M. C. A.

(SEM. II) EXAMINATION, 2006-07

INTERNET & JAVA PROGRAMMING

Time : 3 Hours] [Total Marks : 100

Note :  
1. All questions are compulsory.
2. All questions carry equal marks.

1 Attempt any four parts of the following :  5x4=20

(a) Draw the OSI-ISO Reference Model architecture and list at least one function which each layer performs.

(b) Ten Thousand airline reservation stations are competing for the use of a single slotted ALOHA channel. The average station makes 18 requests/hour. A slot is 125 μ sec. What is the approximate total channel load?

(c) Explain IEEE standard 802.3 and Ethernet in terms of performance.

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(d) Why are fiber optic media better than copper media? Explain briefly FDDI LAN.

(e) In a token ring the sender removes the frame. What modifications to the system would be needed to have the receiver remove the frame instead, and what would the consequence be?

(f) What are the different methods of framing? Explain in brief.

2 Attempt any four parts of the following: $5 \times 4 = 20$

(a) Give two examples each where connection- oriented service is appropriate and where connectionless service is best suited.

(b) What is the difference between adaptive and non adaptive routing? Explain any one adaptive and one nonadaptive routing protocol.

(c) What are bridges and gateways. Explain their functions briefly.

(d) Why do you think CCITT provided flow control in X.25 in both LAPB and PLP instead of just in one layer?
(e) Imagine that a two-way handshake rather than a three-way handshake was used to set up connections. In other words, the third message was not required. Are deadlocks now possible? Give an example or show that none exists.

(f) Describe the functions of various layers of TCP/IP protocol.

3 Attempt any **four** of the following: \(5 \times 4 = 20\)

(a) Why is Java called machine independent language? Explain the functionality of JVM.

(b) What is the difference between process based and thread-based Multitasking? Give the two ways by which a thread can be created using Java. Write a short program to demonstrate the creation of a new thread by extending the thread class.

(c) What is the main difference between an application and applet? What are the advantages of Java swings over Java applets?

(d) Do any **two** of the following: \(\frac{1}{2} \times 2 = 5\)

   (i) What are wrapper classes? Explain their use.

   (ii) What are the different types of Literals?

V-1457] 3 [Contd..
(iii) Differentiate between a class variable and an instance variable. How can a class variable be accessed?

(e) In Java only a single class can be extended. If there is a need to extend more than one class, how can this be achieved?

(f) Write short notes on (any two):

\[ \frac{1}{2} \times 2 = 5 \]

(i) Constructors and finalizers

(ii) Method overloading and Method overriding

(iii) Super keyword and Final modifier.

4 Attempt any two of the following:

(a) Do any two of the following:

(i) What is a string buffer? How does it differ from a string? Give the three ways of creating a string object.

(ii) By means of a diagram show the various streams found in the java. io package? Write a program to demonstrate how to use a stream Tokenizer to count the number of words in a file.

V-1457] 4 [Contd..
(iii) What is the main difference between Readers/Writers and Input/Output streams? Give a few subclasses of Reader and Writer Class?

(b) Write a program in Java to demonstrate communication using TCP/IP i.e. using sockets:- Write a separate code for a server and client program. The program should display the contents of the file specified in a server on to the client.

(c) Write an Applet (use swings) to display the following outputs.

(i) 

![Applet](image)

**Fig. 1**
(ii) Applet Viewer: Simple Applet.class

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Applet started

Fig. 2

5 Attempt any **two** of the following: 10×2=20

(a) What are the characteristics of JDBC? What are the various steps for using JDBC? Write a program to demonstrate these steps.

(b) Do the following: 5×2=10

(i) What is RMI? What is the difference between Naming.bind and Naming.rebind method? Write a short code to invoke a remote method using Java RMI.

(ii) Explain briefly the life cycle of a servlet. What are the basic steps for creating a servlet?

V-1457] 6 [Contd..
(c) Do the following:

(i) What is Java Beans? Give its advantages.

(ii) What does a Dynamic Billboard Applet do? What are the three main classes that the applet contain?