Use separate answer script for each module

B.Sc. (Honours) Examination 2018
Semester-IV
Computer Science (Allied)
Course : BCSA-41 A

Time : 3 Hours **Full Marks : 40**

Questions are of value as indicated in the margin

Module-A (Networking)

Answer **any four** questions

1. a) What are physical address and logical address? 1×5=5
   b) What is the difference between connection oriented and connection less service?
   c) What is port address and why it is used?
   d) What are the address classes in IP? What is classless addressing?
   e) Distinguish between TCP/IP model and OSI model.
2. What is Automatic Repeat Request (ARQ)? Write down the working principles of Stop-and-wait and Go-Back-N ARQ. (1+4)=5
3. Illustrate Pulse Code Modulation (PCM) with an example. What is the Nyquist rate? (4+1)=5
4. a) What are the advantages PSK over Amplitude-Shift-Keying (ASK)?
   b) Briefly illustrate Binary Frequency-Shift-Keying (BFSK).
   c) What do you mean by Quadrature Amplitude by Modulation (QAM) (1+2+2)=5
5. a) What is the significance of Shannon's channel capacity theorem?
   b) Assume a mobile network has a bandwidth of 4000 Hz assigned for data communications. The signal-to-noise ratio is around 30 dB. Calculate the channel capacity. Justify if a data rate of 4Kbps can be achieved over the channel if the signal to noise ratio drops to 3 dB. (1+2+2=5)
6. Write short notes on (**any two**) : (2+2+1=5)
   a) Transmission Control Protocol (TCP),
   b) Unified Datagram Protocol (UDP),
   c) Simple Mail Transfer Protocol (SMPT).

Module-B (Programming in Java)

Answer Question No.**1** and **any two** from the rest

1. Answer **any two** questions 2×2=4
   a) State the purpose of *final* variable.
   b) What gives Java its 'write one and run anywhere' nature?
   c) What is JVM?
   d) What are the parameters of *drawOval* method?

P.T.O.

2. a) Explain the meaning of following commands –
   i. public static void main(String argss[])
   ii. System.out.printIn();
   b) What is the output of the following code snippets?
   i. System.out.println(50+56+58+ "Are integers");
   ii. int y = 0;
   int x = ++y+y*5;
   System.out.printIn("i="+x++);
   iii. String S1 = "Hello";
   String S2 = "There";
   String S3 = "HELLO";
   String S4 = "THERE";
   System.out.print.In(S1.equals(S2));
   System.out.println(S2.equalsIgnoreCase(S4)); (1+1)+(2+2+2)=8
3. a) How constructors(s) is different from methods? Can a class inherit constructor(s) of its superclass?
   b) What is the difference between default constructor and a non-parameterized constructor? Is default constructor always non-parameterized?
   c) Explain constructor overloading with an example. (2+1)+(2+1)+2=8
4. a) Write notes on 'static variable' and 'static method'.
   b) What is an abstract class? State the differences between abstract class and interface. (2+2)+(2+2)=8
5. a) What are the different types of inheritance? Show how multiple inheritance is supported in Java with a suitable example.
   b) Differentiate between method overloading and overriding with the help of examples. (3+2)+3=8
6. Write a Java program to create a class called **'Creature'** comprising field variables: height, weight, and a method: *movement()*. Write appropriate parameterized and non-parametrized constructors for the class. Then, create class **'Mammal'** with appropriate constructors, which inherits **'Creature'** and overrides the method *movement()*. Note that '**Mammals'** have an extra variable called 'age'. Create another class 'Human' which inherits 'Mammal' and have extra variables 'Name' and 'Nationality'. Finally, create a class '**Multi_Inherit'** and write the main() method which creates suitable object of all the earlier classes and shows their implementation appropriately. 2×4=8

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