



**Gandaki University**  
**Bachelor in Information and Technology**  
Web Application - II (Code: CIT-208)

**Set A**

June 27, 2023

Time: 2 hr

*Mid Term Exam*

Maximum Marks: 50

Pass Marks: 20

- |  |       |
|--|-------|
| 1. Attempt all. Very Short Answer Questions  | [10]  |
| (a) What are the main components of the MVC architectural pattern?   | [2]   |
| (b) Write two differences between  | [4]   |
| i. Model and DB-Table  | [2]   |
| ii. FullStack and API Developments   | [2]   |
| (c) Write Full Form of   | [4]   |
| i. CRUD    ii. ORM    iii. UI/UX    iv. URL  |       |
| 2. Attempt any 5. Short Answer Questions   | [25]  |
| (a) How does the Model-View-Controller (MVC) pattern promote separation of concerns in software development? | [5]   |
| (b) What do you understand by request lifecycle? Illustrate the concept based on a MVC-based web framework.  | [5]   |
| (c) How does the MVC pattern support code reusability and maintainability?                                   | [5]   |
| (d) Discuss on drawbacks of using a MVC framework for web application development.                           | [5]   |
| (e) Discuss the importance of unit testing.  | [5]   |
| (f) What are some common use cases or scenarios where MVC is a suitable architectural choice?                | [5]   |
| 3. Attempt any 2. Long answer questions.   | [15]  |
| (a) Discuss about Normal Flow layout. Write HTML and CSS using flex and float for Figure 1.                  | [7.5] |

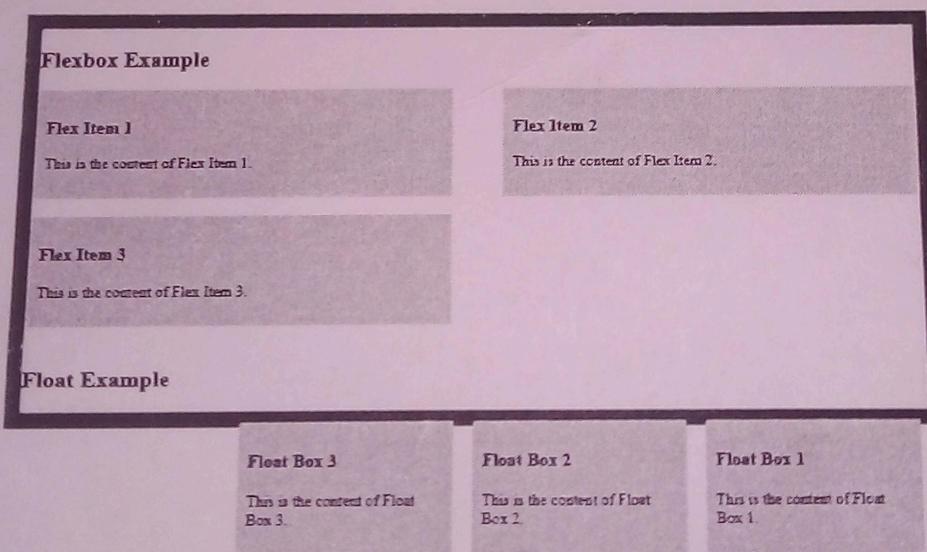


Figure 1: Flex and Float Layout Design

- |   |       |
|---|-------|
| (b) Explain about any CMS system that you know.   | [7.5] |
| (c) Write an application on MVC framework for CRUD operations on following fields :<br>firstname, middlename and lastname. Configure route, model, controller & view. | [7.5] |



**GANDAKI UNIVERSITY  
MIDTERM EXAMINATION**

Level: Bachelor

Semester - III

Year : 2080

Programme: BIT

Full Marks: 50

Course: Principles of Organization and Management

Time : 2 Hrs.

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

**Attempt all the questions.**

**Group A**

**$5 \times 2 = 10$**

**Brief Answer Questions (Any five):**

- 1 List any two limitation of scientific management approach.
- 2 State any four principles of bureaucratic theory.
- 3 What is business ethics.
- 4 List out the different approaches of corporate social responsibility.
- 5 What do you understand by MBO?
- 6 What do you mean by Unity of Command?

**Group B**

**$5 \times 5 = 25$**

**Short Answer Questions (Any five):**

- 1 Define management and explain the function of management.
- 2 Define planning. Explain the quantitative tools for planning.
- 3 Most of the today's literature is based on system theory. In this context examine the contribution and limitations of system theory
- 4 Explain the contemporary management challenges.
- 5 Who is a manager? Explain required managerial roles.
- 6 What do you mean by corporate governance? What are the measures to improve corporate governance?

**Group C**

**$2 \times 7.5 = 15$**

**Long Answer Questions (Any Two):**

- 1 Business is an economic institution operating in social-political environment. In this light of this statement define business environment and discuss each of the basic components of the general environment.
- 2 What is contingency theory? Discuss its features and limitations.
- 3 What is social responsibility? Explain the areas of social responsibility towards different stakeholders.



**GANDAKI UNIVERSITY  
MIDTERM EXAMINATION**

Level: Bachelor

Semester - III

Year : 2080

Programme: BIT

Full Marks: 50

Course: Software Engineering (CIT 209)

Time : 2 Hrs.

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

**Attempt all the questions.**

**Group A**

**Brief Answer Questions (Any five):**

**5x2= 10**

- 1 What are the different issues that affect software?
- 2 What do you mean by context modelling?
- 3 What is Software Requirement Specification (SRS)?
- 4 What is the importance of verification and validation?
- 5 Differentiate between black box testing and white box testing.
- 6 What do you mean by refactoring?

**Group B**

**5x5= 25**

**Short Answer Questions (Any five):**

- 1 Explain requirement engineering process.
- 2 Explain product log and backlog with example.
- 3 What do you mean by user requirement and system requirement? Write one example of user requirement for Library Management System and its corresponding system requirements.
- 4 "Internet Technology (IT) is one of the enablers for the business process reengineering". Give suitable example to support the statement.
- 5 Illustrate resource distribution in different phases of united process.
- 6 Why do we prefer agile development rather than plan development?

**Group C**

**2x7.5=15**

**Long Answer Questions (Any Two):**

- 1 Differentiate functional requirement with non-functional requirement. Illustrate your answer with an example describing the importance of functional as well as non-functional requirement.
- 2 Explain MVC architecture with example.
- 3 Draw use case diagram that explains the deposit/withdrawal to/from Automated Teller Machine maintained by Financial Institution. You can make necessary assumptions.

***The End***



## GANDAKI UNIVERSITY MIDTERM EXAMINATION

Level: Bachelor

Semester - III

Year : 2080

Programme: BIT

Full Marks: 50

Course: Microprocessor and CA (ELX 203)

Time : 2 Hrs.

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

*Attempt all the questions.*

### Group A

#### Brief Answer Questions (Any five):

**5x2=10**

- 1 What is microprocessor?
- 2 Define bus and list out its type?
- 3 What is the function of Timing and Control unit
- 4 What is the purpose of control signal in 8085 Microprocessor??
- 5 Define Flags and explain use of Auxiliary Carry Flag?
- 6 What is Op-code and Operand??

### Group B

#### Short Answer Questions (Any five):

**5x5= 25**

- 1 Briefly explain the block diagram of Microprocessor
- 2 Discuss the features of SAP-1 with its Architecture.
- 3 List out the Comparison between SAP-1 and SAP-2.
- 4 Briefly explain pin configuration of 8085 Microprocessor.
- 5 Define instruction and with suitable example explain different types of Instruction Set.
- 6 List out the area of field of application of Microprocessor.

### Group C

#### Long Answer Questions (Any Two):

**2x7.5=15**

- 1 With functional units briefly explain Internal Architecture of 8085 Microprocessor.
- 2 Write as assembly language program for the subtraction of two 8-bit numbers.
- 3 Briefly explain the Internal Architecture of 8086 Microprocessor.

*The End*



## GANDAKI UNIVERSITY MIDTERM EXAMINATION

Level: Bachelor

Semester - III

Year : 2080

Programme: BIT

Full Marks: 50

Course: Database management Systems (CIT 210)

Time : 2 Hrs.

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

**Attempt all the questions.**

### Group A

**5x2=10**

#### Brief Answer Questions (Any five):

- 1 What do you understand by the schema of a database?
- 2 Mention the application of the database.
- 3 What is the degree in DBMS?
- 4 Write about generalization in a database.
- 5 Differentiate between the primary key and the candidate key.
- 6 Show the example distinguishing a strong entity set and a weak entity set.

### Group B

**5x5= 25**

#### Short Answer Questions (Any five):

- 1 What are the drawbacks of a traditional file processing system?
- 2 What is data abstraction? Explain the different levels of data abstractions.
- 3 Define DDL and DML. Mention the DDL commands in the database
- 4 Construct an E-R diagram of the Hospital Management System. State the assumptions made in the design of the E-R diagram.
- 5 From the Employee table shown find the following:
  - a. Find the name and position of all the employees from the employee table.
  - b. Find the Emp\_id of employees whose salary is 40000.
  - c. List the name of an employee who is an assistant.

Emp_id	Name	Department	Position	Salary
E001	Ram	IT	Assistant	40000
E002	Shyam	HR	Manager	70000
E003	Hari	CSD	Assistant	40000
E004	Gita	Credit	Officer	60000

- 6 Explain the types of relationships in the database with the relevant examples

### Group C

**2x7.5=15**

#### Long Answer Questions (Any Two):

- 1 What is the need for a database administrator? Explain each type of user in the database.
- 2 Name different types of joins in relational algebra. Explain each of them with suitable examples.
- 3 Name the different types of attributes. Explain each of them with suitable examples.



**GANDAKI UNIVERSITY  
MIDTERM EXAMINATION**

Level: Bachelor

Semester - III

Year : 2080

Programme: BIT

Full Marks: 50

Course: Data Structures and Algorithms (CIT 211)

Time : 2 Hrs.

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

**Attempt all the questions.**

**Group A**

**Brief Answer Questions (Any five):**

**5x2=10**

- 1 Define recursion.
- 2 Evaluate the postfix expression  $2\ 3\ 1\ * + 9 -$
- 3 Define time and space complexity.
- 4 How TOH problem can be solved?
- 5 Write down the syntax of double linked list (only structure).
- 6 Mention any four applications of circular linked list.

**Group B**

**5x5= 25**

**Short Answer Questions (Any five):**

- 1 Differentiate between data types and data structure.
- 2 Digitize a circle of equation  $(x-5)^2 + (y-3)^2 = 9$ .
- 3 Write an algorithm for PUSH and POP operation in stack.
- 4 Define asymptotic notation. Explain its types.
- 5 Explain the types of recursions with suitable example of each.
- 6 Write an algorithm or code to insert a node at the beginning of single linked list. Illustrate with example.

**Group C**

**2x7.5=15**

**Long Answer Questions (Any Two):**

- 1 Write an algorithm to convert the infix to postfix expression and also convert the given expression to postfix.  $a+b*c+(d*e+f) *g$
- 2 What is the drawback of linear queue? How circular queue overcome the problem. Also write an algorithm for insertion and deletion in circular queue

The End



## GANDAKI UNIVERSITY PRE-BOARD EXAMINATION

Level: Bachelor

Semester - III

Year : 2080

Programme: BIT

Full Marks: 75

Course: Principles of Organization and management (BCT  
202)

Time : 3 Hrs.

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

**Attempt all the questions.**

### Group A

**$10 \times 2 = 20$**

#### Brief Answer Questions (Any ten):

- 1 Mention any four principles of management.
- 2 Define the contingency approach of management.
- 3 Define social responsibility of Business.
- 4 List out the tools used in strategic planning.
- 5 What do you mean by Management by Objectives (MBO).
- 6 What does organizational structure represent?
- 7 Write down the sources of organizational conflict.
- 8 Point out the barriers to effective communication.
- 9 Point out the 7ps of Marketing?
- 10 Point out six categories of situational leadership under Goleman's Model of Situational Leadership.
- 11 Point out two differences of interpersonal and intergroup conflict.

### Group B

**$8 \times 5 = 40$**

#### Short Answer Questions (Any eight):

- 1 Define management. Explain the three types of managerial roles.
- 2 Explain the scientific management theory of management.
- 3 Define business environment. How do you assess the emerging business environment in Nepal? Explain
- 4 What is strategic planning? Explain the steps in the strategic planning process.
- 5 What is communication? Briefly explain the process of communication.
- 6 Explain the Maslow's Hierarchy Needs of motivation.
- 7 Explain the managerial grid model of leadership.
- 8 What do you mean by control? Explain difference tools of controlling.
- 9 Explain the rational decisions making process in organization.

### Group C

#### Case/Situation Analysis

**30**

1. Read the case situation given below and answer the questions that follow.

## A New Kind of Structure

Admit it. Sometimes the projects you're working on (school, work, or both) can get pretty boring and monotonous. Wouldn't it be great to have a magic button you could push to get someone else to do that Boring, time-consuming stuff? At Pfizer, that "magic button" is a reality for a large number of employees.

As a global pharmaceutical company, Pfizer is continually looking for ways to help employees be more efficient and effective. The company's senior director of organizational effectiveness found that the "Harvard MBA staff we hired to develop strategies and innovate were instead Googling and making PowerPoint's." Indeed, internal studies conducted to find out just how much time its valuable talent was spending on unskilled tasks was surprising. The average Pfizer employee was spending 20 percent to 40 percent of his or her time on support work (creating documents, typing notes, doing research, manipulating data, scheduling meetings) and only 60 percent to 80 percent on knowledge work (strategy, innovation, networking, collaborating, critical thinking).

And the problem wasn't just at lower levels. Even the highest-level employees were affected. Take, for instance, Dávid Cain, an executive director for global engineering. He enjoys his job—assessing environmental real estate risks, managing facilities, and controlling a multimillion-dollar budget. But he didn't so much enjoy having to go through spreadsheets and put together Power Points. Now, however, with Pfizer's "magic button," those tasks are passed off to individuals outside the organization.

Just what is this "magic button?" Originally called the Office of the Future (OOF), the renamed Pfizer Works allows employees to shift tedious and time-consuming tasks with the click of a single button on their computer desktop. They describe what they need on an online form, which is then sent to one of two Indian service outsourcing firms. When a request is received, a team member in India calls the Pfizer employee to

clarify what's needed and by when. The team member then e-mails back a cost specification for the requested work. If the Pfizer employee decides to proceed, the costs involved are charged to the employee's department. About his unique arrangement, Cain said that he enjoys working with what he prefers to call his "personal consulting organization."

The number 66,500 illustrates just how beneficial Pfizer Works has been for the company. That's the number of work hours estimated to have been saved by employees who've used Pfizer Works. What about Joe Cain's experiences? When he gave the Indian team, a complex project researching strategic actions that worked when consolidating company facilities, the team put the report together in a month, something that would have taken him six months to do alone. He says, "Pfizer pays me not to work tactically, but to work strategically."

### Case Questions

- 1) Describe and evaluate what Pfizer is doing with its Pfizer Works.
- 2) What structural implications—good and bad—does this approach have?
- 3) Do you think this arrangement (organization design) would work for other types of organizations? Why or why not? What types of organizations might it also work for?
- 4) What role do you think organizational structure plays in an organization's efficiency and effectiveness? Explain



**GANDAKI UNIVERSITY  
PRE-BOARD EXAMINATION**

Level: Bachelor Semester - III  
Programme: BIT  
Course: Data Structures and Algorithms (CIT 211)

**Year : 2080**  
**Full Marks: 50**  
**Time : 2 Hrs.**

*Candidates are required to give their answers in their own words as far as practicable.*

The figures in the margin indicate full marks.

*Attempt all the questions.*

## **Group A**

$$5 \times 2 = 10$$

**Brief Answer Questions (Any five):**

- Define Object Oriented Programming.
  - Write an algorithm for PUSH and POP operation.
  - Define Big O, Big  $\Theta$ , Big  $\Omega$ .
  - Define Double Linked List with syntax and structure.
  - Difference between BST and B-Tree.
  - Difference between internal and external sorting.

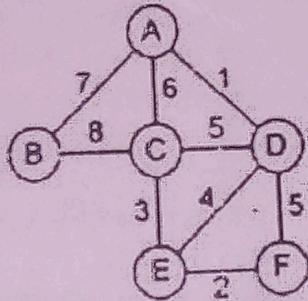
## **Group B**

$$5 \times 5 = 25$$

**Short Answer Questions (Any five):**

- Short Answer Questions**

  - Convert the following infix expression into postfix expression using stack  $(a * (b - c) / (d * e - f) + g))^h$
  - Write an algorithm for insertion and deletion in circular queue.
  - Create a B-Tree of order 5 for the following data: 13, 76, 45, 28, 47, 23, 33, 29, 18, 45, 56, 24, 78, 88, 12
  - Construct MST using Kruskal's algorithm for the following graph.



- 5 Write an algorithm or code to insert a node at the beginning of single linked list. Illustrate with example.

6 12 Construct an AVL tree for the following data: 71, 81, 91, 2, 6, 99, 92, 80, 46, 22, 17, 55

## Group C

$$2 \times 7.5 = 15$$

### **Long Answer Questions:**

- 1 Define Hashing. Find the result of the following: Input sequence: 12, 22, 36, 66, 78, 38, 39, 48, 44, 27, 34 Hash Function:  $H(x) = x \text{ MOD } 13$

  - i) Hash Table using Separate Chaining
  - ii) Hash Table using Linear Probing
  - iii) Hash Table using Quadratic Probing

2 Explain quick sort. Sort the following data using quick sort: 35, 53, 61, 42, 30, 45, 1, 22



**GANDAKI UNIVERSITY  
PRE-BOARD EXAMINATION**

Level: Bachelor  
Programme: BIT  
Course: Microprocessor and Computer Architecture (ELX  
203)

Semester - III

Year : 2080  
Full Marks: 75  
Time : 3 Hrs.

*Candidates are required to give their answers in their own words as far as practicable.  
The figures in the margin indicate full marks.*

**Attempt all the questions.**

**Group A**

**10x2=20**

**Brief Answer Questions (Any ten):**

- 1 Briefly explain evolution of Microprocessor.
- 2 Illustrate the features of 8085 Microprocessor.
- 3 List out and explain the addressing mode of 8086 Microprocessor.
- 4 Explain the microinstruction and its type in brief.
- 5 What is DMA?
- 6 Briefly explain memory Hierarchy?
- 7 Briefly explain the Peripheral devices.
- 8 What is Virtual Memory?
- 9 What is Pipelining?
- 10 What is parallel Processing?
- 11 Briefly explain Flynn's classification?

**Group B**

**8x5= 40**

**Short Answer Questions (Any eight):**

- 1 Discuss the features of SAP-2 with its Architecture.
- 2 Briefly explain the Pin Configuration of 8085 Microprocessor.
- 3 With various functional units briefly explain the internal architecture of 8086 Microprocessor.
- 4 What is arithmetic micro-operation? Briefly explain 4-bit adder/ subs tractor arithmetic circuit.
- 5 List the types of CPU organization based on the instruction format.
- 6 With necessary block diagram explain the input-output interface.
- 7 Define Cache memory and briefly explain Cache Mapping Technique.
- 8 What is pipelining? Briefly explain Arithmetic Pipelining.
- 9 Briefly explain interconnection structure of multiprocessor system.

**Group C**

**2x7.5=15**

**Long Answer Questions (Any Two):**

- 1 Multiply  $-8 \times 6$  using Booth's Algorithm.
- 2 Divide  $8/5$  using Restoring Division Method
- 3 Write an assembly language program for the multiplication of two 8-bit numbers.



## GANDAKI UNIVERSITY PRE-BOARD EXAMINATION

Level: Bachelor

Semester - III

Year : 2080

Programme: BIT

Full Marks: 50

Course: Database Management System (CIT 210)

Time : 2 Hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

**Attempt all the questions.**

### Group A

#### Brief Answer Questions (Any five):

**5x2=10**

- 1 What do you illustrate the view of a database?
- 2 Define DCL of the database with commands.
- 3 What is the tuple in DBMS?
- 4 Define failure. Mention its types
- 5 What do you mean by ACID properties of a transaction?
- 6 Show the example distinguishing a strong entity set and a weak entity set.

### Group B

#### Short Answer Questions (Any five):

**5x5= 25**

- 1 What are the advantages of a modern Database management system over the traditional file processing system?
- 2 Explain data independence with its types.
- 3 Define database users. How can you differentiate sophisticated users and application programmers?
- 4 Construct an E-R diagram of the Airlines Management System. State the assumptions made in the design of the E-R diagram
- 5 Consider a student table and write SQL queries for following questions.

Student_id	first_name	last_name	Age	major	gpa
1	Ram	Sharma	20	Engineering	3.5
2	Shyam	K.C.	21	Psychology	3.2
3	Hari	Thapa	19	IT	3
4	Gita	Poudel	20	Nursing	3.6
5	Sita	Nepal	21	Arts	2.9

1. Retrieve all the columns of the student table.
2. Find the name of Students whose gpa is greater than sorting in descending order.
3. Calculate average gpa for each age.
4. List the total number of students of each age group.
- 6 Define crash recovery. How log-based recovery is used?

### **Group C**

**$2 \times 7.5 = 15$**

#### **Long Answer Questions (Any Two):**

- 1 What problems are faced during concurrent execution? Name the concurrency control protocols and explain any one of them.
- 2 Explain the functional dependency in the database. Consider a relation  $U = \{A, B, C, D, E, F\}$  and functional dependencies  $AB \rightarrow C$ ,  $B \rightarrow E$ ,  $CF \rightarrow D$ . Find the closure of  $AB$ . Also find prime and non-prime attributes
- 3 Write short notes on:
  - a Keys in DBMS
  - b NOSQL Systems



The End



Gandaki University  
Bachelor in Information and Technology  
Web Application - II (Code: CIT-208)

Set A

August 27, 2023

Time: 2 hr

*Pre-Board Exam*

Maximum Marks: 50

Pass Marks: 20

1. Answer shortly [10]
- (a) Define any five terms:
- i. XSLT [2]
  - ii. View (MVC) [2]
  - iii. DTD [2]
  - iv. XSD [2]
  - v. XPATH [2]
  - vi. AJAX [2]
2. Answer in brief. [25]
- (a) Define any two terms: [10]
- i. Controller (C of MVC framework) [5]
  - ii. GRID [5]
  - iii. Fetch API (method of JavaScript) [5]
- (b) Define CMS. Explain the use of CMS system for modern application development. [5]
- (c) What is a callback function? Write an example to demonstrate the use of callback function by implementing an asynchronous workflow. [5]
- (d) Define Media Query. How can one develop responsive website using media queries? Illustrate with example. [5]
3. Long Answer Questions. (Any 2) [15]
- (a) Describe the class concepts (member functions and member variables) used in JavaScript. How is inheritance implemented using classes? Explain. [3 + 4.5]
- (b) We have a situation:
1. A api call to <https://bit2021.anup.pro.np/exam/web2/org.json>

```
{  
    "id": "o001",  
    "name": "Research and Development"  
}
```
  2. An api call to <https://bit2021.anup.pro.np/exam/web2/individual.json>

```
{  
    "id": "u001",  
    "name": "Ram",  
    "email": "ram@ram.com.np",  
    "organizationId": "o001"  
}
```
3. Our aim is to combine the results as:

```
{  
    id: 'u001',  
    name: 'Ram',  
    email: 'ram@ram.com.np',  
    organizationId: 'o001'  
    organization: {  
        id: 'o001',  
        name: 'Research and Development'  
    }  
}
```

Implement chained JavaScript promise calls to achieve the combined result. [7.5]

- (c) Write an application on MVC framework for CRUD operations on following fields :  
full\_name, subject\_code, marks\_achieved. Configure route, model, controller & view. [7.5]
-



**GANDAKI UNIVERSITY  
PRE-BOARD EXAMINATION**

Level: Bachelor

Semester - III

Year : 2080

Programme: BIT

Full Marks: 50

Course: Software Engineering (CIT 209)

Time : 2 Hrs.

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

*Attempt all the questions.*

**Group A**

**5x2=10**

**Brief Answer Questions (Any five):**

- 1 List any 4 software quality attributes.
- 2 Do you prepare open-source software? If yes, why?
- 3 Differentiate between alpha testing and beta testing.
- 4 What are the key features of version control system (VCS)?
- 5 List any four CASE tools with its use/purpose.
- 6 What are the layers of layered architectural pattern?

**Group B**

**5x5= 25**

**Short Answer Questions (Any five):**

- 1 Write a test case for user authentication functionality of an application.
- 2 Web customer uses some web site to make purchases online. Assume necessary use cases and draw a use case diagram for it.
- 3 Why do we need design patterns for software development? Explain one example of the design patterns.
- 4 Differentiate component testing and system testing.
- 5 How is Capability Maturity Model Integration (CMMI) used for software process improvement?
- 6 Explain the activities involved in configuration management.

**Group C**

**2x7.5=15**

**Long Answer Questions (Any Two):**

- 1 Explain MVC architectural pattern with the design principles it helps to adhere.
- 2 What is function point analysis? Consider a project with the following functional units:

Number of user inputs = 50

Number of user outputs = 40

Number of user enquiries = 35

Number of user files = 06

Number of external interfaces = 04

Assuming all complexity adjustment factors and weighing factors as average, Calculate the function point of the project. (AVERAGE complexity weights = {4, 5, 4, 10, 7} for the 5 complexities respectively. AVERAGE characteristic weight = 3.)

- 3 How do COCOMO model calculate cost? A software company needs to develop a project that is estimated as 1000 function points and is planning to use JAVA as programming

language whose approximate lines of code per function point is accepted as 50. Considering  $a = 1.4$  as multiplicative factor,  $b = 1.0$  as exponential factor for the basic COCOMO effort equation and  $c = 3.0$  as multiplicative factor,  $d = 0.33$  as exponential factor for the basic COCOMO duration equation, approximately how long does the project take to complete?



The End

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

*Attempt all the questions.*

**1. Answer the following questions in brief.**

[ $10 \times 2 = 20$ ]

- a. Point out the major four characteristics of management.
- b. State the components of external business environment.
- c. Write the 7 PS of marketing.
- d. Write down the process of decision making.
- e. Write down four disadvantages of delegation of authority.
- f. What are the motivating factors according to Herzberg's Two Factor Theory?
- g. List out various types of conflict.
- h. Differentiate between team and group.
- i. Write down the steps in control process.
- j. List out the steps in business research process.

**Short Answer Questions (any three).**

[ $3 \times 5 = 15$ ]

2. Explain administrative management theory. How is it useful in management world?
3. Briefly explain the barriers to effective communication.
4. What is the role of information technology in controlling behavior in organization?
5. Write short notes on Knowledge Management and Talent Management.

**Long Answer Questions (Any two).**

[ $2 \times 10 = 20$ ]

6. What is Strategic Planning? Describe the steps in Strategic Planning Process.
7. What is Departmentalization? Describe various types of Departmentalization.
8. Elaborate the Maslow Hierarchy Theory of motivation along with its implications and limitations.

## 9. Case Analysis:

Insanely Great Leadership

A lot has been written about the late Steve Jobs. How he took Apple, a niche business, and turned it into the most valuable company in the world as measured by market capitalization. How he was extremely charismatic and extremely compelling in getting people to join with him and believe in his vision. But how he was despotic, tyrannical, abrasive, uncompromising, and a perfectionist. So what is his leadership legacy?

Everything that Jobs did and how he did them was motivated by his desire to have Apple make innovative products—products that were "insanely great"—"insanely" being one of his favorite descriptors. That singular focus shaped his leadership style, which has been described as autocratic and yet persuasive. As one reporter said, Jobs "violated every rule of management. He was not a consensus builder but a dictator who listened mainly to his own intuition. He was a maniacal micromanager . . . He could be absolutely brutal in meetings." His verbal assaults on staff could be terrifying. The story is told that when Apple launched its first version of the iPhone that worked on 3G networks, it included MobileMe, an email system that was supposed to provide seamless synchronization features similar to that used by the fanatical corporate users of BlackBerrys. The problem? It didn't work well at all, and product reviews were quite critical. Since "Steve Jobs doesn't tolerate duds," it was not long after the launch that he gathered the MobileMe team in an auditorium on Apple's campus.

According to a participant in that meeting, Jobs walked in—in his trademark black mock turtleneck and jeans—and "asked a simple question: 'Can you tell me what MobileMe is supposed to do?' Having received a satisfactory answer, he responded, 'So why the heck doesn't it do that?'" Then, for the next 30 minutes, Jobs blasted criticisms at the team. "You've tarnished Apple's reputation. You should hate each other for having let each other down." Ouch. And this was not the only example of his taking employees to task. He was tough on the people around him. When asked about his tendency to be rough on people, Jobs responded, "Look at the results. These are all smart people I work with, and any of them could get a top job at another place if they were truly feeling brutalized. But they don't."

On the other hand, Steve Jobs could be thoughtful, passionate, and "insanely" charismatic. He could "push people to do the impossible." And there is no argument with the fact that the results from the company he cofounded have been market-changing. From Macs to iPods to iPhones and iPads, Apple's products have revolutionized industries and created a fan base of

consumers who are very loyal to the Apple brand and employees who are very loyal to the company.

**Questions:**

- a. How would you describe Steve Jobs leadership style according to the case?
- b. What were you most surprised about after reading this case?
- c. Would Steve Jobs leadership approach work for others? Discuss
- d. In your opinion what are the qualities of an effective leader?

**The End**



Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt all the questions.

**1. Answer the following questions in brief (any five).**

[ $5 \times 2 = 10$ ]

- a. Differentiate Web Client and Web Server.
- b. Differentiate Static and Dynamic web pages.
- c. Write a XML Document that uses a DTD file "people.dtd" (You don't need to write contents of people. dtd)
- d. What are arrow functions in JavaScript?
- e. Discuss the terms authentication and authorization in context to securing web.
- f. Give use of let, const and var keywords in JavaScript.

**Answer the following questions (any five).**

[ $5 \times 5 = 25$ ]

2. XML Separates Data from HTML. Discuss with related example.
3. What are different types of Inheritance? Discuss Inheritance followed in JavaScript with necessary examples.
4. Explain Promise in JavaScript, also discuss various states with related examples.
5. Describe the use of MVC Framework for rapid application development.
6. Write a technique of using grid to style a web document using a suitable example of your own.
7. Discuss cross site scripting attacks (XSS) in brief.

**Answer the following questions (any two)**

[ $2 \times 7.5 = 15$ ]

8. Define AJAX technology. Distinguish between synchronous and asynchronous communication. Draw and define the block diagram of AJAX technology with XMLHttpRequest Object.

9. Implement a DTD in a XML document with suitable example. Complying the rules with figure below.

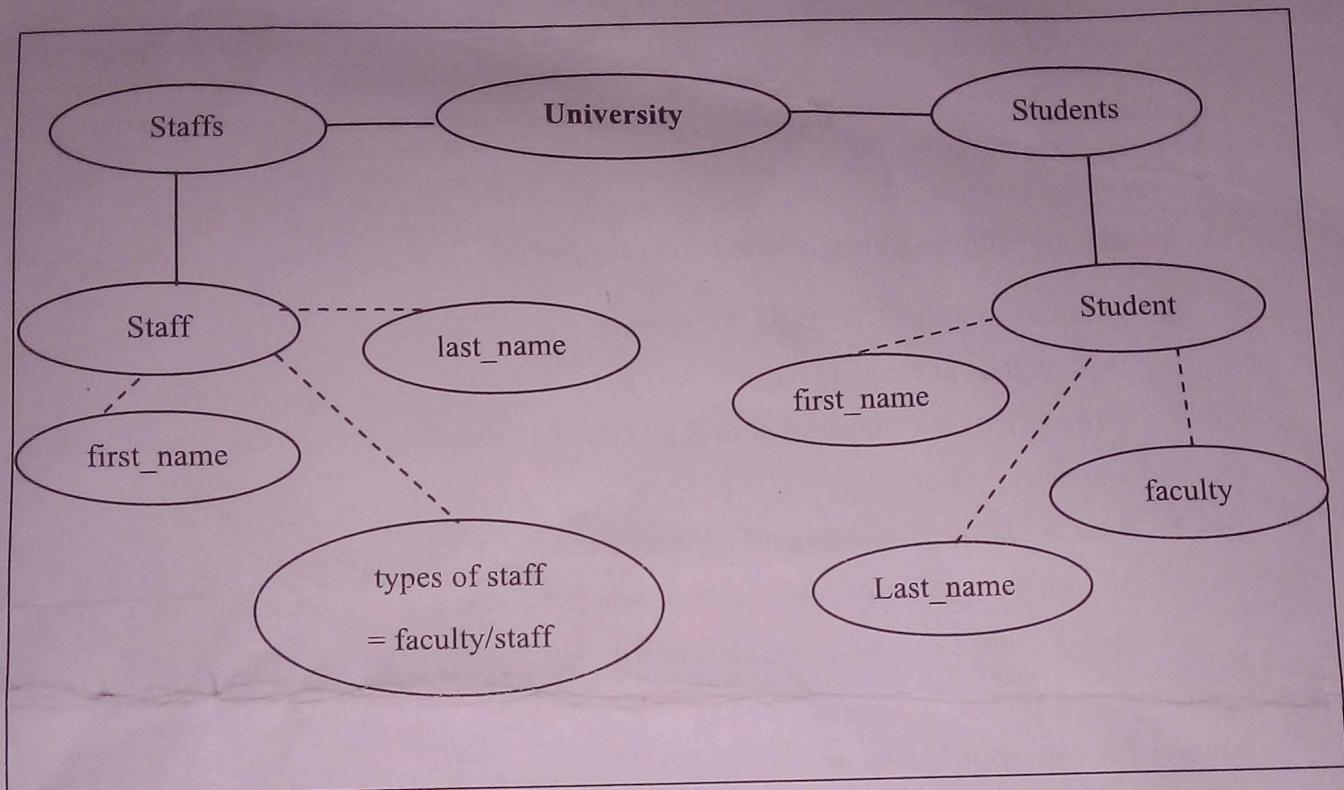


Fig. 1.0

10. Describe the process of registering the domain and making your website live in that domain.

The End



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*Attempt all the questions.*

**1. Answer the following questions in brief (any five).**

[ $5 \times 2 = 10$ ]

- a. Define schema and instance.
- b. List the difference between primary key and foreign key.
- c. What is the use of view?
- d. Define transitive and full functional dependency.
- e. Why do we need data recovery mechanism?
- f. Define NOSQL.

**Answer the following questions (any five).**

[ $5 \times 5 = 25$ ]

2. Define DBMS. Identify and explain database user.
3. Define Data Abstraction. Explain logical and physical data independence.
4. What is Relational Algebra? Explain different levels of database schema.
5. Define concurrency control. Explain time stamp based protocol.
6. Classify the different types of failure in Database. Explain log based recovery in detail.
7. Explain Object oriented model in brief.

**Answer the following questions (any two)**

[ $2 \times 7.5 = 15$ ]

8. Consider the following relations:

Users(userid, username, password, email, dob, gender, registeredDate)

Categories(catid, categoryName, upperLimit)

Expenses(expenseid, spentDate, Amount, catid, userid)

Write down the SQL statements for the following:

- a. Create the above table

- b. Insert a new user
  - c. Find users who is female.
  - d. Find top category on which users spend their money.
  - e. Find categories in which no expenditure has been made so far.
9. How redundancy is minimized in database? Explain normalization up to 3NF with suitable example.
10. Explain ER model in detail. Draw an ER diagram for the following scenario. Make any assumptions if necessary.

“Mrs. Sunaina Pathak is the manager of an art gallery. She wants an online application to keep track of the artists, paintings, customers, orders and payments details. It is known that the admin should store the information of artists and their paintings. Multiple artists can participate to make a painting.

**The End**



Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

*Attempt all the questions.*

**1. Answer the following questions in brief (any ten).**

[ $10 \times 2 = 20$ ]

- a. What do you mean by 16-bit microprocessor?
- b. What is the impact of pipelining and segmentation feature offered by 8086 microprocessors?
- c. What are the major differences between data bus and address bus?
- d. What are the timing and control signals generated by 8085 MP?
- e. What is the necessity of I/O interface?
- f. What are opcode and operands?
- g. What is DMA?
- h. Provide an appropriate comment for the instruction: MOV AX, [BX+4].
- i. What is virtual memory?
- j. What is parallel processing?
- k. What are major improvements in SAP II over SAP I?

**Answer the following questions (any eight).**

[ $8 \times 5 = 40$ ]

2. Give a brief chronological history of the evolution of microprocessors listing the most important features of each.
3. Discuss the features of SAP-1 with its architecture.
4. Compare and contrast between 8085 and 8086 microprocessors.
5. Perform the Booth's algorithm for the operation:  $(5)_{10} \times (-6)_{10}$ .
6. Explain the functional block diagram of 8086 microprocessor.
7. Define the Instruction with suitable examples. Explain different types of Instruction set.
8. What is cache mapping? Explain different cache mapping techniques.
9. With functional unit, briefly explain internal architecture of 8085 Microprocessor.
10. What are addressing modes? Explain different addressing modes used in 8085 Microprocessors.

**Answer the following questions (any two)**

[ $2 \times 7.5 = 15$ ]

11. Write an assembly language program for the division of two 8-bit number.
12. What are pipelining hazards? Explain different pipelining hazards along with their solutions.
13. Define microoperation. Explain different microoperations with examples.

The End



Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

*Attempt all the questions.*

**1. Answer the following questions in brief (any five).**

[ $5 \times 2 = 10$ ]

- a. Explain about time and space complexity trade-off.
- b. Differentiate between singly and two-way linked list.
- c. What are the main features of circular link list?
- d. Provide an example to explain the height and depth of a tree.
- e. Differentiate between external and internal sorting.
- f. Why are graph traversal algorithms necessary? Provide a real-world example.

**Answer the following questions (any five).**

[ $5 \times 5 = 25$ ]

2. Convert the following infix expression into postfix expression using stack.  
$$(a * (b - c / (d * e - f) + g)) ^ h$$
3. Write an algorithm for insert an item at the beginning of single linked list.
4. Construct Binary Search Tree for the following data and traverse in in-order, post-order and pre-order. GANDAKI UNIVERSITY
5. Given input {1, 16, 49, 36, 25, 64, 14, 9} and a hash function  $H(x) = x \bmod 10$ . Show the resulting:
  - i. Hash table using open chaining
  - ii. Hash table using quadratic probing
6. What is minimum spanning tree? How Kruskal algorithm is used to find minimum spanning tree? Explain it with suitable example
7. Given the following data {19, 1, 22, 32, 16, 7}. Perform Bubble sort with the given data.

**Answer the following questions (any two).**

[ $2 \times 7.5 = 15$ ]

8. Define the algorithm for Quick Sort and sort the numbers 82, 73, 12, 39, 26, 88, 2, 9, 60 and 41 using quick sort.
9. Explain about Single-Source Shortest Paths algorithms. Find the shortest path using Bellman-Ford Algorithm for the following graph.



Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

*Attempt all the questions.*

**1. Answer the following questions in brief (any five).**

[ $5 \times 2 = 10$ ]

- a. What are the factors that needs to be considered while developing professional software products?
- b. What is SDLC? Mention the basic phases in a SDLC.
- c. Write any two differences between Plan-driven Development and Agile Development for software.
- d. Define MVC framework? List out any two MVC framework that you know.
- e. What is Singleton Design Pattern? When is it useful?
- f. Define Test case and Test suite.

**Answer the following questions (any five).**

[ $5 \times 5 = 25$ ]

2. Explain, in brief, the Extreme Programming Model, for Agile software development.
3. What is requirement engineering? Explain the phases of requirement elicitation.
4. Explain client-server architecture with a suitable example.
5. Draw a use case diagram from the given case study:

A customer visits online shopping portal. A customer may buy item or just visit the page and logout. The customer can select a segment, then a category and brand to get different products in the desired brand. The customer can select product for purchasing. The process can be repeated for more items. Once the customer finishes selecting the product/s, the cart can be viewed. If the customer wants to edit the final cart it can be done here. For final payment, the customer has to login to portal. If the customer is visiting for the first time, he must register with the site, else the customer use login page to proceed. Final cart is submitted for payment and card details and address details are to be confirmed with customer. Customer is confirmed with the shipment id and delivery of goods within 15 days.

6. What do you mean by software cost estimation? Describe in brief about the LOC and FP based software cost estimation.
7. What are the causes that make changes in the course of software development? How do you implement version and release management in a software that you are developing?

Answer the following questions (any two)

[ $2 \times 7.5 = 15$ ]

8. Develop a sequence diagram on the following Food Ordering System:  
*Customer* can place an *Order of the food*. The *Order Food* process receives the *Order*, forwards it to the *Kitchen*, store it in the *Order* data store, and store the updated *Inventory details* in the *Inventory* data store. The process also delivers a *Bill* to the *Customer*, *Manager* can receive *Reports* through the *Generate Reports* process, which takes *Inventory details* and *Orders* as input from the *Inventory* and *Order* data store respectively. *Manager* can also initiate the *Order Inventory* process by providing *Inventory Order*. The process forwards the *Inventory order* to the *Supplier* and stores the updated *Inventory details* in the *Inventory* data store.
9. What makes a quality software? What is the role of CMM model in SQA? Explain.
10. ABC Technologies Pvt. Ltd. needs to estimate effort and time using COCOMO Model. Suppose you are assigned as a software analyst. The project was estimated to be 400 KLOC. For organic software development type, standard factors provided are as:  $a = 2.4$ ,  $b = 1.05$ ,  $c = 2.5$  and  $d = 0.38$ . Calculate the effort and time explaining the Model.

The End

