



INSTITUTE OF INFORMATION TECHNOLOGY

JAHANGIRNAGAR UNIVERSITY

3RD 2ND SEMISTER FINAL EXAMINATION-2015

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 your development process and the implications it will have for costs.

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.
 - 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 the following component to develop to make it more powerful in the market. They wanted to 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. 5 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?
4. a) A software firm has a project which will be done by 14 months. Figure shows the people 8 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.

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 3 directly comparable.
- 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 5 module coupling, cohesion, and size can help the engineer monitor the build quality of software.
- b) Functionality is one of the most important software quality characteristics. It has been 2 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 3 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 SEMISTER B.Sc. (HONS.) FINAL EXAMINATION-2020

Session: 2017-2018

COURSE CODE: IT-3201

TOTAL MARKS: 60

COURSE TITLE: Software Engineering

TIME: 3 hours

ANSWER ANY FIVE (5) QUESTIONS

1. (a) What are the SPM failures causes for a project? 4
(b) Draw the network diagram of the following project task and also find CP, SLACK time. 8

Activity	Dependency	Duration (weeks)
A	-	7
B	A	8
C	A	10
D	A	6
E	A	2
F	B,C	5
G	F,D,E	8
H	E	7
I	F	5
J	I,G,H	2

2. (a) Draw the conceptual view of software estimation techniques? 4
(b) Compute the function point, productivity, documentation, cost per function for the following data: 8

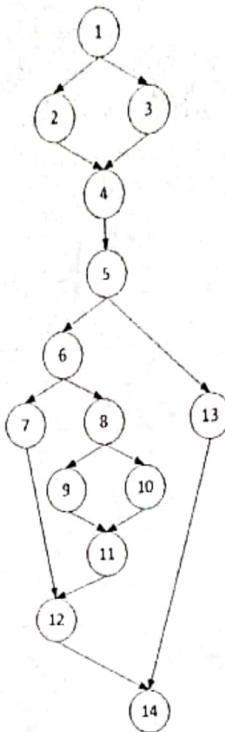
Number of user inputs = 24
Number of user outputs = 46
Number of inquiries = 8
Number of files = 4
Number of external interfaces = 2
Effort = 36.9 p-m
Technical documents = 265 pages
User documents = 122 pages
Cost = \$7744/ month

Various processing complexity factors are: 4, 1, 0, 3, 3, 5, 4, 4, 3, 3, 2, 2, 4, 5.
Use the following historical weighting factor table to calculate FP.

Serial	Measurement Parameter	Low	Average	High
1	Number of External Inputs(El)	7	10	15
2	Number of External Outputs(EO)	5	7	10
3	Number of External Inquiries(EQ)	3	4	6
4	Number of Internal Files(ILF)	4	5	7
5	Number of External Interfaces(EIF)	3	4	6

3. (a) How agile and waterfall differ to each other in term of developing an e-commerce website? 6
Discuss the Scrum Process model with the Table of Question 2 (b)

(b) What is functional and non-functional testing? Find the McCabe Cyclometric path for the following illustration.



- 4 (a) What is use case? How use case help to find the function of the system? 4
(b) Mr. Karim has a grocery store in Savar area. During the Corona pandemic, often customers call him to look for some products. But he is a lonely man, so he can't get over it. He is illiterate so he can't even write. He wants an online solution.
i. What will be the online product for him?
ii. What are the user requirements and system requirements?
iii. Draw use case diagram for the system? (Registration, Login, Product list, Reports)
- 5 (a) "Non-functional requirements may affect the overall architecture of a system rather than the individual components"- justify the statement. 4
(b) Categories non-functional requirements. How office space effect the overall software development in costing? 4
(c) What are the Metrics for specifying nonfunctional requirements? 4
- 6 (a) How the context model and process model are different? What are the signifiers of those models? 4
(b) App product will bring a digital change in the buying and selling of small shop and wholesale traders. It will handle all processes including Total Business Trade, Transaction Process, Delivery, Company Product Order, Market Management by a digital software and machine to protect consumers sometimes buy adulterated, unhealthy products, or unknowingly buy illegal products. A special feature of the app is that if a product falls below a certain limit, the order will go to the supplier through the software. And after they deliver it, the cache memo will be sent through the software, the scanner will scan it and the receiver software will enter the data in its reference. And if the shopkeeper sells the product, a total account will be made of it. And the weight will be packaged.
i. Draw a wireframe of the product.
ii. Draw a process model of the special feature.
- 7 (a) Discuss about the 4+1 architectural view model of software architecture. 3
(b) What do you understand from MVC architectural pattern? Explain that with a conceptual view of it. 7
(c) How system functionalities are distributed in the layered architecture? 2



Institute of Information Technology
Jahangirnagar University
THIRD YEAR SECOND SEMESTER B.SC (HONS) FINAL EXAMINATION, 2017
[In Information Technology]

Course Code: IT 3201

Time: 3 Hours

Course Title: Software Engineering

Full Marks: 60

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

1. a) Write the agile manifesto. How extreme programming values agile manifesto? 5
b) How scrum development process works? Why XP@Scrum get popular among developers? 5
c) Write the outcome of the different burn down charts. 2

2. a) How can we classify requirements? Give example of each type. 4
b) Show the UML representation of the following relations:
 - i. In a shopping mall “*customer checkout*” use case is composed of “*Scan Item*”, “*Calculate Total and Tax*” and “*Payment*” use cases.
 - ii. “*Payment*” use case can use “*Customer authentication*” use case to complete its operation.
 - iii. “*Customer authentication*”, responsible for verifying the identity of the customer. The customer might require *one of* two realizations: “*CheckPassword*” or “*CheckFingerprint*”.

- c) How many types of classes can be identified during analysis? Draw a class diagram from the following sequence diagram in fig. 1: 4

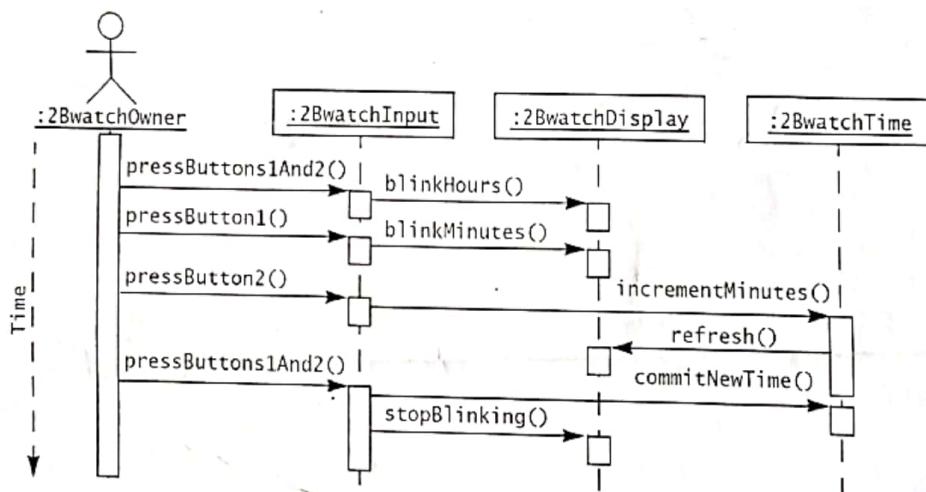


Fig.1: Example of Sequence Diagram

3. A software company engaged in Object Oriented development has been collecting both software product metrics and software process metrics over a number of years.
 - a) Explain what is meant by software product metrics and give three examples of product metrics relating to OO software. 4
 - b) Explain what is meant by process metrics and give examples of three such metrics relevant to a software company's process improvement. 4
 - c) Explain what is meant by the Goal Question Metric (GQM). Outline how GQM and both software product metrics and software process metrics can be used in a company's efforts to determine and to improve their software quality. 4

4. a) Consider a system that includes a Web server and two database servers. Both database servers are identical: the first acts as a main server, and the second acts as a redundant back-up in case the first one fails. Users use Web browsers to access data through the Web server. They also have the option of using a proprietary client that accesses the databases directly. Draw a UML deployment diagram representing the hardware/software mapping of this system. 4
- b) Why do we need structural partitioning? Which type of partitioning is useful for agile? 4
- c) Write the names of different cohesions. Why should we increase cohesion for good design? 4
5. a) Show the software architecture of an ATM system. 2
- b) Show the expression of calculating Error Index (EI). 2
- c) Show the risk management process. 2
- d) How many types of plan you need to do for software development? 2
- e) For the given table below shows the tasks, durations and dependencies. Draw a task network and then find the critical path from the network. 4

Task	Effort (person-days)	Duration (days)	Dependencies
T1	15	10	
T2	8	15	
T3	20	15	T1 (M1)
T4	5	10	
T5	5	10	T2, T4 (M3)
T6	10	5	T1, T2 (M4)
T7	25	20	T1 (M1)

6. a) What are the stages of Testing? Identify the following types of testing: 4
- i. Testing the limits of system e.g. maximum number of users, peak demands, extended operation.
 - ii. Test the various software and hardware configurations
 - iii. Evaluate response times and time to perform a function
 - v. Exercise all input and output parameters of each component, all components and all calls (each component is called at least once and every component is called by all possible callers.)
- b) Why developer or programmer shouldn't test the system? What are the differences between system testing and inspections? 4
- c) Explain the modified sandwich testing strategy and compare it with the other strategies. 4
7. Computer-Aided Software Engineering (CASE) tools are designed to help developers manage complexity. 5
- a) What are the two main types of complexity such a tool must deal with? 3
 - b) What are the tools traditionally used to manage each type of complexity? 4
 - c) For each type, describe briefly one case history in which a serious failure was caused. 5



Institute of Information Technology

JAHANGIRNAGAR UNIVERSITY

3rd Year 2nd Semester B.Sc (Hons.) Final Examination 2017

Course Title: Microprocessor & Interfacing

Course Code: IT 3207

Duration: 03 Hr

Full Marks: 60

There are **seven** questions, answer any **five** of them. Figures in the right margin indicates the marks

1. a. Write a simple assembly program to subtract two memory location, where each memory location is one byte wide. 4
- b. How to you differentiate between machine cycle and clock cycle? If a device slower than microprocessor requests additional clock cycles, how does 8086 accommodate the extra time cycles? 4
- c. Discuss the pipeline processing. How does it improve the performance of performance over the traditional processing? Distinguish between RISC and CISC architecture. 4
2. a. How does the 8086 microprocessor produce 20-bit physical address from 16-bit logical address? 4
- b. What are the differences between accumulators based microprocessor and general purpose microprocessor? 4
- c. If we use registers as storage, we can speed up operation but the cost will be increased. However, if we use secondary memory as storage, we lose the speed but cost will be reduced. What will be the optimum solution? 4
3. a. What do you understand by volatility? How the volatility problem can be resolved in practical applications? 4
- b. Design an 8-bit microprocessor interfaced to a 6K RAM system using the linear select decoding technique. 4
- c. What is the function of memory management unit (MMU)? What is the difference between physical memory and virtual memory? 4
4. a. An 8086 microprocessor can access up to one Megabytes of physical memory – justify the statement. 4
- b. Draw the 8086 microprocessor architecture, and specify the reasons why the 8086 microprocessor architecture is divided into two functional unit. 4
- c. What do you understand by memory segmentation? Why is memory segmentation used? 4
5. a. Explain the control and status register. 4
- b. Why do we need programmable interval controller? Draw the internal block diagram of a programmable interval controller. 5

- c. An 8085 execute the following instruction

MVI A, 89
 MVI B, 74
 ADD B
 DAA
 Evaluate the content of accumulator and status flag

6. a. Describe the RESET signal (Pin 21) and which thing does the 8086 microprocessor initialize as a consequences if the RESET is low? 4

b. Discuss on the string addressing mode. Consider the string mode instruction “MOVS BYTE”, where DF = 0, [DS] = 2000₁₆, [SI] = 0500₁₆, [ES] = 3000₁₆ and [DI] = 0300₁₆; and the contents of memory locations at [20500] = 38₁₆ and [30300₁₆] = 45₁₆. What will be the content of memory locations and the value of SI and DI after execution of the instruction? (Specify the reasons also) 4

c. Why indirect memory addressing mode is expensive than that of direct memory addressing mode? What are the advantages of using the register indirect addressing mode? 4

7. a. Write down the characteristics of Intel 80386 microprocessor. What are the differences between 80386 DX and 80386 SX? 4

b. Draw the block diagram of Intel 80386 microprocessor, and hence make a short discussion on central processing unit, memory management unit and bus interface unit. 4

c. Describe real address mode, protected address mode and virtual address mode used in Intel 80386 based microprocessor. 4



Institute of Information Technology

Jahangirnagar University

THIRD YEAR FIRST SEMESTER B.SC (HONS) FINAL EXAMINATION, 2018

[In Information Technology]

Course Code: IT 3105

Course Title: Signals & Systems

Time: 3 Hours

Full Marks: 60

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

1. a) Show the representation of a system. Mention different types of system 4
b) Write properties of Linear Time-Invariant systems. 3
c) A system has the input-output relation given by $y[n] = T\{x[n]\} = nx[n]$. Determine whether the system is (a) memoryless, (b) causal, (c) linear, (d) time-invariant, or (e) stable. 5

2. a) Show that the complex exponential signal $x(t) = e^{j\omega_0 t}$ is periodic and that its fundamental period is $2\pi/\omega_0$. 4
b) i. Find the even and odd components of signal $x(t) = \cos(t) + \sin(t) + \sin(t)\cos(t)$. 4
ii. Consider a discrete-time signal, $x[n] = \begin{cases} 1, & -2 \leq n \leq 2 \\ 0, & |n| > 2 \end{cases}$, Find $y[n] = x[3n-2]$.

- c) Sketch the waveform of the following signals: 4
i. $x(t) = u(t+1) - 2u(t) + u(t-1)$
ii. b) $x(t) = r(t+1) - r(t) + r(t-2)$

3. a) Find the Fourier coefficient C_n for signal $x(t)$ shown in fig. 1. 3

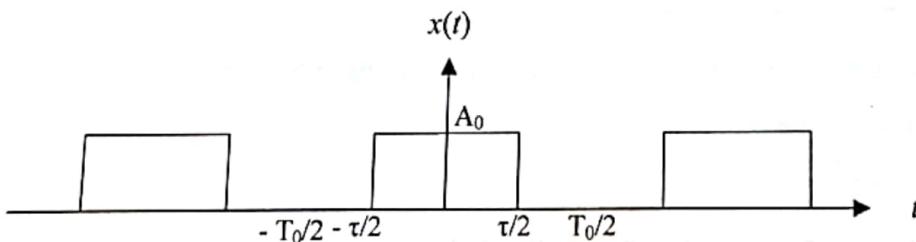


Fig. 1

- b) How Fourier series of any periodic signal can be derive using trigonometric representation? 6
- c) Derive the Parseval's power theorem. 3

4. a) Express the Fourier transform of a rectangular pulse. If $y(t) = x(t) \cos(t)$ and Fourier transform of $y(t)$ is given as $\tilde{Y}(\omega) = \begin{cases} 2, & |\omega| \leq 2 \\ 0, & \text{otherwise} \end{cases}$; Then find $x(t)$.

- b) Write and derive the shifting properties of Fourier transform for both time and frequency domain.
- c) Find the Fourier transform of the signal $x(2t-3)$.

5. a) Write the properties of Z-transform.

- b) The Z-transform of a signal is given by $C[Z] = \frac{1z^4(1-z^4)}{4(1-z^{-1})^2}$, Find its final value.

- c) A finite sequence $x[n]$ is defined as $x[n] = \{5, 3, -2, 0, 4, -3\}$, Find $X(z)$ and its ROC.

- d) Determine the Z-transform and ROC of $x[n] = -u[-n+1] + \left(\frac{1}{2}\right)^n u[n]$.

6. a) What are the various representations of signal? Why is a signal converted from one representation to another?

- b) If $x(t)$ is an integrable continuous-time signal, then write the equation of Fourier transform $X(\omega)$ of this signal. How $x(t)$ can be constructed from $X(\omega)$?

- c) Briefly explain the following properties of Fourier transform:

- i) Time Scaling
ii) Time Reversal

- d) What is the significant of impulse response (IR) for LTI system?

7. a) Determine the Laplace transform of the following functions:

i) $h(t) = e^{2t} + \cos(6t) + 3\sin(2t)$
ii) $x(t) = 5e^{-4t} + 4\cos(3t) + 9\sin(3t)$

- b) Determine the inverse Laplace transforms of the functions given below:

i) $F(s) = \frac{6s}{s^2+25} + \frac{3}{s^2+25}$
ii) $H(s) = \frac{19}{s+2} - \frac{1}{3s-5} + \frac{7}{s^5}$

- c) Show that the z-transform of $x[n] = \cos(an)$ is $X(z) = \frac{z(z-\cos(a))}{(z^2-2\cos(a)z+1)}$ (where a is a real number)



INSTITUTE OF INFORMATION TECHNOLOGY
3RD YEAR ~~2ND~~ SEMESTER B. SC. IN INFORMATION TECHNOLOGY
15th JAHANGIRNAGAR UNIVERSITY

Final Examination 2018
Course Code: IT 3109
Course Title: Simulation and Modeling

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) What is simulation? Explain why do we need to use simulation? [4]
(b) Briefly state the procedure of simulation [4]
(c) Give some examples where simulation is used to conduct research or operations [4]
2. (a) When is a system called Single Queue Single Server System? Explain it with an example. [4]
(b) Suppose virtual customers are arrived with the following inter-arrival time and service time:
 $A_1 = 0.4, S_1 = 2.0; A_2 = 1.2, S_2 = 0.7; A_3 = 0.5, S_3 = 0.2;$
 $A_4 = 1.7, S_4 = 1.1; A_5 = 0.2, A_6 = 1.4, A_7 = 1.9$
If $Q(t)$ is the queue length at the time t and $B(t)$ is the busy function against t . Construction area under $Q(t)$ and $B(t)$.
(c) Calculate expected utilization of the server $u(n)$ and comment on the result. [4]
3. (a) Define Negative Binomial Distribution and geometric distribution. Write the application of these distribution in simulation. [4]
(b) Chi-square Goodness of fit test is widely use after a simulation performed, what are the processes of conduction this test and why do researchers use this test? [4]
(c) What are the application of Q-Q and P-P plot? Construct a Q-Q plots for the inter arrival time of customers 10, 12, 18, 22 in seconds. [4]
4. (a) What is Monte Carlo Simulation? Explain briefly three basic types of parameters to describe the distribution. [4]
(b) Explain method of moments and Maximum Likelihood Estimator. [4]
(c) Consider an M/M/1 queuing system with an inter arrival rate 0.03 and service rate 0.6. Compute the system load and show that the system is stable or not? [4]

5. (a) Consider the grocery store with one checkout counter. Prepare the simulation table for four customers and find out average delay in queue, the time-average number of customers in queue, and the proportion of time the server is busy. The inter arrival time (IAT) and the service time (ST) are given in minutes. [10]
- IAT: 0.4, 1.2, 0.5, 1.7, 0.2, 1.6, 0.2, 1.4, 1.9
 ST: 2.0, 0.7, 0.2, 1.1, 3.7, 0.6
- Assume first customer arrives at $t = 0$.
- (b) For a single server queuing system, suppose that we did not want to estimate the expected average delay in queue; the model structure and parameters remain the same. Does this change the state variables? If so, how? [2]
6. (a) Describe the evaluation of the following queuing system by a Markov chain. [5]
 i) M/M/ ∞ Queue ii) M/M/m Queue iii) M/M/m/m Queue
- (b) Consider a random variable X which takes on values 1 and 2 with probability 0.25 and 0.75, respectively (i.e., $Pr[x = 1] = 0.25$ and $Pr[x = 2] = 0.75$). Determine the mean and variance of X . Plot the probability density function (pdf) and probability distribution function (PDF) of X . [5]
- (c) What properties should random numbers have? [2]
7. (a) What is a confidence interval? How can the width of a confidence interval be reduced? [2]
- (b) Explain the following heuristic procedures for comparing fitted distributions with the true underlying distribution. [4]
 i) Density-Histogram Plots
 ii) Comparison Frequency
- (c) A professor wants to find out students' monthly income during summer vacation. Past year figures shows that the mean and variance are Tk.8000 and Tk.400 respectively. The professor thus hypothesizes the mean as Tk.8000, and Tk.400 respectively. [6]
 After the vacation, the professor wants to verify if his hypothesis is correct, and adopts a significance level (α) of 0.05 in testing. He selects 100 students from population, and record down their salary. The sample mean among these 100 students is Tk. 7,800. (Consider, z (the number of S.D. deviated from the mean) = 1.96 for the value of 0.975). How do you test the hypothesis of the professor?



**Institute of Information Technology
Jahangirnagar University**

2nd Semester of M.Sc. Final Examination-2018

**Course Code: IT-5210
Total Marks: 60**

**Course Title: E-Commerce & E-Governance
Time: 3 Hours**

**Answer any FIVE (05) from the following questions.
Figures at the right indicate the marks.**

1. a. Recently young generation of Bangladesh are becoming more interested in doing business rather than doing job. 6
i) Why?
ii) How this may affect the socio-economic condition of Bangladesh? Explain.
 - b. Briefly explain how people who are doing business over Facebook are using Facebook as broker.
 - c. Write down some disadvantage of e-commerce from business perspective.
2. a. "Perhaps no area of business has been more affected by Internet and mobile platform technologies than marketing and marketing communications"----explain. 4
b. Why segmentation is required? Which factors must be considered doing segmentation? 5
c. Why psychographic segmentation is required? Explain with example. 3
 3. a. Discuss in detail about the security issues for which electronic cash is transferred over internet with an example. 4
b. Write about the security service that are to be offered in E-Payment systems. 4
Discuss any one E-Payment system in detail.
 - c. Discuss the various threats involved in client server communications and how are they encountered in EC business. 4
4. a. How a popular search engine can force an e-commerce site to be commercially dead? 4
Explain with example.
b. Which factors should be considered when two companies are affiliating with each other? 6
c. How content relevance is important in organic ranking? 2
 5. a. Why anchor text is important in SEO? Explain. 3
b. What is "Content farm"? How content farming technique can turn a website in number one position of a search engine? Explain with example. 4
c. Briefly describe the procedure that must be followed if you want to open an online auction house. 5
 6. a. Any communication system consists of three parts: client, server and the channel. When we are using SSL protocol which part of a communication system we are trying to secure and how we are doing that? Explain with block diagram. 4
b. What was the problem that SSL protocol couldn't solve? How that problem be addressed and solved later? Explain. 4
c. Explain the use of block chain in BitCoin. Why is it required? 4
 7. A new start-up company proposes to develop an electronic wallet, a device that can cryptographically hold electronic money, data, credit card numbers etc. Such a device might, for example, be included in a mobile phone. 8
a. Explain how network externalities affect the introduction of such a device. 3
b. Explain some of the legal and regulatory issues affecting such a device. 3
c. Sketch out the back-end processing and infrastructure that would be needed to support such a device. 3
d. Would such a device increase the overall security of a transaction? Justify your answer. 3



INSTITUTE OF INFORMATION TECHNOLOGY
JAHANGIRNAGAR UNIVERSITY
2nd Semester of M.Sc. Final Examination-2017

Course Code: IT-5210 Course Title: E-Commerce & E-Governance

TOTAL MARKS: 60

TIMES: 3 HOURS

ANSWER ANY FIVE (5) QUESTIONS

1. a. Discuss the present scenario and future prospect of e-commerce in Bangladesh. [5]
b. Suppose Lenovo computer company wants to purchase their hardware from IBM and for that they provided their requirements in details in XML format and sent it to IBM. Write down the further procedure of transaction between Lenovo and IBM along with block diagram. [5]
c. What is the main source of revenue generation of Facebook? In business perspective it is following which model? [2]
2. a. Why a good supply chain management is required in e-commerce? How this chain management can be improved? [5]
b. Even though online auction is more popular than traditional auction but there are some problems in online auctions that is very tough to deal with. Briefly address those problems along with your proposed solution. [5]
c. How online auction differs from traditional auction? [2]
3. a. What is e-marketing? Why e-marketing is called "permission marketing"? Justify your answer. [4]
b. Affiliate marketing can reach more customers than any other e-marketing strategy but sometimes advertising is more beneficial than affiliate marketing in prospect of reaching mass people. When? [4]
c. If we want to do e-business involving Generation Y than how we can earn the revenue? Propose your suggestion with proper logic. [4]
4. a. Why market segmentation is important? Explain. [2]
b. Why psychographic segmentation is required over demographic segmentation? Explain with example. [3]
c. What is the difference between attitude and behaviour? How these information is helpful in e-marketing? [4]
d. Why cookie is important in e-commerce? Explain and also describe how it works. [3]

5. a. How e-Governance differ from e-democracy? Write down the components and delivery models of e-Governance. [3]
- b. In Bangladesh, national commitment for promotion of e-governance is exposed with many of the governmental policies and activities. Briefly describe some visible e-governance initiatives, with particular reference to the ministries and divisions in the Bangladesh Secretariat. [5]
- c. How e-Governance can change the total working procedure of the Government of Bangladesh? [4]
6. a. What do you mean by 'Digital Bangladesh'? What are the objectives of Digital Bangladesh? [3]
- b. How can e-Government be implemented through the vision of Digital Bangladesh? [2]
- c. List some factors that are needed to implement Digital Bangladesh. [2]
- d. Discuss some appreciated steps taken by the government for establishing Digital Bangladesh. [5]
7. a. What was the major problem of online payment system before SET protocol was introduced and implemented? How SET protocol solved that problem? Explain. [3]
- b. Briefly describe the EFT procedure using automated clearing house. [4]
- c. Write down the algorithm for making an e-money anonymous. [4]



INSTITUTE OF INFORMATION TECHNOLOGY
JAHANGIRNAGAR UNIVERSITY
2nd Semester of M.Sc. Final Examination-2017

Course Code: IT-5210 Course Title: E-Commerce & E-Governance

TOTAL MARKS: 60

TIMES: 3 HOURS

ANSWER ANY FIVE (5) QUESTIONS

1. a. Discuss the present scenario and future prospect of e-commerce in Bangladesh. [5]
b. Suppose Lenovo computer company wants to purchase their hardware from IBM and for that they provided their requirements in details in XML format and sent it to IBM. Write down the further procedure of transaction between Lenovo and IBM along with block diagram. [5]
c. What is the main source of revenue generation of Facebook? In business perspective it is following which model? [2]

2. a. Why a good supply chain management is required in e-commerce? How this chain management can be improved? [5]
b. Even though online auction is more popular than traditional auction but there are some problems in online auctions that is very tough to deal with. Briefly address those problems along with your proposed solution. [5]
c. How online auction differs from traditional auction? [2]

3. a. What is e-marketing? Why e-marketing is called "permission marketing"? Justify your answer. [4]
b. Affiliate marketing can reach more customers than any other e-marketing strategy but sometimes advertising is more beneficial than affiliate marketing in prospect of reaching mass people. When? [4]
c. If we want to do e-business involving Generation Y than how we can earn the revenue? Propose your suggestion with proper logic. [4]

4. a. Why market segmentation is important? Explain. [2]
b. Why phycographic segmentation is required over demographic segmentation? Explain with example. [3]
c. What is the difference between attitude and behaviour? How these information is helpful in e-marketing? [4]
d. Why cookie is important in e-commerce? Explain and also describe how it works. [3]

5. a. How e-Governance differ from e-democracy? Write down the components and delivery models of e-Governance. [3]
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INSTITUTE OF INFORMATION TECHNOLOGY
JAHANGIRNAGAR UNIVERSITY
3rd YEAR 2nd SEMISTER B.Sc. (HONS.) FINAL EXAMINATION-2014

COURSE CODE: IT- 3207

TOTAL MARKS: 60

COURSE TITLE: MICROPROCESSOR AND INTERFACING

TIMES: 3 HOURS

ANSWER ANY FIVE (5) QUESTIONS

1. a) Discuss the general functions of all general-purpose registers of 8086. 6
b) Explain the special function of each register and instruction support for these functions. 6
2. a) How does an 8086 microprocessor generate a 20 bit address despite of being a 16-bit processor? 3
Explain with an example.
b) If you are provided with two different processors having two different architectures: Harvard architecture and Von Neumann architecture, what would be your choice if you are required to come up with the best between these two processors having the fastest execution time and why? 2
c) Draw a simple block diagram of a microprocessor based system. 3
d) What are the differences between microprocessor and microcontroller? 2
e) What are the steps of instruction cycle? You could use appropriate illustrations. 3
3. a) Draw the complete architecture of 8086. 2
b) Consider the following scenario: IF = 1; What would happen if (i) a power failure occurs and (ii) an external interrupt signal is arrived. Explain with proper reasoning. 3
c) Describe the Index registers of 8086. 4
d) Describe the FLAG register. 2
4. a) What are the methods of addressing register data and immediate data? Describe with example. 2
b) If Direction Flag bit is set to 1 while [DS] = 200416, [SI] = 025016 and [DI] = 012916, after the execution of the following instruction: MOVS BYTE, what would be the scenario? The Op-code 'MOVS' causes a string variable BYTE to move from a source location to a destination location. 2
c) What do you mean by memory segmentation? Why is it used? 3
d) The segment registers CS, DS and SS have values 4000H, 6000H and 8000H respectively. What will be the 20 bit start and end addresses of the code, data and stack segments? 3
e) Why is instruction queue used? 2
5. a) Categorize the following instructions into their respective addressing modes: 3
 - i) MOV BX, [50H]
 - ii) MOV AX, [BX]
 - iii) MOV AX, [501H+BX]
 - iv) POP AL
 - v) MOV DX, PATTERN[BX+SI]
 - vi) MOV BP, [BX+SI]

- b) What do you mean by maximum mode of operation? Why bus controller is used in maximum mode? 2
- c) How is machine cycle utilized to demultiplex address and data signals in 8086 based systems? 2
- d) What is assembly language? Mention some disadvantages of using assembly language in programming. 2
- e) Why is stack used? How stack segment (SS) register is used when stack is accessed? You could use appropriate illustration. 3
6. a) Draw the bus buffering and demultiplexing circuit of 8086 6
- b) Draw an interfacing circuit for a bifilar stepper motor with 8086. 6
7. a) What is an interrupt vector table? Describe how interrupt can be used in data acquisition. You could use appropriate illustrations. 4
- b) Choose any 8 bit ADC and explain how it can be interfaced with 8086 using an 8255. 2
- c) Why is DMA used? 2
- d) Describe strobe I/O methods with appropriate illustrations. 4



**INSTITUTE OF INFORMATION TECHNOLOGY
JAHANGIRNAGAR UNIVERSITY
3RD YEAR 2ND SEMESTER FINAL EXAMINATION-2014**

**COURSE CODE: IT-3201
TOTAL MARKS: 60**

**COURSE TITLE: SOFTWARE ENGINEERING
TIME: 3 HOURS**

ANSWER ANY FIVE (5) QUESTIONS

1. a) A software firm wants to implement a SDLC model in their recent project. But problem is that the project has no concrete budget, time and functional specification. But the client wants to pay what they demand. Now company decided to develop the software with a SDLC model. Which model will be most application for this type of risk oriented project? Compare your mentioned model with others in short. 6
- b) Explain why programs which are developed using evolutionary development are likely to be difficult to maintain. 3
- c) Show the steps of the software development life cycle with a brief description. 3
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. 9
 - i. Draw the project activity network.
 - ii. Determine the critical path.
 - iii. What is the probability of completing the project in scheduled time?

<i>Activity</i>	<i>t_o-t_m-t_p</i>	<i>Activity</i>	<i>t_o-t_m-t_p</i>
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? Is it possible to issue a deliverable before certain milestone? If Yes justify your answer. 3

3. a) A software project has the following activities and management asked the project manager to reduce time to be done in earliest possible time. What will be the final cost of least software development time?

Activity	Dependencies	Normal time	Crash time	Normal Cost	Crash Cost
A	--	4	2	10000	11000
B	A	3	2	6000	9000
C	A	2	1	4000	6000
D	B	5	3	14000	18000
E	B,C	1	1	9000	9000
F	C	3	2	7000	8000
G	E,F	4	2	13000	25000
H	D,F	4	1	11000	18000
I	H,G	6	5	20000	29000

- b) An offshore company has taken a software development task to complete within 36 month. 5
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?

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

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) Why open-plan and communal offices sometimes less suitable for software development than 4 individual offices? Under what circumstances do you think that open-plan environments might be better?

5. a) A business application having 32200 lines of code needed. The disproportionate effort of the 4 project is 0.39. Determine:

- Effort of the project
- Time consumption needed for the project using COCOMO2 formulae.

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.

6. a) 8

```
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) What is the overall strategy for software testing? What do you mean by regression testing? 4

7. a) What is risk in software engineering? Mention a strategic approach to software testing. 2

- b) How many types of objects are there in an object model? Show how can we express them in UML? 4

- c) Identify the appropriate relations among underlined objects and express them in diagrams: 6
- i. Students can take highest four courses in a semester and each course contains 10 to 50 students.
 - ii. Two points make a line and more than three points make polygons.
 - iii. Person can be students, teachers and office stuffs. Students can be under grade students and post grade students. Teachers can be full time and part time. Office stuffs can be officers and support stuffs.



INSTITUTE OF INFORMATION TECHNOLOGY

JAHANGIRNAGAR UNIVERSITY

3rd YEAR 2nd SEMISTER B.Sc. (HONS.) FINAL EXAMINATION-2014

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