system whose impulse response h(n) = {1, −2, 1}. Find the output for input x(n) = {1, 2, 3, 4}. 5

(c) Classify following DT System on linearity/causality and time variance :— 5

      (i) y(n) = 2x(n) + x(n − 1)   (ii) y(n) = x(2n) + 2.

5. (a) Using Fast Hadmard transform, find X(n) for x(n) = {4, 2, 2, 4}. 5

(b) Calculate the direction of the edge at the center point of the image : 5

$$I = \begin{bmatrix} 50 & 60 & 70 \\ 5 & 50 & 80 \\ 7 & 9 & 50 \end{bmatrix}$$

(c) Explain the following operations :— 10

      (i) Erosion   (ii) Dilation   (iii) Opening   (iv) Closing

6. (a) Compare Lossless and lossy compression techniques. 5

(b) Explain Hit-or-Miss transformation. 10

(c) Explain in detail typical image compression process. 5

7. Write detail notes on any **two** of the following :— 20

      (a) Object detection using correlation principle

      (b) Biometric Authentication

      (c) Digital image processing system

      (d) Content Based image retrieval.

Con. 2950–11.   (REVISED COURSE)   RK–3502

(3 Hours)   [Total Marks : 100]

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

1. (a) Explain steps in simulation study along with the flowchart.   10
   (b) Define the following terms—   10
       (i) System (ii) System state (iii) Event notice (iv) Activity (v) Clock
       give examples for each.

2. (a) Explain event-scheduling algorithm along with an example.   10
   (b) Explain poisson process along with its properties.   10

3. (a) List down and explain characteristics of queuing systems.   10
   (b) Explain linear congruential method also list down tests for Random numbers.   10

4. (a) Explain Random-Variate generation using Inverse Transform technique.   10
   (b) Explain Input modeling in detail.   10

5. (a) Explain Naylor and Finger validation approach.   10
   (b) Explain Initialization Bias in steady state simulations.   10

6. (a) Explain long-run measures of performance of Queuing Systems.   10
   (b) Explain Multivariate Input Models.   10

7. Write short notes on (any **two**) :—   20
   (a) Advantages and disadvantages of simulation
   (b) Iterative process of calibrating a model
   (c) Types of simulations with respect to output analysis.

87-mk : 1stHf-11.

Con. 2937-11. (REVISED COURSE) RK-3498

(3 Hours) [Total Marks : 100

N.B. (1) Question No. 1 is **compulsory**.
    (2) Attempt any **four** questions from remaining **six** questions.
    (3) Assume **suitable** data if **required**.

1. (a) Explain BIRCH with example.   5
  (b) Write FP-growth Algorithm.   5
  (c) Define and explain :   5
      (i) Support, (ii) Confidence, (iii) Information Gain, (iv) Entropy,
      (v) Gini Index.
  (d) Explain Web Content Mining and Web Usage Mining.   5

2. (a) Write difference between OLTP and OLAP. Also explain different OLAP operations   10
    and applications.
  (b) Apply the Apriori Algorithm on the following data with Minimum Support = 2.   10

TID	List of item IDS
T100	I1, I2, I4
T200	I1, I2, I5
T300	I1, I3, I5
T400	I2, I4
T500	I2, I3
T600	I1, I2, I3, I5
T700	I1, I3
T800	I1, I2, I3
T900	I2, I3
T1000	I3, I5

3. (a) Explain KDD process and architecture of Typical Data Mining System.   10
  (b) Predict a class label of an unknown tuple X = { age = '< = 20', Income = 'Medium',   10
    Student = 'Yes', Credit rating = 'Fair' } using Naive Bayesian classification.

Age	Income	Student	Credit_rating	Class: buys_Laptop
>30	Medium	No	excellent	No
< = 20	High	No	Fair	No
21 -- 3	High	Yes	Fair	Yes
< = 20	High	No	excellent	No
21 -- 30	Medium	No	excellent	Yes
21 -- 30	High	No	Fair	yes
< = 20	Medium	Yes	excellent	Yes
>30	Medium	No	Fair	Yes
>30	Medium	Yes	Fair	Yes
>30	Low	Yes	Fair	Yes
< = 20	Low	Yes	Fair	Yes
>30	Low	Yes	excellent	No
21 -- 30	Low	Yes	excellent	Yes
< = 30	Medium	No	Fair	No

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4. (a) Explain dimensionality reduction for text. Also explain different text mining 10
approaches.

   (b) Use K-means algorithm to create 3 clusters for given set of values { 2, 3, 6, 8, 5
9, 12, 15, 18, 22 } .

   (c) Explain Agglomerative clustering with example. 5

5. (a) Explain Data Cleaning, Data Integration and Transformation in detail. 10

   (b) What is Stream Data ? Explain Hoeffding Tree Algorithm with example. 10

6. (a) Explain Data Mining for Market segmentation and retail industry. 10

   (b) Explain different Data Reduction techniques. 10

7. Write short notes on (any **four**) :— 20
    (a) Market Basket Analysis
    (b) Spatial Data Cube Construction
    (c) Linear Regression
    (d) Constraint-Based Association Mining
    (e) K-Mediods.

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Con. 3136–11. (REVISED COURSE) RK–3525

(3 Hours) [Total Marks : 100

N.B. : Q1 is compulsory. Attempt any 4 out of the remaining questions.
Assume suitable data wherever necessary.
Figures to the right indicate full marks.

Q1. a) What is need of Adaptive Huffman Coding and explain it with 10
example.
b) List the objects involved in MMS and describe various applications. 10

Q2 a) Draw neat labeled diagram for a decoder and encoder of H.261 10
and explain its working in detail.
b) For the i/p string ABABBABCABABBA use LZW compression algorithm 10
to create codes.(Use Dictionary based coding)
The given data for initial code is as follows:

Code String
1 A
2 B
3 C

Q3 a) Explain MIDI file format in detail. 10
b) With the help of block diagram explain Baseline JPEG compression in 10
detail.

Q4 a) Explain object based visual coding and video bit stream in MPEG 4. 10
b) Explain hypermedia messaging concept used in MMS in detail. 10

Q5 a) What are the various software tools available for carrying out tasks in 10
MMS.
b) Write a note on various Color models used in MMS. 10

Q6 a) Compare the following- 10
i) RIFF and TIFF file formats.
ii) Midtread and Midrise Quantizer

b) Explain in brief -(any two) 10
i) Multimedia Over IP
ii) Multimedia Over ATM n/w
iii) Padding techniques used in motion compensation

Q7 Write short notes on the following-
a) Frame Segment Tree/ Structure in Video database 05
b) Mumedia presentation and authoring 05
c) TV trees in Text database 05
d) Descriptors in MPEG 7. 05

BE IT VII (Rev)
Software Testing / Quality Assurance

Con. 2941–11.   (REVISED COURSE)   **RK–3528**

(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) Compare Error, failure and fault failure.   5
    (b) Explain Test case Design effectiveness.   5
    (c) Explain different views of software quality.   5
    (d) What are the strengths and weaknesses of automated and Manual testing. 5

2. (a) Write a function for Binary Search. Also draw a data flow graph for the same 10
         and show that branch coverage include statement coverage.
    (b) Explain Test Execution Strategy in detail.   10

3. (a) Explain Mutation Testing in detail with example.   10
    (b) Calculate Power of number. Draw CFG for below given routine—   10

```
Scan F ( " % d % d", & x, & y) ;
if (y < 0)
  Pow = -y;
else
  Pow = y;
2 = 1·0;
while (Pow : = 0)
{
  Z = Z * x ;
  Pow = Pow - 1;
}
  if (y < 0)
2 = 1·0/Z;
print f ("% f", Z);
```

4. (a) What are the differences between software testability and Reliability ? What 10
         is more important in software ? Justify your answer.
    (b) Explain different metrices used in System Testing.   10

5. (a) Draw control flow graph for given code and show that branch coverage 10
         includes statement coverage.

```
FILE*Fptrl,*Fptr2,*Fptr3;/* These are global variables.*/int openfiles ( ) {
/* This function tries to open files"file1", "file2," and "file3" for read access,
and returns the number of files successfully opened. The file Pointers of
the opened files are put in the global variables. */
inti = 0;
if (
((( Fptr1 = Fopen ("File1", "r")) ! = NULL) && (i++) & (0))||
(((≠ ptr2 = Fopen ( "file2", "r")) !=NULL) && (i++)&&(0))||
((( fptr3= fopen ("file3","r")! = NULL) && (i++)));
return (i);
}
```

(b) Briefly explain McCalls quality factors and quality criteria.   10

6. (a) Explain in detail evaluations & Selection of test automation Tools.   10
   (b) In a Software test project, the number of unit, integration; and system-level 10
       test cases specified are 250, 175 and 235, respectively. The number of test
       cases added during the unit, integration and system testing phases are 75,
       60 and 35, respectively. Calculate the TCDY for unit, integration and system
       testing phases.

7. (a) What are zero day attack ? Discuss it's significance with respect to security Testing .   5
   (b) Explain Test Design preparedness metrics.   5
   (c) Explain different types of interface errors.   5
   (d) What are advantages & disadvantages of acceptance testing ?   5