ID No. 16CP012

Birla Vishvakarma Mahavidyalaya (Engineering College)
(An Autonomous Institutes)
Third Year B. Tech – 1st Mid Semester Examination
A.Y. 2018-19 Semester 1

Course Code : CP302 **Course Title: Design and Analysis of Algorithms**
Date: 14/08/2018 **Time: 2:00 PM to 3:00 PM** **Max. Marks: 30**

Q.1

[A] State Three condition of master Theorem. And apply Master Theorem for following equations. [03]

T(n)= 4T(n/2)+n2

T(n)=4T(n/2)+n

[B] What are the time complexities of following codes? And Why? [04]

(1)

```
int a = 0, b = 0;
for (I = 0; I < N; i++) {
   a = a + rand();
}
for (j = 0; j < M; j++) {
   b = b + rand();
}
```

(2)

```
int I, j, k = 0;
for (I = n / 2; I <= n; i++) {
  for (j = 2; j <= n; j = j * 2) {
    k = k + n / 2;
  }
}
```

Q.2

[A] Solve the following 0/1 knapsack problem using Greedy (By weight, By value and by ratio) and Dynamic Programming and evaluate the results. [08]

Values: 60,100,120

Weights: 10,20,30

W =50

[B] Answer the following questions. [05]

1. Give the recurrence equation for linear search.
2. Give two scenarios where space complexity analysis is important.
3. List two applications of Maximization and Minimization problems each.
4. List three applications where Dynamic Programming gives best solutions.
5. What are the applications of Disjoint Set? Any two.

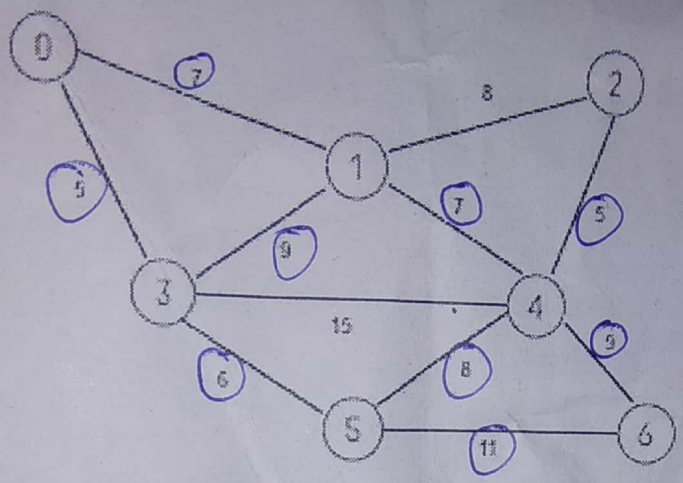
Q.3

[A] Explain Graph representations for implementation. Give one application where particular representation have advantage over other. Explain in short. [04]

[B] Find Minimum Spanning Tree using Prim's Algorithm for the following graph. [03]

OR

Find Minimum Spanning Tree using Kruskal's Algorithm for the following graph.



Write an algorithm explaining Topological Sort. [03]

--------- BEST OF LUCK -------

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Birla Vishvakarma Mahavidyalaya (Engineering College)
(An Autonomous Institution)
First Internal Test

CP304 – Processor Architecture

Date: 18/08/18 Time: 11.00 pm to 12.00 pm Max Marks: 30

Q.1 (A) Answer the following questions. **(Any Six)** [12]

1. Assume CS=1234H, DS=2345H, SS=2700H and BP=0050H
   What will be the physical address generated to access data when instruction MOV AX,[BP+4] is executed
2. Explain pipelining structure of 8086.
3. Briefly explain special use (other than data register) of DX and CX registers with example
4. Why we prefer that stack should start at even address
5. What is the use of direction flag? How we can set and reset direction flag?
6. Compare Macro and procedure
7. What are the differences between near and far procedure

(B) Briefly explain different addressing modes of 8086 with example [04]

Q 2 (A) Draw circuit to demulitplex address and data lines of 8086. Interface 8KB EPROM with end address FFFFFH and 4KB RAM with starting address 00000H with 8086 in minimum mode. Specify complete address map of both the memory. [06]

(B) Write an 8086 assembly program for following (**Any Two**) [08]

1. Write an 8086 assembly program to Add two 64 bit BCD numbers and answer must be BCD
2. Write an 8086 assembly program to find occurrence of given character in given string and replace each occurrence with another character. **(use string instructions)**
3. Write a procedure to find ASCII value of given digit from 0 to F. Using this procedure find ASCII value of each digit of 8 bit number

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Birla Vishvakarma Mahavidyalaya (Engineering College)

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3rd Year, B. Tech. (Computer Engineering), 1st Mid Semester Examination

Course Code: CP303 **Course Title: Object Oriented Programing using JAVA**

Date: 16.08.2018 **Time: 02 pm to 03 pm** **Maximum Marks: 30**

Instructions:

- Make suitable assumption wherever necessary and clearly mention it.
- Figures to the right indicate maximum marks.

Q. 1 Answer any **four**: [10]

1. There is no destructor in java. Justify.
2. Compare an interface with that of an abstract class.
3. By giving example(s) illustrate usage of final.
4. The JVM is platform dependent. True or false? Justify.
5. Method main is a public static method. Justify.
6. What are the usage of key word super?

Q.2 a) Declare a class called Matrix having a data member to refer to a two-dimensional array of integer. Define following methods: [05]

- constructor
- addTwoMatrices to add two matrices and to produce third resultant matrix
- main to accept command line arguments to be used for initializing all data members

Raise & handle exceptions for following cases:

- Mismatch in the dimensions of the matrices to be added
- less than required number of command line arguments given

b) Declare a class called employee having employee_id as member. Extend class employee to have a class called salary having designation and monthly_salary as members. Define following : [05]

- Required constructors
- A method to find and display all details of an employee drawing salary more than Rs. 30000/-.
- Method main creating an array for storing these details and showing usage of above methods.
- Additionally, write required code to retrieve the details using employee_id given as the argument.

Q.3 a) Illustrate how to provide parameters to Applet through HTML. [02]

b) Write a simple GUI application that traces the user's Keyboard action. [03]

c) Write a program to create a frame with exit capabilities. Handle events for mouse pressed, mouse released, mouse clicked and mouse dragged by displaying appropriate message describing the event at the coordinates where the event has taken place. [05]

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Birla Vishvakarma Mahavidyalaya (Engineering College)
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First Internal Test

CP305 – Operating Systems

Date: 20/08/18 Time: 2.00 pm to 3.00 pm Max Marks: 30

Q.1 (A) Answer the following questions. [06]

1 What are system calls? "Invocation of system call is machine dependent" Justify the statement

2 Draw state transition diagram considering non-preemptive scheduling

3 List out different file types. Using which command we can identify file types in Linux file

4 You have executed the following C program

```
main()
{
int id;
id=fork();
printf("%d\n", id);
}
```

What are the possible outputs assuming the fork succeeded?

5 List reasons why a switch between threads may be cheaper than a switch between processes

6 Consider the methods used by processes P1 and P2 for accessing their critical sections whenever needed, as given below. The initial values of shared Boolean variables S1 and S2 are randomly assigned.

Method Used by P1	*Method Used by P2*
while (S1 == S2) ;	while (S1 != S2) ;
Critical Section	Critical Section
S1 = S2;	S2 = not (S1);
Non critical section	Non critical section

Which one of the following statements describes the properties achieved? **Justify your answer**

(A) Mutual exclusion but non-critical section prevent progress

(B) Progress but not mutual exclusion

(C) Neither mutual exclusion nor progress

(D) Both mutual exclusion and progress

(B) Answer the following questions **(Any Two)** [10]

1 Briefly explain Race condition. How mutual exclusion is used to solve race condition problem. Why lock variable solution failed to achieve mutual exclusion?

2 Define a Thread? Give the benefits of multithreading. What resources are used when a thread is created? How do they differ from those used when a process is created?

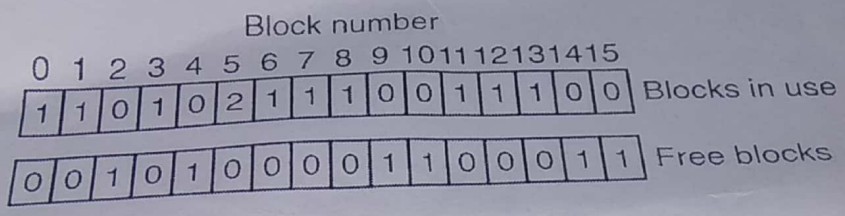
3 What is the main advantage for an operating-system designer of using a virtual-machine architecture? Briefly explain virtual machine architecture. What is the main advantage for a user?

(C) Consider three concurrently running processes P1 with statement S1, P2 with statement S2 and P3 with statement S3. Suppose we want that statements are executed in order S1, S2, S3, S1, S2, S3, ... Use Semaphores to achieve above synchronization. Write pseudo code for same [04]

Q 2 (A) Answer the following questions **(Any Two)** [10]

1 Briefly explain FAT and INODE method to implement files. What are the advantages of INODE method over FAT method

2 Why file system become inconsistent? In Unix fsck check the file system consistency and created list of used blocks and free bocks as shown in figure below:



Is the system consistent? If Yes, then justify your answer. If No, then give corrective measures to make it consistent

3 Briefly explain advantages and disadvantages of hard links over symbolic link. Explain how hard links and soft links differ with respect to i-node allocations.

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ID No._____

Birla Vishvakarma Mahavidyalaya (Engineering College)

(An Autonomous Institution)

Third Year B. Tech. -1st Mid Semester Examination

A.Y. 2018-19 Semester-I

Course Code: CP301 **Course Title: Web Technologies**

Date: 13.08.2018 **Time: 02.00 pm to 03.00 pm** **Maximum Marks: 30**

Q:1 (a) Explain following HTML Elements with example.**(Any Four)** **[04]**

1) <section> 2) <aside> 3) <footer> 4) <audio> 5)

(b) Enlist Web Site Design issues. Explain any two with Example. **[04]**

(c) Differentiate XHTML and HTML. Explain need of XHTML. **[02]**

Q:2 (a) Explain the document object model in JavaScript. Explain any two objects with their methods and properties. **[04]**

Or

Explain various events in JavaScript. Explain one event with example.

(b) What is the purpose of Metatags in HTML? Also show how can following be achieved with the help of Metadata? **[04]**

(i) Stop the page from being listed.

(ii) Set an expire date

(iii) Stop the browser from caching a page.

(c) **[02]**

```
<table border=1>
  <tr>
        <td rowspan=2> ab </td>
        <td colspan=2> cd </td>
  </tr>
  <tr>
        <td> ef </td>
        <td rowspan=2> gh </td>
  </tr>
  <tr>
        <td colspan=2> ik </td>
  </tr>
</table>
```

How many of rows in each column and the number of columns in each row?

Draw the output table.

Q:3

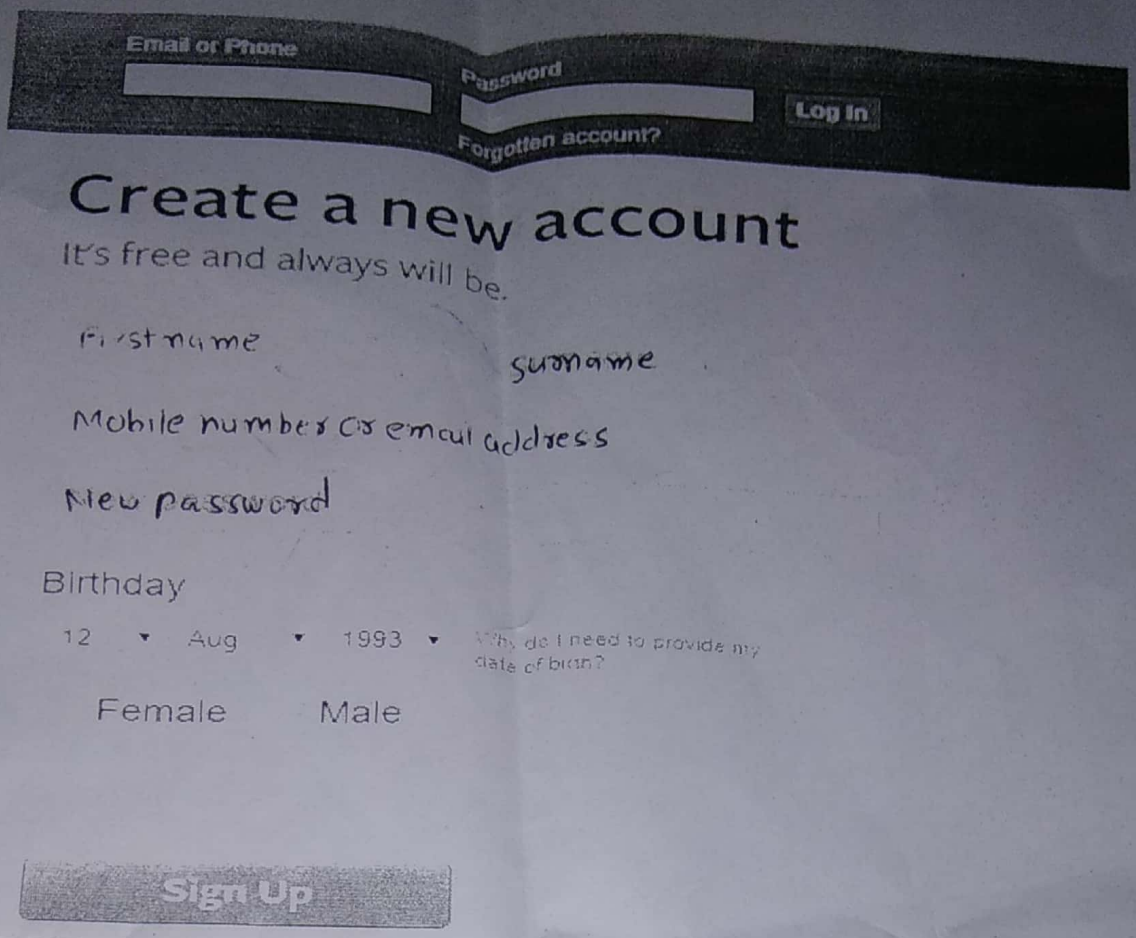

Fig: 1 Registration Page.

(A) Write HTML tags to generate the output as per Fig: 1.Also include below mystyle.css and myscript.js file in header part. **[03]**

(B) Write code for mystyle.css (Stylesheet) for **[02]**

i) Set the background colour light blue and header background colour to Dark Blue.

ii) Set padding, width, font family, height, alignment.

(C) Formulate a myscript.js (JavaScript) for.

1. Validate all input element using Regular Expression on click of "Sign Up" Button: **[02]**

2. Click on login button check username and password. If correct then change URL to Home.html, otherwise once again ask for username and password. **[01]**

3. If Page is not active (no activity from user side) for 60sec then close current window. **[02]**

**********Best Of Luck**********