INSTITUTE OF INFORMATION TECHNOLOGY

JAHANGIRNAGAR UNIVERSITY

3RD 2ND SEMISTER FINAL EXAMINATION-2016

COURSE CODE: IT-3201 COURSE TITLE: SOFTWARE ENGINEERING

TOTAL MARKS: 60 TIME: 3 HOURS

ANSWER ANY FIVE (5) QUESTIONS

1. a) Describe the main processes in a modern software development environment, and the tools used to support them. 4

b) What is black-box and white-box testing? 2

c) You are developing control software for a car whose latest model will have a network connection. Software upgrades will be delivered over the air rather than at service visits, so that any security vulnerabilities can be patched quickly. This in turn means that you will have to provide patches, to deal with both security and safety issues for the next 25 years. Discuss how this is likely to affect you development process and the implications it will have for costs. 6

2. a) The optimistic, most likely and pessimistic times of the activities of a project are given below. Activity (40-50) must not start before 22 days, while activity (70-90) must end by 35 days. The scheduled completion time of the project is 46 days. 10

i. Draw the project activity network.

ii. Determine the critical path.

iii. What is the probability of completing the project in scheduled time?

Activity	t_o-t_m-t_p	*Activity*	t_o-t_m-t_p
10-20	4-8-12	50-70	3-6-9
20-30	1-4-7	50-80	4-6-8
20-40	8-12-16	60-100	4-6-8
30-50	3-5-7	70-90	4-8-12
40-50	0-0-0	80-90	2-5-8
40-60	3-6-9	90-100	4-10-16

b) What is the critical distinction between a milestone and a deliverable? 2

3. a) www.fruity.com is an e-commerce site to sell best and fresh local fruit in the market. It [illegible] the following component to develop to make it more powerful in the market. They wanted [illegible] develop a supply chain management system. Draw the sequence diagram for the following component.

1. Workforce registration
2. Location tracking
3. Tracking by the online customer
4. Tracking by the fruit supplier
5. Payment method to delivery man.

b) An offshore company has taken a software development task to complete within 36 month. The company has 20 programmers consisting of 7 fresher's and 10 programmers are already working in another project also which will be finished very soon. Organization facing some financial problem to recruit expert programmers. The customer did not get any fixed timing of delivery but the offer of software is very attractive. Do you think company will approach the work immediately? If Yes, then what are the possible impediments and how the PM will approach? 5

4. a) A software firm has a project which will be done by 14 months. Figure shows the people needed for the project. Find the minimum number of staff needed for this project to finish in stimulated period. Also explain the appointment process of staff in this project. 8

Activity	Dependencies	Duration	People
A	--	4	2
B	--	4	1
C	--	4	2
D	A	2	5
E	B	3	2
F	C	2	2
G	D	3	5
H	G	5	3

b) What are the functional and non-functional requirements of bus ticketing system? 4

5. a) Write a short note on COCOMO2 software cost estimation process. 4

b) Give three reasons why algorithmic cost estimates prepared in different organizations are not directly comparable. 3

c) Justify the following: 5

i. Adding more people to a late project can make it later.

ii. Early cost prediction is sometimes goes wrong without historical data analysis.

iii. Cost prediction is a risk.

```
i=1;
total.input=total.valid=0;
sum=0;

DO WHILE value[i] < > -999 AND total.input<100
        increment total.input by 1;
        IF value[i] >= minimum AND value[i] <= maximum
         THEN increment total.valid by 1;
              Sum = sum + value[i];
         ELSE skip
        ENDIF
        Increment by 1;
END DO
IF total.valid>0
    THEN average = sum/total.valid;
ELSE average=-999
ENDIF
END average
```

The above sample program is written for some functionality in a large activity. Find the following:

i. Cyclomatic complexity of the program and verify with different formulae using control flow graph.

ii. Write a test case for each path.

b) Describe stub and driver in integration testing approaches with example. 4

7. a) Explain what is meant by software product complexity, and demonstrate how measures of module coupling, cohesion, and size can help the engineer monitor the build quality of software. 5

b) Functionality is one of the most important software quality characteristics. It has been suggested that the functionality is influenced by the following software quality sub-characteristics: suitability, accuracy, interoperability and security. Justify this claim. 2

b) Which of the following software quality characteristics are easier to measure: Efficiency or functionality, Efficiency or reliability? Justify your answer. 2

c) Draw a diagram showing the operation of a typical batch application. Then draw a diagram showing the operation of a typical online application. Discuss how they are similar and how they are different. 3

Institute of Information Technology
Jahangirnagar University
3rd Year 2nd Semester B.Sc (Hons.) Final Examination 2016
Course No. IT-3203 Course Title: Computer Graphics
Time: 3 hours, Full Marks: 60

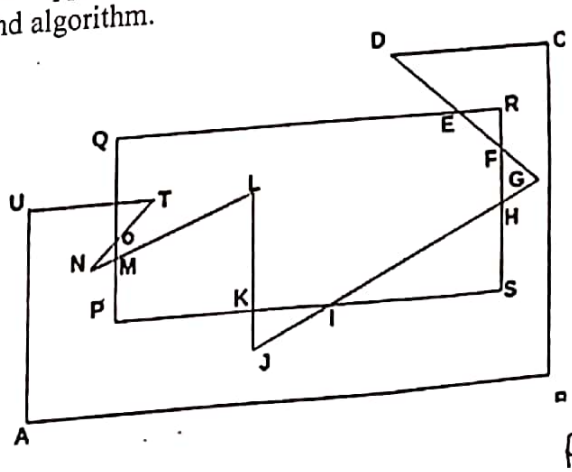
Answer Any Five of the Following Questions

1. a) What is computer graphics? What are its different uses and applications? 3.0
   b) What is the role of frame buffer? Explain with necessary diagram. 5.0
   c) Consider a raster system with a resolution of 1024 ×1024. What is the size of raster (in bytes) needed to store 4 bits per pixel? How much storage is required if 8 bits/pixel are to be stored? 4.0

2. a) Derive the equation for scan converting a circle using midpoint circle algorithm. 5.0
   b) Find out the values of x and y while scan converting an ellipse with major axis (2a)=16 and minor axis (2b)=12 with center (0, 0) using midpoint ellipse algorithm. 4.0
   c) What steps are required to scan convert a circle using Bresenham's algorithm? 3.0

3. a) Reflect the triangle whose vertices are A(0,0), B(1,1), C(5,2) about
      i. the horizontal line y=2 2.5
      ii. the vertical line x=2 2.5
      iii. the line y=x+2 4.0
   b) Perform a 60^0 rotation of a diamond shaped polygon whose vertices are A (-1,0), B(0,-2), C(1,0) and D(0,2) about the origin. 3.0

4. a) Consider a rectangular window which has a lower left hand corner at (-4, 1) and upper right-hand corner at (3, 6). Now after finding out the region codes for the following endpoints:{A(-5,3),B(-2,8)};{C(-4,7),D(-2,9)},{E(2,5),F(4,8)};{G(-1,-2),H(4,3)};{I(-2,3),J(-2,-2)} find out the clipped co-ordinate of the lines to be viewed on viewport using cohen-sutherland algorithm. 7.0
   b) Perform polygon clipping from this diagram against the window PQRS using appropriate polygon clipping algorithm with proper illustration of each step with figure. 5.0



P.T.O

5. a) Explain rotation about the origin in the perspective of 3-D transformation for both clockwise and counter-clockwise direction.

b) Let an axis of rotation L be specified by a direction vector V which is not parallel to any of the principal axes. There is also a location point P. Now illustrate the steps with figure which are required to find the transformation for a rotation of θ^0 about L. 4.0

c) Consider a pyramid defined by coordinates A(0,0,0), B(1,0,0), C(0,1,0), D(0,0,1). Perform the following transformations and find the coordinates of the transformed figure: 4.0

i. Reflection along Y-Z and X-Y plane.

ii. Perform Y and Z shear on the object with parameter Sh_x=2, Sh_y=3 and Sh_z=5.

6. a) What is the blending function used in Bezier's method for curve generation? Explain the terms involved in it. 6.0

b) Find the Pixel location approximately the first octant of a circle having a center and radius of 2 units using Bresenham circle algorithms. Plot the complete circle on a Cartesian graph representing pixel grids. 6.0

7. a) Explain the concept of window to viewport mapping. Derive the equation for window to viewport mapping with viewing transformation. 5.0

b) Consider a rectangular window which has a lower left hand corner at (-4, 2) and upper right-hand corner at (3, 5). Find out the clipped co-ordinate of the lines to be viewed on viewport {A(-4,3),B(-2,4)};{C(-4,7),D(-2,9)},{E(2,5),F(4,8)};{G(-1,-2),H(2,3)};{I(-2,3),J(-2,-2)} using midpoint subdivision algorithm. 5.0

c) What are the advantages and disadvantages of using midpoint subdivision algorithm? 2.0

Institute of Information Technology (IIT)

Jahangirnagar University

BSc in IT: Exam-2018

Course Title: Web Technology, Course Code: IT-3205

3rd year 2nd Semester Final Exam, Total Marks #60

Time: 3 Hrs

Answer any 5 (five) of the following questions. Figures in the right margin indicate marks.

1 a) What are the differences between World Wide Web and Internet [4]

b) In the perspective of Web Technology development, discuss the evolution of Internet. [3]

c) "Web Semantics helps to web technology adaptation worldwide"- Justify this arguments. [3]

d) How do you differ web programming from structured programming? [2]

2 a) What is FQDN? [2]

b) Mention the service which convert the domain name to relevant IP address. Describe the function of this server service. Relative to this, What are the function of Primary and Secondary of this server service? [3]

c) In web technology perspective, what are the differences between TCP and UDP? [3]

b) Explain how the recursive query works. [2]

e) Consider a scenario, where you type direct IP address in your client browser. Explain technically the possible outcomes. [2]

3 a) Write the steps of server side and client side validation. Which one is faster? [5]

b) Why caching is done on client side? [2]

c) How HTTP works? [5]

4 a) How server side scripting works? Write some advantages of it. [4]

b) What is Ajax? Why should we use it? [4]

c) Write a program using JSON objects to display the following data for at least five different rows of values. [4]
{DriverID, Name, DrivingLicNumber, Age, VehicleNumber}

5 a) Write the output:

```
<!DOCTYPE html>
<html>
<body>
<h2>HTML Forms</h2>
<form action="/action_page.php">
  First name:<br>
  <input type="text" name="firstname" value="SAKIB">
  <br>
  Last name:<br>
  <input type="text" name="lastname" value="HASAN">
  <br><br>
  <input type="submit" value="Submit">
</form>
<p>If you click the "Submit" button, the form-data will be sent to a page called
"/action_page.php".</p>
</body>
</html>
```

b) Explain the functionalities of the Java script in web programming. [2]

b) Draw the JSP page translation and processing phases. [3]

d) Describe Java Servlets advantages in web technology. . [3]

6 a) What are the differences in XML and HTML? [3]

b) What is the htmlspecialchars() function in PHP form validation? [2]

c) How To Avoid $_SERVER["PHP_SELF"] exploits in PHP? [2]

d) Draw the output: [2]

```
<frameset columns="35%, 40%, 25%">
  <frame src="frame_a.htm">
  <frame src="frame_b.htm">
  <frame src="frame_c.htm">
</frameset>
```

c) What is the $_SERVER ["PHP_SELF"] variable in PHP and what is the security threat in here? [3]

7 a) How do you write comments in HTML, CSS and PHP? Explain with examples. [4]

b) Discuss and Explain how you can implement the viewport concept in Web Technology. [2]

c) Write the output: [2]

IIT students CWC -2019 possible Semi-Final team choice was:

```
<OL>
  <LI>Bangladesh
  <LI>Australia
  <LI>England
  <LI>India
</OL>
```

d) Write down short notes: [4]

CSS, Responsiveness Web design

Institute of Information Technology
Jahangirnagar University
3rd Year 2nd Semester B.Sc (Hons.) Final Examination 2016
Course No. IT-3207 Course Title: Microprocessor and Assembly Language
Time: 3 hours Full Marks: 60

Answer Any Five of the Following Questions

1. a. Draw the internal block diagram of 8086 processor. 4
   b. Mention the tasks of BIU, AX register, BX register, SS register. 4
   c. For example, a processor uses 36-bits for an address. How many memory bytes can be accessed? 4

2. a. Define Immediate Addressing Mode, Register Addressing Mode, and Direct Addressing Mode. 4
   b. i. SP = FFE0H, SS = 5000H; Find out the Physical Address.
      ii. EA = 437AH, DS = 2000H; Find out the Physical Address. 4
   c. i. Let CX = 2A84H and AX = 4971H 4
      after executing MOV CX, AX what will be the content of CX register?
      ii. Let BX = 1234H
      after executing MOV [437AH], BX what will be happened?

3. a. Find out the Machine code or Op-code for the following instructions. 5
      i. MOV 43H[SI], DH
      ii. MOV CX, [437AH]
   b. i. MOV CX, 0604H 7
      MOV AX, 0A98H
      SHL AH, CL
      ADD AX, CX
      Find out the, AX=?, CX=?, CF=?, PF=?, AF=?, SF=?, ZF=?

      ii. ADD AX, BX, where AX contains FFFFH and BX contains FFFFH
      For the above instructions find out the value of SF, PF, ZF, CF, OF

4. a. Let starting address 8000H. There are 8 RAMs. Each ROM size is 1K. Hence, need to create memory design worksheet (including first and end address of each ROM) and draw the configuration of these 8 ROMs through 74LS138 connector. 6
   b. What are the major tasks for keyboard circuit connections and interfacing? In addition, draw the flow diagram of keyboard interfacing. 2
   c. i. When minimum mode of 8086 will be asserted? 4
      ii. When M/IO signal will be high for 8086 processor?

P.T.O

5. a. Describe three modes of operation of the 8255 chip when it is connected with an I/O
   b. Configure Port A of 8255 PPI chip as i/p in Mode 0, Port B as o/p in Mode 0, Port C (L
   as o/p and Port C (Upper) as i/p ports.

6. a. What does DMA mean? Briefly describe the basic operations in DMA.
   b. Draw the functional block diagram when DMA system operates. Briefly describe some important signals of the system.

7. a. Read a character, and if it is an uppercase letter then display YES else NO. 4
   b. Display certain stars in such a way that first line contains 1 star, 2nd line contains 2 stars and 3rd line contains 3 stars. 4
   c. Let AX contains 1234H. Hence, write a code for clearing the content of AX register. 2
   d. Write a code to put the biggest one in CX when AX and BX contain respectively signed numbers. 2

INSTITUTE OF INFORMATION TECHNOLOGY
JAHANGIRNAGAR UNIVERSITY
B. SC. (HONS.) IN INFORMATION TECHNOLOGY

3rd Part 2nd SemesterFinal Examination 2018
Course Code: IT 3209
Course Title: Bioinformatics

Session 2015-2016
Time Allowed: 3 Hours
Full Marks: 60

Do not write anything in the question script.
There are **seven** questions. Answer any **five** of them.
Figures in the right margin indicate marks.

1. (a) Describe a bioinformatics application of Hidden Markov Model. [4]
   (b) Define network with respect to biology. Give three example of biological network that can be constructed from large scale datasets. [4]
   (c) A bioinformatician wishes to construct an integrated functional network from the three networks that you described in 1(b). Outline a process that could be used to facilitate this integration. [4]

2. (a) Name two different dynamic programming algorithms used in protein sequence analysis. Describe the differences and similarities between them, [4]
   (b) What is the difference in terms of connectivity between a scale free network and a random network? Give biological examples of scale free networks. [4]
   (c) Briefly explain how to compute sequence alignments with dynamic programming. How do you set the scoring scheme to compute the longest common sub-sequence? [4]

3. (a) What is codon? How many Amino acid are in the living organism?-Justify your answer. [4]
   (b) What are the step by step processes of building protein from gene? [4]
   (c) There are four nucleic acids in the gene A set 3 nucleic acids yields an ammino acid. But only 20 amino acids are available in the living organism. Justify these statements. [4]

4. (a) Let the scoring scheme of an alignment technique be for any matching pair score is +1, mismatch pairs score os 2 amd gap penalty is -1. Construct the substitution matrix. Why do we use the concept of penalty gap? [4]
   (b) Construct the score table and discover the alignment for the sequence S=ACCAGT and T=ACCTGT using the information given in 4(a) [4]
   (c) What are the time and space complexity of Needleman-Wunsch Alogirthm. Also comment on it. [4]

5. (a) In the sequence similarity, we consider insertion, deletion and mismatch. What are the logics of such consideration? [4]

   (b) When an alignment is called local alignment. List some applications of protein sequence similarity. [4]

   (c) Write Needleman-Wunsch Algorithm for global alignment. [4]

6. (a) What is multiple sequence alignment? Write an application of multiple sequence alignment. [4]

   (b) Write the process of center star method for multiple sequence alignment. [4]

   (c) Write the process of Clustalw method of MSI. [4]

7. (a) Species can be evolved through not only mutation but also through genome rearrangement. Evident on genome rearrangements have been observed for higher organisms like human, mice, etc. (i) What are the consequences of genome rearrangement? (ii) List different types of genome rearrangements with symbolic example. [4]

   (b) What do you mean by phylogeny? List some examples of phylogenetics in Bioinformatics. [4]

   (c) In a genome rearrangement given below, the last row has been evaluated from the first row. [4]

   2,4,3,5,8,7,6,3
   2,3,4,5,8,7,6,1
   2,3,4,5,6,7,8,1
   8,7,6,5,4,3,2,1
   1,2,4,3,5,6,7,8

   What are the calculated reversal distance and breakpoints in this rearrangement? Drive the upper and lower bound of an unsigned reversal distance.