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DD-687

M.C.A. EXAMINATION, May 2016

(Fourth Semester)

(B. Scheme) (Main & Re-appear)

NETWORK SECURITY AND MANAGEMENT

MCA-556

Time : 3 Hours] [*Maximum Marks : 75*

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) Differentiate between stream ciphers and block ciphers. **7.5**

(b) What is meant by cryptography ? What are the different applications of cryptography ? **7.5**

2. Briefly explain :

(a) Complexity Analysis of Crypto Systems **7.5**

(b) Classical systems used for cryptography. **7.5**

Unit II

3. Write short notes on the following :

(a) Knapsack system **7.5**

(b) Authentication. **7.5**

4. (a) What are the design considerations for stream ciphers ? **5**

(b) Explain the methodology used in Diffie-Hellman for exchange of keys. **10**

Unit III

5. (a) What are the fundamental issues that need to be tackled while performing speech encryption ? **6**

(b) Discuss any *one* digital system for speech encryption. **9**

6. Differentiate between :

(a) Narrow band and wide band systems for speech encryption **7.5**

(b) Analog and digital systems for speech encryption. **7.5**

Unit IV

7. (a) What are the different applications of Hashing ? **5**

(b) Explain the complete procedure of performing authentication using any authentication protocol. **10**

8. Discuss briefly :

(a) Digital Signature Standard **8**

(b) Secure electronic transactions. **7**

Unit IV

7. Explain the differences in Perceptron learning and Backpropagation learning algorithms used in Neural Learning. **15**

8. Explain the various components of Natural Language understanding process for the sentence given below : **15**

   "I want to print John's.doc file"

   Also explain the various analysis carried out on this above sentence.

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DD-684

M.C.A. EXAMINATION, May 2016

(Fourth Semester)

(B. Scheme) (Main & Re-appear)

MCA-508

ARTIFICIAL INTELLIGENCE

Time : 3 Hours] [*Maximum Marks : 75*

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) Define alpha and beta pruning. **5**

(b) Why is alpha beta pruning required in game playing ? Explain with the help of an example. 10

2. Explain constraint satisfaction procedure and use it to solve the cryptoarithmetic problem given below : 15

CROSS

+ ROADS

DANGER

Unit II

3. (a) Differentiate between forward and backward chaining rule system. 5

(b) State and explain how to solve a water jug problem. 10

4. Write and explain the resolution procedure for prepositional logic taking example of your choice. 15

Unit III

5. Consider the following facts :

(i) Most things do not fly.

(ii) Most birds do fly, unless they are too young or dead or have a broken wing.

(iii) Penguins and ostriches do not fly.

(iv) Magical ostriches fly.

(v) Tweety is a bird.

(vi) Chirpy is either a penguin or an ostrich

(vii) Feathers is a magical ostric.

Use one *or* more nonmonotonic reasoning systems to explain and answer the following questions :

(a) Does Tweety fly ? 3.5

(b) Does Chirpy fly ? 3.5

(c) Does Feathers fly ? 4

(d) Does Paul fly ? 4

6. Explain Dempster Shafer theory. Draw comparison between Dempster Shafer theory and Probability theory. 15

A C
B D

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DD-683

M.C.A. EXAMINATION, May 2016

(Fourth Semester)

(B. Scheme) (Main & Re-appear)

COMPUTER NETWORKS

MCA-506

Time : 3 *Hours*] [*Maximum Marks* : 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) What do you mean by connection-less and connection-oriented services ? Explain which layer in TCP/IP model provides connection-less service. **6,2**

   (b) What do you mean by network topology ? Explain which topology has maximum immunity against a fault in the network system. **4**

   (c) Explain how signal to noise ratio affects the transfer rate, state mathematical relation. **3**

2. (a) What do you mean by guided and unguided media ? **4**

   (b) Explain the structure of an optical fiber cable and the principles involved in transmission through it. **5**

   (c) Explain what is difference between a gateway and a router. **3**

   (d) What is the role of Hamming code in data transmission ? **3**

Unit II

3. (a) Explain how dividing time into slots improve the efficiency of ALOHA protocol. **5**

   (b) Explain frame format of Token Bus LAN standard. **5**

   (c) What is the role of Logical Link Control layer ? Explain. **5**

4. (a) Explain carrier sense multiple access with collision detection CSMA/CD method. **7**

   (b) Explain the Time Division Multiple Access (TDMA) and Frequency Division Multiple Access (FDMA). **8**

Unit III

5. (a) Explain the various components of IPv4 header. **6**

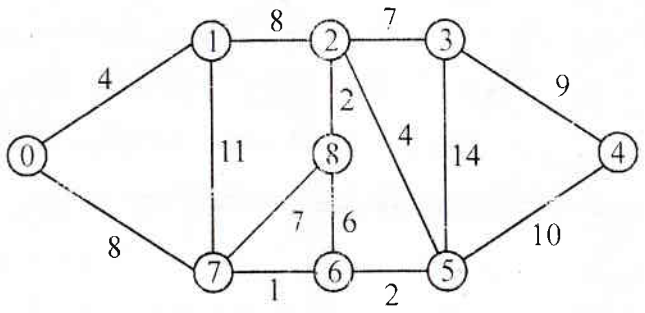
   (b) What do mean by IP address classes ? State the class of following iP address 122.100.12.1. **4,1**

   (c) Explain RARP algorithm, in brief. **4**

6. (a) Explain DHCP protocol for assigning IP addresses. 6

(b) How do we implement sub-netting in a given network ? 2

(c) Apply Bellman Ford algorithm to find shortest path on the following graph representing network of networks. 7



Unit IV

7. (a) What is congestion in a network ? How is it controlled at Transport layer ? 7

(b) Explain the structure of format of a cell in ATM network. 8

8. (a) Explain the working of a proxy server, also give filters available in this software. 7

(b) What do you mean by quality of service ? 4

(c) Give a brief introduction of SONET. 4

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DD-682

M.C.A. EXAMINATION, May 2016

(Fourth Semester)

(B. Scheme) (Re-appear Only)

JAVA PROGRAMMING

MCA-504

Time : 3 Hours] [*Maximum Marks : 75*

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit.

Unit I

1. (a) What are features of Java language ? 5

(b) Java is a pure object oriented programming language, explain. What are benefits of this language being a OOP language ? **5**

(c) Explain what are those features of Java language which could be possible due to the presence of Java Virtual Machine; otherwise they are impossible to implement. **5**

2. (a) Explain how data abstraction and encapsulation are handled in Java. **7**

(b) Write a simple Java program to define two matrixes of 4×3 and 3×4 in the form of two two-dimensional arrays and then find the multiplication of these two matrixes. **8**

Unit II

3. (a) What is a static class ? Why do Java have such functionality in it ? **4**

(b) Explain how do we define and use an interface in Java program. Explain also whether an interface can give reference to the object of a class which implements it. **5,2**

(c) Let us suppose we have to create a package called BigPackage in which there are three public classes **A, B** and **C** and one interface called **MyInter**. The package is stored in folder defined by path **C:\Java\BigProject**. Explain the following :

(i) What code we have to write in files containing classes and interface ?

(ii) How **classpath** will be set ? **2,2**

4. (a) Explain, using suitable examples, what are use of **this** and **super** keywords. **6**

(b) Let us suppose **I** have to create my own exception called **StringLengthException** which will be thrown by a function **fun( )** when this function finds a string x of length greater than a given length (say SLimit). Create this exception and also show how **fun( )** will be called. **6**

(c) Explain, can you check many exception hierarchy in a try catch. 3

Unit III

5. (a) Write a Java program to read a file give at a **path**. Then convert the content of this file into an array of StringBuffered class. 6,2

(b) Let us suppose we have to store an object (called **myObj**) of a class **MyClass** on permanent storage. Explain how we can do this. 7

6. (a) Explain benefits of a thread over to a process. Explain the life-cycle of a thread. 4,4

(b) Write a simple program to implement the producer and consumer problem to show how producer and consumer are synchronized while accessing a shared data element (say dataElement). 7

Unit IV

7. (a) Explain the component and container classes hierarchy in AWT programming. 8

(b) Write Java program to capture the mouse motion event. 7

8. (a) Explain using suitable example how parameters are passed to an applet. 8

(b) Write a Java program in which a window frame holding a panel is created. The panel is holding a text field and two buttons. The program is to show an integer value in text field which will start incrementing if you press first button and stops incrementing when press second button. 7

8. Write short notes on the following : 15

(a) Bezier curves

(b) B-spline curves.

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DD-681

M.C.A. EXAMINATION, May 2016

(Fourth Semester)

(B. Scheme) (Main & Re-appear)

COMPUTER GRAPHICS

MCA-502

Time : 3 *Hours*] [*Maximum Marks* : 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit.

Unit I

1. (a) What do you understand by Computer Graphics ? What are the major applications of Computer Graphics ? 7

(b) Discuss mid-point circle drawing algorithm. **8**

2. (a) Explain the Bresenham's algorithm for line drawing in detail. Also plot a line between (5, 5) and (13, 9) using Bresenham's algorithm. **10**

(b) Write a short note on Boundary Fill Algorithm. **5**

Unit II

3. (a) Write and explain Cyrus Beck line clipping algorithm. **7**

(b) Write and explain Sutherland-Hodgeman polygon clipping algorithm in detail. **8**

4. (a) Write the 3-dimensional transformation matrix for translation and scaling. **5**

(b) Use Cohen Sutherland algorithm to clip line between P(70, 20) and Q(100, 20) against a window with lower left hand corner (50, 10) and upper right hand corner (80, 40). **5**

(c) Consider the 2-dimensional square A(1, 0), B(0, 0), C(0, 1), D(1, 1). Rotate the square ABCD by 45 degree clockwise about A(1, 0). **5**

Unit III

5. (a) Define projection. Explain various types of projections in detail. **10**

(b) Perform a perspective projection onto the $z = 0$ plane of the unit cube where center of projection is at $x_c = 10$ and $y_c = 10$. **5**

6. Write short notes on the following : **15**

(a) z-buffer algorithm

(b) Scan line algorithm.

Unit IV

7. (a) What is an image ? Discuss the concept of geometric transformation of images in brief. **7**

(b) Explain Gourar shading model in detail. **8**