



10000 10000 10000

# Dwarka International School

## Session 2024-25

Class-XII

SCIENCE



*Full of joy is early Summer,  
Growth and warmth and golden light;  
Every day is crowned with beauty,  
Full of loveliness the night.  
Dazzling sunshine brings the roses,  
Fills the whole bright world with bloom;  
Day and night rejoice together,  
Banished now are doubt and gloom.  
-Ellwood Roberts*

Dear Students and Parents,

As we embark on the summer vacation, I want to remind you of the importance of continued learning and growth during this time away from school.

To ensure that our students remain engaged and academically stimulated, we have assigned summer vacation homework for all classes. This homework is designed to reinforce concepts learned throughout the year and to prepare students for the upcoming academic term.

I urge all students to approach their summer homework with diligence and responsibility. Completing these assignments will not only enhance your academic skills but also help you start the new school year on the right foot.

Parents, your support in encouraging your children to complete their summer homework is invaluable. By working together, we can ensure that our students continue to thrive academically.

#### GUIDELINES FOR STUDENTS

- Ensure timely submission of holiday homework after the reopening of the school.
- Try to incorporate creativity and innovation.
- Revise all the topics that have been taught by your subject teachers in the new session.
- UT 2 syllabus is provided at the end. Kindly revise.
- UT2 will commence from 22<sup>nd</sup> July 2024

Wishing everyone a productive and enjoyable summer break! Warm regards.

**DWARKA INTERNATIONAL SCHOOL**

**HOLIDAY HOME WORK**

**CLASS XII SCIENCE (2024-25)**

**SUBJECT- ENGLISH CORE-301**

**A. Q 1 to Q 7 should be done in your English note books.**

Q1. Read the lesson 'The Enemy' by Pearl. S. Buck from Vistas and answer the following questions in detail:

- a. What was the General's plan to get rid of the American prisoner? Was it executed? What traits of General's character are highlighted in the lesson?
- b. What conflicting ideas arise in Dr Sadao's mind after he has brought the wounded American soldier home? How is the conflict resolved?
- c. Do you think Dr Sadao's final decision was the best possible one in the circumstances? Why/Why not? Explain with reference to the story, 'The Enemy'
- d. What impression do you form about Dr Sadao as a man and as a surgeon on your reading the chapter 'The Enemy'?
- e. Dr Sadao was compelled by his duty as a doctor to help the enemy soldier. What made Hana, his wife, sympathetic to him in the face of open defiance from the domestic staff?

Q2. You are Ankit/Amrita, staying at 4 Pycrofts Road, Chennai. You have come across an advertisement in The Times of India for recruitment of computer engineer trainees by Shivam Software. Apply in response to this advertisement, giving your detailed bio-data (curriculum vitae). Invent all necessary details.

Q3. You are Swati Rai/Swastik Sen of A-45 Vasant Enclave, New Delhi. You are tired of the sermons on cut throat competition, success, chasing goals, accomplishing targets and deadlines. You feel that instead of participating in the rat race it is time to sit, meditate and introspect before plunging into the world of materialism. Taking cues from Pablo Neruda's Keeping Quiet along with your inputs write an article on Introspection: The Need of the Hour.

Q4. You are Josely Mathew, the President of the school book club. The club is organising a drive for promoting reuse of study materials and books. Draft a notice in about 50 words, for the school notice board, addressing students of classes X-XII, informing them about this drive and urging them to contribute to the endeavour. Mention how the donated books would benefit a charitable cause.

Q5. 'Aunt Jennifer's Tigers' exemplifies the eternity and immortality of art which is used as a device to escape from hopelessness and dejection. Perhaps Aunt Jennifer finds comfort in this creative expression, crafting a bold tapestry that will outlive her and Uncle both, and that shows nature's creatures living wild and unafraid, liberated from man-made constraints like marriage. Write an article on the topic 'Art is Immortal' on the basis of the poem as well as your own interpretations.

Q6. Linguistic Chauvinism is a shame, yet history is witness to many such instances of language dominance resulting in the classification of people into the 'oppressor' and 'oppressed'. Little Franz experienced it on the day of the last lesson and wonders if the Germans would make the

pigeons sing in German. You being Franz decide to pen down the events of the day. Write a draft in the form of a report.

### Clues

Heading-The Last Lesson

Byline- by Franz

First Paragraph- 5Ws-what, when, where, why, who

Second Paragraph-sequence of events, description of events

Third Paragraph- sum up, end on an optimistic note

#### ➤ Do not use personal pronouns in your report

Q7. After passing the secondary school examination, a candidate has to make a very difficult choice from a number of streams available to him at the senior school level for further studies. There is not a valid mechanism to assess the suitability of a candidate for a particular stream. Write a letter to the Editor of a national daily emphasising the need for educational counsellors for guidance in this matter in each school. You are Vinita/Vinay, 48, Agra Fort, Agra.

### B. Project Work-Board Internal Assessment

(i) Select a topic from the literature syllabus or general affairs and burning topics

The following topics can be taken-

- (a) Climate Change- Vistas- Lesson-Journey to the End of the Earth by Tishani Doshi
- (b) Racial Discrimination- Vistas- Lesson-Memories of Childhood by Zitkala-Sa and Bama
- (c) Child Labour-Flamingo-Lesson- Lost Spring by Anees Jung
- (d) Appearances are deceptive-Lesson-On the Face of It by Susan Hill
- (e) Adolescent Fantasizing-Lesson-Going Places by A.R. Barton
- (f) Childhood Phobia-Lesson-Deep Water by William Douglas
- (g) Escapism-Lesson-The Third Level by Jack Finney
- (h) Linguistic Chauvinism-Lesson-The Last Lesson by Alphonse Daudet
- (i) Economic Disparity-Poetry-A Roadside Stand by Robert Frost
- (j) Silence and Introspection-Poetry Keeping Quiet by Pablo Neruda

### Format of the Project

The Project can be done individually or in a group. The maximum members in a group should not exceed 4.

- **First Page**-Cover page, school logo, title of project, school details/details of students
- **Second Page**-Statement of purpose/objectives/goals
- **Third Page**-Certificate of completion under the guidance of the teacher.
- **Fourth Page**-Students' input on the topic, their research and interpretation/Essay/Script/Report
- **Fifth Page**- Students' input on the topic, their research and interpretation/ Essay/Script/Report
- **Sixth Page**- Students' input on the topic, their research and interpretation/ Essay/Script/Report
- **Seventh Page**-Students' input on the topic, their research and interpretation/ Essay/Script/Report
- **Eighth Page**-Students' reflections
- **Ninth Page**-Students' reflections
- **Tenth Page**-List of resources/bibliography

**Note-** The Project Work should be done on A-4 sized sheets and after the completion of the project should be compiled within a file.

## UT-2 SYLLABUS

### READING SKILLS

FACTUAL/DISCURSIVE PASSAGE

### LITERATURE

#### FLAMINGO

CH-The Last Lesson by Alphonse Daudet

Poetry- Keeping Quiet by Pablo Neruda

Poetry- Aunt Jennifer's Tigers

#### VISTAS

CH- The Tiger King by Kalki

**WRITING SKILLS:** Formal Invitation and Replies, Letter to Editor

## SUBJECT-CHEMISTRY (043)

1. Kindly complete your classwork notebook.
2. Investigatory projects should be made according to the topics already provided and following instruction to be followed while preparing:
  - a) Order of investigatory project
    - Cover page
    - Certificate
    - Acknowledgement
    - Index
    - Introduction
    - Content (it would include the experiments, details about chemical used, process of experimentation, pictures and graphs)
    - Conclusion
    - Bibliography
  - b) Certificate

This is to certify that ----- has successfully completed the project file on topic ----- under my guidance and supervision of Ms. Himanshi Kharb (PGT CHEMISTRY). I am satisfied with their initiative and efforts for the completion of project file as a part of curriculum of CBSE Class XII Examination.

Signature of examiner: -----

Signature of HOS/ vice principal/principal: -----
  - c) Acknowledgement

I would like to express my deepest gratitude to all those who have helped me complete this school project successfully. I am extremely thankful to my project guide, Ms.Himanshi Kharb, for invaluable guidance, encouragement and support throughout this project.

Student signature: -----
  - d) Topics:
    - 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.

e) Total pages of investigatory project: 20-30

3. Complete chemistry practical file from the pdf provided on whatsapp groups.

4. **UT-II SYLLABUS:**

ALDEHYDES, KETONES AND CARBOXYLIC ACID  
AMINES

## **SUBJECT-BIOLOGY**

**I. Prepare an investigatory project of your choice after approval with subject teacher:**

**II. Do the following experiments in the practical file:**

1. Flowers adapted to pollination by different agencies (wind, insects, birds).
2. Pollen germination on stigma through a permanent slide or scanning electron micrograph.
3. Identification of stages of gamete development, i.e., T.S. of testis and T.S. of ovary through permanent slides.
4. Meiosis in onion bud cell through permanent slides.
5. T.S. of blastula through permanent slide.
6. Controlled pollination - emasculation, tagging and bagging.
7. Common disease-causing organisms like Ascaris, Entamoeba, Plasmodium, any fungus causing ringworm through permanent slides, Comment on symptoms of diseases that they cause.
8. Models specimen showing symbiotic association in root nodules of leguminous plants, Cuscuta on host, lichens.
9. Flash cards models showing examples of homologous and analogous organ

**UNIT TEST II SYLLABUS:**

**CH – REPRODUCTIVE HEALTH,**

**PRINCIPLES OF INHERITANCE AND VARIATIONS**

## SUBJECT-PHYSICS

### Chapter-1 Electric charges & fields

#### MCQ

1. Charge is the property associated with matter due to which it produces and experiences

- (a) electric effects only                      (b) magnetic effects only  
(c) both electric and magnetic effects      (d) None of these

2. Charge is (a) transferable (b) associated with mass (c) conserved (d) All of these

3. A body is positively charged, it implies that

- (a) there is only positive charge in the body.  
(b) there is positive as well as negative charge in the body but the positive charge is more than negative charge  
(c) there is equal positive and negative charge in the body but the positive charge lies in the outer regions  
(d) 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

- (a) valence electrons only                      (b) electrons of inner shells  
(c) both valence electrons and electrons of inner shell                      (d) yet to be established

5. Which of the following is the best insulator?

- (a) Carbon                                      (b) Paper                                      (c) Graphite                                      (d) Ebonite

6. If an object possesses an electric charge, it is said to be electrified or ... A ... When it has no charge, it is said to be ... B ... Here, A and B refer to

- (a) charged, neutral      (b) neutral, charged      (c) discharged, charged      (d) active, reactive

7. When a comb rubbed with dry hair attracts pieces of paper. This is because the

- (a) comb polarizes the piece of paper  
(b) comb induces a net dipole moment opposite to the direction of field  
(c) electric field due to the comb is uniform  
(d) comb induces a net dipole moment perpendicular to the direction of field

8. What happens when some charge is placed on a soap bubble?

- (a) Its radius decreases                                      (b) Its radius increases  
(c) The bubble collapses                                      (d) None of these

9. Two charges  $q_1$  and  $q_2$  are placed in vacuum at a distance  $d$  and the force acting between them is  $F$ . If a medium of dielectric constant  $4$  is introduced around them, the force now will be  
(a)  $F$       (b)  $F/2$       (c)  $F/4$       (d)  $4F$

10. 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.

### Chapter-2 Electric potential & capacitance

#### MCQ

1. The electric potential  $V$  at any point  $O(x, y, z)$  all in metres) in space is given by  $V = 4x^2$  volt. The electric field at the point  $(1 \text{ m}, 0, 2 \text{ m})$  in volt/metre is

- (a)  $8$  along negative  $x$ -axis      (b)  $8$  along positive  $x$ -axis  
(c)  $16$  along negative  $x$ -axis      (d)  $16$  along positive  $z$ -axis

2. 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.

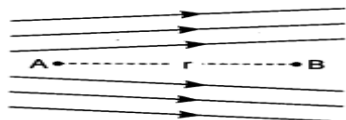
3. A hollow metal sphere of radius  $5 \text{ cm}$  is charged so that the potential on its surface is  $10 \text{ V}$ . The potential at the centre of the sphere is

- (a)  $0 \text{ V}$       (b)  $10 \text{ V}$       (c) Same as at point  $5 \text{ cm}$  away from the surface  
(d) Same as at point  $25 \text{ cm}$  away from the surface

4. A capacitor is charged by a battery. The battery is removed and another identical uncharged capacitor is connected in parallel. The total electrostatic energy of resulting system

- (a) increases by a factor of  $4$ .      (b) decreases by a factor of  $2$ .  
(c) remains the same.      (d) increases by a factor of  $2$ .

5. Figure shows the electric lines of force emerging from a charged body. If the electric field at  $A$  and  $B$  are  $E_A$  and  $E_B$  respectively and if the displacement between  $A$  and  $B$  is  $r$  then



- (a)  $E_A > E_B$       (b)  $E_A < E_B$       (c)  $E_A = E_B/r$       (d)  $E_A = E_B/r^2$



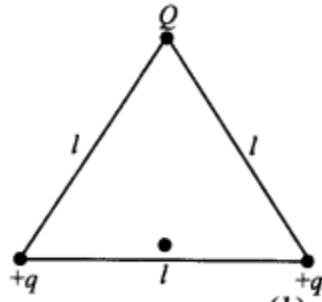
6. 64 drops each having the capacity  $C$  and potential  $V$  are combined to form a big drop. If the charge on the small drop is  $q$ , then the charge on the big drop will be

- (a)  $2q$       (b)  $4q$       (c)  $16q$       (d)  $64q$

7. A parallel plate condenser is connected with the terminals of a battery. The distance between the plates is 6mm. If a glass plate (dielectric constant  $K = 9$ ) of 4.5 mm is introduced between them, then the capacity will become

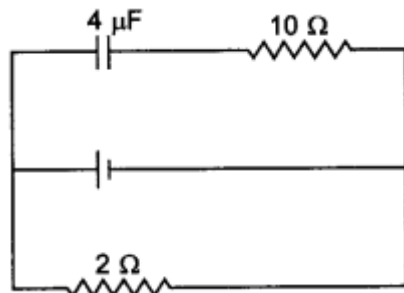
- (a) 2 times.      (b) the same.      (c) 3 times.      (d) 4 times.

8. Three charges  $Q$ ,  $+q$  and  $+q$  are placed at the vertices of an equilateral triangle of side  $l$  as shown in the figure. If the net electrostatic energy of the system is zero, then  $Q$  is equal to



- (a)  $-q$       (b)  $+q$       (c) zero      (d)  $-q/2$

9. A capacitor of  $4 \mu\text{F}$  is connected as shown in the circuit. The internal resistance of the battery is  $0.5 \Omega$ . The amount of charge on the capacitor plates will be



- (a) 0      (b) 4      (c)  $16 \mu\text{C}$       (d)  $8 \mu\text{C}$

10. A capacitor is charged by using a battery which is then disconnected. A dielectric slab then slipped between the plates, which results in

- (a) reduction of charge on the plates and increase of potential difference across the plates.  
(b) increase in the potential difference across the plate, reduction in stored energy, but no change in the charge on the plates.  
(c) decrease in the potential difference across the plates, reduction in the stored energy, but no change in the charge on the plates.  
(d) none of these

11. The work done in bringing a unit positive charge from infinite distance to a point at distance  $x$  from a positive charge  $Q$  is  $W$ . Then the potential at that point is

- (a)  $\frac{WQ}{x}$                       (b)  $W$   
(c)  $\frac{W}{x}$                         (d)  $WQ$

12. When air is replaced by a dielectric medium of constant  $K$ , the maximum force of attraction between two charges separated by a distance

- (a) increases  $K$  times                      (b) remains unchanged  
(c) decreases  $K$  times                      (d) increases  $K-1$  times

### Subjective Questions

1. The electric field components in Fig. 1.24 are  $E_x = ax^{1/2}$ ,  $E_y = E_z = 0$ , in which  $a = 800$  N/C m<sup>1/2</sup>. Calculate (a) the flux through the cube, and (b) the charge within the cube. Assume that  $a = 0.1$  m.

2. An electric field is uniform, and in the positive  $x$  direction for positive  $x$ , and uniform with the same magnitude but in the negative  $x$  direction for negative  $x$ . It is given that  $E = 200 \hat{i}$  N/C for  $x > 0$  and  $E = -200 \hat{i}$  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 face is at  $x = +10$  cm and the other is at  $x = -10$  cm (Fig. 1.25). (a) What is the net outward flux through each flat face? (b) What is the flux through the side of the cylinder? (c) What is the net outward flux through the cylinder? (d) What is the net charge inside the cylinder?

3. Two point charges  $q_A = 3$  mC and  $q_B = -3$  mC are located 20 cm apart in vacuum. (a) What is the electric field at the midpoint  $O$  of the line  $AB$  joining the two charges? (b) If a negative test charge of magnitude  $1.5 \times 10^{-9}$  C is placed at this point, what is the force experienced by the test charge?

4. Consider a uniform electric field  $E = 3 \times 10^3 \hat{i}$  N/C. (a) What is the flux of this field through a square of 10 cm on a side whose plane is parallel to the  $yz$  plane? (b) What is the flux through the same square if the normal to its plane makes a  $60^\circ$  angle with the  $x$ -axis?

5. A conducting sphere of radius 10 cm has an unknown charge. If the electric field 20 cm from the centre of the sphere is  $1.5 \times 10^3$  N/C and points radially inward, what is the net charge on the sphere?

6. (a) Calculate the potential at a point  $P$  due to a charge of  $4 \times 10^{-7}$  C located 9 cm away. (b) Hence obtain the work done in bringing a charge of  $2 \times 10^{-9}$  C from infinity to the point  $P$ . Does the answer depend on the path along which the charge is brought?

7. Three capacitors of capacitances 2 pF, 3 pF and 4 pF are connected in parallel. (a) What is the total capacitance of the combination? (b) Determine the charge on each capacitor if the combination is connected to a 100 V supply.
8. In a parallel plate capacitor with air between the plates, each plate has an area of  $6 \times 10^{-2} \text{ m}^2$  and the distance between the plates is 3 mm. Calculate the capacitance of the capacitor. If this capacitor is connected to a 100 V supply, what is the charge on each plate of the capacitor?
9. Derive the expression for potential energy due to system 2 and 3 point charges.
10. Draw the pattern of equipotential surfaces due to 2 positive point charges.

**NOTE: UT-2 SYLLABUS- CHAPTER- 3 & 4 \*\*\*\*\***

## **SUBJECT- MATHEMATICS**

### **Topic: Art integration with Mathematics**

Art and mathematics closely related in terms of reasoning skills and pattern recognition. Artists and Mathematicians, both use geometry in their work, including shapes, symmetry, proportions and measurements.

Keeping all this in mind students will do one of the following project according to their choices:

- 1. Using Golden Ratio(1:1.618) create designs of different objects**  
(Ref ; <https://99designs.com/blog/tips/the-golden-ratio/>)
- 2. Draw a portrait using Mathematical formulas.**  
(Image for ref : [https://drive.google.com/file/d/1Hvtd9jDzFHfw6Miv61jB0Ta\\_5QGHjoVC/view](https://drive.google.com/file/d/1Hvtd9jDzFHfw6Miv61jB0Ta_5QGHjoVC/view))
- 3. Learn how to use Microsoft, Excel for addition, subtraction, multiplication and transpose of matrices.** Make a soft copy of the same and paste screenshot of the output on the file along with the project.
- 4. Make a project on Sacred Geometry**  
(Ref: [Sacred Geometry: Symbols, Patterns & Shapes of Divine Creation \(uniguide.com\)](https://www.uniguide.com/sacred-geometry))

#### **Please note the following Specifications for the above projects:**

- (i) Page 1 should have your name ,class, section and the PROJECT NAME
- (ii) Page 2 should have Certificate where you recognise the people and thank them for the help they have given you in putting this project together.
- (iii) Page 3 will be the contents page
- (iv) Page 4 should have objective
- (v) Page 5 to 9 will cover the project itself
- (vi) Please make a proper front and back cover for your project.
- (vii) Submit the project in file

**CHAPTER – RELATIONS AND FUNCTIONS, MATRICES & DETERMINANTS,  
DERIVATIVES**

**NOTE: Do the worksheet in your school register. Work should be done neatly.**

**Competency Based Questions- MCQ**

1. Let  $A = \{1, 2, 3\}$  and consider the relation  $R = \{(1, 1), (2, 2), (3, 3), (1, 2), (2, 3), (2, 1)\}$ . Then R is

- (a) an equivalence relation  
(b) reflexive and symmetric but not transitive  
(c) reflexive and transitive but not symmetric  
(d) reflexive but neither symmetric nor transitive

2. Let  $A = \{1, 2, 3\}$  and consider the relation  $R = \{(1, 1), (2, 2), (3, 3), (1, 2), (2, 3), (1, 3), (3, 1)\}$ . Then R is

- (a) an equivalence relation  
(b) reflexive and symmetric but not transitive  
(c) reflexive and transitive but not symmetric  
(d) reflexive but neither symmetric nor transitive

3. Let  $A = \{1, 2, 3\}$  and consider the relation  $R = \{(1, 1), (2, 2), (3, 3), (1, 2), (2, 1)\}$ . Then R is

- (a) reflexive and symmetric but not transitive  
(b) reflexive but neither symmetric nor transitive  
(c) an equivalence relation  
(d) reflexive and transitive but not symmetric

4. Let  $A = \{1, 2, 3\}$  and consider the relation  $R = \{(1, 1), (1, 2), (2, 1)\}$ . Then R is

- (a) reflexive and symmetric but not transitive  
(b) symmetric but neither reflexive nor transitive  
(c) reflexive but neither symmetric nor transitive  
(d) reflexive and transitive but not symmetric

5. Let  $A = \{1, 2, 3\}$  and consider the relation  $R = \{(1, 3)\}$ . Then R is

- (a) transitive  
(b) symmetric  
(c) reflexive  
(d) none of these

6. Let  $A = \{1, 2, 3\}$  and consider the relation  $R = \{(1, 1), (2, 2), (3, 3)\}$ . Then R is

(a) reflexive and symmetric but not transitive      (b) reflexive but neither symmetric nor transitive

(c) reflexive and symmetric and transitive      (d) reflexive and transitive but not symmetric

7. Let  $A = \{1, 2, 3\}$  and  $R = \{(1, 1), (2, 3), (1, 2)\}$  be a relation on  $A$ , then the minimum number of ordered pairs to be added in  $R$  to make  $R$  reflexive and transitive.

(a) 4      (b) 2

(c) 3      (d) 1

8. The maximum number of equivalence relations on the set  $\{1, 2, 3\}$  is

(a) 6      (b) 4

(c) 3      (d) 5

9. Let  $R$  be a relation on the set  $N$  be defined by  $\{(x, y) : x, y \in N, 2x + y = 41\}$ . Then,  $R$  is

(a) reflexive      (b) symmetric

(c) transitive      (d) none of these

10. Relation  $R$  in the set  $Z$  of all integers defined as  $R = \{(x, y) : x - y \text{ is an even integer}\}$  is

(a) reflexive and transitive      (b) symmetric and Transitive

(c) reflexive and symmetric      (d) an equivalence relation

11. Let  $R$  be the relation on the set of all real numbers defined by  $a R b$  iff  $|a - b| \leq 1$ . Then,  $R$  is

(a) reflexive and transitive      (b) symmetric and Transitive

(c) reflexive and symmetric      (d) an equivalence relation

12. Consider the non-empty set consisting of children in a family and a relation  $R$  defined as  $aRb$  if  $a$

is sister of  $b$ . Then  $R$  is

(a) symmetric but not transitive      (b) transitive but not symmetric

(c) both symmetric and transitive      (d) neither symmetric nor transitive

13. Relation  $R$  in the set  $A = \{1, 2, 3, 4, 5, 6, 7, 8\}$  as  $R = \{(x, y) : x \text{ divides } y\}$  is

(a) reflexive and symmetric but not transitive      (b) reflexive and transitive but not symmetric

(c) reflexive but neither symmetric nor transitive      (d) symmetric but neither reflexive nor transitive

14. Let  $L$  denote the set of all straight lines in a plane. Let a relation  $R$  be defined by  $l_1 R l_2$  if and only if  $l_1$  is perpendicular to  $l_2, \forall l_1, l_2 \in L$ . Then  $R$  is

- (a) symmetric (b) reflexive  
(c) transitive (d) reflexive and symmetric

15. If  $A = \{a, b, c\}$  then number of relations containing  $(a, b)$  and  $(a, c)$  which are reflexive and symmetric but not transitive is

- (a) 4 (b) 3  
(c) 2 (d) 1

16. The relation  $R$  in the set  $\{1, 2, 3, \dots, 13, 14\}$  defined by  $R = \{(x, y) : 3x - y = 0\}$  is

- (a) symmetric (b) reflexive  
(c) transitive (d) none of these

17. The relation  $R$  in the set of natural numbers  $N$  defined by  $R = \{(x, y) : x > y\}$  is

- (a) reflexive and symmetric but not transitive (b) transitive but neither reflexive nor symmetric  
(c) reflexive but neither symmetric nor transitive (d) symmetric but neither reflexive nor transitive

18. A function  $f : X \rightarrow Y$  is one-one (or injective), then which of the following is true?

- (a)  $\forall x_1, x_2 \in X, f(x_1) = f(x_2) \Rightarrow x_1 = x_2$ . (b)  $x_1 \neq x_2 \Rightarrow f(x_1) \neq f(x_2)$ .  
(c) both (a) and (b) are true (d) none of these

19. A function  $f : X \rightarrow Y$  is said to be onto (or surjective), then which of the following is true?

- (a) if  $\forall y \in Y, \exists$  some  $x \in X$  such that  $y = f(x)$  (b) range of  $f = Y$   
(c) both (a) and (b) are true (d) none of these

20. A function  $f : X \rightarrow Y$  is said to be bijective, if  $f$  is

- (a) one-one only (b) onto only  
(c) one-one but not onto (d) one-one and onto

21. If a set  $A$  contains  $m$  elements and the set  $B$  contains  $n$  elements with  $n > m$ , then number of bijective functions from  $A$  to  $B$  will be:

- (a)  $m \times n$  (b)  $m^n$   
(c)  $n^m$  (d) 0

22. Which of the following functions from  $I$  (Set of Integers) to itself is a bijection?

- (a)  $f(x) = x^3$  (b)  $f(x) = x + 2$

(c)  $f(x) = 2x + 1$

(d)  $f(x) = x^2 + x$

23. Let  $X = \{-1, 0, 1\}$ ,  $Y = \{0, 2\}$  and a function  $f : X \rightarrow Y$  defined by  $y = 2x^4$ , is

(a) one-one onto

(b) one-one into

(c) many-one onto

(d) many-one into

24. Let  $f(x) = x^2 - 4x - 5$ , then

(a)  $f$  is one-one on  $\mathbb{R}$

(b)  $f$  is not one-one on  $\mathbb{R}$

(c)  $f$  is bijective on  $\mathbb{R}$

(d) None of these

25. The function  $f : \mathbb{R} \rightarrow \mathbb{R}$  given by  $f(x) = x^2$ ,  $x \in \mathbb{R}$  when  $\mathbb{R}$  is the set of real numbers, is

(a) one-one and onto

(b) onto but not one-one

(c) neither one-one nor onto

(d) one-one but not onto

26. The signum function,  $f : \mathbb{R} \rightarrow \mathbb{R}$  is given by  $f(x) = \begin{cases} 1, & \text{if } x > 0 \\ 0, & \text{if } x = 0 \\ -1, & \text{if } x < 0 \end{cases}$

(a) one-one

(b) many-one

(c) onto

(d) none of these

27. Let  $f : \mathbb{R} \rightarrow \mathbb{R}$  be defined by  $f(x) = \begin{cases} 3x, & \text{if } x \leq 1 \\ x^2, & \text{if } 1 < x \leq 3 \\ 2x, & \text{if } x > 3 \end{cases}$ , then  $f(-1) + f(2) + f(4)$  is

(a) 9

(b) 3

(c) 4

(d) 8

28. The greatest integer function  $f : \mathbb{R} \rightarrow \mathbb{R}$  be defined by  $f(x) = [x]$  is

(a) one-one and onto

(b) onto but not one-one

(c) one-one but not onto

(d) neither one-one nor onto

29. The function  $f : \mathbb{N} \rightarrow \mathbb{N}$ , where  $\mathbb{N}$  is the set of natural numbers is defined by

$$f(x) = \begin{cases} n^2, & \text{if } n \text{ is odd} \\ n^2 + 1, & \text{if } n \text{ is even} \end{cases}$$

(a) one-one and onto

(b) neither one-one nor onto

(c) one-one but not onto

(d) onto but not one-one

30. The total number of injective mappings from a set with  $m$  elements to a set with  $n$  elements,  $m \leq n$ , is

(a)  $n^m$

(b)  $m^n$

(c)  $mn$

(d)  $\frac{n!}{(n-m)!}$

## INVERSE TRIGONOMETRIC FUNCTIONS

### Multiple Choice Questions [MCQ]

1. Domain of  $\sin^{-1}(2x-1)$  is

(a)  $[-1, 1]$

(b)  $[-1, 2]$

(c)  $[1, 2]$

(d)  $[-1, -2]$

2. Domain of  $\sin^{-1} x + \cos x$  is

(a)  $[-1, 1]$

(b)  $[-1, 2]$

(c)  $[1, 2]$

(d)  $[-1, -2]$

3. Domain of  $\sin^{-1} \sqrt{x-1}$  is

(a)  $[-1, 1]$

(b)  $[1, 2]$

(c)  $[-1, 2]$

(d)  $[-1, -2]$

4. Principal value of  $\sec^{-1}(-2)$  is equal to

(a)  $\frac{2\pi}{3}$

(b)  $\frac{5\pi}{6}$

(c)  $\frac{4\pi}{3}$

(d)  $-\frac{2\pi}{3}$

5. Principal value of  $\sin^{-1}\left(\cos\frac{2\pi}{3}\right)$  is equal to

(a)  $-\frac{2\pi}{3}$

(b)  $\frac{\pi}{6}$

(c)  $-\frac{\pi}{6}$

(d)  $\frac{2\pi}{3}$



6. Principal value of  $\tan^{-1}\left(\tan \frac{15\pi}{4}\right)$  is equal to

(a) 1

(b)  $-\frac{\pi}{4}$

(c)  $\frac{15\pi}{4}$

(d)  $\frac{\pi}{4}$

7. Principal value of  $\sec^{-1}\left(2 \sin \frac{3\pi}{4}\right)$  is equal to

(a)  $\frac{\pi}{4}$

(b)  $-\frac{\pi}{4}$

(c)  $-\frac{3\pi}{4}$

(d)  $\frac{3\pi}{4}$

8. Principal value of  $\cot^{-1}\left(\tan \frac{3\pi}{4}\right)$  is equal to

(a)  $-\frac{\pi}{4}$

(b)  $\frac{\pi}{4}$

(c)  $-\frac{3\pi}{4}$

(d)  $\frac{3\pi}{4}$

9. Principal value of  $\cos^{-1}\left(\cos \frac{3\pi}{2}\right)$  is equal to

(a)  $\frac{3\pi}{2}$

(b)  $\frac{\pi}{2}$

(c)  $-\frac{\pi}{2}$

(d)  $-\frac{3\pi}{2}$

10. Principal value of  $\sin^{-1}\left(\cos \frac{33\pi}{5}\right)$  is equal to

(a)  $\frac{3\pi}{5}$

(b)  $\frac{\pi}{10}$

(c)  $-\frac{\pi}{10}$

(d)  $-\frac{3\pi}{5}$

11. Principal value of  $\sin^{-1}\left(\sin \frac{3\pi}{5}\right)$  is equal to

(a)  $\frac{2\pi}{5}$

(b)  $\frac{3\pi}{5}$

(c)  $-\frac{3\pi}{5}$

(d)  $-\frac{2\pi}{5}$

12. Principal value of  $\cos^{-1}\left(\frac{\sqrt{3}+1}{2\sqrt{2}}\right)$  is equal to

(a)  $\frac{7\pi}{12}$

(b)  $\frac{5\pi}{12}$

(c)  $\frac{11\pi}{12}$

(d)  $\frac{\pi}{12}$

13. The value of  $\cos(\sin^{-1} x)$  is

(a)  $x$

(b)  $\sqrt{1-x^2}$

(c)  $\frac{\sqrt{1-x^2}}{x}$

(d)  $\frac{x}{\sqrt{1-x^2}}$

14. The value of  $\cot(\cos^{-1} x)$  is

(a)  $\frac{x}{\sqrt{1+x^2}}$

(b)  $\sqrt{1-x^2}$

(c)  $\frac{\sqrt{1-x^2}}{x}$

(d)  $\frac{x}{\sqrt{1-x^2}}$

15. The value of  $\sin^{-1}\left\{\cos\left(\sin^{-1}\frac{\sqrt{3}}{2}\right)\right\}$  is

(a)  $\frac{\sqrt{3}}{2}$

(b)  $-\frac{\pi}{6}$

(c)  $\frac{\pi}{6}$

(d)  $-\frac{\sqrt{3}}{2}$

16. The value of  $\tan^{-1}\left\{2\cos\left(2\sin^{-1}\frac{1}{2}\right)\right\}$  is

(a) 1

(b)  $\frac{3\pi}{4}$

(c)  $\frac{1}{2}$

(d)  $\frac{\pi}{4}$

17. The value of  $\cot[\sin^{-1}\{\cos(\tan^{-1}1)\}]$  is

- (a) 1 (b)  $\frac{3\pi}{4}$   
(c)  $\frac{1}{2}$  (d)  $\frac{\pi}{4}$

18. The value of  $\tan^{-1}\left\{2\sin\left(4\cos^{-1}\frac{\sqrt{3}}{2}\right)\right\}$  is

- (a)  $\frac{2\pi}{3}$  (b)  $\frac{\pi}{3}$   
(c)  $\frac{\sqrt{3}}{2}$  (d)  $\frac{\pi}{6}$

19. The value of  $\cos^{-1}\left(\cos\frac{2\pi}{3}\right) + \sin^{-1}\left(\sin\frac{2\pi}{3}\right)$  is

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

20. The value of  $\tan^{-1}\left(\tan\frac{5\pi}{6}\right) + \cos^{-1}\left(\cos\frac{13\pi}{6}\right)$  is

- (a) 0 (b)  $\frac{5\pi}{6}$   
(c)  $\frac{13\pi}{6}$  (d)  $3\pi$

## MATRICES

### Multiple Choice Questions [MCQ]

1. Write the number of all possible matrices of order  $2 \times 2$  with entries  $-1$  or  $0$  or  $1$  ?

- (a) 27 (b) 64  
(c) 81 (d) 54

2. If a matrix has 12 elements, the number of possible orders it can have :

- (a) 4 (b) 8  
(c) 3 (d) 6

3. A matrix  $A = [a_{ij}]_{3 \times 4}$ , whose elements are given by  $a_{ij} = \frac{1}{2}|i - 3j|^2$ , then  $a_{32}$  is :

(a)  $\frac{9}{2}$

(b)  $\frac{9}{4}$

(c)  $\frac{3}{2}$

(d) 2

4. If  $\begin{bmatrix} 3x+7 & 5 \\ y+1 & 2-3x \end{bmatrix} = \begin{bmatrix} 2 & y-2 \\ 8 & 7 \end{bmatrix}$ , then the values of x and y are :

(a)  $x = -\frac{5}{3}, y = 5$

(b)  $x = -\frac{5}{3}, y = 7$

(c)  $x = \frac{5}{3}, y = 7$

(d)  $x = -\frac{5}{3}, y = -7$

5. If  $\begin{bmatrix} x+y & 2 \\ 5+z & xy \end{bmatrix} = \begin{bmatrix} 6 & 2 \\ 5 & 8 \end{bmatrix}$  the values of x, y and z are:

(a)  $x = 4, y = 2, z = 0$  or  $x = 2, y = 4, z = 0$   
 $= 0$

(b)  $x = -4, y = -2, z = 0$  or  $x = 2, y = 4, z = 0$

(c)  $x = 4, y = -2, z = 0$  or  $x = 2, y = 4, z = 0$   
 $= 0$

(d)  $x = 4, y = 2, z = 0$  or  $x = 2, y = -4, z = 0$

6. A matrix  $A = [a_{ij}]_{m \times n}$  is called scalar matrix if :

(a)  $a_{ij} = 0$  if  $i \neq j$ . and  $a_{ij} = k, i = j$ .  
j.

(b) where  $a_{ij} \neq 0$  if  $i \neq j$ . and  $a_{ij} = k, i = j$ .

(c)  $m \neq n, a_{ij} = 0$  if  $i \neq j$ . and  $a_{ij} = k, i = j$ .  
 $= j$ .

(d)  $m = n, a_{ij} = 0$  if  $i \neq j$ . and  $a_{ij} = k, i = j$ .

7. If  $\begin{bmatrix} 1 & 2 \\ -2 & -b \end{bmatrix} + \begin{bmatrix} a & 4 \\ 3 & 2 \end{bmatrix} = \begin{bmatrix} 5 & 6 \\ 1 & 0 \end{bmatrix}$ , then  $a^2 + b^2 =$

(a) 12

(b) 21

(c) 20

(d) 22

8. If  $3A - B = \begin{bmatrix} 5 & 0 \\ 1 & 1 \end{bmatrix}$  and  $B = \begin{bmatrix} 4 & 3 \\ 2 & 5 \end{bmatrix}$ , then the matrix A =

(a)  $\begin{bmatrix} 3 & -1 \\ 1 & 2 \end{bmatrix}$

(b)  $\begin{bmatrix} 3 & 1 \\ 1 & 2 \end{bmatrix}$

(c)  $\begin{bmatrix} -3 & 1 \\ -1 & 2 \end{bmatrix}$

(d)  $\begin{bmatrix} 3 & -1 \\ 1 & -2 \end{bmatrix}$

9. If A is a square matrix such that  $A^2 = A$ , then the simplified value of  $(I - A)^3 + A$  is equal to

(a) A

(b)  $A^2$

(c) I

(d)  $A^3$

10. If A is a square matrix such that  $A^2 = A$ , then the simplified value of  $(A - I)^3 + (A + I)^3 - 7A$

is equal to

(a) A

(b)  $A^3$

(c) 3A

(d) I

**DIFFERENTIABILITY**  
**Competency based questions [MCQ ]**

1.  $\frac{d}{dx} [\sin^2(\sqrt{\cos x})] =$

(a)  $-\frac{2 \sin x \cdot \sin(\sqrt{\cos x}) \cdot \cos(\sqrt{\cos x})}{2(\sqrt{\cos x})}$

(b)  $-\frac{2 \cdot \sin(\sqrt{\cos x}) \cdot \cos(\sqrt{\cos x})}{2(\sqrt{\cos x})}$

(c)  $-\frac{2 \sin x \cdot \sin(\sqrt{\cos x})}{2(\sqrt{\cos x})}$

(d)  $-\frac{2 \sin x \cdot \sin(\sqrt{\cos x}) \cdot \cos(\sqrt{\cos x})}{2}$

2.  $\frac{d}{dx} [\log \sin \sqrt{x^2 + 1}] =$

(a)  $\frac{2x \cos \sqrt{x^2 + 1}}{\sqrt{x^2 + 1} \cdot \sin \sqrt{x^2 + 1}}$

(b)  $\frac{x \cos \sqrt{x^2 + 1}}{2\sqrt{x^2 + 1} \cdot \sin \sqrt{x^2 + 1}}$

(c)  $\frac{\cos \sqrt{x^2 + 1}}{2\sqrt{x^2 + 1} \cdot \sin \sqrt{x^2 + 1}}$

(d)  $\frac{x \cos \sqrt{x^2 + 1}}{\sqrt{x^2 + 1} \cdot \sin \sqrt{x^2 + 1}}$

3.  $\frac{d}{dx} [2^{-x}] =$

(a)  $\frac{1}{2^x} \log 2$

(b)  $-\frac{1}{2^x} \log 2$

(c)  $2^x \log 2$

(d)  $-\frac{x}{2^{x+1}}$

$$4. \frac{d}{dx} \left[ e^{1 + \log_e x} \right] =$$

(a) 1

(b) 0

(c)  $x \cdot \log_e x$

(d) e

$$5. \frac{d}{dx} \left[ 2^{\cos^2 x} \right] =$$

(a)  $2^{\cos^2 x} \cdot \sin 2x$

(b)  $-2^{\cos^2 x} \cdot \log 2 \cdot \sin 2x$

(c)  $2^{\cos^2 x} \cdot \log 2 \cdot \sin 2x$

(d)  $-2^{\cos^2 x} \cdot \sin^2 x$

$$6. \frac{d}{dx} \left[ \log_e \tan \left( \frac{\pi}{4} + \frac{x}{2} \right) \right] =$$

(a)  $\sec x$

(b)  $\tan x$

(c)  $\sec x \cdot \tan x$

(d)  $\sec^2 x$

$$7. \frac{d}{dx} \left[ \tan^{-1} \left( \frac{\sqrt{1+x^2}-1}{x} \right) \right] =$$

(a)  $\frac{\sqrt{1+x^2}}{x}$

(b)  $\frac{1}{(1+x^2)}$

(c)  $\frac{x}{\sqrt{1+x^2}-1}$

(d)  $\frac{1}{2(1+x^2)}$

$$8. \frac{d}{dx} \left[ \sin^{-1} \left( \frac{1}{\sqrt{1+x^2}} \right) \right] =$$

(a)  $\frac{1}{1+x^2}$

(b)  $-\frac{x}{1+x^2}$

(c)  $-\frac{1}{1+x^2}$

(d)  $-\frac{2x}{1+x^2}$

$$9. \frac{d}{dx} \left[ \tan^{-1} \left( \sqrt{\frac{1+\sin x}{1-\sin x}} \right) \right] = \quad \text{where } 0 < x < \frac{\pi}{4}$$

(a)  $-\frac{1}{2}$

(b)  $\frac{1}{2}$

(c)  $\frac{1 + \sin x}{1 - \sin x}$

(d)  $\frac{1 - \sin x}{1 + \sin x}$

10.  $\frac{d}{dx} \left[ \sin^{-1} \left( \frac{\sin x + \cos x}{\sqrt{2}} \right) \right] =$

(a)  $\frac{1}{\sqrt{2}}$

(b)  $\sqrt{2}$

(c) 1

(d)  $-\sqrt{2}$

11.  $\frac{d}{dx} [x^{\sin x}] =$

(a)  $x^{\sin x} \left( \cos x + \frac{\sin x}{x} \right)$

(b)  $x^{\sin x - 1} \cdot \cos x$

(c)  $x^{\sin x} (\cos x \cdot \log_e x + \sin x)$

(d)  $x^{\sin x} \left( \cos x \cdot \log_e x + \frac{\sin x}{x} \right)$

12. If  $(\cos x)^y = (\sin y)^x$ , then  $\frac{dy}{dx} =$

(a)  $\frac{\log \sin y + y \tan x}{(\log \cos x - x \cot y)}$

(b)  $\frac{\log \sin y + \tan x}{(\log \cos x - x \cot y)}$

(c)  $\frac{\log \sin y + y \tan x}{(\log \cos x + x \cot y)}$

(d)  $\frac{\log \sin y + y \tan x}{(\log \cos x - \cot y)}$

13. If  $y^x = e^{y-x}$ , then  $\frac{dy}{dx} =$

(a)  $\frac{y^x}{\log y}$

(b)  $\frac{\log y}{(1 + \log y)^2}$

(c)  $\frac{(1 + \log y)^2}{\log y}$

(d)  $\frac{1}{\log y \cdot (1 + \log y)^2}$

14.  $\frac{d}{dx} [x^{x^x}] =$

(a)  $x^{x^x} \cdot x^{x-1}$

(b)  $x^{x^{x-1}}$

(c)  $x^{x^x} \cdot x^x [(1 + \log x) \log x]$

(d)  $x^{x^x} \cdot x^x \left[ (1 + \log x) \log x + \frac{1}{x} \right]$

15. If  $x = a(\theta - \sin\theta)$ ,  $y = a(1 + \cos\theta)$ , then  $\frac{d^2y}{dx^2}$  at  $\theta = \frac{\pi}{2}$  is equal to

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

16. If  $y = \sqrt{x + \sqrt{x + \sqrt{x + \dots \infty}}}$ , then  $\frac{dy}{dx} =$

- (a)  $\frac{1}{2y-1}$  (b)  $\frac{1}{2y+1}$   
 (c)  $\frac{1}{1-2y}$  (d)  $\frac{2}{2y-1}$

17. If  $y = \sqrt{\cos x + \sqrt{\cos x + \sqrt{\cos x + \dots \infty}}}$ , then  $\frac{dy}{dx} =$

- (a)  $\frac{\cos x}{1-2y}$  (b)  $\frac{\sin x}{1+2y}$   
 (c)  $\frac{\sin x}{1-2y}$  (d)  $\frac{\cos x}{1-2y}$

18. If  $y = (x + \sqrt{x^2 + a^2})^n$ , then  $\frac{dy}{dx} =$

- (a)  $\frac{y}{n\sqrt{x^2 + a^2}}$  (b)  $\frac{ny}{\sqrt{x^2 + a^2}}$   
 (c)  $2nx(x + \sqrt{x^2 + a^2})^{n-1}$  (d)  $\frac{y}{\sqrt{x^2 + a^2}}$

19. If  $x = a(\cos t + t \sin t)$  and  $y = a(\sin t - t \cos t)$ ,  $0 < t < \frac{\pi}{2}$ , then  $\frac{d^2x}{dt^2} =$

- (a)  $a(\cos t - t \sin t)$  (b)  $at \sin t$   
 (c)  $t \sin t$  (d)  $a(\cos t + t \sin t)$

20. If  $y = a \cos(\log x) + b \sin(\log x)$ , then

- (a)  $x^2 \frac{d^2y}{dx^2} + x \frac{dy}{dx} - y = 0$  (b)  $x^2 \frac{d^2y}{dx^2} - x \frac{dy}{dx} + y = 0$



$$(c) x^2 \frac{d^2y}{dx^2} + x \frac{dy}{dx} + y = 0$$

$$(d) x^2 \frac{d^2y}{dx^2} - x \frac{dy}{dx} - y = 0$$

21. If  $x^m \cdot y^n = (x + y)^{m+n}$ , then  $\frac{dy}{dx} =$

$$(a) -\frac{y}{x}$$

$$(b) \frac{2y}{x}$$

$$(c) \frac{x}{y}$$

$$(d) \frac{y}{x}$$

22. If  $y = A \cos nx + B \sin nx$ , then

$$(a) \frac{d^2y}{dx^2} - n^2y = 0$$

$$(b) \frac{d^2y}{dx^2} + n^2y = 0$$

$$(c) \frac{d^2y}{dx^2} + y = 0$$

$$(d) \frac{d^2y}{dx^2} = n^2y^2$$

**NOTE : UT-2 Syllabus – Chapter 1,2,5**

### **SUBJECT: COMPUTER SCIENCE**

<b>1</b>	<p><b>Which line number of code(s) will not work and why?</b></p> <pre>def Interest(P,R,T=7): I     = (P*R*T)/100     print(I)  Interest(20000,.08,15)           #Line 1 Interest(T=10,20000,.075)       #Line 2 Interest(50000,.07)             #Line 3 Interest(P=10000,R=.06,Time=8)  #Line 4                                 Interest(80000,T=10)  #Line 5</pre>
<b>2</b>	<p><b>What will be the output of following code?</b></p> <pre>def Calculate(A,B,C):     return A*2, B*2, C*2  val = Calculate(10,12,14) print(type(val)) print(val)</pre>
<b>3</b>	<p><b>What is Local Variable and Global Variables? Illustrate with example</b></p>

4	<p><b>What will be the output of following code?</b></p> <pre>def check():     num=50     print(num)  num=100 print(num)check() print(num)</pre>
5	<p><b>What will be the output of following code?</b></p> <pre>def check():     global num     num=1000     print(num) num=100 print(num) check() print(num)</pre>
6	<p><b>What will be the output of following code?</b></p> <pre>print("Welcome!") print("Iam ",____name_) #____is double underscore</pre>
7	<p>Function can alter only Mutable data types? (True/False)</p>
8	<p>A Function can call another function or itself? (True/False)</p>
9	<p><b>What will be the output of following code?</b></p> <pre>def display(s):l     = len(s)     m=""     for i in range(0,l):         if s[i].isupper():              m=m+s[i].lower()         elif s[i].isalpha():             m=m+s[i].upper()         elif s[i].isdigit():             m=m+"\$"         else:             m=m+"*" print(m) <a href="mailto:EXAM20@cbse.com">display("EXAM20@cbse.com")</a></pre>
10	<p><b>What will be the output of following code?</b></p> <pre>def Alter(M,N=50):     M = M + N     N = M - N print(M,"@",N) return M A=200B=100 A = Alter(A,B) print(A,"#",B)</pre>

```
B = Alter(B)
print(A,"@",B)
```

**11** What will be the output of following code?

```
def Fun1(mylist):
    for i in range(len(mylist)):if

        mylist[i]%2==0:
            mylist[i]/=2
        else:
            mylist[i]*=2

list1 =[21,20,6,7,9,18,100,50,13]
Fun1(list1)
print(list1)
```

**12** What will be the output of following code?

```
def drawline(char='$',time=5):
    print(char*time)

drawline()
drawline('@',10)
drawline(65)
drawline(chr(65))
```

#### **CH 4 DATA FILE HANDLING**

**13** What do you mean by file? What do you mean by file handling?

**14** Explain open() function with its syntax in detail.

**15** Write a statement to create a data.txt file with the following text.

**16** List out the basic file modes available in python.

**17** Differentiate between text file and binary file.

**18** Differentiate between read() , readline(), readlines() in python file handling.

**19** Write a Python program to count the number of characters (character frequency) in a string. Sample String: 'google.com' Expected Result: {'g': 2, 'o': 3, 'l': 1, 'e': 1, '.': 1, 'c': 1, 'm': 1}

**20** Write a Python function to reverse a string. Sample String: "python123" Expected Output: "321nohtyp"

**21** Write a Python function that accepts a string and calculates the number of uppercase letters and lowercase letters.

Sample String: PythonProgramminG  
Expected Output: Original String: Python Programming  
No. of Uppercase characters: 3  
No. of Lowercase characters: 14

#### **Board Practical File Program**

**26** Write a Program to check if the entered number is Armstrong or not.

**27** Write a Program to find factorial of the entered number.

**28** Write a Program to enter the string and to check if it's palindrome or not using loop.

29	Write a Program to enter the number of terms and to print the Fibonacci Series.
30	Write a program to sort a sequence using insertion sort.
	Complete above practical program on system and send mail on chanchalsachdeva2020@gmail.com

### **UT 2 SYLLABUS**

1. Python Revision Tour I
2. Python Revision Tour II
3. Working with Function
4. File Handling

## **SUBJECT-PHYSICAL EDUCATION**

### **A.PRACTICAL FILE WORK**

#### **Suggest topics**

- Test for CWSN (any 4 items out of 27 items. One item from each component: Aerobic Function, Body Composition, Muscular strength & Endurance, Range of Motion or Flexibility)
- CWSN (Children With Special Needs – Divyang): Bocce/Boccia , Sitting Volleyball, Wheel Chair Basketball, Unified Badminton, Unified Basketball, Unified Football, Blind Cricket, Goal ball, Floor ball, Wheel Chair Races and Throws, or any other Sport/Game of choice
- Children with Special Needs can also opt any one Sport/Game from the list as alternative to Yogic Practices. However, the Sport/Game must be different from Test - ‘Proficiency in Games and Sports’

#### **\*Record Practical File shall include:**

- 1: Fitness tests administration. (SAI Khelo India Fitness Test)
- 2: Procedure for Asanas, Benefits & Contraindication for any two Asanas for each lifestyle disease. (Obesity, Diabetes, Asthma, Hypertension, Blood Pressure)
- 3: Measurement for any one IOA recognized Sport/Game of choice.

Labelled Diagram of Field & Equipment. Also, mention its Rules, Terminologies & Skills.

Including games: Basketball, Football, Handball, Hockey, Cricket, Kabaddi, Kho-Kho, Volleyball

#### **Guidelines:**

1. The Practical file should be clean and covered by light blue sheet.
2. Practical file should be prepare individually in legible handwriting.
3. Practical file should not be less than 30 pages
4. Students should prepare the practical on the topics allotted. It is as follows:

**B. Make proper notes of the chapter 2 and 3**

**C. Revise all the chapter completed till may**

**D. UT-2 SYLLABUS**

**Chapter-3 &4**

## **SUBJECT-PSYCHOLOGY**

**A. Prepare a project file.**

### **General Instructions:**

1. The project should be simple, brief and easy.
2. It should be handwritten. The cover page should be neat and simple in presentation. No glitters etc. should be used.
3. More credit will be given to original drawings, illustrations, mind maps and articles from magazines and newspapers.
4. It is mandatory to have case studies / questionnaires in the project but if the topic demands, it may be included.
5. While choosing the topic, the student should keep in mind that he can be questioned on what, when how etc. of the topic during viva.
6. By July 11th, 2024 the project has to be submitted.
7. The PROJECT will be evaluated for 20 marks during the FIRST TERMINAL EXAMINATION, 2024 and the marking will be done as per the CBSE guidelines given below.

The project should contain:

- Cover Page
- Acknowledgement and certificate
- Index
- Content (Real Examples, Real forms)
- Assessment Tool
- Conclusion
- Bibliography

### **COVER PAGE**

PROJECT REPORT ON ----- (TOPIC) Submitted in the partial fulfillment of the project work of Class XII Psychology Session: 2024 – 25

By - ----- Under the supervision of Ms. Radhika  
Sharma (PGT Psychology} -----School -----  
-----

### ACKNOWLEDGEMENT

I would like to specially thank Ms.-----Principal of----- for her support and encouragement in every endeavour of ours. I would also like to express my gratitude towards my teacher Ms. Radhika Sharma for her extended guidance and support throughout the project work. Last but not the least I would like to thank my parents for their love and support. -----  
-----

### CERTIFICATE

This is to certify that the project report of Psychology titled----- Submitted by -----of class ----- This project is to be considered as a part of practical Examination conducted by the School. It is a record of project work carried out under our guidance and supervision at -----  
-School. The project has been evaluated on -----

Head of the institution's Name & Signature -----

Examiner's Name & Signature -----  
--

**Note:** Do the Project work as assigned below:

1. Write a CASE FILE on any disorder and make a therapy intervention for the same. It should be based on real life case. Include MSE, Case History, Assessment and suggest therapies from the therapies mentioned in NCERT textbook.
2. Watch a movie based on any disorder or disability and write a documentary report in 500 words.

UT-II SYLLABUS:

CH-2 SELF AND PERSONALITY

CH-3 MEETING LIFE CHALLENGES

## SUBJECT-PAINTING

a) Folk art on canvas.

