M.Sc. 3rd Semester Examination, 2013

COMPUTER SCIENCE

( Practical )

PAPER — CS-306

Full Marks : 50

Time : 6 hours

The figures in the right hand margin indicate marks

GROUP — A

(Artificial Intelligence Lab)

[Marks : 25]

Answer any one question (in Lottery basis) : 15 × 1

1. Write a prolog program for following facts:
   X is grandfather of Y. If X is father of Z and is father of Y.

   Or

   X is father of Z and Z is mother of Y.

   ( Turn Over )
2. Write a prolog program to calculate circumference and area of circle.

3. Write a prolog program from below graph —

\[
\begin{align*}
&\quad \quad \quad p \\
&\quad \quad \quad \quad \quad \quad q \\
&\quad \quad \quad \quad \quad \quad \quad r \\
&\quad \quad \quad \quad \quad \quad \quad \quad s \\
&\quad \quad \quad \quad \quad \quad \quad \quad \quad t \\
\end{align*}
\]

Is there \( p \) to \( t \) route exist?

4. Write a prolog program to find the factorial of any given no. (the no. should be given through keyboard)

\[
\text{fact}(n) = \begin{cases} 
1 & n \leq 0 \\
 n \cdot \text{fact}(n-1) & n \geq 1. 
\end{cases}
\]
5. Write a prolog program to calculate the GCD of two nos.

\[
\text{gcd}(m,n) = \begin{cases} 
\text{gcd}(n,m) & n > m \\
m & \text{if} \quad n = 0 \\
\text{gcd}(n,m \mod n) & n > 0
\end{cases}
\]

6. Write a prolog program for displaying all element from list.

7. Write a prolog program for find out the length of any list.

8. Write a prolog program to find last element of a list.

9. Write a prolog program to search an element from list.
10. Write a program to delete an element from list.

PNB  —  5 Marks
Viva-voice  —  5 Marks

GROUP — B
("Java Lab.")

[Marks : 25]

Answer any one question (in Lottery basis) : 15 x 1

1. Write a Java program to arrange a list of \( n \) numbers in Ascending Order.

2. Write a Java program to implement method overriding.

3. Write a Java program to display prime numbers between \( a \) and \( b \).
4. Write a Java program to demonstrate multilevel inheritance.

5. Write a Java program to implement interfaces.

6. Write a Java program to arrange a list of names in Ascending Order.

7. Write a Java program to implement method overloading.

8. Write a Java program to display first $n$ fibonacci numbers.

9. Write a Java program to check whether a number is Armstrong or not.
10. Demonstrate abstract class in Java.

11. Write down a Java programme using command line argument concatenation of two string and also find the length of the input which is taken through command line argument.

12. Write down a Java programme using super and this keyword unitedly.

13. Write down a Java programme, show that a constructor can invoked another constructor using this ( ).

14. Write down a Java programme to show the priority if thread.
15. Write down a Java programme using package and also show that a number is prime or not (Applying keyboard connection).

16. Convert a decimal no. into binary number by applying keyboard.

17. Print the non-prime fibonacci no. up to 100 (keyboard connection apply)

18. Find the gcd of two number. (Apply for above number)

19. Print the sum of following series

\[ x - \frac{x^3}{3} + \frac{x^5}{5} - \frac{x^7}{7} + \frac{x^9}{9} \]

(keyboard connection apply).
20. Find the sum of the following series:

\[ 1 + 2 + 4 + 7 + 11 + 16 + 22 + \ldots. \]

**Note:** Here keyboard connection must.

- Practical Note Book — 5 Marks
- Viva-voice — 5 Marks