



Delhi Public School Bulandshahr

Holiday Homework

Class : XII Computer Science
Session : 2024-25



Question 1: Write SQL queries given below on the basis of following table –

Hospital

NO	NAME	AGE	DEPARTMENT	DATEOFADM	CHARGES	SEX
1	Arpit	62	Surgery	21/1/98	300	M
2	Zareena	22	Ent	12/12/97	250	F
3	Kareem	32	Arthopedic	19/2/98	200	M
4	Arun	12	Surgery	11/1/98	300	M
5	Zubin	30	Ent	12/1/98	250	M
6	Karin	16	Ent	24/2/98	250	F
7	Ankita	29	cardiology	22/2/98	800	F
8	Zareen	45	Gynecology	22/2/98	300	F
9	Kush	19	Cardiology	13/1/98	800	M
10	Shilpa	23	Nuclear medicine	21/2/98	400	F

- (A) To select all the information of patients of all cardiology department.
(B) To list the names of female patients who are in ent department.
(C) To list names of all patients with their date of admission in ascending order.
(D) To display patients name, charges, age, for only female patients.
(E) To count the number of patients with age <30.
(F) To insert the new row in the hospital table with the following data: 11, "aftab", 24, "surgery", {25/2/98}, 300, "M".
(G) Give the output of the following SQL statements:
(i) Select count (distinct charges)from hospital;
(ii) Select min(age) from hospital where sex = "f";
(iii) Select sum(charges) from hospital where department = "ent";
(H) Select avg(charges) from hospital where date of admission is <{12/02/98}

Question No2: Write SQL queries given below on the basis of following table –

COMPANY

CID	NAME	CITY	PRODUCTNAME
111	SONY	DELHI	TV
222	NOKIA	MUMBAI	MOBILE
333	ONIDA	DELHI	TV
444	SONY	MUMBAI	MOBILE
555	BLACKBERRY	MADRAS	MOBILE
666	DELL	DELHI	LAPTOP

CUSTOMER

CUSTID	NAME	PRICE	QTY	CID
101	ROHAN SHARMA	70,000	20	222
102	DEEPAK KUMAR	50,000	10	666
103	MOHAN KUMAR	30,000	5	111
104	SAHIL BANSAL	35,000	3	333
105	NEHA SONI	25,000	7	444
106	SONAL AGGARWAL	20,000	5	333
107	ARUN SINGH	50,000	15	666

- I. To display those company name which are having prize less than 30000.
II. To display the name of the companies in reverse alphabetical order.

- III. To increase the prize by 1000 for those customer whose name starts with „S?
- IV. To add one more column totalprice with decimal] 10,2) to the table customer
- V. SELECT COUNT(*) , CITY FROM COMPANY GROUP BY CITY;
- VI. SELECT MIN(PRICE), MAX(PRICE) FROM CUSTOMER WHERE QTY>10;
- VII. SELECT AVG(QTY) FROM CUSTOMER WHERE NAME LIKE “%r%”;
- VIII. SELECT PRODUCTNAME,CITY, PRICE FROM COMPANY, CUSTOMER WHERE COMPANY. CID=CUSTOMER.CID AND PRODUCTNAME=“MOBILE”;

Class : XII (Subject Name) Geography
Session : 2024-25

Geography -Complete chapter 1 of practical Geography and necessary diagram of chapter 3.

Class : XII (PHYSICAL EDUCATION)
Session : 2024-25

PRACTICAL 1.

Write about **Any one IOA recognized Sport/game(Badminton, Football, Basketball, Cricket, Athletics, Hockey, Table Tennis, Volleyball)** of your choice under the following heads-

- i) Labelled diagram of field and equipments.
- ii) Rules of the game/sport.
- iii) Terminologies of the game/sport.
- iv) Skills of the game/sport.
- v) Important personalities (National and International)

PRACTICAL 2.

Write the procedure , benefits and contraindication of **any two asanas for each lifestyle disease.**

Note- Holiday Homework must be done in Physical Education practical file and Paste or draw at least 20 suitable pictures related to above mentioned topics.

Class : XII (HISTORY)
Session : 2024-25

1. Students are required to revise the Mid sem syllabus thoroughly
2. Students can choose one topic for project file as discussed in class.
Write answers in detail
3. Discuss the functions that may have been performed by the rulers in Harappan society?
4. Explain how did Harappans maintain contact with distant lands?
5. List some of the problems faced by epigraphists
6. What are the various sources which have been used to reconstruct Mauryan History?
7. Discuss whether kings in early states were invariably Kshatriyas?
8. Explain the structural and sculptural features of Stupa?

Class : XII (Business Studies)
Session : 2024-25

Students are supposed to select one unit out of two and are required to make only ONE project from the selected unit

1- Principles of Management

The students are required to visit any one of the following:

1. A departmental store.
2. An Industrial unit.
3. A fast food outlet.

They are required to observe the application of the general Principles of management advocated by Fayol.

OR

2 - Marketing Management

1. How will your product be packaged?
2. Which channel of distribution are you going to use? Give reasons for selection?
3. Decisions related to warehousing, state reasons.
4. What is going to be your selling price?
 - (i) To consumer
 - (ii) To retailer
 - (iii) To wholesaler
5. List 5 ways of promoting your product.
6. Any schemes for
 - (i) The wholesaler
 - (ii) The retailer
 - (iii) The consumer
7. What is going to be your 'U.S.P'?
8. What means of transport you will use and why?
9. Draft a social message for your label.
10. What cost effective techniques will you follow for your product.
11. What cost effective techniques will you follow for your promotion plan.

At this stage the students will realise the importance of the concept of marketing mix and the necessary decision regarding the four P's of marketing.

- Product
- Place
- Price
- Promotion

Topics Chocolate, Perfume, Coffee, Cosmetology products, Lipsticks, Mobile Pencil, Noodles the students are required to make a project on the identified product/service keeping in mind the following:

1. Why have they selected this product/service?
2. Find out '5' competitive brands that exist in the market.
3. What permission and licences would be required to make the product?
4. What are your competitors Unique Selling Proposition.[U.S.P.]?
5. Does your product have any range give details?
6. What is the name of your product?
7. Enlist its features.
8. Draw the 'Label' of your product.
9. Draw a logo for your product.
10. Draft a tag line.
11. What is the selling price of your competitor's product?
 - (i) Selling price to consumer
 - (ii) Selling price to retailer
 - (iii) Selling price to wholesaler
12. What is the profit margin in percentage to the:
 - Manufacturer.
 - Wholesaler.
 - Retailer.
13. How will your product be packaged?
14. Which channel of distribution are you going to use? Give reasons for selection?
15. Decisions related to warehousing, state reasons.
16. What is going to be your selling price?
 - (i) To consumer
 - (ii) To retailer
 - (iii) To wholesaler
17. List 5 ways of promoting your product.
18. Any schemes for

- (i) The wholesaler
 - (ii) The retailer
 - (iii) The consumer
19. What is going to be your 'U.S.P?
 20. What means of transport you will use and why?
 21. Draft a social message for your label.
 22. What cost effective techniques will you follow for your product.
 23. What cost effective techniques will you follow for your promotion plan.

At this stage the students will realise the importance of the concept of marketing mix and the necessary decision regarding the four P's of marketing.

Product
Place
Price
Promotion

The project should be handwritten.
The project should be presented in a neat folder.

Class : XII (ACCOUNTANCY-055)
Session : 2024-25

1. Students are supposed to prepare one specific project based on Financial statements of a Company covering any two aspects from the following:
 - a. Comparative and Common Size Statements
 - b. Accounting Ratios
 - c. Segment Reports
 - d. Cash Flow Statements

NOTE: Financial Statements of Company should not be older than 3 years (2021-22; 2022-23; 2023-24)

2. Solve 20 questions of Accounting Ratios from a different book (S.C. SHARMA) having 05 questions for each category of ratios i.e. Liquidity, Solvency, Activity and profitability ratios.
3. Solve 10 questions of Cash Flow Statement with Adjustments from a different book (S.C. SHARMA).

Class: XII (Chemistry)
Session: 2024-25

1. PROJECT - Preparation of Project File on any one topic.

A few suggested Projects.

- Study of the presence of oxalate ions in guava fruit at different stages of ripening.
- Study of quantity of casein present in different samples of milk.
- Preparation of soybean milk and its comparison with the natural milk with respect to curd formation, effect of temperature, etc.
- Study of the effect of Potassium Bisulphate as food preservative under various conditions (temperature, concentration, time, etc.)
- Study of digestion of starch by salivary amylase and effect of pH and temperature on it.
- Comparative study of the rate of fermentation of following materials: wheat flour, gram flour, potato juice, carrot juice, etc.
- Extraction of essential oils present in Saunf (aniseed), Ajwain (carum), Illaichi (cardamom).

- Study of common food adulterants in fat, oil, butter, sugar, turmeric powder, chilli powder and pepper.

Note: Any other investigatory project which involves about 10 periods of work, can be chosen.

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Class : XII (Subject Name) KATHAK DANCE
Session : 2024-25
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THEORY

1. Dance Project file

*Taal - Teen taal and Dhamar Taal

*Gharana

*Biography (Jeevani) Kathak

*History of Kathak Dance

*Abhinaya

*Short Notes (Sam, Karan , Taal, Matra, Sangeet)

2. Revise the Mid Semester Syllabus

PRACTICAL

1. Practice Guru Vandana and Krishna Vanadana

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Class : XII (Political Science)
Session : 2024-25
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Prepare a project file of any of the topics or Chapters of your text book of 1 or Two.

The project file should contain the following.

1. Content

2. Preface

3. Acknowledgement

4. Introduction and

5. Bibliography.

The file can be prepared in A4 or A3 sheet of papers. (Colours or White)

It should be hand-written contain maximum of 15-20 pages excluding serial number 1-5

OR

Students can prepare street play/Skit/role play/declamation etc. of any social and political issues/events.

Number of students should be of maximum 7. In group items.

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Class : XII (Subject Name) IP
Session : 2024-25
Worksheet - 1
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In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Mark the correct choice as:

- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true but R is not the correct explanation of A.
- (c) A is true but R is false (or partly true).
- (d) A is false (or partly true) but R is true.
- (e) Both A and R are false or not fully true.

1. Assertion (A). To use the Pandas library in a Python program, one must import it.
Reasoning (R). The only alias name that can be used with the Pandas library is pd.

2. Assertion. A series is a 1D data structure which is value-mutable but size-immutable.
Reason. Everytime you change the size of a series object, change does not take place in the existing series object, rather a new series object is created with the new size.

3. Assertion. A dataframe is a 2D data structure which is value mutable and size mutable.
Reason. Every change in a dataframe internally creates a new dataframe object.
4. Assertion. A dataframe is value mutable and size-mutable.
Reason. All changes occur in-place in a dataframe.
5. Assertion. A series object stores values of homogeneous types.
Reason. Even if values appear to be of different types, internally they are stored in a common datatype.
6. Assertion. Arithmetic operations on two series objects take place on matching indexes.
Reason. Non-matching indexes are removed from the result of arithmetic operation on series objects.
7. Assertion. Arithmetic operations on two series objects take place on matching indexes.
Reason. For non-matching indexes of series objects in an arithmetic operation, NaN is returned.
8. Assertion. While changing the values of a column in a dataframe, if the column does not exist, an error occurs.
Reason. If values are provided for a non-existing column in a dataframe, a new column is added with those values.
9. Assertion. loc() is a label based data selecting method to select a specific row(s) or column(s) which we want to select.
Reason. iloc() can not be used with default indices if customized indices are provided.
10. Assertion. DataFrame has both a row and column index.
Reason. A DataFrame is a two-dimensional labelled data structure like a table of MySQL

Worksheet - 2

In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Mark the correct choice as:

- (a) Both A and R are true and R is the correct explanation of A.
 - (b) Both A and R are true but R is not the correct explanation of A.
 - (c) A is true but R is false (or partly true).
 - (d) A is false (or partly true) but R is true.
 - (e) Both A and R are false or not fully true.
1. Assertion. The matplotlib library of Python is used for data visualisation.
Reason. The PyPlot interface of matplotlib library is used for 2D plotting.
 2. Assertion. A scatter chart simply plots the data points on a chart to show the trend in the data.
Reason. A line chart connects the plotted data points with a line.
 3. Assertion. Both scatter() and plot() functions of PyPlot can create scatter charts.
Reason. The plot() function can create line charts as well as scatter charts.
 4. Assertion. For the same sets of data, you can create various charts using plot(), scatter(), pie(), bar() and barh().
Reason. All the data sets of a plot(), scatter(), bar() cannot be used by pie(); it will work with only a single set of data.
 5. Assertion. Five-point statistical summary of a data set can be visually represented.
Reason. The boxplot() function can plot the highest and lowest numbers of a data range, its median along with the upper and lower quartiles.

6. Assertion. Line graph is a tool for comparison and is created by plotting a series of several points and connecting them with a straight line.

Reason. You should never use a line chart when the chart is in a continuous data set.

Worksheet - 3

1. Assertion. Python Panda library offers functionality to interact with a CSV file.

Reason. Panda's read_csv() and to_csv() functions can read-from and write-to CSV files.

2. Assertion. The read_csv() function of Python Pandas can read data of a csv file into any of pandas data structures.

Reason. Dataframe is a compatible data structure for read_csv() function.

3. Assertion. The read_csv() function reads a csv file's data into a dataframe.

Reason. The to_csv() function writes a dataframe on to a csv file.

4. Assertion. The read_sql() function of Pandas can query upon any mysql database.

Reason. The read_sql() function can query upon only those databases that have a connection established through mysql database connector.

5. Assertion. A dataframe's data can be exported as a table of a mysql database.

Reason. Over an established connection to a mysql database, <DF>, to_sql() would write the data of the dataframe <DF> as a table in the mysql database.

Worksheet - 4

In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Mark the correct choice as:

- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true but R is not the correct explanation of A.
- (c) A is true but R is false (or partly true).
- (d) A is false (or partly true) but R is true.
- (e) Both A and R are false or not fully true.

1. Assertion. The UNIQUE and PRIMARY KEY constraints are similar but not the same.

Reason. There can be only one column with PRIMARY KEY constraint, in a table.

2 Assertion. In terms of values allowed in a column, both UNIQUE and PRIMARY KEY constraints are not the same.

Reason. UNIQUE allows NULL value once in the column, but PRIMARY KEY does not.

3. Assertion. The INSERT INTO statement can skip some columns' values.

Reason. Only the columns allowing the NULL values or have default-value-defined, can be skipped in INSERT INTO statement of SQL.

4. Assertion. The PRIMARY KEY can be defined only once in the CREATE TABLE command.

Reason. If the PRIMARY KEY is a composite key, then it is not defined with the individual columns but at the end of the table definition as a table constraint.

5. Assertion. INSERT, UPDATE, DELETE, SELECT are the DML commands.

Reason. The DML commands manipulate the data stored in the database tables.

6. Assertion. The PRIMARY KEY and FOREIGN KEY constraints are similar.

Reason. The FOREIGN KEY constraint links a column of a table with the PRIMARY KEY constraint of another table.

7. Assertion. Datatypes varchar and char are the same as they both represent the string data. Reason. The VARCHAR datatype stores variable string length while CHAR datatype stores the string always as fixed length strings.

Worksheet - 5

In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Mark the correct choice as:

- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true but R is not the correct explanation of A.
- (c) A is true but R is false (or partly true).
- (d) A is false (or partly true) but R is true.
- (e) Both A and R are false or not fully true.

1. Assertion. Single row functions when applied on a column in a table, yield multiple values equal to number of rows in the table.

Reason. Single row functions work with individual rows and yield values accordingly.

2. Assertion. Multi-row functions when applied on a column in a table, yield values which are not equal to number of rows in the table.

Reason. Multiple-rows functions do not work with all the rows in the table.

3. Assertion. Multiple rows functions when applied on a column in a table, yield values which are not equal to number of rows in the table.

Reason. The multi-row functions work with data of multiple rows at a time and return aggregated value.

4. Assertion. The count(*) will yield a single value while round() will yield number of values equal to the cardinality of the table.

Reason. The count (*) is a multiple-rows function and round() is a single-row function.

Worksheet - 6

1. Assertion. The ORDER BY clause of SELECT statement is carried out in the last after executing other clauses of the SELECT statement.

Reason. The ORDER BY clause is carried out on the final result of the SELECT query.

2. Assertion. MOD() and MIN() are numeric functions, yet they are different types of functions.

Reason. MOD() is a single-row function and MIN() is a group function.

3. Assertion. The GROUP BY clause can use any type of function.

Reason. The GROUP BY clause combines a number of rows in a group and applies functions on it.

4. Assertion. The GROUP BY clause yields summary results using group functions.

Reason. The GROUP BY clause combines a number of rows in a group and applies functions on it.

5. Assertion. Both WHERE and HAVING clauses work with GROUP BY in a SELECT statement. Reason. The WHERE clause is applied before forming groups of rows and HAVING clause is applied after forming the groups.

6. Assertion. Both WHERE and HAVING clauses are used for specifying conditions.

Reason. WHERE and HAVING clauses of the SELECT query can be used interchangeably.

7. Assertion. Both WHERE and HAVING clauses are used for specifying conditions.

Reason. The WHERE condition is applicable on individual rows and HAVING condition is applicable on a group of rows.

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Holiday homework (2024-25)

CLASS XII

English (Core)

1. Study about the following poets given below:

i. John Keats

ii. Kamla Das

iii. Pablo Neruda

iv. Robert Frost

Select any one from the above. Research and compile the following for the topic selected in a project file:

- General Introduction of the poet.
- Paste images of the poets and their work.
- Study two of their works in detail and cover the following:
 - a. Salient features of the literary work selected
 - b. Style of its writing
 - c. Contemporary influences

The project file should contain:

- Index page
- Acknowledgement
- Certificate of completion
- Topic
- Objective
- Report/student reflection
- Bibliography

Class : XII (Subject Painting)
Session : 2024-25

.*One Canvas painting using Fabric colours or Acrylic colours

Landscape Painting (in Sketch -book)

- Paint a landscape scene from your surroundings or from a photograph.

Portrait Study(in sketch -book)

- Draw or paint a portrait of a family member, friend, or a self-portrait.

- Pay attention to facial features, expressions, and proportions.

1. On the basis of your study, describe the Indian National Flag ?
2. Describe the origin and development of Pahari school of miniature painting ?
3. Discuss the colour combination of the painting- Krishna with Gopis ?
4. Can you differentiate between the Kangra sub-school of miniature painting and the Basohli sub-school of miniature painting ?
5. Describe briefly the development of Mughal AND Deccan school of Miniature paintings and specialities of its sub - schools ?

Class : XII (Hindustani Vocal Music)
Session : 2024-25

Subject: Hindustani Vocal Music (034)

1. ऋतुकालीन राग कौन से होते हैं?
2. राग भैरव का संप्रकृतिक राग क्या है?
3. अध्वदर्शक स्वर क्या होते हैं?
4. पूर्वांगवादी और उत्तरांगवादी से आप क्या समझते हैं?
5. ताल झपताल में कौन से गीत गाए जाते हैं?
6. आलाप से आप क्या समझते हैं?
7. अलंकार को परिभाषित कीजिए।
8. ताल झपताल का परिचय थाट, दुगुण, तिगुण और चौगुण के साथ लिखें।
9. रागों के समय सिद्धांत का संक्षिप्त वर्णन करें।
10. राग भैरव का परिचय लिखिए।
11. संगीत रतनाकर का संक्षिप्त वर्णन करें।
12. रूपक ताल का परिचय थाट, दुगुण, तिगुण और चौगुण के साथ लिखें।

13. प. कृष्ण राव शंकर पंडित, बड़े गुलाम अली खाँ एवं फ़ैयाज़ खाँ का चित्र लगाए।
14. तानपुरे का चित्र बनाए।
15. संगीत की फाइल बनाए।

Class : XII (Economics-030)
Session : 2024-25

1. Solve the assignments shared in the classroom.
2. Prepare a project file on anyone of the topics discussed in the classroom.

Guidelines for the project:

1. The entire project must be completed in around 25-30 pages.
2. It is compulsory that the project must be handwritten. However, only certificate can be in printed form.
3. The project must be clubbed inside a neat and tidy spiral/cobra file/folder
4. While crafting your project, you must follow this specified format already explained to you:

-Cover Page

-Certificate

-Acknowledgement

-Index (List of Contents)

-Introduction

-Topic with a Unique Title/Heading

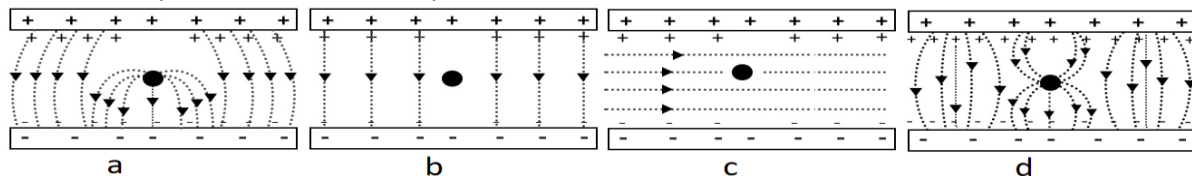
- Student's own perception

-Conclusion

-Bibliography

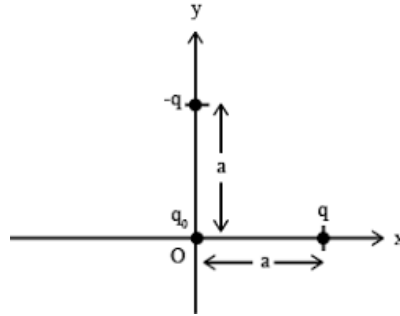
HOLIDAY HOMEWORK XCLASS XII PHYSICS
Session : 2024-25

1. Which of the following diagrams correctly represents the electric field between two charged plates if a neutral conductor is placed in between the plates?



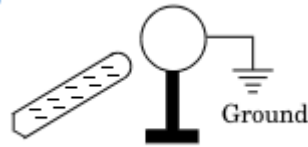
2. An electric dipole placed in a non-uniform electric field can experience
 - a. A force but not a torque
 - b. A torque but not a force
 - c. Always a force and a torque
 - d. Neither a force nor a torque
3. Two point charges A and B having charges $+q$ and $-q$ respectively, are placed at certain distance apart and force acting between them is F . If 25% charge of A is transferred to B, then force between the charges becomes
 - a. F
 - b. $9F/16$
 - c. $16F/3$
 - d. $4F/3$
4. Two large conducting spheres carrying charges Q_1 and Q_2 are kept with their centres r distance apart. The magnitude of electrostatic force between them is not exactly $\frac{1}{4\pi\epsilon_0} \frac{Q_1 Q_2}{r^2}$ because
 - a. These are not point charges
 - b. Charge distribution on the spheres is not uniform
 - c. Charges on spheres will shift towards the centres of their respective spheres.
 - d. Charges will shift towards the portions of the spheres which are closer and facing towards each other.
5. A negatively charged object X is repelled by another charged object Y. However, an object Z is attracted to object Y. Which of the following is the most possibility for the object Z?
 - a. Positively charged only
 - b. Negatively charged only
 - c. Neutral or positively charged
 - d. Neutral or negatively charged

6. In an experiment three microscopic latex spheres are sprayed into a chamber and became charged with charges $+3e$, $+5e$ and $-3e$ respectively. All the three spheres came in contact simultaneously for a moment and got separated. Which one of the following are possible values for the final charge on the spheres?
 a. $+5e, -4e, +5e$ b. $+6e, +6e, -7e$ c. $-4e, +3.5e, +5.5e$ d. $+5e, -8e, +7e$
7. The magnitude of electric field due to a point charge $2q$, at distance r is E . Then magnitude of electric field due to a uniformly charged thin spherical shell of radius R with total charge q at a distance $r/2$ ($r \gg R$) will be
 a. $E/4$ b. 0 c. $2E$ d. $4E$
8. Three charges q , $-q$ and q_0 are placed as shown in figure. The magnitude of the net force on the charge q_0 at point O is $\left[k = \frac{1}{4\pi\epsilon_0} \right]$

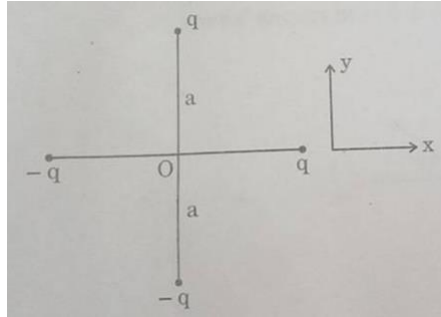


- a. 0 b. $\frac{2kqq_0}{a^2}$ c. $\frac{\sqrt{2}kqq_0}{a^2}$ d. $\frac{kqq_0}{\sqrt{2}a^2}$
9. Four objects W, X, Y and Z, each with charge $+q$ are held fixed at four points of a square of side d as shown in the figure. Objects X and Z are on the midpoints of the sides of the square. The electrostatic force exerted by object W on object X is F . Then the magnitude of the force exerted by object W on Z is
 a. $F/7$ b. $F/5$ c. $F/3$ d. $F/2$
10. A square sheet of side a is lying parallel to XY plane at $z = a$. The electric field in the region is $E = cz^2k$. The electric flux through the sheet is
 a. a^4c b. $\frac{1}{3}a^3c$ c. $\frac{1}{3}a^4c$ d. 0
11. A point charge situated at a distance r from a short electric dipole on its axis, experiences a force F . If the distance of the charge is $2r$, then force on the charge will be
 a. $F/16$ b. $F/8$ c. $F/4$ d. $F/2$
12. The magnitude of electric field due to a point charge object at a distance of 4 m is 9 N/C. From the same charged object the electric field of magnitude 16 N/C will be at a distance of
 a. 1 m b. 2 m c. 3 m d. 6 m
13. An electron experiences a force $(1.6 \times 10^{-16} \text{ N}) \mathbf{i}$ in an electric field E . The electric field E is
 a. $(1.0 \times 10^3 \text{ NC}^{-1}) \mathbf{i}$ b. $-(1.0 \times 10^3 \text{ NC}^{-1}) \mathbf{i}$ c. $(1.0 \times 10^{-3} \text{ NC}^{-1}) \mathbf{i}$ d. $-(1.0 \times 10^{-3} \text{ NC}^{-1}) \mathbf{i}$
14. Two charges q_1 and q_2 are placed at the centres of two spherical conducting shells of radius r_1 and r_2 respectively. The shells are arranged such that their centres are d ($>(r_1+r_2)$) distance apart. The force on q_2 due to q_1 is
 a. $\frac{1}{4\pi\epsilon_0} \frac{q_1q_2}{d^2}$ b. $\frac{1}{4\pi\epsilon_0} \frac{q_1q_2}{(d-r_1)^2}$ c. zero d. $\frac{1}{4\pi\epsilon_0} \frac{q_1q_2}{[d-(r_1+r_2)]^2}$
15. An electric dipole of length 2 cm is placed at an angle of 30° with an electric field 2×10^5 N/C. If the dipole experiences a torque of 8×10^{-3} Nm, the magnitude of either charge of the dipole, is
 a. $4 \mu\text{C}$ b. $7 \mu\text{C}$ c. 8 mC d. 2 mC
16. Two similar spheres having $+Q$ and $-Q$ charges are kept at a certain distance. F force acts between the two. If at the middle of two spheres, another similar sphere having $+Q$ charge is kept, then it experiences a force in magnitude and direction as
 a. Zero having no direction
 b. $8F$ towards $+Q$ charge
 c. $8F$ towards $-Q$ charge
 d. $4F$ towards $+Q$ charge
17. Why is the direction of the electric field due to a charged conducting sphere at any point perpendicular to its surface? (2019)
 (ii) Two electric field lines cannot cross each other. Also they cannot form closed loops. Give reasons. (2020)
 (iii) Draw the pattern of electric field lines when a point charge $+q$ is kept near an uncharged conducting plate. (2019)
 (iv) Two identical conducting balls A and B have charges $-Q$ and $+3Q$ respectively. They are brought in contact with each other and then separated by a distance d apart. Find the nature of the Coulomb force between them. (2019)

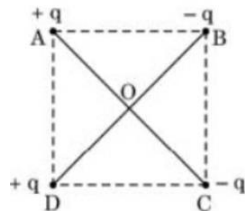
- (v) A metal sphere is kept on an insulating stand. A negatively charged rod is brought near it, then the sphere is earthed as shown. On removing the earthing, and taking the negatively charged rod away, what will be the nature of charge on the sphere? Give reason for your answer. (2019)



18. Derive an expression for the torque acting on an electric dipole of dipole moment P placed in a uniform electric field E . Write the direction along which the torque acts. (2019)
19. Two identical dipoles are arranged in x - y plane as shown in the figure. Find the magnitude and the direction of net electric field at the origin O . (2023)



20. Two identical point charges q each are kept 2 m apart in air. A third point charge Q of unknown magnitude and sign is placed on the line joining the charges such that the system remains in equilibrium. Find the position and nature of Q . (2019)
21. Five point charges, each of charge $+q$ are placed on 5 vertices of a regular hexagon of side l . Find the magnitude of the resultant force on a charge $-q$ placed at the centre of the hexagon. (2019)
22. Two large parallel plane sheets have uniform charge densities $+\sigma$ and $-\sigma$. Determine the electric field (i) between the sheets and (ii) outside the sheets. (2019)
23. Two point charges $q_1 = +1 \mu\text{C}$ and $q_2 = +4 \mu\text{C}$ are placed 2 m apart in air. At what distance from q_1 along the line joining the two charges, will the net electric field be zero? (2020)
24. An electric field is uniform and acts along $+x$ direction in the region of positive x . It is also uniform with the same magnitude but acts in $-x$ direction in the region of negative x . The value of the field is $E = 200 \text{ N/C}$ for $x > 0$ and $E = -200 \text{ N/C}$ for $x < 0$. A right circular cylinder of length 20 cm and radius 5 cm has its centre at the origin and its axis along the x -axis so that one flat face is at $x = +10 \text{ cm}$ and the other is at $x = -10 \text{ cm}$. Find (i) the net outward flux through the cylinder and (ii) the net charge present inside the cylinder. (2020)
25. Two charged conducting spheres of radii a and b are connected to each other by a wire. Find the ratio of the electric fields at their surfaces. (2023)
26. The distance of a far off point on the equatorial plane of an electric dipole is halved. How will the electric field be affected for the dipole? Two identical electric dipoles are placed along the diagonals of a square $ABCD$ of side $\sqrt{2}$ m as shown in the figure. Obtain the magnitude and direction of the net electric field at the centre O of the square. (2023)



27. Two small identical electric dipoles AB and CD , each of dipole moment P are kept at an angle of 120° to each other in an external electric field E pointing along the x -axis as shown in the figure. Find the (i) dipole moment of arrangement and (ii) magnitude and direction of the net torque acting on it. (2020)
28. A spherical conducting shell of inner radius r_1 and outer radius r_2 has a charge Q . (i) A charge q is placed at the centre of the shell. Find out the surface charge density on the inner and outer surfaces of the shell. (ii) Is the electric field inside the cavity (with no charge) zero, independent of the fact whether the shell is spherical or not? Explain.
29. Define electric charge. Write properties of electric charge. State Coulomb's law and represent it in vector form. Also define dielectric constant.
30. (i) Define electric field and derive an expression of the electric field strength for a point charge.
(ii) Define electric field lines and write properties of electric field lines. Also define electric flux and flux density.

31. What is electric dipole, define electric dipole moment and derive an expression for the electric field strength due to a dipole at any point on its (i) axis (ii) equatorial line
32. Derive an expression for torque experienced by an electric dipole placed in an electric field and thus explain with the help of a diagram stable and unstable equilibrium of an electric dipole also calculate work done to rotate a dipole.
33. State and prove gauss's theorem and using this derive an expression for the electric field strength due to (i) straight charged wire (ii) charged plane sheet. Also draw the graph showing variation of electric field strength with the distance for both the cases.
34. Two similar spheres having $+Q$ and $-Q$ charges are kept at a certain distance. F force acts between the two. If at the middle of two spheres, another similar sphere having $+Q$ charge is kept, then it experiences a force in magnitude and direction as

Class : XII (BIOLOGY)
Session : 2024-25

Subject: BIOLOGY (044)

(A) Write the following experiments in the Practical file.

1. Prepare a temporary mount to observe pollen germination.
2. Study the plant population density by quadrat method.
3. Study the plant population frequency by quadrat method.
4. Prepare a temporary mount of onion root tip to study mitosis.
5. Isolate DNA from available plant material such as spinach, green pea seeds, papaya, etc.

(B) Study and observe the following (Spotting):

1. Flowers adapted to pollination by different agencies (wind, insects, birds).
2. Identification of stages of gamete development, i.e., T.S. of testis and T.S. of ovary through permanent slides .
3. Meiosis in onion bud cell or grasshopper testis through permanent slides.
4. T.S. of blastula through permanent slides (Mammalian).
5. Mendelian inheritance using seeds of different colour/sizes of any plant.
6. Prepared pedigree charts of any one of the genetic traits such as rolling of tongue, blood groups, ear lobes, widow's peak and colour blindness
7. Controlled pollination - emasculation, tagging and bagging.
8. Common disease causing organisms like Ascaris, Entamoeba, Plasmodium, any fungus causing ringworm through permanent slides, models or virtual images or specimens. Comment on symptoms of diseases that they cause.
9. Flash cards models showing examples of homologous and analogous organs.

(C) Prepare a project report on any topic related to your syllabus (For the AISSCE Practical Exam-2024-2025)



Delhi Public School, Bulandshahr

Holiday Home Work

Class : XII

Mathematics

- Chapters: – Relation and function, Inverse Trigonometric Functions, Matrix , Determinans.
- Solve the questions in class work note book.
- Attempt all questions carefully, feel free to ask your doubts any time.

Section – A Multiple Choice Questions

1. Let $f: R \rightarrow R$ be a function defined by $f(x) = 2 \cos(\sqrt{1+x+x^2})$ Then range of f is
 (a) $[-1,1]$ (b) $[-2,2]$ (c) R (d) None of these
2. Let $f: R \rightarrow R$ be a function defined by $f(x) = \frac{x}{x^2+1}$, Then f is
 (a) One – One but not On to
 (b) One –One & On to
 (c) On to but not One –One
 (d) Neither One- One nor On to
3. If $f: A \rightarrow B$ such that $|A|=4$ & $|B|=5$ then number of non empty relations are
 (a) 2^{20} (b) 2^{19} (c) $2^{20} - 1$ (d) 20
4. If $A = \{1,2,3\}$ then the relation $R = \{(1,1)\}$ is
 (a) Reflexive only (b) symmetric only (c) transitive only (d) none of these
5. If $R = \{(a,b) : a+b=4\}$ is a relation on set of Natural number, then R is
 (a) Reflexive (b) symmetric (c) anti – Symmetric (d) Transitive
6. The value of $\cos\left\{\sin^{-1}\frac{1}{4} + \sec^{-1}\frac{4}{3}\right\}$ is
 (a) $\frac{3\sqrt{15}-\sqrt{17}}{16}$ (b) $\frac{3\sqrt{15}+\sqrt{7}}{16}$ (c) $\frac{\sqrt{7}-3\sqrt{15}}{16}$ (d) $\frac{3\sqrt{15}-\sqrt{7}}{4}$
7. The value of $\tan^{-1}\{\tan(-6)\}$, is
 (a) $2\pi - 6$ (b) $2\pi + 6$ (c) $6 - 2\pi$ (d) $3\pi - 6$
8. The value of $\sin^{-1}(\sin 10)$ is
 (a) $3\pi - 10$ (b) $10 - 3\pi$ (c) $3\pi + 10$ (d) $4\pi - 10$
9. If $4 \sin^{-1}x + \cos^{-1}x = \pi$, then x equals to
 (a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $-\frac{1}{2}$ (d) none of these
10. The value of $\operatorname{Cosec}\left[2 \cot^{-1}x + \cos^{-1}\frac{4}{5}\right]$ is
 (a) $65/56$ (b) $56/65$ (c) $63/65$ (d) $65/63$
11. Let $AB = A$ and $BA = B$, then $A^2 + B^2$ is

(a) $A + B$ (b) $2AB$ (c) $2BA$ (d) *None of these*

12. If $A^2 = A$, then $(I - A)^2$

(a) $(I - A)$ (b) I (c) A (d) A^2

13. If A is an invertible matrix, then $\det A^{-1}$ is equal to

- (a) $\det(A)$ (b) $\frac{1}{\det(A)}$ (c) 1 (d) None of these
- 7 x 2 x 2 7

14. If $A = \begin{vmatrix} -5 & x+1 & 3 \\ 4 & x & 7 \end{vmatrix}$ and $B = \begin{vmatrix} x+1 & 3 & -5 \\ x & 7 & 4 \end{vmatrix}$, then the value of x for which $A + B = 0$ is

- (a) 2 (b) any real number (c) 0 (d) None of these

15. If A is singular matrix then $\text{Adj } A$ will be

- (a) Singular always (b) Non Singular always (c) may be Singular may be Non Singular (d) None of these

Section – B
Short Questions

16. Show that $\tan(\sin^{-1} \frac{3}{5}) = \frac{4}{3}$

17. Prove that : $\sin^{-1}(\frac{63}{65}) = \sin^{-1}(\frac{5}{13}) + \cos^{-1}(\frac{3}{5})$.

18. Prove that : $\cos[\tan^{-1}\{\sin(\cot^{-1}x)\}] = \frac{\sqrt{1+x^2}}{2+x^2}$

19. Prove that : $\sin^{-1}(\frac{8}{17}) + \cos^{-1}(\frac{4}{5}) = \cot^{-1} \frac{36}{77}$

20. Let $A = \begin{bmatrix} 2 & 3 \\ -1 & 2 \end{bmatrix}$ then show that $A^2 - 4A + 7I = 0$. Using this result calculate A^5 .

21. The area of a triangle with vertices $(-3,0)$, $(3,0)$ and $(0, k)$ is 9 sq. units find value of k .

22. If $\begin{vmatrix} 1 & 7 & 5 \\ 0 & 1 & 11 \\ 0 & 0 & 2 \end{vmatrix}$, then show that $|4A| = 64|A| = 128$.

23. Find the value of x if $\begin{vmatrix} 2 & 4 \\ 5 & 1 \end{vmatrix} = \begin{vmatrix} 2x & 4 \\ 6 & x \end{vmatrix}$.

24. Let $A = \begin{bmatrix} 3 & 7 \\ 2 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 6 & 8 \\ 7 & 9 \end{bmatrix}$, verify that $(AB)^{-1} = B^{-1}A^{-1}$.

25. If $\begin{vmatrix} x & 2 \\ 18 & x \end{vmatrix} = \begin{vmatrix} 5 & 6 \\ 18 & 6 \end{vmatrix}$, then x is equal to _____?

26. If $F(x) = \begin{bmatrix} \cos x & -\sin x & 0 \\ \sin x & \cos x & 0 \\ 0 & 0 & 1 \end{bmatrix}$, then show that $F(x) \cdot F(y) = F(x + y)$.

27. Show that AA' and $A'A$ are both symmetric matrices for any matrix A .

If A and B are symmetric matrices, such that AB and BA are both defined, prove that $AB - BA$ is skewsymmetric

28. Express the matrix as the sum of a symmetric and a skew symmetric matrix $\begin{bmatrix} 3 & 3 & -1 \\ -2 & -2 & 1 \\ -4 & 5 & 2 \end{bmatrix}$

29. Let $A = \begin{bmatrix} 2 & -1 \\ 3 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 5 & 2 \\ 7 & 4 \end{bmatrix}$ and $C = \begin{bmatrix} 2 & 5 \\ 3 & 8 \end{bmatrix}$. Find a matrix D such that $AB - CD = 0$.

30. The matrix $\begin{bmatrix} 5 & 10 & 3 \\ -2 & -4 & 6 \\ -1 & -2 & b \end{bmatrix}$ is a singular matrix, if the value of b is _____?