



**DEPARTMENT OF COMPUTER SCIENCE
UNIVERSITY OF BARISHAL
FINAL EXAMINATION**

Course Title: Software Engineering and Information System Design
Course Code: CSE-3103
3rd Year 1st Semester
Session: 2021-22(Admission: 2019-20)

Marks: 60

Time: 3 Hours

(Answer any FIVE questions)

1. a) Write down the principles that need to be followed during Software Development life cycle. [3]
b) Imagine you are leading a software development team for a project with rapidly changing requirements. Which software process model would you recommend, and why? Provide a detailed explanation of how this model accommodates changes efficiently and ensures successful project delivery. [3]
c) Compare and contrast the Incremental Model and Spiral Model. Highlight the key differences in their approach to development, risk management, and adaptability to changing requirements. Discuss scenarios where one model might be more suitable than the other. [3]
d) Startups often operate in dynamic environments with limited resources. Discuss how established software process models can be tailored to suit the specific needs and constraints of startup projects. Provide recommendations and examples based on the Agile principles or other iterative models. [3]
 2. a) The requirements engineering process is accomplished through the execution of seven distinct functions. Specifically, requirements engineering encompasses requirements elicitation, analysis, specification, verification, and management. Briefly describe these processes. [3]
b) Differentiate between functional and non-functional requirements. Provide examples of each and discuss the significance of non-functional requirements in the development process. Explain how non-functional requirements impact system architecture and design. [3]
 - c) Define people, process, and product. Explain the process quality and product quality in details. [2]
d) Test early, test often. Prevention is better than the cure in software development. Justify your answer considering the following diagram. [2]
-
- e) Explain the concept of user stories in Agile development. How do user stories contribute to effective requirements management in an Agile environment? Discuss the characteristics of well-written user stories. [2]
 3. a) Define design pattern and code smells. Imagine you are tasked with designing the pricing system for an online shopping platform that sells a variety of products, ranging from **electronics to fashion items**. The platform wants to implement a flexible pricing system that can accommodate **different types of promotions and discounts**, allowing them to adapt their pricing strategy dynamically. To achieve this, the Strategy Design Pattern is considered an effective solution. Now implement the overall system with implementation code. [5]
b) In the virtual pet simulation game, players have the opportunity to adopt and care for virtual pets that live in distinct habitats, ranging from lush jungles to icy tundras. Each habitat comes with its own set of challenges and interactions, and pets within the same habitat share common traits. The will be employed to create families of related objects, ensuring that pets and habitats are created in a cohesive and interchangeable manner. What design pattern can be used to implement the system in details? [5]

- c) Why singleton design pattern is used? Write down the reasons along with its implementation. [3]
4. a) What do you mean by Code Smells and Refactoring? Define the concept of micro-services architecture in the context of web-based software design. Discuss the benefits and challenges of adopting a micro-services approach. Provide an example scenario where microservices would be advantageous. [3]
- b) Write down the following code smells problems with solutions [3]
- Feature Envy
 - Middle man
 - Shortgun Surgery
 - Refused Bequest
 - Long method
 - Primitive obsession
- c) Define Flaky test smells. Write short notes on Assertion Roulette, Magic Number, Eager Test, Sensitive Equality. [3]
- d) Identify test smells in the following code snippets with detail explanation. [3]
- i. "


```
public void test_2() throws Exception {
    String sql = "create database test_cascade for 'ALIYUN$test@aliyun.com' options(resourceType=ecu ecu_type=c1 ecu_count=2)";
    MySqlStatementParser parser = new MySqlStatementParser(sql);
    SQLStatement stmt = parser.parseStatement();
    String output = SQLUtils.toMySQLString(stmt);
    Assert.assertEquals("CREATE DATABASE test_cascade FOR 'ALIYUN$test@aliyun.com' OPTIONS (ecu_type=c1 ecu_count=2 resourceType=ecu )", output);
  }"
```
- ii. "


```
public void test_multimap() throws Exception {
    Map<String, Integer> map = ImmutableMap.of("a", 1, "b", 1, "c", 2);
    SetMultimap<String, Integer> multimap = Multimaps.forMap(map);
    Multimap<Integer, String> inverse = Multimaps.invertFrom(multimap, HashMultimap.<Integer, String>create());
    String json = JSON.toJSONString(inverse);
    assertEquals("{\"1:[\"a\",\"b\"],2:[\"c\"]}", json);
  }"
```
- iii. "


```
public void test_for_issue() throws Exception {
    ExtendedServletRequestDataBinder binder = new ExtendedServletRequestDataBinder(new Object());
    String json = JSON.toJSONString(binder);
    System.out.println(json);
    Assert.assertTrue(json.indexOf("$ref") >= 0);
  }"
```
5. a) What do you mean by testing? Do you think CMMI level is necessary? Justify your answer. [2]
- b) Write short notes on: [4]
- Reliability, Security, Downtime, authentication
 - Error, bugs, mistakes, and faults
 - Black Box, White Box, and Gray Box Testing
- c) Define basic path testing and test case. How to find out the cyclometric complexity. [2]
- d) In the realm of software development, articulate a concise definition of project management and delve into the distinctive qualities that set apart an exceptional project manager. Illustrate your response with a real-world example, demonstrating how these qualities contribute to the success of a software project. [4]

Scenario: Online Library Management System

Background:

The university recognizes the need for an efficient and modern Online Library Management System (OLMS) to enhance the overall management of its extensive collection of books, journals, and academic resources. The university library serves students, faculty, and librarians, each with distinct roles and responsibilities within the system.

The OLMS must address the following key requirements:

- User Authentication: Students, faculty, and librarians should have secure authentication mechanisms to access the system.
- Search and Filter Functionality: Users should be able to easily search and filter the library catalog to find books based on titles, authors, genres, or other relevant criteria.
- Borrowing and Returning: Users should be able to borrow books, and the system must keep track of borrowed items. A return mechanism should also be in place.
- Notification System: The system needs to have a notification feature to alert users about overdue items and related fines.
- Admin Functionalities: Librarians, as administrators, require functionalities to manage the library inventory, update the catalog with new acquisitions, and monitor system logs.

6. a) Briefly elaborate the overall scenario and find out the required requirements. [3]
- b) Determine all required activity and swimlane diagram for the system. [4]
- c) Draw the state and sequence diagram for the scenario. [5]
7. a) Find out all possible use case for the scenario along with use case diagram. [6]
- b) Which type of software testing can be used to test the software with justification? [3]
- c) Draw required data flow diagram for the system. [3]
8. a) Derive the potential classes from the user story in 6(a) with CRC class cards. [6]
- b) Write down all possible test cases in detail for the system. [3]
- c) Draw an E-R diagram for the system. [3]



FINAL EXAMINATION

Course Title: Economics

Course Code: HUM-3111

3rd Year 1st Semester

Session: 2019-20

(Answer Any Four Questions)

Marks: 60

Time: 2 Hours

1. a) Define the following terms with examples [3*5]
Economics, Micro-economics, Macro-economics, GDP, Consumer surplus.
2. a) What is supply and demand? How supply and demand model works? [5]
b) Discuss the subject matter of economics. [5]
c) Briefly explain the difference between positive and normative economics. [5]
3. a) Define consumption. Briefly explain the determinants of consumption [7]
b) The importance of Consumption can be observed in every branch of economics. [8]
Justify the statement.
4. a) Define localization. Briefly explain the cases of localization. [7]
b) Explain the consequences of localization. [8]
5. a) What are economics of scale? Explain the effects of economies of Scale on production [5]
costs.
b) Briefly explain the diseconomics of scale. [5]
c) Briefly explain the internal and external economics of scale. [5]
6. a) Briefly explain the theory of production with examples. [5]
b) Explain total product, marginal product and average product of labour with examples. [5]
c) How the law of diminishing returns works? [5]



DEPARTMENT OF COMPUTER SCIENCE
UNIVERSITY OF BARISHAL
FINAL EXAMINATION
Course Title: Numerical Methods
Course Code: CSE-3107
3rd Year 1st Semester
Session: 2019-20(Admission)
(Answer Any Five Questions)

Time: 3 Hours

Marks: 60

1. a) Why are numerical methods considered indispensable in the realm of computer science, and how do they address challenges posed by mathematical functions that lack analytical solutions? [4]
- b) Discuss Newton-Raphson method with geometrical significance to find a root of the equation $f(x) = 0$ in $[a, b]$. [4]
- c) Use Newton-Raphson method to find a real root of the equation $3x + \sin x = e^x$ correct up to 5 decimal places. [4]
2. a) Why we use operators in Numerical Methods? Establish the relation between the following various operators
i. $\Delta - \nabla \equiv \Delta \nabla$ ii. $(1 + \Delta)(1 - \nabla) \equiv 1$ iii. $(1 + \Delta) \equiv (E - 1)\nabla^{-1}$ iv. $(\nabla + \Delta) \equiv \frac{\Delta}{\nabla} - \frac{\nabla}{\Delta}$ [4]
- b) Write down the code for finding a real root of the equation by $X^3 + X - 1 = 0$ using bisection method with initial value 0.6 and 0.8. [3]
- c) Show that the n^{th} difference of n^{th} degree polynomial is constant. [3]
- d) Construct a finite difference table for the function $f(x) = X^3 - 3X^2 + X + 6$ in the interval $2 \leq x \leq 3$ with $h=0.1$ [2]
3. a) Define both interpolation and extrapolation, and elucidate the distinct applications for each. [2]
Provide real-world examples showcasing how these techniques are employed in diverse fields to address specific challenges or make informed predictions. [3]
4. a) Population was recorded as follows in a village as follows. Estimate the population for the year 2001. [3]
- | | | | | | | |
|------------|------|------|------|------|------|------|
| Year | 1941 | 1951 | 1961 | 1971 | 1981 | 1991 |
| Population | 2500 | 2800 | 3200 | 3700 | 4350 | 5225 |
- b) Find a cubic polynomial in x which takes on the values -3, 3, 11, 27, 57 and 107, when $x = 0, 1, 2, 3, 4$ and 5 respectively. [3]
- c) Find the missing term in the following table [4]
- | | | | | | | |
|------|----|----|----|----|-------|-----|
| X | 10 | 15 | 20 | 25 | 30 | 35 |
| f(x) | 1 | 8 | -- | 64 | ----- | 216 |
- d) Write short notes on forward, backward and central differences with examples. [3]
- e) Write down the Newton-Gregory's formula for forward and backward interpolation with equal intervals. [5]
- f) The following table gives the population of a town during the last six census. Estimate using any suitable interpolation formula, the increase in the population during the period from 1986 to 1988. [3]
- g) The values of x and $f(x)$ are given below. With the help of given data construct a divided difference table and hence find the values of $f(3)$ and $f(10)$. [4]
- | | | | | | | |
|------|----|-----|-----|-----|------|------|
| X | 4 | 5 | 7 | 10 | 11 | 13 |
| f(x) | 48 | 100 | 294 | 900 | 1210 | 2028 |
5. a) If $y = A + Bx + CX^2$ and y_0, y_1, y_2 are the values of y corresponding to $x = a, a + h, a + 2h$ respectively, prove that $\int_a^{a+2h} y dx = \frac{h}{3}(y_0 + 4y_1 + y_2)$. [3]
- b) Do you know any Interpolation formula used for both equal and unequal intervals? Briefly explain the interpolation formula. [4]

- c) Find the cubic polynomial which takes the following values $y(0) = 1$, $y(1) = 3$, $y(3) = 31$, $y(6) = 223$, and $y(10) = 1011$ then find $y(2.5)$ using Newton's interpolation formula. [3]
- d) With the help of given data construct a divided difference table and hence find the values of $f(8)$ and $f(15)$. [2]

X	4	5	7	10	11	13
$f(x)$	48	100	294	900	1210	2028

6. a) Explain the concept of numerical integration. Compare and contrast the trapezoidal rule and Simpson's rule. Provide an example scenario where numerical integration is necessary in computer science or engineering. [3]
- b) Find the value of $I = \int_{0.2}^{1.4} (\sin x - x^{-1} + e^x) dx$ by using trapezoidal rule along with error in trapezoidal rule. [2]
- ~~c)~~ Write down the error of Simpson's 3/8 rule. [2]

7. a) Find the first and second derivatives for Newton's forward and backward interpolation formula. [4]
- b) Solve the system of linear equations by cremer's method [4]
- $$X - Y + Z = 2, \quad X + Y + Z = 6, \quad 2X - Y + 3Z = 9$$
- ~~c)~~ Solve the following system of linear equations by Gauss-Jordan method [4]
- $$3X + 2Y + Z = 6, \quad 4X + 3Y + 2Z = 9, \quad 7X + 5Y - Z = 11$$
8. a) Using Euler method, find an approximate value of y corresponding to $x = 2$, given that $\frac{dy}{dx} = x + 2y$ and $y(1) = 1$. [4]
- b) Use Taylor's series method to solve the equation [4]
- $$\frac{dy}{dx} = -xy, \quad y(0) = 1$$
- c) Use picard's method to find a solution of $\frac{dy}{dx} = 1 + xy$ up to third approximation, when $y(0) = 1$. [4]

*** Good Luck ***

Department of Computer Science and Engineering

Course Title: Computer Networks

Course Code: CSE-3105

3rd Year 1st Semester Final Examination

Admission Session: 2019-2020

Marks: 60

Time: 03 Hours

N.B.: Answer any **FIVE** questions out of the followings. All parts of each question must be answered consecutively. Right side of the question shows the maximum marks.

- ✓ 1.a) What is computer network? Describe the Network Criteria. 3
- b) What are the advantages of a multi-point connection over a P2P connection? 2
- c) Define protocol and Standards in Computer networks. 3
- d) What do you mean by ARPANET? Describe the physical topology of computer networks. 4
- 2.a) In the Go-Back-N protocol, the size of the send window can be $2m - 1$, while the size of the receive window is only 1. How can flow control be accomplished when there is a big difference between the size of the send and receive windows? Briefly Explain. 5
- b) If the data link layer can detect errors between hops, why do you think we need another checking mechanism at the transport layer in OSI Model? 4
- c) What do you mean by loopback interface? An organization is assigned the block 2000:1456:2474/48. What is the IPv6 address of an interface in the third subnet if the IEEE physical address of the computer is (F5-A9-23-14-7A-D2)₁₆? 3

- ✓ 3.a) You are given the following network address and subnet mask: 6

Network address: 192.168.10.0

Subnet mask: 255.255.255.252

i) How many subnets?	ii) How many hosts?
iii) What are the valid subnets	iv) Fill in the table below

Meaning	Subnet 1	Subnet 2	Subnet 3	Subnet 4	Subnet 5	Subnet 6
Subnet address						
First valid host						
Last valid host						
Broadcast address						

- b) If the data link layer can detect errors between hops, why do you think we need another checking mechanism at the transport layer in OSI model? 3
- c) How can NAT help in address depletion? Explain with necessary diagram. 3
- ✓ 4.a) What is Cryptography? Distinguish between passive and active attacks. 3
- b) What are the differences between message confidentiality and message integrity? Can you have one without another? Use the additive cipher with $k = 5$ to encrypt the plaintext "BU". Then decrypt the message to get the original plaintext. 4
- c) Consider sending 4000-byte IP datagram (including the 20 bytes IP header) into a link that has an MTU of 1200 bytes. Determine the values of the length field and the offset field in each fragment. 5

Ques) What is socket address? Compare TCP & UDP

IP Data
= MTU

- ✓ 5.a) Derive the routing table for the following Fig. 1. Can router R1 forward a packet with destination address 140.24.7.194? What will happen to the packet if this occurs?

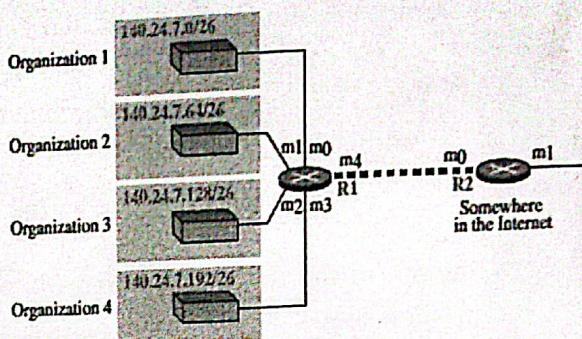


Fig. 1

3

- b) Show abbreviations for the following IPv6 addresses:

- i) 1234:0000:3456:0000:A058:0000:0000:F02F
 ii) 0000:0001:0000:0000:0000:56E2:24.120.12.90

3

- c) List three forwarding techniques and give a brief description of each.

3

- ✓ 6.a) What is Frame Relay? What is Frame Relay a better solution for connecting LANs than T-1 lines? 3
 b) What are the differences between IPv4 and IPv6 addressing? 3
 c) Briefly define sub-netting and super-netting. How do the subnet mask and super-net mask differ from a default mask in classful addressing? 3
 d) How does Frame Relay control congestion? What attributes are used for traffic control in Frame Relay? 3

- 7.a) What is RSA algorithm? Alice wants to send message a to Bob. Then Bob needs to select keys. Suppose, Bob chosen $p = 7$ and $q = 13$ in the RSA algorithm. Now, find the value of d . Also, encrypt the message "CSE" using Bob's public key so that he can only decrypt. For simplicity, do the encryption and decryption character by character. 5
 b) What is Digital Signature? How it can be implemented to provide message integrity service? 4
 c) The following shows the IPv6 datagram format. Compare it with IPv4 datagram format. 3

Version	Traffic Class	Flow Label		
Payload Length		Next Header	Hop Limit	
Source Address (128)				
Destination Address (128)				

- 8.a) Describe about the shift cipher and transposition ciphers with example. 4
 b) What do you mean by the "Two-Node Loop Instability" problem with distance vector routing? Explain with necessary diagrams. Also, provide a solution to the problem. 4
 c) Write short notes on (any two): 4
 i) Packet Switching ii) Circuit Switching iii) HTTP iv) FDDI

UNIVERSITY OF BARISHAL
FINAL EXAMINATION

Final Examination-2023

Course Code: HUM 3109. Course Name: Financial and Management Accounting

Time: 3 Hours. Full Marks: 60

Answer any Four Question

1.	a)	Define Accounting. Who are the users of accounting information?	5
	b)	What are the importance of financial accounting?	5
	c)	Distinguish between financial accounting and management accounting.	5

2.	a)	What are the steps in the recording process?	3
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- b) Big box store is located in midtown Madison. During the past several years, net income has been declining because of suburban shopping centers. At the end of the company's fiscal year on November 30, 2017, the following accounts appeared in two of its trial balances.

Account titles	Unadjusted	Adjusted	Account Titles	Unadjusted	Adjusted
Accounts payable	25,200	25,200	Notes payable	37,000	37,000
Accounts receivable	30,500	30,500	Owner's capital	1,01,700	1,01,700
Accumulated dep- equipment	34,000	45,000	Owner's drawing	10,000	10,000
Cash	26,000	26,000	Prepaid insurance	10,500	10,500
Cost of goods sold	5,18,000	5,18,000	Property taxes exp.		2,500
Freight-out	6,500	6,500	Property tax payable		2,500
Insurance expense		7,000	Sales revenue	7,20,000	7,20,000
Interest expense	6,400	6,400	Sales commission exp.	6,500	11,000
Interest revenue	2,000	2,000	Sales commission payable		4,500
Inventory	32,000	32,000	Sales return and allowance	8,000	8,000
			Utilities expense	8,500	8,500

Instructions :

- Prepare a multiple-step income statement, an owner's equity statement, and a classified balance sheet. Notes payable are due in 2020.
- Journalize the adjusting entries that were made.
- Journalize the closing entries that are necessary.

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3.	a)	Define cost. What are the different types of costs?	3
----	----	---	---

b) The following information has been taken from the records of M Co.:

Inventories	January 1, 2021	December 31, 2021
-------------	-----------------	-------------------

Finished goods	Tk. 5,000	Tk. 7,000
Work-in-process	15,000	9,000
Materials	10,000	12,000

Materials purchases	Tk.
	100,000
Direct labor	200,000
Freight in	3,000
Sales salaries and expenses	25,000
Other factory expenses	4,000
Freight out	2,000
Factory insurance	12,500
Depreciation – machinery	40,000

Purchase returns and allowances	3,000
Sales	350,000
Purchase discounts	800
Sales discounts	2,000

Required:
Prepare a cost statement for the year ended 31 December 2021.

3

4. a) Distinguish between break-even point and margin of safety?
b) Voltar Co. manufactures and sells a specialized cordless telephone for high electromagnetic radiation environment. The company's contribution format income statement for the most recent year is given below:

	Total (Tk.)	Per Unit (Tk.)
Sales (20,000 units)	1,200,000	60
Variable expenses	900,000	45
Contribution margin	300,000	15
Fixed Expenses	240,000	
Net Operating income	60,000	

Management is anxious to increase the company's profit and has asked for an analysis of a number of items.

Required:

1. Compute the company's CM ratio and variable expense ratio.
2. Compute the company's break-even point in both unit sales and tk. sales.
3. Assume sales increase by tk. 400,000 next year. If cost behavior pattern remain unchanged, by how much will the company's net operating income increase?
4. Refer to the original data. Assume that next year management wants the company to earn a profit of at least tk. 90,000. How many units will have to be sold to meet this target profit?
5. Refer to the original data. Compute company's margin of safety in both tk. and percentage form.
6. a. Compute the company's degree of operating leverage at the present level of sales.
b. Assume that through a more intense effort by the sales staff, the company's sales increase by 8% next year. By what percentage would you expect net operating income to increase? Use the degree of operating leverage to obtain your answer.
- c. Verify your answer to (b) by preparing a new contribution format income statement showing an 8% increase in sales.
7. In an effort to increase sales and profits, management is considering the use of a higher-quality speaker. The higher-quality speaker would increase variable costs by \$3 per unit, but management could eliminate one quality inspector who is paid a salary of \$30,000 per year. The sales manager estimates that the higher-quality speaker would increase annual sales by at least 20%.
 - a. Assuming that changes are made as described above, prepare a projected contribution format income statement for next year. Show data on a total, per unit, and percentage basis.
 - b. Compute the company's new break-even point in both units and dollars of sales. Use the formula method.
 - c. Would you recommend that the changes be made?

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5. a) What is the basic difference between process costing and job-order costing?
b) Old company Link Inc. produces sausages in three production department – Mixing, Casting and Curing and Packaging. In the Mixing department, meats are prepared and ground and then mixed with spices. The spiced meat mixture is then transferred to the Casting and Curing Department, with spices. The spiced meat mixture is then transferred to the Casting and Curing department, where the mixture is force-fed into casting and then hung and cured in climate-controlled smoking chambers. In the packaging department, the cured sausages are sorted, packed and labeled. The company uses the weighted average method in its process costing system. Data for September for Casting and Curing Department follow:

	Units	Percent Completed		
		Mixing	Material	Conversion
Work-in-process Inventory, September 1	1	100%	90%	80%
Work-in-process inventory, September 30	1	100%	80%	70%

Work-in-process Inventory, September 1	Mixing	Material	Conversion
Tk. 1,670	Tk. 90	Tk. 605	

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Cost added during September	Tk. 81,460	Tk. 6006	Tk. 42,490
Mixing cost represents the cost of the spiced meat mixture transferred in from the Mixing Department. The spiced meat mixture is processed in the Casting and Curing department in batches; each unit in the above table is a batch and one batch of spiced meat mixture produces a set amount of sausages that are passed on to the Packaging Department. During September, 50 batches (i.e., units) were completed and transferred to the packaging department.			

Required:

1. Determine the equivalent units for September for mixing, material and conversion.
2. Compute the cost per equivalent unit for September for mixing, material and conversion.
3. Determine the total cost of ending work in process inventory and the total cost of units transferred to the packaging department in September.
4. Prepare a cost reconciliation report for the casting and curing department for September.

5. a) What is NPV? Can it ever be negative? Explain. 5

b) L Co. is considering a project that would have a five year life and require a tk. 2,400,000 investment in equipment. At the end of the 5 years, the project would terminate and the equipment would have no salvage value. The project would provide net operating income each year as follows:

	Tk.
Sales	3,200,000
Variable expenses	1,800,000
Contribution margin	1,400,000
Fixed expenses	
Advertising, salaries and other fixed out of pocket costs	tk. 700,000
Depreciation	tk. 300,000
Total fixed expenses	1000,000
Net operating income	<u>400,000</u>

The company's discount rate is 12%

Required:

1. Compute annual net cash inflow from the project
2. Compute the project's net present value. Is the project acceptable.
3. Find the project's internal rate of return to the nearest whole percent.
4. Compute the project's payback period.
5. Compute the project's simple rate of return.



UNIVERSITY OF DARBHANGA
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
3rd Year 1st Semester Final Examination-2023

Session: 2019-20

Course Title: Microprocessor and Microcontroller, Course Code: CSE-3101

Time: 3 hours

Marks: 60

Answer any five Questions from the followings.

1.	a)	Draw the internal architecture of 8086. Describe the functionalities of Execution Unit and Bus Interface Unit.	[5]
	b)	Write down the basic functionalities of general purpose registers of 8086.	[4]
	c)	Write down the major features of various processor generations.	[3]
2.	a)	Why need flag registers? Explicate the main objectives of all flag registers using the 16 bit representation.	[4]
	b)	Why do we need various addressing modes of 8086? Describe prominent addressing modes with suitable diagram and assembly code examples.	[2+6]
3.	a)	What is physical memory? A memory location has physical address (80FD2h). In what segment it have offset BFD2h?	[4]
	b)	Discuss how an array can be declared in 8086 processor with DUP.	[4]
	c)	Explain the concept of cache memory in microprocessors. What are its advantages, and how is it implemented in the system?	[4]
4.	a)	What do you mean by odd address bank and even address bank? How to address them using available prominent approach.	[5]
	b)	Explain how LOOP instruction works in assembly language? Write an assembly language program for For Loop to show the “CSE Department” as reverse string.	[5]
	c)	How instruction affect the Flags: SUB AX, BX [AX=90h, BX=30h] ADD AL, BL [AL=30h, BL=70h]	[2]
5.	a)	Draw the architecture of 8255. Describe the operating modes of 8255.	[6]
	b)	What do you mean by programmable peripheral interface (PPI)? Mention the role of 8255 PPI.	[3]
	c)	Write assembly code statement for each of the high level language assignments statements. i) $A=B*C-5/D$ ii) $B=(A-C)*D/7$	[3]
6.	a)	What is recursion? Write an assembly language program for calculating the factorial of 5.	[4]
	b)	Write short notes on: i) Logical Shift ii) Arithmetic Shift ii)ROL iv)ROR	[8]
7.	a)	What is Microcontroller? What are the advantages and disadvantages of Microcontroller?	[4]
	b)	What is the difference between timer and counter of microcontroller? List the factors to be considered for selection of microcontroller for particular application.	[4]
	c)	Differentiate between Memory mapped IO and IO mapped IO with reference to 8085 microprocessors.	[4]
8.	a)	Short notes on various types of jumping instruction : i) Signed Conditional Jumps ii) Unsigned Conditional Jumps iii) Single Flag Jumps	[6]
	b)	Write an assembly language program for comparing two string and concatenating two string	[6]