Sanskriti KMV SCHOOL

Session 2026-27

Summer Break Assignments

Grade-XII Science

Summertime offers the perfect pause to rejuvenate the body, mind, and spirit."

Dear Parents,

The summer vacation is a cherished opportunity to pause, reconnect with loved ones, and invest time in meaningful and enjoyable pursuits. To make this interval both enriching and engaging, we have curated a collection of experiential learning tasks aimed at promoting creativity, responsibility, and joyful exploration.

As the students unwind and recharge, we request your support in ensuring that this break is spent in a productive and wholesome manner. A few essential guidelines are as follows:

- **All assignments must be completed with sincerity and submitted promptly afterthe vacation. Kindly ensure the work is neatly arranged in a well-labelled folderwith the student's name, father's name, class, and section.**
- **Promote daily physical activity by encouraging your child to follow a simple fitnessroutine and adopt healthy eating habits.**
- **Engage your child in basic household tasks to instil a sense of cooperation andindependence.**
- **Limit screen time and create opportunities for heartfelt conversations andbonding, especially with grandparents.**
- **Maintain a creative journal capturing memorable outings, celebrations, or simplejoyful moments, accompanied by photographs.**
- **Let us work together to make this summer a season of discovery, joy, andmeaningful learning.**

"Wishing you a refreshing, safe, and sunshine-filled holiday season!"

HAPPY HOLIDAYS

ENGLISH

1. PROJECT FILE

Guidelines

o It is compulsory for all students to prepare the Project File for Internal Assessment.

o The assessment will include:

Project File – 5 Marks

Viva – 5 Marks

The project should be handwritten in about 800–1000 words.

Use A4 size white sheets and get the file spiral bound.

Cover Page, Acknowledgement and Certificate may be printed, but the remaining work should be handwritten neatly.

Paste pictures, charts and graphs on the left side and write the content on the right side.

Students should collect information through surveys, interviews, questionnaires, articles and case studies.

At least 10 people should be interviewed and a questionnaire of 15 questions should be prepared.

Attach photographs, questionnaire and other evidences at the end of the file.

Suggested Topics for Grade XII

- **Importance of Time Management in Student Life**
- **Linguistic Chauvinism and Importance of Mother Tongue**
- **Fear, Phobias and Ways to Overcome Them**
- **Stress, Anxiety and Mental Health among Students**
- **Environmental Degradation and Conservation**
- **Meditation and Importance of Self-Introspection**

- **Importance of Parents and Care for Elders**
- **Condition of Old Age Homes in India**
- **Freedom Movements of India and Contributions of Freedom Fighters**
- **Importance of Nature and Mental Peace**
- **Disability and Inclusion in Society**
- **Society's Attitude Towards Disabled People**
- **Life in Slums and Child Labour**
- **Education for Underprivileged Children**
- **Role of Youth in Upliftment of Society**
- **War, Peace and Their Impact on Society**
- **Crime and Criminal Behaviour in Society**
- **Condition of Farmers in India**
- **Or Any Contemporary Topic**

Project File Layout

- **Cover Page**
- **Objective / Purpose**
- **Certificate**
- **Action Plan**

- **Introduction**
- **Main Content (Survey, Interview, Questionnaire, Case Study, Articles, Graphs, Pictures)**
- **Handwritten Report / Essay (800–1000 words)**
- **Student Reflection (100–150 words)**
- **Photographs / Evidence**
- **Bibliography / Resources**

Parameters of Assessment

- **Quality of Content**
- **Accuracy of Information**
- **Creativity and Presentation**
- **Grammar and Spellings**
- **Clarity of Ideas**
- **Timely Submission**
- **Participation and Effort**
- **Knowledge and Understanding**

Q2.Activities

a. You are Rohan living in Punjab. Write an invitation to your friend living in Odisha to spend his summer vacations with you.

b. Write a notice informing the students of class 9 to 12 about the school trip to Odisha that your school cultural society is organising during the summer vacation.

Q3. Self Expression Activity

a) Motivational Speech

Prepare a 3–4 minute speech on topics like:

Never Give Up

Importance of Discipline

Power of Positivity

Success Through Hard Work

b)Any Book or Movie Review

Present:

summary

favourite character

moral/message

personal opinion

SCIENCE

LIST OF THE PHYSICS, CHEMISTRY & BIOLOGY INVESTIGATORY PROJECT

Guidelines for the physics project work:

(i) Project work should be based on individual research.

(ii) BIOLOGY- Prepare a typed project report in the form of word file of more than 25 pages . Include pictures, flow charts, case studies in project report. Font size for titles - 20, subtitles - 16 and for text material – 14

(iii)CHEMISTRY- Prepare a hand written research project of 25 to 30 pages as instructed in class.

(iv)PHYSICS- Prepare a hand written research project of 25 to 30 pages as instructed in class.

S. No.	Students Name (Medical)	Topic (Physics Project Name)	Topic (Chemistry Project Name)	Topic (Biology Project Name)
1	ARSHDEEP KAUR	To study various factors on which the internal resistance/EMF of a cell.	Chemicals in food	Common diseases in urban areas
2	BHAVNOOR KAUR	To study the variations in current flowing in a circuit containing an LDR because of a variation in (i) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). (ii) the distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR.	Biomolecules	Types of Cardiac diseases in human beings
3	DEVINA	To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equiconvex lens (made from a glass of known refractive index) and an adjustable object needle.	Study of Drugs and medicines	To study pollination in angiosperms

4	DIVISHA SETH	To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed.	Applications of colloids	Diabetes
5	DIVYA	To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.	Study of presence of insecticides and pesticides in fruits and vegetables.	Study of causes of infertility in human beings
6	DRISHTI KALER	To estimate the charge induced on each one of the two identical Styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law.	Study of different types of batteries	Cancer
7	ISHITA	To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/(bulb) in a circuit fed up by an A.C. source of adjustable frequency.	A comparative study on soaps and detergents	AIDS
8	GANGA	To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer.	Study of pesticides in food	Biotechnology and it's applications
9	GURVEEN SAINI	Tostudy various factors on which the i nternal resistance/EMF of a cell.	Chemical kinetics	Microbes in human welfare
10	HARMANNAT KAUR	To study the variations in current flow ing in a circuit containing an LDR because of a variation in (iii)the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). the distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR.	Use of organic compounds in daily life.	Ecosystem
11	HARSIMAR SINGH TEJA	To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equiconvex lens (made from a glass of known refractive index) and an adjustable object needle.	Applications of co-ordination compounds.	Sexual reproduction in flowering plants
12	JASMINE KAUR BHOGAL	To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed.	Study of Proteins	Human Genome Project

13	JASMINE SAINI	To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.	Extraction of metals	Genetic disorders
14	KANAN KALRA	To estimate the charge induced on each one of the two identical Styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law.	Study of Antibiotics	Genetic material - DNA
15	LAGAN SHREE	To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/(bulb) in a circuit fed up by an A.C. source of adjustable frequency.	Chemistry of polymers	Morphological and Anatomical Evidences of evolution
16	MADHUR PREET KAUR	To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer.	Study of role of drugs	Common human diseases
17	MANINDER PAL SINGH	Tostudy various factors on which the i resistance/EMF of a cell.	Study of different types of antacids	Defence nism of human
18	MANMEET KAUR	To study the variations in current flow ing in a circuit containing an LDR because of a variation in (iv)the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). (v) the distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR.	To study the effect of corrosion on metals. (Reference to iron)	Addiction
19	MANPREET KAUR	To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equiconvex lens (made from a glass of known refractive index) and an adjustable object needle.	Study the effect of acids and base on tensile strength of natural fibres.	Microbes in human welfare
20	MANVIR KALER	To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed.	Industrial use of catalyst and enzymes	Biodiversity and it's conservation
21	MINAL TIWARI	To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.	Chemicals in food	Abiotic and biotic factors affecting pollination process.

22	NAVPREET SINGH	To estimate the charge induced on each one of the two identical Styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law.	Biomolecules	Addiction of alcohol in humans
23	NIHARIKA SHARMA	To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/(bulb) in a circuit fed up by an A.C. source of adjustable frequency.	Study of Drugs and medicines	Cancer
24	NIKITA ARORA	To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer.	Applications of colloids	Ecosystem
25	NISHTHA	Tostudy various factors on which the i nternal resistance/EMF of a cell.	Comparative study of fermentation of different fruit juices.	Immunity in human beings
26	NIYATI SHARMA	To study the variations in current flow ing in a circuit containing an LDR because of a variation in (vi)the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). (vii) the distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR.	Study of different types of batteries	Microbes in human welfare
27	PALAK SAINI	To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equiconvex lens (made from a glass of known refractive index) and an adjustable object needle.	A comparative study on soaps and detergents	Addiction and drug abuse
28	PAWANI	To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed.	Study of pesticides in food.	Immune system
29	PRAKRITI SHARMA	To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.	Extraction of essential oil from plants like mint, lemon grass, orange peel.	Human genome project
30	RAHAT	To estimate the charge induced on each one of the two identical Styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law.	Use of organic compounds in daily life.	Study of genetic disorders

31	REET VERMA	To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/(bulb) in a circuit fed up by an A.C. source of adjustable frequency.	Applications of co-ordination compounds.	Ecosystem
32	SAHIB SINGH	To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer.	Study of Proteins	Applications of biotechnology
33	SANNA BHATI	Tostudy various factors on which the i nternal resistance/EMF of a cell.	Extraction of metals	Infertility in human beings
34	SANIKA SHARMA	Tostudy the variations in current flo wing in a circuit containing an LDR because of a variation in (viii) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). (ix)the distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR.	Green chemistry – a new era in chemical research.	Genetic disorders in human beings
35	SEHAJVEER SINGH MOKHA	To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equiconvex lens (made from a glass of known refractive index) and an adjustable object needle.	Chemistry of polymers	AIDS
36	SHABAD SHARMA	To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed.	Study of role of drugs	Autoimmune disorders
37	SHORYA SHARDA	To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.	Study of different types of antacids	Biotechnology-Principles and applications
38	SRISHTI VERMA	To estimate the charge induced on each one of the two identical Styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law.	To study the effect of corrosion on metals. (Reference to iron)	Genetic molecule - DNA
39	SIMARPREET KAUR	To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/(bulb) in a circuit fed up by an A.C. source of adjustable frequency.	Environmental pollution and its chemical effects.	Human Genetics

40	TAVIN JOLLY	To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer.	Industrial use of catalyst and enzymes	Biotechnology and it's applications
41	TAVISHA SONDHI	To study various factors on which the in ernal resistance/EMF of a cell.	A comparative study on soaps and detergents	Genetic Disorders in human beings
42	TEJASWANI RANDEV	To study the variations in current flow ing in a circuit containing an LDR because of a variation in (x) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). (xi) the distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR.	Study of Drugs and medicines	Applications of biotechnology
43	TUSHAR SINGH	To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equiconvex lens (made from a glass of known refractive index) and an adjustable object needle.	Green chemistry – a new era in chemical research.	Infertility in human beings
44	VANSHIKA	To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed.	A comparative study on soaps and detergents	Pollination in angiosperms
45	VANSHIKA BADHAN	To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.	Comparative study of fermentation of different fruit juices.	Microbes in human welfare
46	YOGESH SHARMA	To study the variations in current flow ing in a circuit containing an LDR because of a variation in the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). the distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR.	Study of presence of insecticides and pesticides in fruits and vegetables.	Auto immune diseases

		NON MEDICAL		
S. No.	**Students Name (Non -Medical)**	**Topic (Physics Project Name)**	**Topic (Chemistry Project Name)**	
41	AARUSH SHARMA	Tostudy various factors on which the int ernal resistance/EMF of a cell.	Chemicals in food	
42	AKSHITA	Tostudy the variations in current flow ing in a circuit containing an LDR be cause of a variation in (xii) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). the distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR.	Study of pesticides in food	
43	ANGEL	To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equiconvex lens (made from a glass of known refractive index) and an adjustable object needle.	Study of Drugs and medicines	
44	ARMAAN BUNGER	To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed.	Chemistry in artificial flavours and additives.	
45	ARYAN GUPTA	To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.	Chemistry in every day	
46	AVNEET KAUR	To estimate the charge induced on each one of the two identical Styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law.	Green chemistry – a new era in chemical research.	
47	BHAVANSH MAHAJAN	To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/(bulb) in a circuit fed up by an A.C. source of adjustable frequency.	A comparative study on soaps and detergents	
48	DILJEET SINGH	To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer.	Study of pesticides in food	
49	DILSHAN SINGH	Tostudy various factors on which the int ernal resistance/EMF of a cell.	Chemical kinetics	
50	DIVYANSH KUMAR	Tostudy the variations in current flow ing in a circuit containing an LDR be cause of a variation in	Use of organic compounds in daily life	

		(xiii) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). the distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR.		
51	DIVYANSHU SINGH	To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equiconvex lens (made from a glass of known refractive index) and an adjustable object needle.	Applications of co-ordination compounds.	
52	GRACY CHOPRA	To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed.	Study of Proteins	
53	GURSIMAR SINGH	To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.	Comparative study of fermentation of different fruit juices.	
54	HARKIRAT SINGH	To estimate the charge induced on each one of the two identical Styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law.	Study of Antibiotics	
55	HARLEN KAUR	To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/(bulb) in a circuit fed up by an A.C. source of adjustable frequency.	Chemistry of polymers	
56	HARSHIT KHANNA	To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer.	Study of role of drugs	
57	HARSHIT SHARMA	Tostudy various factors on which the int ernal resistance/EMF of a cell.	Study of different types of antacids	
58	HARSIRAT KAUR	Tostudy the variations in current flow ing in a circuit containing an LDR be cause of a variation in (xiv) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). the distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR.	To study the effect of corrosion on metals. (Reference to iron)	
59	ISHAAN ARYA	To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equiconvex lens (made from a glass of	Drugs and medicines -	

		known refractive index) and an adjustable object needle.	classification and uses.	
60	JAPNEET KAUR	To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed.	Biomolecules	
61	JASMEEN RATTU	To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.	Study of Drugs and medicines	
62	JAYANT DUTT	To estimate the charge induced on each one of the two identical Styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law.	Applications of colloids	
63	KAVISH MEHRA	To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/(bulb) in a circuit fed up by an A.C. source of adjustable frequency.	Chemistry in every day	
64	NAITIK SINGH	To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer.	Study of different types of batteries	
65	NEHAL MITTAL	Tostudy various factors on which the int ernal resistance/EMF of a cell.	A comparative study on soaps and detergents	
66	NITIKA SAINI	Tostudy the variations in current flow ing in a circuit containing an LDR be cause of a variation in (xv) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). the distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR.	Study of pesticides in food	
67	PARAM THAKRAAN	To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equiconvex lens (made from a glass of known refractive index) and an adjustable object needle.	Chemical kinetics	
68	PIYUSH GUPTA	To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed.	Study the effect of acids and base on tensile strength of natural fibres.	
69	PRANAV ARORA	To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.	Applications of co-ordination compounds.	
70	PRANAV BHANDHARI	To estimate the charge induced on each one of the two identical Styrofoam (or	Extraction of essential oil from	

		pith) balls suspended in a vertical plane by making use of Coulomb's law.	plants like mint, lemon grass, orange peel.	
71	PRATHANA SHARMA	To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/(bulb) in a circuit fed up by an A.C. source of adjustable frequency.	Extraction of metals	
72	RISHAV KHANNA	To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer.	Study of Antibiotics	
73	SANNA AGGGARWAL	Tostudy various factors on which the int ernal resistance/EMF of a cell.	Chemistry of polymers	
74	SHAURYAV EER RAYAN	Tostudy the variations in current flow ing in a circuit containing an LDR be cause of a variation in (xvi) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). the distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR.	Study of role of drugs	
75	SOURAV BHATTI	To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equiconvex lens (made from a glass of known refractive index) and an adjustable object needle.	Study of different types of antacids	
76	SUKHJINDE R SINGH	To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed.	To study the effect of corrosion on metals. (Reference to iron)	
77	SUKHMEET KAUR	To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.	Study of Antibiotics	
78	VAIBHAV PAUL	To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed.	Study the effect of acids and base on tensile strength of natural fibres	
79	YUVRAJ KUMAR	To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer.	Study of different types of batteries	

"TELL ME AND
I FORGET.
TEACH ME AND
I REMEMBER.
INVOLVE ME AND
I LEARN" –
Benjamin Franklin

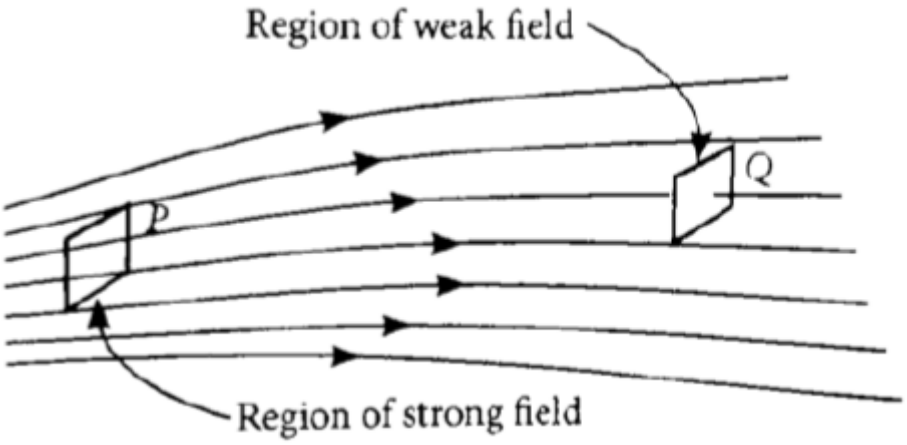
PHYSICS

ANSWER THE FOLLOWING QUESTIONS:

READ THE PASSAGE AND ANSWER THE QUESTIONS THAT FOLLOW THE PASSAGE:

Case Study based Question

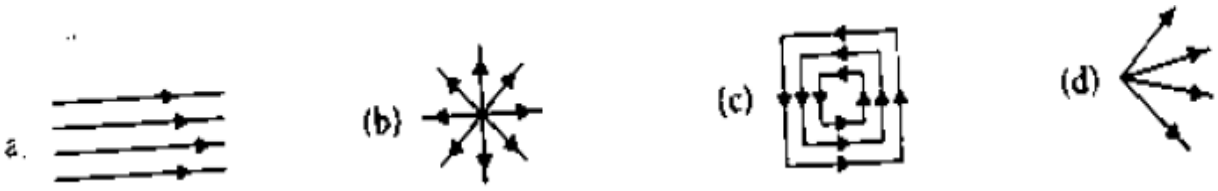
Q.1 Electric field strength is proportional to the density of lines of force i.e., electric field strength at a point is proportional to the number of lines of force cutting a unit area element placed normal to the field at that point. As illustrated in given figure, the electric field at P is stronger than at Q.



(i) Electric lines of force about a positive point charge are
(a) radially outwards (b) circular clockwise (c) radically inwards (d) parallel straight lines

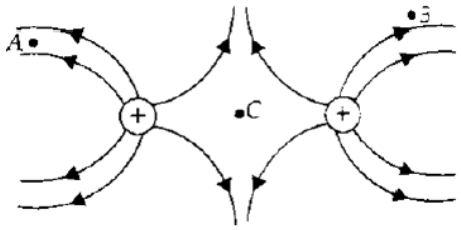
(ii) Which of the following is false for electric lines of force?
(a) They always start from positive charge and terminate on negative charges.
(b) They are always perpendicular to the surface of a charged conductor.
(c) They always form closed loops.
(d) They are parallel and equally spaced in a region of uniform electric field.

(iii) Which one of the following patterns of electric line of force is not possible in field due to stationary charges?



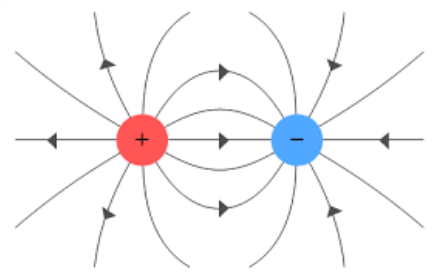
(iv) Electric field lines are curved
(a) in the field of a single positive or negative charge.
(b) in the field of two equal and opposite charges.
(c) In the field of two like charges.
(d) Both (b) and (c)

(v) The figure below shows the electric field lines due to two positive charges. The magnitudes E_A, E_B and E_C of the electric fields at point A, B and C respectively are related as



(a) $E_A > E_B > E_C$ (b) $E_B > E_A > E_C$
(c) $E_A = E_B > E_C$ (d) $E_A > E_B = E_C$

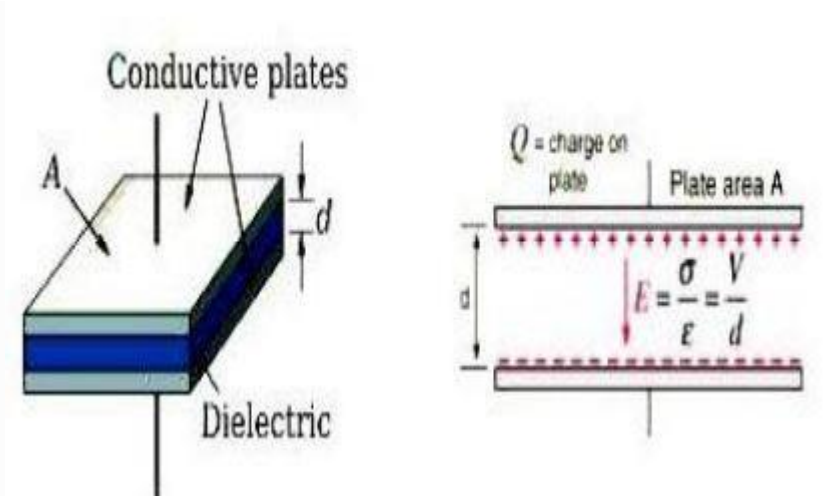
Q.2 Electric charge is the physical property of matter that causes it to experience a force when placed in an electromagnetic field. There are two types of charges positive and negative charges. Also, like charges repel each other whereas unlike charges attract each other.



1. Charge on a body which carries 200 excess electrons is:
    1. -3.2×10^{-18} C
    2. 3.2×10^{18} C
    3. -3.2×10^{-17} C
    4. 3.2×10^{-17} C
1. Charge on a body which carries 10 excess electrons is:
    1. -1.6×10^{-18} C
    2. 1.6×10^{-18} C
    3. 2.6×10^{-18} C
    4. 1.6×10^{-21} C
2. Mass of electron is:
    1. 9.1×10^{-31} kg
    2. 9.1×10^{-31} g
    3. 1.6×10^{-19} kg
    4. 1.6×10^{-19} g
3. A body is positively charged, it implies that:
    1. there is only a positive charge in the body
    2. there is positive as well as negative charge in the body but the positive charge is more than negative charge
    3. there is equally positive and negative charge in the body but the positive charge lies in the outer regions
    4. the negative charge is displaced from its position
4. On rubbing, when one body gets positively charged and other negatively charged, the electrons transferred from positively charged body to negatively charged body are:

1. Valence electrons only
2. Electrons of inner shells
3. Both valence electrons and electrons of the inner shell.
4. none of the above

Q.3 Capacitance is the ratio of the change in the electric charge of a system to the corresponding change in its electrical potential. Capacitor consists of two metal plates which are filled with dielectric. When a voltage is applied to these plates an electric current flows charging up one plate with a positive charge with respect to the supply voltage and the other plate with an equal and opposite negative charge. The generalized equation for the charge stored in a capacitor is given by q=CV, where C is the capacitance of the capacitor.



(i) The capacitance of a capacitor does not depend on
a. Area of plates
b. Separation between the plates
c. Applied potential difference
d. Dielectric constant

(ii) A parallel plate air capacitor with no dielectric between the plates is connected to the constant voltage source. How would capacitance and charge change if dielectric of dielectric constant K=2 is inserted between the plates. C0 and Q0 are the capacitance and charge of the capacitor before the introduction of the dielectric.

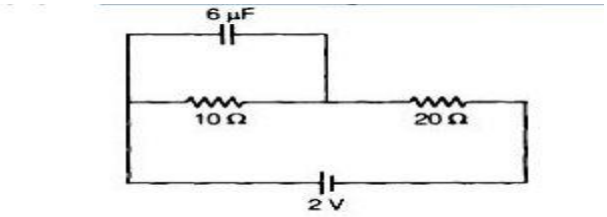
a. $C=C_0/2$; $Q=2Q_0$

b. $C=2C_0$; $Q=Q_0/2$

c. $C=C_0/2$; $Q=Q_0/2$

d. $C=2C_0$; $Q=2Q_0$

(iii) Find the charge stored in the capacitor in the given circuit



a. 3 μC b. 6 μC

c. 8 μC d. 4 μC

(iv) The capacitance is a circuit component that opposes the change in the circuit _____

a. current b. voltage
c. impedance d. None of the above

(v) Amount of energy stored in a capacitor of 5μF when it is charged to a potential of 100 V.

a. 2.5 J b. 2.5 x 10^{-3} J
c. 25 x 10^{-3} J d. 250 x 10^{-3} J

Q.4 As a thundercloud billows, rising ice crystals collide with falling hailstones. The hail strips electrons from the rising ice and the top of the cloud becomes predominantly positive, while the bottom is mostly negative. Negative charges in the lower cloud repel negative charges on the ground. Electric fields build and a spark ignites a cloud-to-ground lightning flash through a potential difference of hundreds of millions of volts. The lightning bolt featured in Figure dramatically demonstrates that when a charge is placed in an electric field, it will move. The potential to move implies the existence of stored energy. Tremendous amounts of electric energy are "stored" in the electric fields created by the separation of charge between thunderclouds and the ground. This energy is often released in the "explosion" of a lightning bolt.

(i). The insulated spheres of radii R_1 and R_2 having charges $Q_1$and Q_2 respectively are connected to each other. There is
(a) No change in the energy of the system. (b) An increase in the energy of the system.
(c) Always a decrease in the energy of the system. (d)A decrease in the energy of the system unless $Q_1R_2 = Q_2R_1$

(ii) +2C and +6C two charges are repelling each other with a force of 12 N. If each charge is given −2C of charge, then the value of the force will be
(a)4N (Attractive) (b)4N (Repulsive)
(c)8N (Repulsive) (d)Zero

(iii) What is the potential energy of the equal positive point charges of 1μC each held 1 m apart in air
(a) $9 \times 10^{-3}\ J$ (b)$9 \times 10^{-3} eV$

(c)$2eV/m$ (d)Zero

(iv) Two protons A and B are placed in space between plates of a parallel plate capacitor charged upto V volts (See fig.) Forces on protons are FA and FB, then

(a)$F_A > F_B$ (b) $< F_B$

(c)$F_A = F_B$ (d) Nothing can be said

(v) If a unit positive charge is taken from one point to another over an equipotential surface, then

(a) Work is done on the charge (b) Work is done by the charge

(c) Work done is constant (d) No work is done

Q.5 The concet of field field was first introduced by Faraday and is now among the central concepts in physics. The effect of electric charge ***q*** on the surrounding is called **electric field** due to charge ***q*** insace around it. The eectric field intensity at a point in an electric field is the force experienced by a unit positive test charge palced at that point, provided the presence of this charge does not distrub the field. If a test charge q_0 (Positive and negligible small) placed at a point in electric field experience a force F, then electric intensity at that point will be

$$E=F/q_0$$

Due to quantization, test charge $q_0$cannot be less than *e*. however, on macroscopic scale, this is good as taking limit $q_0 \longrightarrow 0$

Electric intensity is a vector quantity, its direction is sam as that of the force F is experience by a unit positive charge. The direction of electric intensity is the direction in which the unit positive charge (or q_0) begins to move, if it is free to do so.

(i) At a certain distance from a point charge, the electric field is 600 Vm^{-1} and the potential is 2400V. The distance is:

a) 4m. b) 1/4m.

c) 16m. d) 1/16m.

(ii) The electrostatic field at the surface of the solid sphere is:

a) Minimum b) Maximum

c) Depends on the surface d) Maximum at the centre.

(iii) Which physical quantity has unit Newton/coulomb.

a) Electric Charge b) Electric field

c) Electric force d) Electric potential

(iv) Two parallel metal plates having a charge +Q and –Q face each other at a certain distance between them. If the plates are now dipped in kerosene oil tank. The electric field between the plates will be:

a) Become Zero b) Decrease

c) Increase d) remains constant

(v) Which Quantity is vector quantity among the following?

a) Electric flux b) Electric charge

c) Electric field d) Electric potential

Q.6 Two point charge 4 µC and 1 µC are separated by a distance of 2m in air. Find the point on the line joining the charges at which the net electric field of the system is zero.

Q.7 An electric dipole of length 4m, when placed with its axis making an angle 60^0 with a uniform electric field, experience a torque of $4\sqrt{3}$ Nm. Calculate the potential energy of the dipole, if it has a charge ± 8 *n*C.

Q.8 A dielectric slab of thickness 1.0 cm and dielectric constant 5 is placed between the plates of a parallel plate capacitor of plate area 0.01 m^2 and separation 2.0 cm. calculate the change in capacity on introduction o dielectric, what would be the change, if dielectric slab were conducting?

Q.9 A capacitor of capacitance C_1= 1.0μF withstand the maximum voltage V_1=6.0kV. While another capacitor of capacitance C_2= 2.0 μF withstand the maximum voltage V_2=4.0kV. What maximum voltage will the system of these two capacitors withstand if they are connected are in series.

Q.10 A slab of material of dielectric constant K has same area as the plate of parallel plate capacitor, but has a thickness 3d/4. Find the ration of the capacitance with dielectric inside it to its capacitance without the dielectric.

Write Seven experiments in your practical file.

1. To determine resistivity of two / three wires by plotting a graph for potential difference versus current.
2. To find resistance of a given wire / standard resistor using metre bridge.
3. To verify the laws of combination (series) of resistances using a metre bridge.
4. To verify the laws of combination (parallel) of resistances using a metre bridge.
5. To determine resistance of a galvanometer by half-deflection method and to find its figure of merit.
6. To convert the given galvanometer (of known resistance and figure of merit) into a voltmeter of desired range and to verify the same.
7. To convert the given galvanometer (of known resistance and figure of merit) into an ammeter of desired range and to verify the same.

CHEMISTRY

1. **Complete your investigatory project which you have been already alloted (except the observation part if you haven't performed your project).**

PROJECT FILE SHOULD CONTAIN PAGES IN FOLLOWING ORDER:

a. CERTIFICATE

b. ACKNOWLEDGEMENT

c. AIM OF PROJECT

d. INTRODUCTION

e. THEORY

f. APPARATUS REQUIRED

g. PROCEDURE

h. OBSERVATION

i. CONCLUSION

j. PRECAUTION

k. BIBLIOGRAPHY

**** STRICTLY ADHERE TO ABOVE MENTIONE D ORDER**

2. **Complete the practical files as instructed in class.(Pdf of the file will be shared in the group)**
3. **Solve the assignment given below on loose sheets.**

SOLUTIONS

1 State Henry's law correlating the pressure of a gas and its solubility in a solvent and mention two applications of the law.

2 Calculate the temperature at which a solution containing 54 g of glucose, (C6 H12 O6) in 250 g of water will freeze. (Kf for water =1.86 K mol kg -1)

3 State Raoult's law for solutions of volatile liquids. Taking suitable examples explain the meaning of positive and negative deviations from Raoult's law. Define the term osmotic pressure. Describe how the molecular mass of a substance can be determined by a method based on measurement of osmotic pressure?

4 Define osmotic pressure. How is it that measurement of osmotic pressures is more widely used for determining molar masses of macromolecules than the rise in boiling point or fall in freezing point of their solutions?

5 Differentiate between molality and molarity of a solution. What is the effect of change in temperature of a solution on its molality and molarity?

6 (a) Define the following terms: (i) Mole fraction(ii) Van't Hoff factor (b) 100 mg of a protein is dissolved in enough water to make 100 mL of a solution. If this solution has an osmotic pressure 13.3 mm Hg at 25° C, what is the molar mass of protein? (R = 0.0821 L atm mol–1 K–1 and 760 mm Hg = 1 atm.)

7 Calculate the freezing point depression for 0.0711 m aqueous solution of sodium sulphate(Na2 SO4), if it is completely ionised in solution. If this solution actually freezes at – 0.320 °C, what is the value of Van't Hoff factor for it at the freezing point? (Kf for water is 1.86°C mol–1)

8 What is 'reverse osmosis'?

9 Non-ideal solutions exhibit either positive or negative deviations from Raoult's law. What are these deviations and why are they caused? Explain with one example for each type.

10 A solution prepared by dissolving 1.25 g of oil of winter green (methyl salicylate) in 99.0 g of benzene has a boiling point of 80.31°C. Determine the molar mass of this compound. (B.P. of pure Benzene = 80.10°C and Kb for benzene = 2.53°C kg mol–1)

11 A solution of glycerol (C3H8O3; molar mass = 92 g mol-1) in water was prepared by dissolving some glycerol in 500 g of water. This solution has a boiling point of 100.42°C. What mass of glycerol was dissolved to make this solution? Kb for water = 0.512 K kg mol-1.

12 Define the terms, 'osmosis' and 'osmotic pressure'. What is the advantage of using osmotic pressure as compared to other colligative properties for the determination of molar masses of solutes in solutions.

13 What mass of NaCl (molar mass = 58.5 g mol–1) must be dissolved in 65 g of water to lower the freezing point by 7.5°C? The freezing point depression constant, Kf , for water is 1.86 K kg mol–1. Assume van't Hoff factor for NaCl is 1.87.

14 What mass of ethylene glycol (molar mass = 62.0 g mol–1) must be added to 5.50 kg of water to lower the freezing point of water from 0°C to – 10.0°C? (Kf for water = 1.86 K kg mol–1)

15. 15 g of an unknown molecular substance was dissolved in 450 g of water. The resulting solution freezes at – 0.34°C. What is the molar mass of the substance? (Kf for water = 1.86 K kg mol–1).

Electrochemistry

1 Conductivity of 0.00241M acetic acid solution is 7.896X 10-5 S cm -1. Calculate its molar conductivity in this solution. If ∧m °∧m0 for acetic acid is 390.5 S cm2 mol -1, what would be its dissociation constant?

2 The conductivity of 0.20 M solution of KCl at 298 K is 0.0248 S cm-1. Calculate its molar conductivity in this solution.

3 (a) Depict the galvanic cell in which the following reaction takes place: Zn (s) + 2Ag+ (aq)→ Zn2+ (aq) + 2Ag(s). Also indicate that in this cell
(i) which electrode is negatively charged.
(ii) what are the carrier of the current in the cell.
(iii) what is the individual reaction at each electrode.
(b) Write the Nernst equation and determine the e.m.f. of the following cell at 298 K: Mg(s) | Mg2+ (0.001M) || Cu2+ (0.0001M) | Cu (s)

(Given : E° = Mg2+ /Mg = - 2.375 V, E° = Cu2+ /Cu = 0.34 V)
(b) Three conductivity cells A, B and C containing solutions of zinc sulphate, silver nitrate and copper sulphate respectively are connected in series. A steady current of 1.5 amperes is passed through them until 1.45 g of silver is deposited at the cathode of cell B. How long did the current flow? What mass of copper and what mass of zinc got deposited in their respective cells? (Atomic mass : Zn = 65.4 u, Ag =108 u, Cu = 63.5 u)

4 (a) Define molar conductivity of a substance and describe how for weak and strong electrolytes, molar conductivity changes with concentration of solute. How is such change explained?
(b) A voltaic cell is set up at 25 oC with the following half cells:
Ag+ (0.001 M) | Ag and Cu2+ (0.10 M) | Cu What would be the voltage of this cell? (Eocell = 0.46 V
5. (a) Express the relationship amongst cell constant, resistance of the solution in the cell and conductivity of the solution. How is molar conductivity of a solute related to conductivity of its solution. (b) Calculate the equilibrium constant for the reaction. Fe + Cd2+ → Fe2+ + Cd (Given: EoCd2+/Cd = – 0.40 V, EoFe2+/Fe = – 0.44 V]).

BIOLOGY

SOLVE PREVIOUS YEARS CBSE BOARD EXAMINATION QUESTIONS IN SHEETS

LESSON – SEXUAL REPRODUCTION IN FLOWERING PLANTS

1 Why do farmers find production of hybrid seeds costly?

2 Fertilization is essential for production of seeds , but in some angiosperms seeds develop without fertilization why?

3 List the components of the embryo sac and mention their fate on fertilisation.

4 Parthenocarpy and apomixis have been observed in some plants. Give an example of each . State similarities and differences observed.

5 Draw a T.S. of young anther of an angiosperm. Label the different walls and write their functions.

6 Draw a L.S of pistil showing pollen tube entering the embryo sac in an angiosperm and label any six parts other than stigma, style and ovary.

7 Describe four devices in a flowering plants which prevent both autogamy and geitonogamy.

8 What are possible types of pollinations in chasmogamous flowers?

LESSON – HUMAN REPRODUCTION

1 Describe the events of oogenesis and spermatogenesis with the help of schematic representation.

2 Describe the chemical and physical events of fertilization.

3 What role does pituitary gonadotrophins play during follicular and ovulatory phases of menstrual cycle? Explain the shifts in steroidal secretions.

4 Where are the stem cells located in this embryo? Mention the fate of cells.

5 Explain the role of pituitary and ovarian hormones in the menstrual cycle of human females.

7 Name the stage of human embryo at which it gets implanted. Explain the process .How is polyspermy prevented in humans?

8 Draw microscopic view of human sperm cell and ovum cell.

9 Mention the function of Epididymis, Fallopian tubes, Vagina , Uterus , Corpus luteum, Seminiferous tubules ,Scrotum and Graafian follicle.

LESSON – REPRODUCTIVE HEALTH

1 Our government has intentionally imposed strict conditions for MTP in our country. Justify giving a reason.

2 An infertile couple is advised to adopt test tube baby programme. Describe two principles procedures adopted for such technology.

3 Name the hormonal composition of contraceptive pills used by females and explain the principle how these pills work.

4 Comment on the reproductive and child care health programme of the government to improve the reproductive health of people.

5 A mother of one year daughter wanted to space the second child . Her doctor advised her for Cu-T. Explain its contraception action.

6 Comprehend IVF is a boon to infertile couples in 200 words.

7 Should government of India restrict the family size in order to control human population .Comment

LESSON - PRINCIPLES OF INHERITANCE

1Write a short note on chromosomal theory of inheritance.

2 How ratios obtained in Mendel inheritance are different from ratios of incomplete dominance.

3 Frame a dihybrid cross by taking an example of linked genes.

4 Differentiate linkage and recombinants. What is gene mapping? How it is useful?

5 Explain mendelian disorders and make punnet cross by taking suitable examples of diseases .

6 Differentiate between Turner , Kleinfelter and down syndome on the basis of chromosome number and symptoms.

7 Describe the genetic makeup of insects, fishes, birds.

8 Explain co-dominance with the help of blood groups (by taking your own example)

Complete the practical file by writing both section A& B experiments

Section -A

Experiments – 1,2,3,4 & 5

Section – B

Experiments- 1,2,3,4,5,6,8,9,10 &11

Make the investigatory project in the typed form as alloted in the list.

Final copy of the project will be compiled only if your first copy of information is approved (Project should include introduction ,content related to the topic assigned, pictures , flow charts, case studies , conclusion and bibliography).

COMPUTER SCIENCE

PART A

PROJECT WORK

Create **project Synopsis** based on the topic assigned to you during our class discussion. This project will help you strengthen your skills in **Python programming** and **MySQL database integration**.

Sample Topic: School Management System

1. Title of the Project
School Management System

2. Objectives of the Project
- To maintain student records digitally.
- To reduce manual paperwork.
- To improve efficiency and accuracy.
- To manage academic details easily.

3. Software & Hardware Requirements
Software: Python IDLE / VS Code, MySQL, Windows OS
Hardware: Computer/Laptop, Minimum 4GB RAM

4. Modules of the Project
• Add Student Record
• Search Student Record
• Modify Record
• Delete Record
• Display Records

5. Input and Output Design
Input: Admission Number, Name, Class, Marks
Output: Record Added Successfully

6. Database Design

Table Name: STUDENT
Fields: AdmNo, Name, Class, Section, Marks, FeeStatus

7. Future Scope

- Can be converted into web application.
- Online fee payment system can be added.
- Parent login system can be included.

8. Conclusion

This project improves programming and database handling skills.

Topics :

Name of students	Project
Aarush , Harshit	School Managemet
Jayant , Kavish	Hotel Managemet
Nitika	Bank Managemet

Note: Groups and topics are discussed and assigned in class already.

PART B

PART 3 – MYSQL ASSIGNMENT

Create the following tables:

Table 1: STUDENT
Fields: RollNo, Name, Class, Stream, Marks

Table 2: EMPLOYEE
Fields: EmpID, EmpName, Department, Salary, City

Perform the following queries:

STUDENT Table Queries:
1. Display all records.
2. Display students scoring above 85.
3. Arrange names alphabetically.
4. Display highest marks.
5. Display average marks.

6. Increase marks by 5.
7. Delete records below 40 marks.

EMPLOYEE Table Queries:
1. Display employees from IT department.
2. Display employees having salary greater than 50000.
3. Arrange salary in descending order.
4. Display maximum and minimum salary.
5. Count total employees.
6. Update salary of any two employees.

Application Based Questions:
1. Difference between WHERE and HAVING clause.
2. Explain Primary Key with example.
3. Difference between DELETE and DROP command.
4. Advantages of DBMS.

PART C

1. Make a Quiz game on Orissa using Python. (Minimum 10 questions should be there)

MUSIC

Project File

* Raag Bhairav and Bageshwari (Introduction and notation)

* Introduction and notation of Rupak taal and Jhaptaal along with Ekgun , dugun ,tigun and chaugun.

FINE ARTS

Make two landscape paintings (nature scene, city scene, railway station, or bus stand) on a canvas board and a half sheet.

Still life - any 2 (size -Half sheet or Canvas) Composition - any 2 (Half sheet)

PHYSICAL EDUCATION

Prepare a Project Report 15 to 20 Pages on Asian Games 2026

1.Historical Status

2.No of Countries

3.No of Events

4.No of Venue

5.No. of Top Players performance from india 1982 onwards with their event details

PSYCHOLOGY

TASK 1

Case Study

Development of case profile: Using appropriate methods like interview, observation & psychological tests.

Prepare a case study on the topic of your choice.(refer chapter 4.Psychological disorders). Case study is an in depth analysis of a person. You are required to choose a person on whom you want to do your case study and who is willing to cooperate.

File should consist of:

1. **Cover page**
2. **Title page** (Objective of your case profile)
3. **Certificate**
4. **Acknowledgement**
5. **Rationale** (Reason for choosing the particular topic)
6. **Introduction to Case Study** (heading)
    - Explain Case Study Method; Advantages and Disadvantages of this Method.

7. **About the topic**
    - Somebody unfamiliar with your topic should have a good idea of what it's about having read this.
    - Write all the possible information about your topic.
    - For e.g. if your topic is about depression, this should include:
        - What is Depression?

- Types of Depression
- Signs and Symptoms
- Risk factors
- Prognosis
- Treatment etc..

- A detail of your project covering the theories, research, studies, experiments. The format of his section is totally up to you. Always remember when we are writing about a topic we first have to describe, define the meaning of it. Relate some relevant researchers studied that you can easily find in your textbooks or on the internet.
- I would suggest you to use pictures, stories, case studies, famous instances, news articles, editorial cuttings anything that is relevant to your topic. Psychology can be related and can be located in our daily life. The project should be as interactive and interesting to the reader.
- Originality, innovative thinking, and practicality will be appreciated

8. **Method of Research**
   - Write all possible methods of research in detail that can be included in a case profile like observation, interview, survey, psychological tests.
   - In the end write a paragraph stating the methods that you have used in your case profile.

9. **Detailed Case Profile**

   a. Subject Profile
   Name_____
   Age_____
   Class_____
   Occupation_____
   Education qualification_____
   Chief complaint_____
   (You can more details on your own)

   b. Background Information
   Introduce your subject here. This must be written in a paragraph form. Mention some basic information about the subject

   c. Case Analysis
   → Relating to birth
   → Relating to development
   → Relating to family
   → Relating to socio-economic condition
   → Relating to physical and mental fitness
   → Relating to emotionality and aggression
   → Relating to personality adjustment
   → Relating to hostility

   (Add topics)
   - Relationship with family members
   - Relationship with peers

- Educational history

d. Psychological tests/ Tools used to collect data
   - You can choose one or more tests and conduct them on your subject.
   - Kindly check the reliability, validity, and norms of the tests.

e. Interviews
   Interview sessions need to be conducted with your subject. Setup a convenient time suitable for both of you. Interview sessions can be a combination of structured or unstructured. Keep the interview sessions flexible and free flowing. Minimum of 5-6 sessions should be conducted

   Interview work will be written theme based under case analysis.

f. Observation
   Here you will include your observations about your subject. both verbal and nonverbal behaviours. While interviewing your subject be alert and observe the following things - i.e. The room setup, the body language, behaviour with you, eye contact, way to talking to the parent, comfort level, hand movements etc.

g. Challenges faced by the subject (1-2 pages)
   Here you can include the day to day issues your subject is facing. for example, if it is a student's exam stress, family issues, time management, peer pressure. If it is an adult. financial management, time management, family issues. Etc. The challenges can be big or small depending on your case.
   Write in point form.

h. Possible interventions (1-2 pages)
   Based on the challenges faced by your subject write possible suggestions that you can provide to your subject. You can refer your textbook also for the same.
   Write in point form.

10. **Conclusion**
    The project's conclusions should list the things which have been learnt as a result of the work you have done.
    Your findings and experiences during the work can also be included here.

11. **References**
    Always mention the source from where you extract information in the correct format. This consists of a list of all the books, articles, manuals etc. used in the project and referred to in the report.

- **Web Resources for assistance**

https://youtu.be/FYtoac9Se54?si=RM34shlPlqUOZUA6

The file should be well made and decorated.

TASK 2

STUDENTS MUST WATCH ANY **TWO** MOVIES AND RELATE THEM TO PSYCHOLOGICAL DISORDERS.

List of the movies that are related with the Mental Health problems.

1. Udta Punjab (Hindi) -Substance Abuse
2. 15 Park Avenue – Schizophrenia
3. Matchstick Men- OCD (Obsessive Compulsive Disorder)
4. Kartik Calling Kartik – Schizophrenia
5. Barfi (Hindi)- Autism
6. Tarre Zameen par (Hindi) –Learning Disabilities
7. Tannu Weds Mannu Returns - Anxiety & Bipolar Disorder
8. A Beautiful mind – Schizophrenia
9. Silver Linings Playbook- Borderline Personality Disorder
10. Colossal- Substance Use Disorder
11. Joker: *Folie a Deux* (2024)- Psychotic Disorder
12. Split- Associative Identity Disorder
13. Filth- Borderline Personality Disorder
14. Phobia- Agoraphobia
15. Good Will Hunting PTSD and Attachment Disorder
16. Dear Zindagi - Anxiety & Counselling
17. It’s Kind Of a Funny Story - Depression
18. The Skeleton Twins- Depression
19. Bhool Bhulaiya- Dissociative Identity Disorder
20. Me, Myself, & Irene- Dissociative Identity Disorder
21. The King of Staten Island – Depression and Bipolar Disorder
22. Tamasha- Borderline Personality Disorder
23. Anjaana Anjaani- Depression and Suicidal Tendency
24. Heroine- Bipolar Mood Disorders
25. To the Bone- Anorexia Nervosa
26. The Disaster Artist- Delusion of Grandiosity
27. Horse Girl- Paranoid Delusions
28. Black- Alzheimer Disease

29. My name is Khan- Autism Spectrum Disorder- Asperger's Syndrome
30. Devdas- Major Depressive Disorder with Alcoholism

Attempt these five questions for each movie:

A. Who was the main character in the movie?
B. What was the disorder the movie tried to explain and relate with the criteria (DSM-V and ICD-10)?
C. Explain the causes and the symptoms of disorder?
D. Explain the possible treatment for related disorder?
E. What will be prognosis of the disorder?

(Refer – NCERT TEXTBOOK FOR CLASS XII and DSM-V for the same)

TASK 3

ART INTEGRATION

1. Prepare an art piece to facilitate art therapy to treat the psychological disorder as mindful involvement of overcoming the disorder.
    - LIPPAN ART
    - MANDALA ART
    - MOSAIC ART
    - SKETCHING
    - PAINTING
2. Use ivory sheets and MDF boards to create your art piece.
3. Write a report on the art therapy you have used with step integration. Also illustrate the meaning and aim of that therapy.
4. Do this report writing on A4 size sheets in a file.

NOTE: **Do all the tasks Creatively and innovatively using your incredible thoughts and idea.**

DANCE

Prepare your dance file according to topics given below:

1. Introduction of dance
2. Brief history of all 8 classical dances
3. Gharanas of Kathak
4. Ras
5. Bhava
6. Laya
7. Folk dances of India
8. Taal- Teentaal, Dadra, Kaharva, Jhaptaal, Rupak and Dhamar taal.
9. Life sketches of few Kathak legends (Birju Maharaj, Kundanlal, Gangnani, Sitara Devi).

(Paste suitable pictures and make your file decorative.)

🌿 Eco Club Summer Green Mission 🌿

Theme for the Session

"Small Green Steps, Big Future Changes"

Eco Club Slogan

"Save Nature Today, Secure Tomorrow."

Event Name

🌿 "My Kitchen Garden Mission" 🌿

Activity Details

Students will create a small kitchen garden at home using any one of the following:

- Pots
- Recycled bottles
- Trays
- Balcony space
- Terrace area
- Backyard soil

Students may select and grow:

- Coriander
- Mint
- Spinach
- Tomatoes
- Chillies
- Fenugreek
- Basil
- Any other seasonal vegetables/herbs

Student Tasks

Students Will Submit an Observation Report on an A4 Sheet:

📸 Paste 1–2 photographs while planting.

📝 Write about:

- Weekly growth record
- Plant grown
- Duration taken for growth
- Challenges faced during gardening

MATHS

Chapter: Matrices and Determinants

1. Construct a matrix $A=\left[a_{ij}\right]_{2\times 2}$ whose elements a_{ij} are given by

   a) $a_{ij}=e^{2it}\sin jx$. b) $a_{ij}=\dfrac{(i-2j)^2}{2}$ c) $a_{ij}=\left|-2i+3j\right|$

2. Show that a matrix which is both symmetric and skew symmetric is a zero matrix.

3. If $X=\begin{bmatrix}3 & 1 & -1\\ 5 & -2 & -3\end{bmatrix}$ and $Y=\begin{bmatrix}2 & 1 & -1\\ 7 & 2 & 4\end{bmatrix}$, find a matrix Z such that $X+Y+Z$ is a zero matrix.

4. Find values of a and b if $A=B$ where $A=\begin{bmatrix}a+4 & 3b\\ 8 & -6\end{bmatrix}$ and $B=\begin{bmatrix}2a+2 & b^2+2\\ 8 & b^2-5b\end{bmatrix}$.

5. Find the value of x if $\begin{bmatrix}1 & x & 1\end{bmatrix}\begin{bmatrix}1 & 3 & 2\\ 2 & 5 & 1\\ 15 & 3 & 2\end{bmatrix}\begin{bmatrix}1\\ 2\\ x\end{bmatrix}=O$

6. If $A=\begin{bmatrix}1 & 3 & 2\\ 2 & 0 & -1\\ 1 & 2 & 3\end{bmatrix}$, then show that A satisfies the equation $A^3-4A^2-3A+11I=O$.

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

8. If $A=\begin{bmatrix}3 & -5\\ -4 & 2\end{bmatrix}$, then find $A^2-5A-14I$. Hence obtain A^3.

9. If the matrix $\begin{bmatrix}0 & a & 3\\ 2 & b & -1\\ c & 1 & 0\end{bmatrix}$ is a skew symmetric matrix, find the values of a, b and c.

10. If $P(x)=\begin{bmatrix}\cos x & \sin x\\ -\sin x & \cos x\end{bmatrix}$, then show that $P(x).P(y)=P(x+y)=P(y).P(x)$.

11. If $A=\begin{bmatrix}\cos\alpha & \sin\alpha\\ -\sin\alpha & \cos\alpha\end{bmatrix}$ and $A^{-1}=A'$, find the value of α.

12. Find the matrix A satisfying the following equations:

    a) $\begin{bmatrix}2 & 1\\ 3 & 2\end{bmatrix}A\begin{bmatrix}-3 & 2\\ 5 & -3\end{bmatrix}=\begin{bmatrix}1 & 0\\ 0 & 1\end{bmatrix}$

    b) $\begin{bmatrix}4\\ 1\\ 3\end{bmatrix}A=\begin{bmatrix}-4 & 8 & 4\\ -1 & 2 & 1\\ -3 & 6 & 3\end{bmatrix}$

    c) $\begin{bmatrix}2 & -1\\ 1 & 0\\ -3 & 4\end{bmatrix}A=\begin{bmatrix}-1 & -8 & -10\\ 1 & -2 & -5\\ 9 & 22 & 15\end{bmatrix}$

13. If $A=\begin{bmatrix}\cos\theta & \sin\theta\\ -\sin\theta & \cos\theta\end{bmatrix}$, then show that $A^2=\begin{bmatrix}\cos 2\theta & \sin 2\theta\\ -\sin 2\theta & \cos 2\theta\end{bmatrix}$

14. If $A=\begin{bmatrix}1 & 5\\ 7 & 12\end{bmatrix}$ and $B=\begin{bmatrix}9 & 1\\ 7 & 8\end{bmatrix}$, find a matrix C such that $3A+5B+2C$ is a null matrix

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

16. Express the following matrices as sum of a symmetric and skew-symmetric matrices

a) $\begin{bmatrix}2 & 3 & 1\\ 1 & -1 & 2\\ 4 & 1 & 2\end{bmatrix}$ b) $\begin{bmatrix}2 & 4 & -6\\ 7 & 3 & 5\\ 1 & -2 & 4\end{bmatrix}$

17. Give an example of matrices A, B and C such that AB = AC, where A is nonzero matrix, but B ≠ C.

18. Show by an example that for A ≠ O, B ≠ O, AB = O.

19. Find inverse of the following matrices, if exists.

a) $\begin{bmatrix}2 & -1 & 3\\ -5 & 3 & 1\\ -3 & 2 & 3\end{bmatrix}$ b) $\begin{bmatrix}2 & 3 & -3\\ -1 & -2 & 2\\ 1 & 1 & -1\end{bmatrix}$ c) $\begin{bmatrix}2 & 0 & -1\\ 5 & 1 & 0\\ 0 & 1 & 3\end{bmatrix}$

20. Evaluate a) $\begin{vmatrix}a+ib & c+id\\ -c+id & a-ib\end{vmatrix}$. b) $\begin{vmatrix}\cos 15^\circ & \sin 15^\circ\\ \sin 75^\circ & \cos 75^\circ\end{vmatrix}$ c) $\begin{bmatrix}1 & -3 & 2\\ 4 & -1 & 2\\ 3 & 5 & 2\end{bmatrix}$ d) $\begin{bmatrix}0 & 2 & 6\\ 1 & 5 & 0\\ 3 & 7 & 1\end{bmatrix}$

21. Find x if $\begin{vmatrix}3 & x\\ x & 1\end{vmatrix}=\begin{vmatrix}3 & 2\\ 4 & 1\end{vmatrix}$

22. Find the value of k such that the points are collinear
   a) A(−3, 7), B(7, k) and (2, 1).
   b) A(1, −5), B(−4, 5) and (k, 7).

23. Find the area of the triangle whose vertices are A (11, 7), B (5, 5) and C (-1, 3)

24. Compute A^{-1} for the matrix $A=\begin{bmatrix}0 & 1 & 2\\ 1 & 2 & 3\\ 3 & 1 & 1\end{bmatrix}$

Hence solve the system of equations: $y+2z+8=0$, $x+2y+3z+14=0$, $3x+y+z+8$

25. Find A^{-1} for the matrix $A=\begin{bmatrix}0 & 1 & 1\\ 1 & 0 & 1\\ 1 & 1 & 0\end{bmatrix}$ and show that $A^{-1}=\frac{A^2-3I}{2}$

26. Using matrix method solve the following system of equations:

a) $6x-9y-20z=-4$, $4x-15y+10z=-1$, $2x-3y-5z=-1$

b) $2x+y+z=1$, $x-2y-z=\frac{3}{2}$, $3y-5z=9$

c) $3x+2y-2z=3$, $x+2y+3z=6$, $2x-y+z=2$

27. If $A=\begin{bmatrix}1 & 2 & 0\\ -2 & -1 & -2\\ 0 & -1 & 1\end{bmatrix}$, find A^{-1}. Using A^{-1} solve the system of equations

$x-2y=10$, $2x-y-z=8$, $-2y+z=7$.

MULTIPLE CHOICE QUESTIONS

1. The principal value of $\cos^{-1}(\cos\frac{17\pi}{5})$ is

   a) $\frac{17\pi}{5}$ b) $\frac{2\pi}{5}$ c) $\frac{3\pi}{5}$ d) $\frac{-2\pi}{5}$

2. The value of $\tan^{-1}(1)+\cos^{-1}(\frac{-1}{2})$ is

   a) $\frac{3\pi}{4}$ b) $\frac{11\pi}{12}$ c) $\frac{2\pi}{3}$ d) $\frac{13\pi}{12}$

3. Using the principal value, find the value of $\tan(\sec^{-1}(\frac{-2}{\sqrt{3}}))$.

   a) $-\sqrt{3}$ b) $\frac{1}{\sqrt{3}}$ c) $\sqrt{3}$ d) $\frac{-1}{\sqrt{3}}$

4. $sin\,(\frac{\pi}{3} - sin^{-1}\,(\frac{-1}{2}))$ is equal to

   a) $\frac{1}{2}$ b) $\frac{1}{3}$ c) $\frac{-1}{2}$ d) 1

5. The value of $tan^{-1}\,(\sqrt{3}) - cot^{-1}\,(-\sqrt{3})$

   a) π b) $\frac{\pi}{2}$ c) 0 d) $2\sqrt{3}$

6. If $\sec^{-1}\left(\frac{a}{5}\right)+\sin^{-1}\left(\frac{5}{b}\right)=\frac{\pi}{2}$, then

   a) ab=1 b) a=b c) $a=b^2$ d) none of these

7. If $\tan^{-1}\left(\frac{a}{x}\right)+\tan^{-1}\left(\frac{b}{x}\right)=\frac{\pi}{2}$, then the value of x is

   a) ab b) 1 c) $\sqrt{ab}$ d) none of these

8. The Value of $\sin(\tan^{-1}\frac{3}{4}) + cot\left(tan^{-1}\frac{5}{12}\right)$

   a) $\frac{7}{6}$ b) 3 c) $\frac{5}{6}$ d) 5

9. Evaluate: $\sin^{-1}(\cos(\sin^{-1}\frac{\sqrt{3}}{2}))$

   a) $\frac{\pi}{6}$ b) $\frac{\pi}{3}$ c) $\frac{\pi}{2}$ d) $\frac{\pi}{4}$

10. Find the value of $\sec(\tan^{-1}(\frac{y}{2}))$

    a) $\frac{4+y^2}{2}$ b) $\frac{4-y^2}{2}$ c) $\sqrt{\frac{4-y^2}{2}}$ d) $\sqrt{\frac{4+y^2}{2}}$