

FINAL

HSS 301

University of Asia Pacific

Department of Computer Science & Engineering

Semester Final Examination, Fall -2019

Program: B. Sc Engineering

Year: 3rd, Semester: 1st

Course Title: English Language 2

Time: 2.00 Hours

Course No: HSS 301

Credit: 2.00

Full Mark: 50

There are seven questions. Answer all of them.

Read the following passage and answer questions number 1, 2, 3, 4.

EVERYBODY today is talking about reconstruction. Most people, when asked what spiritual quality is needed to rebuild civilization, will reply "Love". Men must love one another, they say; nations must do likewise, and then the series of cataclysms which is threatening to destroy us will be checked.

Respectfully but firmly, I disagree. Love is a great force in private life; it is indeed the greatest of all things: but love in public affairs simply does not work. It has been tried again and again: by the Christian civilisations of the Middle Ages, and also by the French Revolution, a secular movement which reasserted the Brotherhood of Man. And it has always failed. The idea that nations should love one another, or that business concerns or marketing boards should love one another, or that a man in Portugal, say, should love a man in Peru of whom he has never heard—it is absurd, it is unreal, worse, it is dangerous. It leads us into perilous and vague sentimentalism. "Love is what is needed," we chant, and then sit back and the world goes on as before. The fact is we can only love what we know personally. And we cannot know much. In public affairs, in the rebuilding of civilisation, something much less dramatic and emotional is needed, namely, tolerance. Tolerance is a very dull virtue. It is boring. Unlike love, it has always had a bad press. It is negative. It merely means putting up with people, being able to stand things. No one has ever written an ode to tolerance, or raised a statue to her. Yet this is the quality which will be most needed after the war. This is the sound state of mind which we are looking for. This is the only force which will enable different races and classes and interests to settle down together to the work of reconstruction.

The world is very full of people—appallingly full; it has never been so full before—and they are all tumbling over each other. Most of these people one doesn't know and some of them one doesn't like; doesn't like the colour of their skins, say, or the shapes of their noses, or the way they blow them or don't blow them, or the way they talk, or their smell or their clothes, or their fondness for jazz or their dislike of jazz, and so on. Well, what is one to do? There are two solutions. One of them is the Nazi solution. If you don't like people, kill them, banish them, segregate them, and then strut up and down proclaiming that you are the salt of the earth. The other way is much less thrilling, but it is on the whole the way of the democracies, and I prefer it. If you don't like people, put up with them as well as you can. Don't try to love them; you can't, you'll only strain yourself. But try to tolerate them. On the basis of that tolerance a civilised future may be built. Certainly I can see no other foundation for the post-war world.

For what it will most need is the negative virtues: not being huffy, touchy, irritable, revengeful. I have no more faith in positive militant ideals; they can so seldom be carried out without thousands of human beings getting **maimed** or imprisoned. They might not have mattered so much when the world was emptier: they are horrifying now, when one nation is mixed up with another, when one city cannot be organically separated from its neighbours. Tolerance, I believe, will be imperative after the establishment of peace. We shall have to put up with others, not for any lofty reason.

Tolerance is not the same as weakness. Putting up with people does not mean giving in to them. This complicates the problem. But the rebuilding of civilisation is bound to be complicated. I only feel certain that unless the Lord builds the House, they will labour in vain who build it. Perhaps, when the house is completed, love will enter it, and the greatest force in our private lives will also rule in public life.

1. Answer the following questions.

$10 \times 1 = 10$

- a) What is the passage about?
- b) What was traditionally believed to be the most powerful virtue needed for civilization?
- c) How does the author's view differ from the traditional view?
- d) How does love work for public life?
- e) What according to the author is the most desirable value for rebuilding society?
- f) How does the author describe tolerance?
- g) What does the author say about human relationship?
- h) What according to the author are the two solutions?
- i) Which solution does the author prefer and why?
- j) How are the militant ideals dangerous?

2. Write the meaning of the following words using contextual clues.

$5 \times 1 = 5$

- * a) Cataclysm
- * b) Secular
- * c) Appalling
- d) Banish
- * e) Maim

3. Fill in the blanks using appropriate words.

$5 \times 1 = 5$

People say that love is the most necessary thing in order to a) _____ peace. But, tolerance is more necessary in this b) _____ than love for the sake of peace. There are too many people in this world now. You cannot love everyone. Rather than loving all, we need to c) _____ with people. Tolerance may not sound as d) _____ as love but it has become most necessary.. The Nazi ideal is to kill and segregate people and creating a homogenous world. An antithesis to this e) _____ can be tolerance.

4. Write a summary of the passage in five (5) sentences and not less than 100 words.

5

5. Prepare a job advertisement for the position of Assistant Manager at CyberNet.

7.5

6. Suppose you are the Manager of Startech Computers. Your company wants to import a large number of hardware from a company in China named 'Illusion'. Write an inquiry letter to the Sales Manager of Illusion asking for necessary information regarding the purchase. 7.5
7. Write an event report on the Programming Contest arranged at University of Asia Pacific. 10

Department of Computer Science & Engineering

University of Asia Pacific (UAP)

Final Examination

Fall 2019

3rd Year 1st Semester

Course Code: CSE 311

Course Title: Microprocessors & Assembly Language

Credits: 3

Full Marks: 150

Duration: 3 Hours

Instructions:

1. There are Six (6) Questions. Answer all of them. All questions are of equal value. Part marks are shown in the margins.
2. Non-programmable calculators are allowed.

1. (a) Define (i) Program Counter, (ii) Index register, (iii) Stack, (iv) Stack pointer and (v) Status register of a general purpose microprocessor. [10]

(b) Draw the internal architecture of Intel 8086 microprocessor and identify its different functional units. Explain the function of Bus Interfacing Unit. [15]

OR

a. What do you understand by Address bus, data bus and control bus? State the function, significance and direction of signal flow for each. [10]

b. List all flag bits of 8086 microprocessor and state the functions of control flag bits. Also list some instructions used to set/reset control flag bits? [15]

2. (a) Write a program in assembly language to input a number from keyboard and check whether it is even or odd. [10]

(b) Write a program in assembly language to read two inputs from keyboard, add the numbers and display the result using assembly language [15]

OR

a. Write a program in assembly language to read a number and check whether it is prime using a procedure. [10]

b. Write a program in assembly language to read a letter (uppercase/lowercase) from keyboard and change its case. [15]

3. (a) What do you understand by addressing modes? List the types of addressing modes of 8086 microprocessor. [5]

* b. Assume that: CS=6000H, DS=3000H, ES=8000H, SS=5000H, SP=8512H, BP=4532H, AX=2314H, BX=4536H, CX=6087H, DX=9A20H, DI=1032H and SI=100H, VALUE = 45H. Also assume that the direction flag bit is cleared. Port address for input device = 1A24H, Port address for output device = 12A3H, For each of the following instructions, state/ calculate Addressing Mode, no of bits transferred, Source (Register/Memory), Destination (Register/Memory), Segment register for Source (if applicable), Segment register for Destination (if applicable), Physical address of memory for source (if applicable) and Physical address of memory for destination (if applicable).

i. MOV CL, [BP+SI]

- ii. MOV DX, [2345H]
- iii. PUSH DX
- iv. MOV VALUE[BX+SI], AH
- v. INSB

4. a. Briefly explain the functions of the following pins and signals of 8086. Also indicate the signal flow (input, output or bidirectional) for each case. [20]

- (i) BHE and A0
- (ii) HOLD and HLDA
- (iii) ALE
- (iv) INTR and INTA
- (v) DEN
- (vi) DT/R
- (vii) RESET
- (viii) M/IO
- *(ix) NMI
- *(x) TEST

b. Write a program in assembly language to read 1KB data from consecutive locations within main memory and load into CPU register byte by byte using string data transfer instructions. Assume that: CS=3000H, DS=5000H, ES=7000H, SS=9000H, SP=120FH, BP=3254H, DI=3A10H and SI=1025H. [5]

5. a. What additional controller is required to run 8086/8088 microprocessor in maximum mode? [5]
Why this is necessary? Briefly explain.

b. Draw a simplified diagram of a system (personal computer) based on 8086 running in the maximum mode, briefly describe. [20]

6. a. Show the contents of stack and relevant registers after each instructions: [15]

PUSH AX
POP CX
PUSH SI
POP DX

Assume that: CS=1000H, DS=3000H, ES=4000H, SS=6000H, SP=1258H, BP=3254H, AX=1234H, BX=3456H, CX=8760H, DX=2893H, DI=3210H and SI=1000H.

b. Briefly state what happens in following instructions. Assume, AX= A234H, BX= 2345H, CX=1082H, DX=FF20H, SI=100H, DI=200H, CS=1000H, DS=3000H, SS=5000H and ES=6000H. [10]

(i) IN AX, DX (ii) INSW (iii) OUT 0FH, AX (ix) OUT DX, AL (v) OUTSW

CSE 303

Department of Computer Science & Engineering
University of Asia Pacific (UAP)

Final Examination Fall 2019

3rd Year 1st Semester

Course Code: CSE 303

Course Title: Data Communications

Credits: 3

Full Marks: 150

Duration: 3 Hours

Instructions:

1. There are Six (6) Questions. Answer all of them. All questions are of equal value. Part marks are shown in the margins.
2. Non-programmable calculators are allowed.

- ✓ 1. (a) What is data communication? List all the communications tasks and briefly explain 10 any 3 of them.
- (b) Define Circuit switching, Packet switching, Frame relay, and ATM. 05
- (c) A digital signaling system is required to operate at 9600 bps. 10
i) If a signal element encodes a 4-bit word, what is the minimum required bandwidth for the channel?
ii) Repeat part (i) for the case of 8-bit words.
- ✓ 2. (a) Define fundamental frequency. 05
- (b) Explain any six digital-to-digital encoding schemes (e.g. NRZ-L, Bipolar-AMI, etc.) with example. 15
- (c) A digital signaling system is required to operate at 128000 bps. If a signal element encodes a 4-bit word, what is the minimum required bandwidth of the channel? 05
- ✓ 3. (a) Discuss how Sliding-Window Flow Control works with the proper diagram. Why 10 is it better than Stop-and-Wait Flow Control?
- * (b) What is HDLC? Draw frame format of it. 05
- * (c) What is the disadvantage of the Go-Back-N ARQ protocol? Show how it is overcome in the Selective Repeat protocol. What is the maximum window size of the protocol? 10
- ✓ 4. (a) Where will you use unshielded twisted pair and shielded twisted pair and why? 5
- * (b) Explain Ground wave, Sky Wave and Line-of-Sight propagation? Describe the data transmission characteristics of optical fiber cable. 15
- (c) Explain the design factors relating to the transmission medium. 05
- ✓ 5. (a) Generate CRC code for the data word 110101010 using the divisor 10101. 10
- (b) Calculate the VRC and LRC for the following bit Pattern using Even Parity:
0011101 1100111 1111111 0000000 1010101 10
- ✓ 6. What motivates the use of error detection techniques? 05

OR

- (a) How the error detection process executes from a transmitter to the receiver. 10

(b) A sender wants to send the stream '1011010' using CRC. The divisor is 1101. 15

Show- i) How the codeword is created in the sender site
ii) How the codeword is received without error
iii) How the codeword is received with an error. Assume one or more bits changed.

- ✓ 6. (a) Why Delta Modulation (DM) is thought to be an alternative to PCM? Discuss DM with a proper figure. 10
(b) Distinguish between frequency division multiplexing and time domain multiplexing system. 10
(c) What is the purpose of Bit Stuffing? 05

OR

- ✓ (a) What is bit stuffing and unstuffing? 05
Apply bit stuffing to the sequence 01101111111100
Apply unstuffing: 0111110000111011110111101100111110
(b) Compare and contrast FDMA, TDMA and CDMA techniques. 10
✓ (c) Explain the conditions for stop-and-wait, Go-Back-N, and selective repeat protocols. 10

Department of Computer Science & Engineering
University of Asia Pacific (UAP)

Final Examination Fall 2019

3rd Year 1st Semester

Course Code: CSE 305

Course Title: System Analysis and Design

Credits: 3

Full Marks: 150

Duration: 3 Hours

Instructions:

1. There are Six (6) Questions. Answer all of them. All questions are of equal value. Part marks are shown in the margins.
2. Non-programmable calculators are allowed.

- ✓ 1. a. Explain the steps of Software Development Life Cycle with proper examples. [20]
- b. "*A system cannot be developed to its full efficiency without the involvement of a System Analyst*"- Evaluate the statement with your own reasons. [05]

OR

- a. Explain Transaction Processing System (TPS), Knowledge Work System (KWS), Office Automation System (OAS), Decision Support System (DSS) with examples. [20]
- b. "*Although a proposed project might be Technically feasible, it might not get implemented for lacking Economic feasibility*"- To what extent you agree or disagree to the statement? [05]

- ✓ 2. a. Explain AGILE System modeling in your understanding. [10]
- b. Mr. Mubin is a seriously lazy developer in "Baaper Hotel IT Firm". His boss continuously pushes him to do the simplest of tasks and tries to make him work always with a pro developer like Mr. Soyeb. But once a time came, Mubin's boss got a job of developing a website for an Online Food Ordering System but only Mubin was available for the next three months to do the job. His boss wanted to decline as only Mubin was left alone to work, but the amount of remuneration equaling to Tk. 5, 00,000 was too much to deny. [15]

Create a DATA FLOW Diagram for the above mentioned scenario so that Mr. Mubin can directly go on to developing.

OR

- a. Explain INCLUDE and EXTEND relationship for Use Case Diagram. [10]
- b. Result Processing is one vital function to run the education process in a University. This requires involvement of the teachers, students, administration officers and the exam controller for various inputs and verifications. Such as- a teacher will login with his/her credentials, keep record of the Class Test marks, Mid Semester Marks, Final Marks for a specific semester and a specific course. However, this mark entry will be verified by the Exam Controller. Again when repeat exams are taken, the teacher should be enabled to update the specific students marks. This is also verified by the Exam Controller. The administration officers' job is to allocate the courses to the corresponding teacher credentials so that the teacher can easily find only his/her allotted courses. And at the very last the Exam Controller generates the result of a student of a particular semester based on all these marks entries and verification, which the students can view from their end. Matter of fact is that all of them have to log in first to do their jobs. [15]

Draw a USE CASE diagram for the above project to be developed with INCLUDE relationships. [Identify the Actors and Use Cases first, list them, and draw the final diagram]

- ✓ 3. a. Describe the parts of writing a Project Proposal in your way with a suitable example. [20]
- b. State the components needed to build a Data Flow Diagram. [05]
- ✓ 4. a. For developing the system in Question 2b, explain which methodology will work best for Mr. Mubin with proper reasoning. [20]
- b. State the components of a Use Case Diagram. [05]
- ✓ 5. a. For Question 2b(or), prepare five (05) open-ended question for gathering information for requirement analysis. [10]
- b. Create a project proposal for the system in Question 2b(or). [15]

6

- Look at the following precedent chart for the project called "**POLISH AND FINISH**". Calculate the **Minimum Time Required** and the **Critical Path** for the project to finish.

[25]

Activities	Predecessor	Completion Days
A	-	5
B	A	10
C	A	20
D	B, C	30
E	C, B	25
F	E	40
G	D, F	20

MID TERM

ms

University of Asia Pacific
Computer Science and Engineering
Mid Examination
Semester: 3rd year 1st Semester

Course Code: CSE 309

Course Title: Object Oriented Programming II: Visual and Web Programming

Credit Hr: 3.0

Time: 1 hour

Total Marks: 60

Answer any 3 questions including question no. 1 (Question no. 1 is compulsory*)**

1. In a corporate office we can see different kinds of people (**Person**). Some of them are **employees** of that company, some of them can be **guests** and others might be **clients**. Moreover, there are different classes of employees. For example: **Manager, Developer, clerk** etc.
- a. What is inheritance? 3
b. Identify the entities (classes) and show the inheritance relationship among the classes with a simple class diagram. 7
c. Analyze the situation and implement (write code) Employee and Manager Class by using the concept of Inheritance. 10
2. You want to start a project called “Anti-rag portal”. You want to develop this project in Django. But at first you need to test your project with a sample HTML. As this is the first time with Django you want to print “Hello World! CSE 309 is most awesome course I have ever seen!!” in the browser.
- a. Show the project structure and the interaction between the files with a diagram 8
b. Now to accomplish this write the following files as needed.
i. home.html 4
ii. url.py 4
iii. views.py 4
3. a. Write a python function which returns a list of prime numbers in a given range. Two numbers will be given as the parameters of the function which of them will represent the starting number and ending number of the range respectively. A sample input and output is given in the following. 12

def prime_list(start, end):

//

Input:

5

20

Output:

[5, 7, 11, 13, 17, 19]

b. Write a python code to print the following pattern

8

X
XXX
XXXXX
XXXXXXXX

a. Identify correct and incorrect function calls. If incorrect, state the reason briefly.

10

Function Prototype:

```
def midExam(name, ID, exam= "python", duration= "30", marks=20):  
    pass
```

Function calls:

- i. *midExam ()*
- ii. *midExam ("Sakib")*
- iii. *midExam ("Maruf", 20)*
- iv. *midExam ("Afsana", 18, duration=35)*
- v. *midExam (exam= "python", duration= "30", marks=20, "Redwan", 30)*
- vi. *midExam (exam= "python", duration= "30", marks=20, Name="A", 30)*
- vii. *midExam ("B",exam= "python", duration= "30", marks=20, ID=40)*
- viii. *midExam (name= "C", ID=44, marks=20)*
- ix. *midExam (name= "C", exam= "python", ID=44, number=20)*
- x. *midExam (name= "C", exam= "python", ID=44, time= "30")*

b. Write the output of the following code. Write the word "Error" in case of error.

10

Word = "Python!"

- i. Word[:]
- ii. Word[-3 :]
- iii. Word[: -3]
- iv. Word[-3]
- v. Word[-30]
- vi. Word[-30 :]
- vii. Word[: : -1]
- viii. Word[-1 : 4]
- ix. Word[100]
- x. Word[100 :]

University of Asia Pacific
Department of Computer Science & Engineering
Mid-Semester Examination, Fall-2019
Program: B. Sc. Engineering (3rd Year/ 1st Semester)

Course Title: Data Communications

Course No. CSE 303

Credit: 3.00

Time: 1.00 Hour.

Full Mark: 60

There are Four Questions. Answer three questions including Q-1 and Q-2.

- 1.** a) What do you understand by Bandwidth, Data rate and Baud? [5]
b) Explain the most significant types of transmission impairments. [5]
c) What do you mean by OSI reference model? Write the differences between [10] OSI and TCP/IP reference model.
- 2.** a) We need to upgrade a channel to a higher bandwidth. Answer the following [10] questions:
i) How is the rate improved if we double the bandwidth?
ii) How is the rate improved if we double the SNR?
- 3.** If the bandwidth of the channel is 5 Kbps, how long does it take to send a [10] frame of 100,000 bits out of this device?
A device is sending out data at the rate of 1000 bps.
i) How long does it take to send out 10 bits?
ii) How long does it take to send out a single character (8 bits)?
iii) How long does it take to send a file of 100,000 characters?
- 4.** a) Why do optical signals used in fiber optic cables have a very short wave [7] length?
b) What are the differences between half-duplex and full-duplex transmission [8] modes?
c) Sketch satellite communication configuration. [5]

OR

- 4.** a) Describe optical fiber cable (OFC). What is the purpose of cladding in OFC? [10]
b) In satellite communications, different frequency bands are used for the uplink [4] and the downlink. Discuss why this pattern occurs.
c) A signal radiated from an antenna propagates along one of the three routes. [6] Briefly explain each of these three wireless propagations.

University of Asia Pacific
Department of Computer Science & Engineering
Mid-Semester Examination Spring -2019
Program: B. Sc Engineering
Year: 3rd, Semester: 1st

Course Title: English Language 2
Time: 1.00 Hour.

Course No: HSS 301

Credit: 2.00
Full Mark: 20

There are **four** questions. Answer all of them.

Read the following passage and answer questions number 1, 2, 3.

The next few decades will see great changes in the way energy is supplied and used. In some major oil producing nations, 'peak oil' has already been reached, and there are **escalating** fears of global warming. Consequently, many countries are focusing on the switch to a low carbon economy. This **transition** will lead to major changes in the supply and use of electricity. Firstly, there will be an increase in overall demand, as consumers switch from oil and gas to electricity to power their homes and vehicles. Secondly, there will be an increase in power generation, not only in terms of how much is generated, but also how it is generated, as there is growing electricity generation from renewable sources. To meet these challenges, countries are investing in Smart Grid technology. This system aims to **administer** the electricity industry with a better understanding of power generation and demand, and to use this information to create a more efficient power network.

Smart Grid technology basically involves the application of a computer system to the electricity network. The computer system can be used to collect information about supply and demand and improve engineer's ability to manage the system. With better information about electricity demand, the network will be able to increase the amount of electricity delivered per unit generated, leading to potential reductions in fuel needs and carbon emissions. Moreover, the computer system will assist in reducing operational and maintenance costs.

Smart Grid technology offers benefits to the consumer too. They will be able to collect real-time information on their energy use for each appliance. Varying tariffs throughout the day will give customers the **incentive** to use appliances at times when supply greatly exceeds demand, leading to great reductions in bills. For example, they may use their washing machines at night. Smart meters can also be connected to the internet or telephone system, allowing customers to switch appliances on or off remotely. Furthermore, if houses are fitted with the apparatus to generate their own power, appliances can be set to run directly from the on-site power source, and any excess can be sold to the grid.

With these changes comes a range of challenges. The first involves managing the supply and demand. Sources of renewable energy, such as wind, wave and solar, are notoriously unpredictable, and nuclear power, which is also set to increase as nations switch to alternative energy sources, is inflexible. With oil and gas, it is relatively simple to increase the supply of energy to match the increasing demand during peak times of the day or year. With alternative sources, this is far more difficult, and may lead to blackouts or system collapse. Potential solutions include investigating new and efficient ways to store energy and encouraging consumers to use electricity at off-peak times.

A second problem is the fact that many renewable power generation sources are located in **remote** areas, such as windy uplands and coastal regions, where there is currently a lack of electrical infrastructure. New infrastructures therefore must be built. Thankfully, with improved smart technology, this can be done more efficiently by reducing the reinforcement or construction costs.

1. Answer the following questions.

$5 \times 1 = 5$

- a) Why will there be increase in overall demand of electricity?
- b) What is Smart Grid technology?
- c) Write one (1) benefit of Smart Grid technology for the consumers.
- d) Why do we need to build new infrastructures?
- e) What is the problem with nuclear power energy?

2. Write the synonyms or explain the following words with the help of the context:

$5 \times 1 = 5$

- a) Transition: _____
- b) Escalating: _____
- c) Incentive: _____
- d) Remote: _____
- e) Administer: _____

3. Summarize the passage in five (5) lines.

5

4. Write a memo.

5

Imagine you are the General Manager of a software company named IT Solutions Limited. Write a memo to your colleagues instructing them to follow the rules and regulations of the organization.

University of Asia Pacific
Department of Computer Science and Engineering
Mid-Semester Examination Fall-2019
Program: B.Sc. Engg.

Course Title: System Analysis and Design Course No.: CSE 305 Credit: 3.00
Time: 1.00 Hour. Full Mark: 60

There are Four Questions. Answer any three questions including Question-2.

1. a. Define System Development Life Cycle and all the steps of SDLC methodology. [10]
- b. Md. Mosharrof is in the position of Inspector General of Bangladesh Police. After being promoted to the position, he started to look into the problems that general people face when they need to get involved with the police. The most common thing for which an individual comes in touch with the police is filing a **General Diary (GD)**. Per day uncountable number of GDs are filed throughout the country, especially in the capital city of Dhaka. Sometimes a GD is for a lost item, sometimes for public harassment, sometimes for overpricing an item at a shop, etc. So, about 60-70% GDs are basically for any lost item or any complain of the same degree. Looking into the statistics, the IGP wants to automate this system, so that the common people don't have to go through the hassle of coming to the police station. He wants that anyone can file a GD at any moment. The only concern here is the identity verification of the person who is going to file a GD. For that purpose, many photo identity documents (NID, Passport, Driving License etc.) and signature uploading can be done in the system. So, a GD has to be filled in the designated police station near the incident happening location. That means, if you have lost a wallet in Mirpur 12, you must have to file the GD in Pallabi Police Station because it's the nearest.

For the task above Mr. Mosharrof discusses with his friend Mr. Billah, who is an IT firm owner, that how he can solve it within December 31, 2019. Mr. Billah appointed a new system analyst who is the person who is appearing this exam (yourself) just a week ago and he selected the newbie to formulate a project proposal within 1 week for this task.

Formulate your project proposal.

2. a. Contrast between **Tangible** and **Intangible** Costs and Benefits. [10]
- b. Suppose, Mr. Taheri is the project manager at **Pour It System Solutions** is due to launch a new facial recognition system to ensure the attendance in a big Restaurant named "**Dad's Hotel and Co.**" This system will automatically recognize which employees are present at a certain day and the admin will get notified. Also any

employee can log in to the system's website to check out his/her attendance records, hour counts, his/her weekly schedule, etc. There are analysts, developers, testers, web-designers, architecture designer under your team and you have 3 months of time to install the projects. The project budget in total is about 2 million takas.

List out the Costs and Benefits both Tangible and Intangible.

OR

- ✓ 2. a. Distinguish between Prototyping and RAD methodologies. [10]
- b. Mrs. Nupur is the owner of a beauty parlor near the Kalabagan bus stand named **Mathanoshtha Beauty Parlor**. For the past 2 years, because of her crazily good gesture and behavior, the number of regular customers touched the sky almost per day. To accommodate, she had to increase the parlor size both structurally and physically (increased manpower to three times). Now, she is facing a lot of problem for allocating the appointments with the customers with their favorable parlor girl. Also, as the number of appointments increased, she needs a well-managed payment receiving system for the customers with an experienced receptionist. But sadly, she can only afford 24 days to build an appointment scheduling system along with a payment confirmation system as well. "The customers who pay in advance via any payment gateway will get the earliest service", she says. For the system to get developed, she appoints her loving friend Nahid Hossain, a Software Engineer giving him only 2 lakh money to spend.

If you were in the place of Nahid, which methodology do you think would produce the best outcome for this system? Provide reasons in favor of your answer.

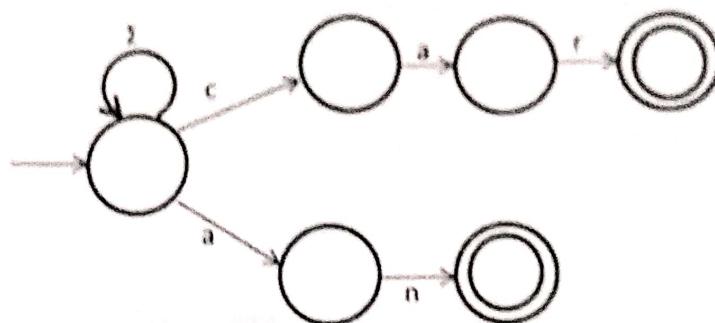
- ✓ 3. a. There are three ways of arranging questions for interviewing namely- **Pyramid, Funnel & Diamond**. Discuss the best one among them in case of the scenario in Ques. 1(b). [10]
- b. Prepare ten closed questions and five open-ended questions to gather info for the scenario described in Ques. 1(b). [10]
- ✓ 4. a. Describe Agile Modeling for system development in your words. [10]
- b. Read any of the scenarios in Ques. 2(b) again and explain the system development methodology that might produce the best result while establishing the system according to you with reasons. [10]

University of Asia Pacific
Department of Computer Science & Engineering
Mid-Semester Examination Fall -2019
Program: B. Sc. Engineering (3rd Year/1st Semester)

Course Title: Theory of Computation Course No. CSE 307 Credit: 3.00
 Time: 1.00 Hours. Full Mark: 60

There are Four Questions. Answer questions 3, 4 and (1 or 2). All questions are of equal value/FIGURES in the right margin indicate marks.

- 1.a) Describe formal definition of Deterministic Finite Automata. 8
 * b) Convert the bellow diagram into DFA. 12



	q1	q2	q3	q4
	q1			

- 2.a) Describe symbol, alphabet and Language in perspective of finite automata. 8
 b) Consider the following ϵ -NFA:
 i) Find out the ϵ -closure for each state. 12
 ii) Convert it into DFA. Show both transition table and diagram.

	C	0	1	2
$\rightarrow A$	{B,C}	Φ	{B}	{C}
B	Φ	{A}	{C}	{A,B}
C	Φ	Φ	Φ	Φ

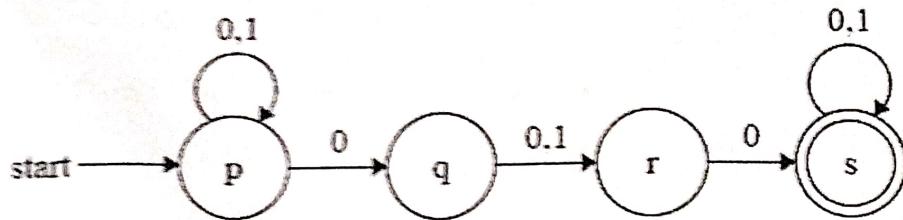
- 3.a) Let $\Sigma = \{a,b\}$ 4+4

Suppose you are wanting to construct the following language:

"The set of all strings that either start with ab or ba ."

- i) Write the regular expression for this language.
 ii) Draw the corresponding NFA.

b) Convert the following NFA into DFA. Show both transition table and diagram of the DFA. 12



4.a) Prove or disprove each of the following statement about regular expressions. 8

i) $(0 + 1)^*1(0 + 1)^* = (0 + 1)^*(10 + 11 + 1)(0 + 1)^*$

ii) $(RS + R)^*RS = (RR^*S)^*$

b) Show the Finite Automata for the following expression. 12

i) $Q(P+Q)^*$ ii) $AB^+(AB+B)$

University of Asia Pacific

Department of Computer Science & Engineering

Mid-Semester Examination Fall -2019

Program: B. Sc Engineering (3rd Year/ 2nd Semester)

Course Title: Microprocessors & Assembly Language Course No. CSE 311 Credit: 3.00

Full Mark: 60

Time: 1.00 Hour

There are Four Questions. Answer three questions including Q-1.

- ✓ 1. a.** Draw the internal architecture of Intel 8086 microprocessor and identify its different functional units. [5]
- b.** Briefly describe the functions of Bus Interfacing Unit and Execution Unit of 8086 Microprocessor. [5]
- c.** List all flag bits of 8086 microprocessor and state the functions of control flag bits. Also list some instructions used to set/reset control flag bits? [10]
- ✓ 2. a.** Define (i) Program Counter, (ii) Index register, (iii) Stack, (iv) Stack pointer and (v) Status register of a general purpose microprocessor. [10]
- b.** What do you understand by Address bus, data bus and control bus? State the function, significance and direction of signal flow for each. [10]
- 3. a.** What do you understand by memory segmentation technique? State its benefits. [5]
- b.** List the segment registers and default registers used to hold offset addresses in memory address calculation. Also mention purpose for each case. [5]
- c.** How does 8086 microprocessor calculate physical addresses of any memory locations? Give example. [5]
- d.** Given the contents of following register pairs, calculate the physical address of main memory location pointed by each: [CS]:[IP]=[1F0AH]:[15F6H], [SS]:[SP]=[82FFH]:[4FAFH] [5]
- ✓ 4. a.** What do you understand by instruction fetch? List the steps involved in instruction fetch. [10]
- b.** What do you understand by pipelining? How it is implemented in 8086 microprocessor? What is its advantage? [10]