BE I.T. Sem.

"Soft. Testing & Quality Assurance

QP Code : 15460

(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) What is test case? What are the objectives of testing? What are the different sources from which test cases can be selected explain in brief. **10**
   (b) Discuss the importance of code review rework and validation. **10**

2. (a) What are the limitations of control flow based testing? Draw the CFG for binary search function. **10**
   (b) Explain why the presence of data flow anomaly does not imply that execution of the program will definitely produce incorrect results. **10**

3. (a) Describe the difference between black-box and white-box testing techniques. **10**
   (b) What are zero day attacks? Discuss its significance with respect to security testing. **10**

4. (a) Discuss the importance of regression testing when developing a new software release. What test cases from the test suite would be more useful in performing a regression test. **10**
   (b) Explain the boundary value testing with the help of example. **10**

5. (a) Explain the difference between requirement testability and software testability. **10**
   (b) What are the objectives of the first, second and third system test cycles? Explain with the help of example. **10**

6. (a) What are the objectives of acceptance testing? Explain the difference between UAT and BAT. **10**
   (b) Explain ISO 9126 quality characteristics. **10**

7. (a) Explain in detail evaluation and selection of test automation tools. **10**
   (b) Explain the metrics for monitoring defect reports with the help of example. **10**

B.E. IT Sem VII (Rev) Nov '14

Multimedia

21-11-14

Multimedia

QP Code : **15878**

(3 Hours) [Total Marks : 100

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

1. (A) Explain Game design principles. **5**
(b) Explain Hardware abstraction. **5**
(c) What are Research goals ? **5**
(d) Explain Game development issues. **5**

2. (A) Explain Game design process. **10**
(B) Which are the core groups involved in software factory ? Explain. **10**

3. (A) Explain Architectural Styles. **10**
(B) Explain various Aspects, Bugs and errors of game. **10**

4. (A) Explain smart pointers with examples. **10**
(B) Explain seven golden principles. **10**

5. (A) What are the game development tools and platforms to deploy game ? **10**
(B) What is Source Control ? Explain functions provided by Source Control. **10**

6. (A) Explain basic mouse Interaction methods and user controls. **10**
(B) Explain steps in Game Loop. **10**

7. Solve any **four** from following :— **20**
(a) Sprites.
(b) Scene Graph.
(c) Get Message.
(d) Resource File builders.
(e) Direct Draw objects.

———V———

BE - IT Sem VII Rev

DWM BT

27/11/2014

QP Code :15387

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

N.B. : (1) Question No. **1** is **compulsory**.
(2) Attempt total **five** questions.
(3) **Figures** to the **right** indicate **full** marks.

1. (a) What is Web Structure Mining? What are the techniques used for it ? **5**
(b) Compare OLTP & OLAP. **5**
(c) Consider the transaction database in the Appendix B. Use Apriori Algorithm with minimum support of 30% find all Frequent Item-sets. **5**
(d) What is multidimensional association rule ? **5**

2. (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 allocated different cities. The object is to track Sales figure at different granularity levels of Region. Also to count number of products sold. Products are categorized as High end and low end products. Develop BI application, taking into consideration of above granularity levels for region, Sales person, Product and the Quarterly, yearly and monthly sales. Also it should predict Zone wise, product-wise sales for subsequent quarters.
(i) Identify facts and dimensions and hence draw Information Package Diagram. **5**
(ii) Design suitable DWH schema. **5**
(iii) Identify suitable DM algorithm for predicting the sales. **5**
(iv) Give justification for all the decisions you have taken for the design. **5**

3. (a) Use Data set in Appendix A. Create Adjacency Matrix. Use Single Link OR Complete Link Algorithm to Cluster given data set by drawing Dendogram. **10**
(b) With neat diagram explaining the process of KDD giving emphasis on selection and pre-processing phase. **10**

4. (a) Use Data set in Appendix A. Use K-means algorithm to create two clusters. **10**
(b) What are the features required in Mining algorithm to Cluster Stream Data ? Explain any Clustering algorithm used for Stream Data. **10**

5. (a) Explain Data Integration and Transformation w.r.t Data Warehouse. **10**
(b) Explain BIRCH algorithm with example. **10**

[TURN OVER

6. (a) What is Concept Hierarchy ? How Concept Hierarchy is generated for Numerical and categorical data ? 10

(b) Using table in Appendix C, Create classification model using decision-tree and hence classify following tuple. Very High, Old ? 10

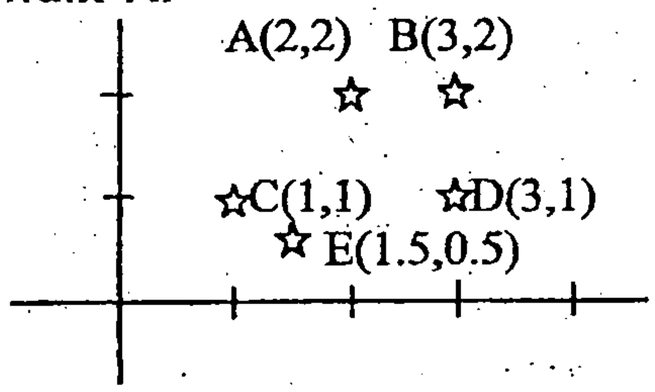
7. Answer any **two** questions :– 20

(a) What is text mining ? Explain different approches of text mining.

(b) What is CLICK-STREAM Mining ?

(c) What are the applications of Web usage mining ? What is Web Log ? Give typical structure of web log ?

Appendix A.



Appendix B.

TID	Items
01	A, B, D
02	B, C, D
03	A, B
04	B, D
05	A, B, C, D

Appendix C

No.	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
10.	Low	Old	Rented
11.	High	Young	Yes

****

BE / IT / VII (Rev) 21/11/14

Elective - Nanotechnology

QP Code : 15324

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

N.B. (1) Question **No. 1** is **compulsory**
(2) Attempt any four questions from **Q-2 to Q-7.**
(3) Draw **neat sketches** wherever **applicable**
(4) Figures to **right** indicate **full** marks.

1. Attempt any **four** from the following :- **20**
   (a) How optical property of material change as they fall to nanoscale?
   (b) Draw a rough sketch and explain essential components of XRD.
   (c) How nanomaterials are classified?
   (d) Explain different approaches used in synthesis of nanomaterials.
   (e) What is nanotribology?
   (f) Explain the concept of nanomechanics
   (g) Write short note on Nanosensors.

2. (a) What is Microelectronics? What are its applications and future impact? **10**
   (b) How nanotechnology is being used to diagnostic and therapeutic applications? **10**

3. (a) What are nano-ethics? Explain giving suitable examples. **10**
   (b) Draw a rough sketch and explain working of optical microscope. How is it different from electronic microscope? **10**

4. (a) Explain the concept of Nano business. Which areas of technology are benefited due to the progress in nanotechnology? **10**
   (b) How nanotechnology can help to get cleaner environment? **10**

5. (a) Draw a rough sketch and explain working of TEM. Explain the relevance of TEM to the field of Nanotchnology. **10**
   (b) With suitable examples explain the concept of Photonics. **10**

6. (a) Draw a rough sketch and explain working of UV- Visible spectrophotometer How UV-Visible spectrophotometer is useful in the study of nanotechnology? **10**
   (b) Why CNTS are useful nanomaterials? Explain how CNTS are prepared by Laser method. **10**

7. (a) How smarter Computers can be built using nanotechnology? **10**
   (b) Draw a rough sketch of Infra red spectrophotometer and explain its working. Explain its significance in the characterization of nanomaterials. **10**

LM-Con.:6979-14. ----------

BE | IT | VII CBSGS

Elective - Geographical Information Systems.

QP Code : 15327

(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 but justify it.

1.	(a)	What are Slivers? What are the techniques available for dealing with slivers?	**5**
	(b)	What is Raster data model? What are the elements of Raster data model?	**5**
	(c)	What is Geographical Co-ordinate system?	**5**
	(d)	What is data conversion? Draw neat diagram and explain steps used in rasterisation.	**5**
2.	(a)	What is line simplification? Explain with the help of neat diagram how Douglas Pecker Algorithm works.	**10**
	(b)	What are the different formats available for storing a satellite Image of different bands? Comment on the suitability of a particular format.	**10**
3.	(a)	What is Spatial Interpolation? What are the different types of Spatial Interpolation? Explain any one in detail.	**10**
	(b)	What is Vector data Model? Name the three types of simple features used in GIS, their dimensions and property.	**10**
4.	(a)	Describe the UTM grid system. What are its advantages for GIS use.	**10**
	(b)	(i) What is digitizing? Explain the difference between point mode and stream mode digitizing?	**5**
		(ii) What are the main sources of Raster data?	**5**
5.	(a)	What are the different components of data Quality.	**10**
	(b)	Explain Energy Interaction with Earth's surface Materials.	**10**
6.	(a)	What are the steps involved in GIS Application development.	**10**
	(b)	What is Buffering? What are the variations in Buffering.	**10**
7.	(a)	Describe the methods of compacting storage of raster data.	**10**
	(b)	What is visual image Interpretation? What are the tasks involved? What are the elements of image interpretation ?	**10**

BE | IT | VII (Rev) 21/11/14.
Elective - Wireless Network

QP Code : 15312

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

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

1. (a) Explain possible attacks on wireless LAN and explain WEP in detail. **10**
   (b) With neat diagram explain cdmaOne protocol architecture. **10**

2. (a) Explain reference model and protocol entities of WATM. **10**
   (b) What is WLL? Explain the MMDS & LMDS with the help of diagram. State its advantages & disadvantages. **10**

3. (a) Compare IEEE 802.11, HiperLAN2 and Bluetooth with regard to their ad-hoc capabilities. **10**
   (b) State creatness in the WEP Protocol. **5**
   (c) Describe PAN applications. **5**

4. (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**

5. (a) What is VSAT? Explain the VSAT-to-hub and hub-to-VSAT channel structure with neat diagram. **10**
   (b) Explain FHSS and DSSS with suitable examples. **10**

6. (a) With neat diagram explain the IEEE 802.11 System architecture. **10**
   (b) Explain the 3G service classes and applications. **10**

7. Write Short notes on (any **two**): – **20**
   (a) IS-41 protocol.
   (b) Mobility management in network operations of NMT.
   (c) GSM System Architecture.

Multimedia Systems (Elective)
BE IT Sem VII (R) 21/11/14.

QP Code : 15315

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

N.B. : (1) Questions No.1 is **compulsory.**
(2) **Solve** any **four** questions from the remaining **six** questions
(3) **Assume** suitable data wherever required.

1. (a) Explain the difference between lossy and lossless compression. **20**
   (b) Write short note on Croma Subsampling.
   (c) Explain the role of Nyquist Theorm in basics of digital audio.
   (d) Write Short Note on TV trees.

2. (a) Describe the JPEG methodology/ algorithm. Clearly state and explain the mathematical treatment and building blocks used in detail. **10**
   (b) Explain different Color Model in images in detail. **10**

3. (a) Explain how RTP with RTCP. RSVP and RTSP play important role in Multimedia communication. **10**
   (b) Explain different multimedia elements which can be used in college website. **10**

4. (a) Explain MPEG -1 motion compensation concept along with the video bit stream. **10**
   (b) For the input string ABCABCBBCABAB use LZW compression algorithm to create codes. **10**

String	Code
A	1
B	2
C	3

5. (a) Explain different broadcasting schemes in Video On Demand. **10**
   (b) Explain Internet Telephony advantage over POTS. Explain the role of SIP protocol in Internet telephony. **10**

6. (a) Explain essential design steps (design methodology) for multimedia system. Design with example. **10**
   (b) Explain with suitable diagram the encoder and decoder of H.261 along with the bit stream syntax. **10**

7. Write Short note on (Any **two**) :— **20**
   (a) Multimedia Networking and Multiplexing Technologies
   (b) Explain Huffman coding algorithm with suitable example
   (c) Speech coding technique in G.726
   (d) MIDI

AI (Elective)
BE IT Sem VII

21/11/14.

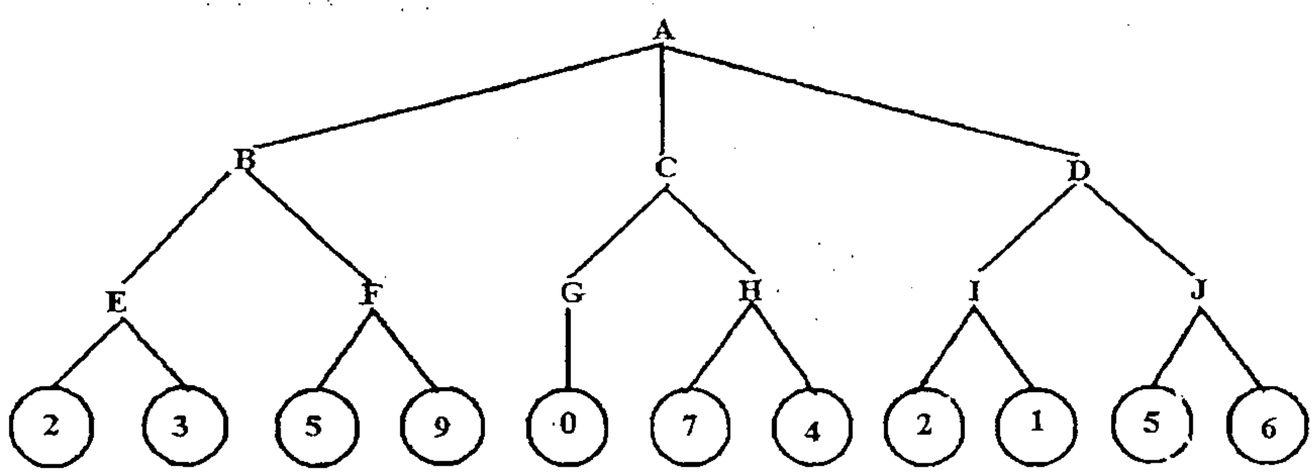
QP Code : 15330

(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) What is prepositional logic? Explain with an example. 7
(b) Explain simple reflex agent architecture. 7
(c) What is reasoning? What is its role in artificial intelligence 6

2. (a) Explain PEAS representation with example. 8
(b) Perform $\alpha-\beta$ cutoff on the following: 12



3. (a) Measure 3 and 4 liters of milk when jugs of size 7 and 2 are available. 10
(b) Explain Hill Climbing. 10

4. (a) Using predicate logic find the course of Shyam's liking for the following: 10
(i) Shyam only likes easy courses.
(ii) Computer courses are easy.
(iii) Electronics courses are hard.
(iv) DSP is an electronics course.
(v) Programming is a computer course.
(b) Compare Forward and Backward reasoning with suitable example. 10

5. (a) Explain the role of probabilistic reasoning in medical diagnostic 10
(b) Explain A* Algorithm. Where is it used? 10

6. (a) What is Ontology? Explain a real world example and its use. 10
(b) Design a multilayer feed forward network of neurons to add 2 2-bit numbers and generate result and carry 10

7. Write short notes on any 4 out of the following: 20
(a) Iterative deepening search
(b) Properties of a heuristic function and its role in AI.
(c) Conditional Probability.
(d) Uncertainty
(e) Role of NLP in AI.

LM-Con.:6985-14.

B.E. I.T. Sem VII (R) 9/12/14

Simulation and Modelling

QP Code :15502

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

N.B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions from the **remaining** questions.
(3) Assume **data** if **required** and **specify** your **assumption**.

1. (a) Explain different steps in Simulation study. **10**
(b) How will you validate simulation model ? **10**

2. (a) For the following data find the Queue Statistics. (Time in minutes). IAT denotes inter arrival time and ST denotes the service time. Assume first customer arrives at time = 0. **10**

IAT	–	08	06	01	08	03	08	07	02	03
ST	04	01	04	03	02	04	05	04	05	03

(b) Explain the following terms: Event scheduling, Process interaction, activity scanning, bootstrapping and terminating event **10**

3. (a) The sequence of numbers 0.54, 0.73,0.98,0.11 and 0.68 has been generated. Use the Kolmogorov- Smirnov test with $\alpha = 0.05$ to determine if the hypothesis that the numbers are uniformly distributed on the interval [0,1] can be rejected given $D\alpha = 0.565$. **10**
(b) Explain various methods for random numbers generation. **10**

4. (a) The following is set of single digit numbers from a random number generator. Using appropriate test check whether the numbers are uniformly distributed. **10**
$N = 50$, $\alpha = 0.05$ and $X^2_{.05,9} = 16.9$.
6, 7, 0, 6, 9, 9, 0, 6, 4, 6, 4, 0, 8, 2, 6, 6, 1, 2, 6, 8, 5, 6, 0, 4, 7
1, 3, 5.0, 7, 1, 4, 9, 8, 6, 0, 9, 6, 6, 7, 1, 0, 4, 7.9, 2, 0, 1, 4, 8
(b) Differentiate random variables and random variates. Generate random variates of exponential distribution. **10**

5. (a) Lt X_1 represent the average lead time to deliver (in months), and X_2 the annual demand, for industrial robots. The following data were available on demand and lead time for the last ten years. Estimate the correlation and co-variance. **10**

Lead Time	6.9	6.5	4.3	6.9	6.0	6.9	5.8	7.3	4.5	6.3
Demand	103	83	116	97	112	104	106	109	92	96

(b) Define correlation and covariance. Explain Time-series model. **10**

6. (a) Derive the steady state parameters of M/G/1 queue and M/M/I. **10**
(b) What are the issues in manufacturing and material handling system. **10**

7. Write short.notes on any **two** :— **20**
(a) Cobweb model.
(b) Probability distributions and the process related to them.
(c) Need for output Analysis in simulations.

———V———

LM-Con.:10500-14.

B E · Sem VII (R) 12 | 12 | Dec 14

I.T. DSIP

QP Code :15635

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

N.B. (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** out of remaining **six** questions.
(3) Assume suitable **data** wherever required but **justify** them.

1. (a) Define Image enhancement and explain any three Point Processing Techniques. **10**
   (b) Give the classification of discrete time signal with example. **10**

2. (a) Perform Histogram Equalization and draw the Histogram for the given grey levels of an image shown : **10**

Gray level	0	1	2	3	4	5	6	7
Frequency	123	78	281	417	639	1054	816	688

   (b) Give the Classification of Discrete Time System with example. **10**

3. (a) List any five properties of 1-D DFT and explain the use of any two properties. **10**
   (b) Explain smoothing and sharpening Filters with example. **10**

4. (a) For the following 4 × 4 image, determine its forward and inverse transforms and compare the inverse transforms with the digitized image data : **12**

   $f(x, y) = [\,2\ 0\ 1\ 0\ ;\ 1\ 0\ 0\ 1\ ;\ 1\ 0\ 0\ 1\ ;\ 2\ 1\ 2\ 1\,]$

   Use the following image Transforms :—
   (i) Hadamard Transform
   (ii) Discrete Cosine Transform.
   (b) What is morphology ? Name and explain the basic four operations of morphology ? **8**

5. (a) Explain in brief different Lossless digital image compression technique. **10**
   (b) If $x(n) = \{\,2, -1, 3, 0, 4\,\}$: **10**
   Find :—
   (i) $x(-n + 2)$
   (ii) $x(n - 1)$
   (iii) $x(2n)$
   (iv) $x(n + 1)$

6. (a) Explain Hit-or-Miss Transformation. **10**
   (b) Write a note on Hough Transform. **10**

7. Write short notes on the following :— **20**
   (a) 4-point DIT-FFT
   (b) Vehicle Number plate Detection and recognition
   (c) Chain Code
   (d) Homomorphic filter.
