Class: XII No. Printed Pages : 14

POST MID TERM EXAM 2024-25

Subject: INFORMATION TECHNOLOGY

SET -A (ANSWER KEY)

Time Allowed : 3 Hrs **Max. Marks: 60**

General Instructions:

1. Please read the instructions carefully
2. This Question Paper consists of 24 questions in two sections – Section A & Section B.
3. **Section A has Objective type questions whereas Section B contains Subjective type questions.**
4. **Out of the given (6 + 18 =) 24 questions, a candidate has to answer (6 + 11 = 17) questions in the allotted (maximum) time of 3 hours.**
5. All questions of a particular section must be attempted in the correct order
6. **SECTION A - OBJECTIVE TYPE QUESTIONS (30 MARKS):**

i. This section has 06 questions.

ii. There is no negative marking.

iii. Do as per the instructions given.

iv. Marks allotted are mentioned against each question/part.

7. **SECTION B – SUBJECTIVE TYPE QUESTIONS (30 MARKS):**

i. This section contains 18 questions.

ii. A candidate has to do 11 questions.

iii. Do as per the instructions given.

iv. Marks allotted are mentioned against each question/part.

SECTION A: OBJECTIVE TYPE QUESTIONS

Multiple Choice Questions on Employability Skills (1 x 4 = 4 marks)

Q1	**Answer any 4 out of the given 6 questions on Employability Skills (1 x4=4)**	
1	_____ is important in communication as it helps in knowing whether the receiver has understood the message or not. Ans Feedback	1
2	_____personality disorder is characterised by distrust for others, including friends, family members and partners. People with such a disorder mostly hold grudges against others. Ans Paranoid	1
3	In the acronym SMART to set goals, 'S' stands for _____. Ans Specific	1
4	What is the shortcut key to underline text in a spreadsheet? a) Ctrl+b b) Ctrl+i c) Ctrl+l d) Ctrl+u	1
5	_____is the ability to take charge and act in a situation before others. Ans TAKING INITIATIVE	1
6	A _____ worker is one who is employed in the environmental sectors of the economy. Ans Green collar	1
Q2 Answer any 5 out of the given 7 questions (1 x 5 = 5 marks)		
1	Name the operator used to access the members of a class. Ans (.) dot operator	1
2	_____ statement in Java allows you to use its prebuilt classes and its associated methods from a package. a) include b) static c) void d) import And d)	1
3	_____ is the optional block used to clean up the code. It is executed whether the exception occurs or not. Ans finally	1
4	Define the term Database. Ans collection of related data that has been recorded, organized and made available for searching is called a Database	1
5	Which of the following is not a DDL command? a) Update	1

	b) Alter c) Create d) Drop Ans a)	
6	Name one central initiative taken by the government for e-governance. Ans NeGP	1
7	_____ portal is Mission Mode Project under the National E-Governance Plan, designed and maintained by National Informatics Centre (NIC), DeitY, MoCIT, Government of India. Ans india.gov.in	1

Q3 Answer any 6 out of the given 7 questions		**(1 x6=6marks)**
1	The main thrust for e-Governance was provided by the launching of _____in 1987. Ans NICNET	
2	Define Referential Integrity. Ans Referential integrity is a constraint on the database design that makes certain that each foreign key in a table point to a unique primary key value in another table.	1
3	Which of the following is not a keyword in Java? a) break b) while c) for d) display And d)	1
4	The expression 10%30 evaluates to 0.(True/ False) Ans False	1
5	ICT stands for _____ Ans Information and communication technology	1
6	_____ is a special method that every Java application must have. Ans Main	1
7	Write one example of a DBMS. Ans MYSQL	1

Q4	**Answer any 5 out of the given 6 questions**	**(1 x 5 = 5 marks)**

1	The services of the e-governance portal can be broadly classified into two categories _____ and _____. Ans to provide information To provide online services	½+½
2	Ramesh wants to book a train ticket online from Delhi to Bhopal, but he is not aware of the Indian Railways website where he can do so. What is the address of the Indian Railways website that he can use to purchase a ticket online? Ans https://www.irctc. co.in	1
3	Ram has joined a company . He is responsible for authoring access, monitoring its use, providing technical support, and acquiring software and hardware resources. What kind of role as a user he play in a company? Ans DBA	1
4	What is Meta Data? Ans Meta-data is stored in a database catalogue or data dictionary. It contains the structure of the data and also the constraints that are imposed on the data.	1
5	There are _____ number of primitive datatypes in Java. Ans 8	1
6	What will be the output of the following program? **class Prg** **{** **public static void main(String args[])** **{** **final int a=10;** **System.out.println(a);** **}** **}** a) 10 b) a c) Unprintable Character d) Error Ans a)	1

Q5	**Answer any 5 out of the given 6 questions**	**(1 x 5 = 5 marks)**

<table>
<tr><td>1</td><td>A group of statements which get executed based on a condition is called
a) Selection
b) Sequential
c) Iteration
d) Exit
Ans a)</td><td>1</td></tr>
<tr><td>2</td><td>Identify the operator used in the expression
if(a<=b)
a) Arithmetic
b) Relational
c) Logical
d) Assignment
Ans b)</td><td>1</td></tr>
<tr><td>3</td><td>_____ method of a String Class returns the character at the given index.
a) indexAt()
b) length()
c) isEmpty()
d) indexOf()
Ans a)</td><td>1</td></tr>
<tr><td>4</td><td>Write the schema of the table given below
Employee
<table><tr><td>Eid</td><td>Ename</td><td>Esal</td></tr><tr><td>101</td><td>Ramesh</td><td>40000</td></tr><tr><td>102</td><td>Geeta</td><td>50000</td></tr></table>
Ans Employee(Eid,Ename,Esal)</td><td>1</td></tr>
<tr><td>5</td><td>Define the term Relation.
Ans A table is called a relation.</td><td>1</td></tr>
<tr><td>6</td><td>Which of the following is not an aggregate function?
a) count
b) Average
c) Avg
d) sum
Ans b)</td><td>1</td></tr>
</table>

<table>
<tr><td>Q6</td><td colspan="2">Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)</td></tr>
<tr><td>1</td><td>The _____ statement evaluates the test after executing the body of the loop.
Ans do while</td><td>1</td></tr>
<tr><td>2</td><td>Name the website that hosts video tutorials on different subjects, like, mathematics, history, physics, chemistry, civics, and economics.
Ans Khan Academy</td><td>1</td></tr>
<tr><td>3</td><td>Consider the following table Employee
<table><tr><td>Eid</td><td>Ename</td><td>Last_name</td><td>Esalary</td></tr><tr><td>E111</td><td>Ramesh</td><td>Kumar</td><td>40000</td></tr><tr><td>E112</td><td>Suresh</td><td></td><td>60000</td></tr></table>Write the Sql query to retrieve all the details of those employees whose last name is not specified.

Ans SELECT * FROM Employee WHERE Last_Name IS NULL;</td><td>1</td></tr>
<tr><td>4</td><td>Consider the following table Teacher
Teacher
<table><tr><td>Tid</td><td>Tname</td><td>Deptno</td></tr><tr><td>101</td><td>Gita</td><td>4</td></tr><tr><td>102</td><td>Surbhi</td><td>7</td></tr><tr><td>103</td><td>Shama</td><td>3</td></tr></table>Write the Sql Query to retrieve the names of the teachers who belong to Deptno 4 or 7.
Ans SELECT Tid,TName, Dept_No FROM Teacher WHERE Dept_No = 4 OR Dept_No = 7;</td><td>1</td></tr>
<tr><td>5</td><td>if ((percentage>=30) &&(percentage<40))
{
System.out.println(“ Passed in the exam”);
}
Consider the above statement , && will check for both the conditions to be:</td><td>1</td></tr>
</table>

	a) True b) False c) Any of the above d) None of the above Ans a)	
6	_____ offers free tutorials in all web development technologies like HTML, CSS, Javascript, PHPetc Ans w3schools.com	1

SECTION B: SUBJECTIVE TYPE QUESTIONS

Answer any 3 out of the given 5 questions on Employability Skills (2 x 3 = 6 marks)

Answer each question in 20 – 30 words.

7	Explain briefly the five parameters of the Big Five factors model. Ans Openness: Individuals with openness to experience are, generally, creative, curious, active, flexible and adventurous. Consciousness: Individuals, who listen to their conscience, are self-disciplined, do their work on time, take care of others before themselves and care about others' feelings. Extraversion: Extroverts are individuals, who love interacting with people around and are, generally, talkative. Agreeableness: Individuals having such a trait are, generally, kind, sympathetic, cooperative, warm and considerate. Neuroticism: Neuroticism is a trait, wherein, individuals show tendency towards anxiety, self-doubt, depression, shyness and other similar negative feelings.	2
8	Write any two techniques to maintain a positive outlook. Ans Physical exercise and fresh air: Following a healthy lifestyle is essential for students. Practising yoga, meditation and deep breathing exercises help improve blood circulation and relax the body. becoming more active. • Healthy diet: A healthy and balanced diet is important for a healthy body and mind. Eating a balanced diet, such as daal, roti, green vegetables and fruits provides the strength required to do daily work efficiently.	2
9	What are the different stages involved in active listening? Ans Receiving: It involves listening attentively. 2. Understanding: It is an informed agreement about something or	2

	someone. 3. Remembering: It refers to the retrieval or recall of some information from the past. 4. Evaluating: It is about judging the value, quantity, importance and amount of something or someone. 5. Responding: It is about saying or doing something as a response to something that has been said or done.	
10	Write any two characteristics of entrepreneurship. Ans It is an economic activity done to create, develop and maintain a profit-oriented organisation. • It begins with identifying an opportunity as a potential to sell and make profit in the market. • It deals with optimisation in utilisation of resources.	2
11	Write any two benefits of green jobs. Ans Increase the efficiency of energy and raw material. • Reduce greenhouse gas emissions. • Control waste and pollution. • Protect and restore ecosystems. • Support adaptation to the effects of climate change.	2

Answer any 3 out of the given 5 questions **(2 x 3 = 6 marks)**

12	What are self-referencing tables? Ans Self-referencing table is a table that is a parent and a dependent in the same referential constraint, i.e. a foreign key constraint can reference columns within the same table in such tables.	2
13	Explain Delete table with the cascade command. Ans It says that if a column is deleted from a parent table then its corresponding rows will be be deleted in the child table for example if the Dept_ID attribute in Department table is deleted, then the corresponding rows in the Teacher table would also be deleted.	2
14	Define the term Wrapper class. Ans A Wrapper class in Java is a class whose object wraps or contains primitive data types. When we create an object to a wrapper class, it contains a field and in this field, we can store primitive data types. In other words, we can wrap a primitive value into a wrapper class object.	2
15	Write a program to compute the sum of two numbers using a method. Ans import java.util.Scanner; **public class** SumOfNumbers2 {	2

	public static int sum(**int** a, **int** b)
	{
	int sum = a + b;
	return sum;
	}
	//method that calculates the sum
	
	public static void main(String args[])
	{
	int x, y, sum;
	Scanner sc = **new** Scanner(System.in);
	System.out.print("Enter the first number: ");
	x = sc.nextInt();
	System.out.print("Enter the second number: ");
	y = sc.nextInt();
	sum = sum(x, y);
	System.out.println("The sum of two numbers x and y is: " + sum);
	}
	}	

16	Define the term Data Redundancy. Ans Data redundancy is when the same data is stored in more than one place, either within a single database or across multiple data systems. It can be intentional or accidental.	2

Answer any 2 out of the given 3 questions **(3 x 2 = 6 marks)**

17	List the various ways in which database management applications can be used in the Education Sector. Ans For storing information such as student details, marks and result. For storing information about faculty and staff members. For storing details about school/college such as infrastructure details, department and offered course details.	3

18	Predict the output of the following code; Also categorize the loop as Entry/Exit control loop.
	int j=1, s=0;
	while(j<6)
	{
	System.out.print(j+"+");
	s=s+j;
	j=j+j%3;
		3

	} System.out.println("="+s); Ans 1+2+4+5+=12	
19	Write any three properties of a database. Ans 1) A database is a representation of some aspect of the real world also called miniworld. Whenever there are changes in this miniworld they are also reflected in the database. 2) It is designed, built and populated with data for specific purpose. 3) It can be of any size and complexity.	3

Answer any 3 out of the given 5 questions **(4 x 3 = 12 marks)**

20	What are Threads? Explain the concept of threads with the help of a program.
	Ans
	A multithreaded program is one that can perform multiple tasks concurrently so that there is optimal utilization of the computer's resources. A multithreaded program consists of two or more parts called threads each of which can execute a different task independently at the same time.
	`public class ExtendThread extends Thread {`
	`  public void run() {`
	`  System.out.println("Created a Thread");`
	`  for (int count = 1; count <= 3; count++)`
	`  System.out.println("Count="+count);`
	`  }`
	
	`  public static void main(String args[]){`
	`  ExtendThread t1 =new ExtendThread();`
	`  ExtendThread t2 =new ExtendThread();`
	
	`  t1.start();`
	`  t2.start();`
	`  }`
	`}`
		2+2

21	Consider the following table Employee and answer the questions that follow: Id | Name | Age | Salary | Phone 1 | Siddharth | 24 | 62000 | 98110766656	4

	2	Chavi	23	71000	99113423989
	3	Karan	26	65000	98105393578
	4	Raunaq	22	89000	99101393576
	5	Kunal	27	80000	97653455654
	Write the commands in SQL: a) To display the list of all employees below the age of 25. a) To count the number of employees with names starting with 'K'. b) To update the salary of ID 5 to 90000 c) To list the names and respective salaries in descending order of salary. Ans i) Select * from employee where age<25; ii) select count(name) from employee where name like "%k"; iii) update employee set salary=90000 where id=5; iv) select name from employee order by salary desc;				
22	What are operators in Java? What are the different types of operators in Java? Explain with the help of example. Ans In Java, operators are special symbols or keywords that perform operations on values and variables. These operations can include basic mathematical calculations or complex logical comparisons. Here are some examples of operators in Java: **Arithmetic operators:** Used to perform common mathematical operations, such as addition (+), subtraction (-), multiplication (*), division (/), and modulus (%) **Relational operators:** Used to compare values, such as ==, !=, >, <, >=, and <= **Logical operators:** Used for logical comparisons, such as && (logical AND), || (logical OR), and ! (logical NOT) **Assignment Operators :** Used for assigning the value in a variable. ● **x += 3**: Same as x = x + 3 ● **x -= 3**: Same as x = x - 3 ● x* = 3: Same as x = x * 3 ● **x /= 3**: Same as x = x / 3				4
23	Why is Java considered as an Object Oriented Programming language? Explain data members and member methods with the help of an example.				4

Ans It is considered as an Object-Oriented Programming System (OOPS) because of its fundamental architecture, embodying key concepts such as classes, objects, inheritance, polymorphism, abstraction, and encapsulation. Java OOP concepts help in creating working methods and variables, then re-use all or part of them without compromising security.

A Java program may contain many classes of which only one class will have a main method. The class will contain data members and member methods that operate on the data members of the class.

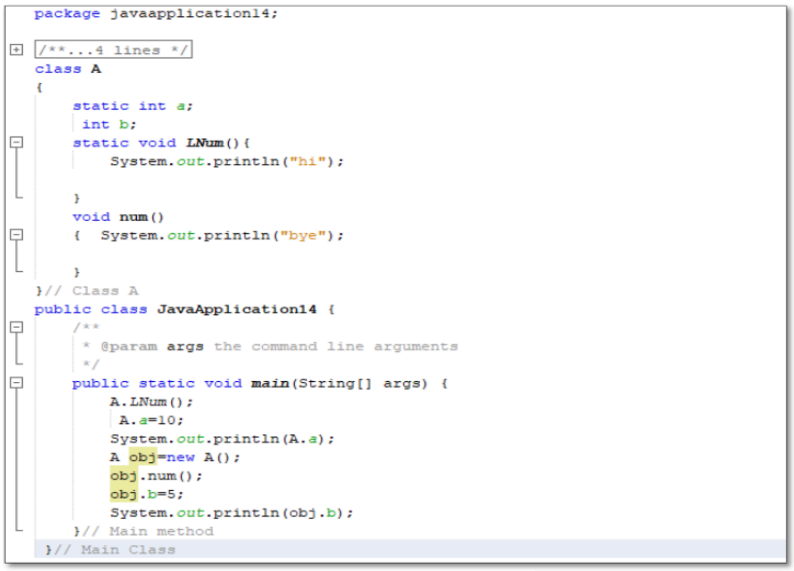
- Data Members represent either instance members or static members.
- Member methods (User-defined methods) represent either instance (or) static .

Sr. No	Instance Data members	Static (class) Data members
1	Memory will be allocated each and every time whenever an object is created	Memory will be allocated only once, whenever the class is loaded in the main memory regardless of number of objects created
2	Instance variable Stores specific values	Class variable Stores common values
3	Instance variable declaration never preceded by a keyword static **Syntax:** int Stud_1, Stud_2 ……. Stud_n;	Class type variable declaration always preceded by **static** keyword. **Syntax:** static int Stud_1, Stud_2 ……. Stud_n;
4	These variables must be accessed with object name. **Example:** ObjectName.Stud_1;	These variables must be accessed with class name. **Example:** ClassName.Stud_1;
5	They are also known as Object Level Data Members	They are also known as Class Level Data Members

Sr. No	Instance Methods	Static (Class) Methods
1	Instance methods are used to perform repetitive tasks like reading records from the file, reading records from the DBMS etc…	Static methods are used to perform single operation like opening the files, obtaining a DBMS connection etc…

2	Methods definition does not require a static keyword to start.
	Syntax:
	void net_salary (parameters if any)
	{
	Block of statements;
	}
		Methods definition must start with the static keyword.
		Syntax:
		static void basic_salary (parameters if any)
		{
		Block of statements;
		}

3	Each and every instance method must be accessed with the respective Object name	Each and every static method must be accessed with the respective Class name
4	Result of instance method is not shared. Every object has its own copy of instance method.	Results of static method always shared by objects of the same class.

	Class with static and instance variable and methods
	 
	`package javaapplication14;`
	`/**...4 lines */`
	`class A`
	`{`
	`static int a;`
	`int b;`
	`static void LNum(){`
	`System.out.println("hi");`
	`}`
	`void num()`
	`{ System.out.println("bye");`
	`}`
	`}// Class A`
	`public class JavaApplication14 {`
	`/**`
	`* @param args the command line arguments`
	`*/`
	`public static void main(String[] args) {`
	`A.LNum();`
	`A.a=10;`
	`System.out.println(A.a);`
	`A obj=new A();`
	`obj.num();`
	`obj.b=5;`
	`System.out.println(obj.b);`
	`}// Main method`
	`}// Main Class`	

24	Smitha is a entrepreneur, and she wants to develop an application for her new start up of food delivery to nearby areas . What is the process/stages of web application development which she has to follow to develop an application. Explain in detail. Ans There are stages in the development of process of web application. These are as follows- 1. Requirements Definition Phase 2. Design Phase 3. Implementation Phase 4. Testing Phase Requirement Definition Phase: In this phase identification of problem will be done. It identifies the problem statement for which the web application is to be developed. It will also Identify the scope of the problem and the feasibility of the project. Design Phase: The focus is on "how" the application is to be designed. A Map of the Web Application Site: It contains essential information about the structure of the site - the pages and the relationships between them. Thus a map with pages and a path connecting them is to be made. We have to simply implement the pages and follow the path to connect them.	4

	Database: Design the application database. (i) Identify the database tables that will be required in the application. (ii) Decide the table structures: For each table we need to identity the attributes of the tables, their data types, the size of the columns in the tables, the relationship between table Page Structure: Design the structure of page. Identify the main sections of the page like header, main content and sidebar. Implementation Phase:Create backend database, frontend and the connectivity between them. a) Backend Database: Create the database and write SQL code defining tables, attribute and relationships, as per the requirement of the application. b) Frontend: Develop the frontend of the application as per the requirement. Use the Page Structure and the Page Layout you defined in Design phase to implement the frontend code. Identify the inputs that are required to be taken from the user in the Front-End of the application. Decide the kind of buttons you will provide to the user, to minimize the user's typing effort, like, Radio buttons, checkbox, list and combo box. c) Data Connectivity: Establish the data connectivity between the Front-End interface and Back-End Database. Testing Phase: Test the complete application (Front-End and Back-End) with multiple sample sets of data. Find all the application bugs and fix them. Test each page of the application and test each feature of the application. Since fixing an error involves modifying the code, validate the modified code also. After final validation, the application is ready for release.	