



Delhi Public School Gwalior

(Under the aegis of DPS Society, New Delhi)

Holiday Assignment

Class - XII

Session (2023-24)



Dear Parents

Greetings of the day!

Vacations are the best time to relax and enjoy. Summer vacations are the reason behind fun in the sun, beach and shadow of the umbrella, but it is also the time to keep some analogy of academics alive in the fun to chisel the inherent potential inside your child. My suggestion to you is to spend these holidays being sociable and be vibrant in undertaking your plans so that the vacation is made purposeful.

To begin with, enhance every precious moment prudently by motivating your child to read informative and enlightening books. Help them improve their speech by conversing with them on every possible occasion and strop their vocabulary by providing them with new words. Spend substantial time visiting your kith and kin and people in your vicinity. Hold parley with your child on daily happenings and crucial world events as this is the best time to update, put forth your thoughts, notions and ideas before your ward and ask for an opinion, be a constant supporter of tolerance and disseminate it amongst people, teach your child to help and let him/her realize the meaning of real happiness and harmony and certainly root out all possible ill feelings and factions. Try being friendly and benevolent to all, let your child play the part in family reunions which will strengthen your family bond. Look out for the ways to abrade the plodding routine and take up some supportive vigorous activities with your child like swimming, cycling, jogging, painting or any other activity that your child enjoys.

It's your time to make every single moment eventful and memorable for your child and fill them with loads of experiences, which he/she eagerly wants to share with his/her pals and Educators when returned to School.

I wish you a pleasant vacation!

Regards

**Principal
Delhi Public School Gwalior**

ADD ONS TO MAKE YOUR VACATION MEANINGFUL !!

Childhood is a crucial stage of development. Most of life's important lessons are learnt here! Let us join hands and make sincere efforts to augment and hone the learning process of the child through inculcation of self learning and keen observation.

- * Let us attempt to enable them by allowing them to assume responsibilities of the routine household and shopping chores. (e.g.: laying the table, serving the guests, making their beds, buying groceries from the nearby stores etc.)
- * Let us make them aware about their social responsibilities which will transform them into a responsible citizen of our society. (e.g.: keeping the surroundings clean, make use of public litter bins, switching off lights / fans / closing the taps properly etc.)
- * They should be taught how to connect with Almighty God through prayers and meditation. (e.g.: daily prayers, thought of the day, meditate to improve the concentration etc.)
- * Socialize and connect with people, neighbours and relatives. (e.g.: meeting & greeting neighbours, helping the elderly around, be friendly to the peers etc.)

We wish all the great for your summer holiday time. May all the pleasure in the world embrace you, let your fun endless with friends and family.

Note : Kindly do all the Holiday Assignments neatly and submit it latest by July 10, 2023.

SUBJECT – ENGLISH

Dear Students

Please be informed that this homework is mandatory for all and must be submitted to the respective English Educators by 10th of July 2023. Please note that it is a part of your English Practical for CBSE Board Examination 2023-24 and carries 10 marks.

You have to make a project file and the file must include:

- (a) Index
- (b) Certificate
- (c) Introduction
- (d) Content : 800 to 1000 words
- (e) Bibliography

Pick any ONE TOPIC out of the given TWO.

Topic -1

Write an article on –

“Courage is not the absence of fear, but a triumph over it.”

- Introduction
- Origin of the quote
- Courage – a choice to act
- What can one learn from fear?
- Benefits of having courage over fear.
- How and why to overcome fear.
- Fighting against fear is hard but worth it.
- Mention some of your worst fears and how you managed to overcome them.
- Famous personalities who overcame their fear (their motivational speeches, stories etc.)

Topic -2

Watch CNN’s award winning ‘Planet in Peril’ series and Anderson Cooper 360⁰ on the environment.

Write a review in 800-1000 words highlighting the problem dealt.

- Climate change
- Vanishing habitats
- Disappearing species
- Human population growth
- Make a comparative report showing the changes from 20 years.

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SUBJECT – MATHEMATICS

General Instructions :

- Holiday Assignment consists of Multiple Choice questions, Case based questions and solve the following questions.
- All the work to be done in A4 sized ruled sheets which are to be arranged in a stick file.
- All the best! Stay Home, Stay Safe!

Multiple Choice Questions

- Q.1 A square matrix 'A' is called idempotent if
(a) $A^2 = 1$ (b) $A^2 = O$ (c) $2A = 1$ (d) $A^2 = A$
- Q.2 If the matrix AB is zero, then
(a) It is not necessary that either $A = O$ or $B = O$
(b) $A = O$ or $B = O$
(c) $A = O$ and $B = O$
(d) All the above statements are wrong
- Q.3 If A and B are symmetric matrices of the same order, then
(a) AB is a symmetric matrix (b) $A - B$ is a skew-symmetric matrix
(c) $AB + BA$ is a symmetric matrix (d) $AB - BA$ is a symmetric matrix
- Q.4 If $A = \begin{bmatrix} 1 & a \\ 0 & 1 \end{bmatrix}$, then A^n (where $n \in \mathbb{N}$) equals :
(a) $\begin{bmatrix} 1 & na \\ 0 & 1 \end{bmatrix}$ (b) $\begin{bmatrix} 1 & n^2a \\ 0 & 1 \end{bmatrix}$ (c) $\begin{bmatrix} 1 & na \\ 0 & 0 \end{bmatrix}$ (d) $\begin{bmatrix} n & na \\ 0 & n \end{bmatrix}$
- Q.5 If $\begin{bmatrix} \cos \frac{2\pi}{7} & -\sin \frac{2\pi}{7} \\ \sin \frac{2\pi}{7} & \cos \frac{2\pi}{7} \end{bmatrix}^k = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, then the least positive integral value of k is
(a) 3 (b) 4 (c) 6 (d) 7
- Q.6 If the adjoint of a 3×3 matrix P is $\begin{bmatrix} 1 & 4 & 4 \\ 2 & 1 & 7 \\ 1 & 1 & 3 \end{bmatrix}$, then the possible value(s) of the determinant of P is (are)
(a) -2 (b) -1 (c) 1 (d) 1
- Q.7 The number of all possible matrices of order 2×3 with each entry 10 or 1 is
(a) 64 (b) 12 (c) 36 (d) 84
- Q.8 The number of real roots of the equation $\begin{vmatrix} x & -6 & -1 \\ 2 & -3x & x-3 \\ -3 & 2x & x+2 \end{vmatrix} = 0$ is :
(a) 0 (b) 1 (c) 2 (d) 3

Q.9 For what value of λ the following system of equations

$$\begin{aligned}x + y + z &= 6 \\ 4x + \lambda y - \lambda z &= 0 \\ 3x + 2y - 4z &= -5\end{aligned}$$

does not have a unique solution?

- (a) 3 (b) -3 (c) 1 (d) 0

Q.10 If A and B are square matrices of order 3 such that $|A| = -1, |B| = 3$, then $\det(3AB)$ is equal to

- (a) -9 (b) -27 (c) -81 (d) 81

Q.11 Which of the following is not correct in a given determinant of A, where $A = [a_{ij}]_{3 \times 3}$

- (a) Order of minor is less than order of the det (A)
(b) Minor of an element can never be equal to cofactor of the same element
(c) Value of a determinant is obtained by multiplying elements of a row or column by corresponding cofactors.
(d) Order of minors and cofactors of elements of A is the same.

Q.12 If A is a square matrix of order n , then $\det(\lambda A)$ is equal to (λ being a scalar)

- (a) $\lambda \det A$ (b) $|\lambda|^n \det A$ (c) $\lambda^n \det A$ (d) none of these

Q.13 If A is square matrix such that $A^2 = I$, then A^{-1} is equal to

- (a) I (b) O (c) A (d) $I + A$

Assertion Reasoning Questions

Q.14 **Assertion (A) :** Let A and B be two matrices of order n .

If A, B are square matrices of order 3 such that $|A| = -1, |B| = 3$, then $|3AB| = -81$.

Reason (R) : $|AB| = |A||B|$; $|kA| = k^n |A|$ if A is of order 3×3 .

In the light of the above statements, choose the most appropriate answer from the options given.

- (A) Both (A) and (R) are true and (R) is the correct explanation of (A).
(B) Both (A) and (R) true but (R) is NOT the correct explanation of (A).
(C) (A) is correct but (R) is not correct
(D) (A) is not correct but (R) is correct.

Q.15 **Assertion (A) :** $AA^T + A^T$ is skew symmetric.

Reason (R) : A square matrix A is symmetric iff $A^T = A$ and skew-symmetric iff $A^T = -A$.

In the light of the above statements, choose the most appropriate answer from the options given.

- (A) Both (A) and (R) are true and (R) is the correct explanation of (A).
(B) Both (A) and (R) true but (R) is NOT the correct explanation of (A).
(C) (A) is correct but (R) is not correct
(D) (A) is not correct but (R) is correct.

Q.16 **Assertion (A) :** $f(x) = \tan^2 x$ is continuous at $x = \frac{\pi}{2}$.

Reason (R) : $g(x) = x^2$ is continuous at $x = \frac{\pi}{2}$.

In the light of the above statements, choose the most appropriate answer from the options given.

- (A) Both (A) and (R) are true and (R) is the correct explanation of (A).
- (B) Both (A) and (R) true but (R) is NOT the correct explanation of (A).
- (C) (A) is correct but (R) is not correct
- (D) (A) is not correct but (R) is correct.

Q.17 **Assertion (A) :** The marginal revenue when $x = 5$ is 66.

Reason (R) : Marginal revenue is the rate of change of total revenue with respect to the number of items sold at an instance.

In the light of the above statements, choose the most appropriate answer from the options given.

- (A) Both (A) and (R) are true and (R) is the correct explanation of (A).
- (B) Both (A) and (R) true but (R) is NOT the correct explanation of (A).
- (C) (A) is correct but (R) is not correct
- (D) (A) is not correct but (R) is correct.

Case Study Based Questions

Q.18 Three schools A, B and C organized a mela for collecting funds for helping rehabilitation of flood victims. They sold handmade fans, mats and plates from recycled material at a cost of ₹25, ₹100 and ₹50 each. The number of articles sold by school A, B and C are given below:

School \ Article	A	B	C
Fans	40	25	35
Mats	50	40	50
Plates	20	30	40

Based on the above information , answer the following questions:

- (i) If R be a 3 x 3 matrix represent the sale of handmade fans, mats and plates by three schools A, B and C, then

$$(a) R = \begin{matrix} & \begin{matrix} Fans & Mats & Plates \end{matrix} \\ \begin{matrix} A \\ B \\ C \end{matrix} & \begin{bmatrix} 40 & 50 & 20 \\ 25 & 40 & 30 \\ 35 & 50 & 40 \end{bmatrix} \end{matrix}$$

$$(b) R = \begin{matrix} & \begin{matrix} Fans & Mats & Plates \end{matrix} \\ \begin{matrix} A \\ B \\ C \end{matrix} & \begin{bmatrix} 25 & 40 & 20 \\ 35 & 40 & 30 \\ 40 & 50 & 20 \end{bmatrix} \end{matrix}$$

$$\begin{array}{c} \text{Fans Mats Plates} \\ A \begin{bmatrix} 40 & 25 & 35 \\ 50 & 40 & 50 \\ 20 & 30 & 40 \end{bmatrix} \\ (c) R = B \end{array}$$

$$\begin{array}{c} \text{Fans Mats Plates} \\ A \begin{bmatrix} 25 & 35 & 40 \\ 40 & 40 & 50 \\ 20 & 30 & 20 \end{bmatrix} \\ (d) R = B \end{array}$$

(ii) If P be a 3×1 matrix represents the sale prices (in ₹) of given products per unit, then

$$(a) P = \begin{bmatrix} 25 \\ 50 \\ 100 \end{bmatrix} \begin{array}{l} \text{Fans} \\ \text{Mats} \\ \text{Plates} \end{array}$$

$$(b) P = \begin{bmatrix} 25 & 50 & 100 \end{bmatrix} \begin{array}{l} \text{Fans Mats Plates} \end{array}$$

$$(c) P = \begin{bmatrix} 25 & 100 & 50 \end{bmatrix} \begin{array}{l} \text{Fans Mats Plates} \end{array}$$

$$(d) P = \begin{bmatrix} 25 \\ 100 \\ 50 \end{bmatrix} \begin{array}{l} \text{Fans} \\ \text{Mats} \\ \text{Plates} \end{array}$$

(iii) The funds collected by school A by selling the given articles is

(a) ₹7,000

(b) ₹6,125

(c) ₹7,875

(d) ₹8,000

(iv) The funds collected by school B by selling the given articles is

(a) ₹5,125

(b) ₹6,125

(c) ₹7,125

(d) ₹8,125

(v) The total funds collected for the required purpose is

(a) ₹20,000

(b) ₹21,000

(c) ₹30,000

(d) ₹35,000

Q.19 The upward speed $v(t)$ of a rocket at time t is approximated by $v(t) = at^2 + bt + c$, $0 \leq t \leq 100$, where a , b and c are constants. It has been found that the speed at time $t = 3$, $t = 6$ and $t = 9$ seconds are respectively 64, 133 and 208 miles per second.

$$\text{If } \begin{bmatrix} 9 & 3 & 1 \\ 36 & 6 & 1 \\ 81 & 9 & 1 \end{bmatrix}^{-1} = \frac{1}{18} \begin{bmatrix} 1 & -2 & 1 \\ -15 & 24 & -9 \\ 54 & -54 & 18 \end{bmatrix}, \text{ then}$$

Answer the following questions :

(i) The value of $b + c$ is

(a) 20

(b) 21

(c) 3/4

(d) 4/3

(ii) The value of $a + c$ is

(a) 1

(b) 20

(c) 4/3

(d) None of these

(iii) $v(t)$ is given by

(a) $t^2 + 20t + 1$

(b) $1/3t^2 + 20t + 1$

(c) $t^2 + 1/3t + 20$

(d) $t^2 + t + 1$

(iv) The speed at time $t = 15$ seconds is

(a) 346 miles / sec

(b) 356 miles / sec

(c) 366 miles / sec

(d) 376 miles / sec

- (v) The time at which the speed of rocket is 784 miles / sec is
 (a) 20 seconds (b) 30 seconds (c) 25 seconds (d) 27 seconds

Short Answer Type Questions

Q.20 Show that the matrix $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$ satisfies the equation $A^2 - 4A - 5I_3 = 0$ and hence find A^{-1} .

Q.21 Find the inverse of the matrix $A = \begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$ by using elementary transformations.

Q.22 If a, b, c are positive and unequal, show that the value of the determinant

$$\begin{vmatrix} a & b & c \\ b & c & a \\ c & a & b \end{vmatrix} \text{ is always negative.}$$

Q.23 Find the values of x, y, z if the matrix

$$A = \begin{bmatrix} 0 & 2y & z \\ x & y & -z \\ x & -y & z \end{bmatrix} \text{ satisfy the equation. } A^T A = I_3.$$

Q.24 Find matrix X so that

$$X \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} = \begin{bmatrix} -7 & -8 & -9 \\ 2 & 4 & 6 \end{bmatrix}$$

Q.25 If $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & -2 \\ a & 2 & b \end{bmatrix}$ is a matrix satisfying $A A^T = 9I_3$, then find the values of a and b .

Q.26 Find the values of x , if

$$\begin{vmatrix} x+1 & x-1 \\ x-3 & x+2 \end{vmatrix} = \begin{vmatrix} 4 & -1 \\ 1 & 3 \end{vmatrix}$$

Q.27 If $A = \begin{bmatrix} i & 0 \\ 0 & i \end{bmatrix}$, $n \in N$ find A^{4n} .

Q.28 For what value of x the following matrix is singular?

$$\begin{bmatrix} 5-x & x+1 \\ 2 & 4 \end{bmatrix}$$

Q.29 If for the matrix A , $A^3 = I$, then find A^{-1} .

Q.30 If A is a square matrix of order 3 and $|2A| = k|A|$, then find the value of k .

Q.31 If $A + B + C = \pi$ then find the value of

$$\begin{vmatrix} \sin(A+B+C) & \sin(A+C) & \cos C \\ -\sin B & 0 & \tan A \\ \cos(A+B) & \tan(B+C) & 0 \end{vmatrix}$$

Q.32 A is a square matrix of order 3 and $|A| = 7$. Write the value of $|\text{adj } A|$.

Q.33 Matrix $A = \begin{bmatrix} 0 & 2b & -2 \\ 3 & 1 & 3 \\ 3a & 3 & -1 \end{bmatrix}$ is given to be symmetric, find values of a and b .

Q.34 If A is an invertible matrix of order 3 and $|A| = 5$, then find $|\text{adj } A|$.

Q.35 Find derivative of $\sin(\sin x^2)$ at $x = \sqrt{\frac{\pi}{2}}$.

Q.36 Differentiate $\tan^{-1}(\sec x + \tan x)$ w.r.t. x .

Q.37 If $y = \sin\left(2 \tan^{-1} \sqrt{\frac{1-x}{1+x}}\right)$. Prove that $\frac{dy}{dx} = \frac{-x}{\sqrt{1-x^2}}$.

Q.38 Find $\frac{dy}{dx}$ at $x=1$, $y=\frac{\pi}{4}$, if $\sin^2 y + \cos xy = k$

Q.39 If $y = \sqrt{\cos x + \sqrt{\cos x + \sqrt{\cos x + \dots \infty}}}$. Prove that $(1-2y)\frac{dy}{dx} = \sin x$

Q.40 Differentiate $\log_5 x$ w.r.t. x .

Q.41 If $y = (\sin x)^x + (\cos x)^{\tan x}$, find $\frac{dy}{dx}$.

Q.42 If $y^x + x^y + x^x = a^b$, find $\frac{dy}{dx}$.

Long Answer Type Questions

Q.43 If $x = a(\cos \theta + \log \tan \frac{\theta}{2})$ and $y = a \sin \theta$, find the value of $\frac{dy}{dx}$ at $\theta = \frac{\pi}{4}$.

Q.44 Differentiate : $\tan^{-1}\left(\frac{x}{\sqrt{1-x^2}}\right)$ w.r.t. $\cos^{-1} x^2$.

Q.45 If $x \cos(a+y) = \cos y$, then prove that $\frac{dy}{dx} = \frac{\cos^2(a+y)}{\sin a}$ and hence show that

$$\sin a \frac{d^2 y}{dx^2} + \sin^2(a+y) \frac{dy}{dx} = 0.$$

Q.46 The two equal sides of an isosceles triangle with fixed base b are decreasing at the rate of 3 cm/sec. How fast the area is decreasing when two equal sides are equal to the base?

Q.47 Water is leaking from conical funnel at the rate of 5 cm³/sec. If the radius of the base of the funnel is 10 cm and its height is 20 cm. find the rate at which the water level is dropping when it is 5 cm from the top.

Q.48 Find the intervals in which the following function is strictly increasing and decreasing .

$$f(x) = x^4 - \frac{x^3}{3}$$

Q.49 Show that $A = \begin{bmatrix} 2 & -3 \\ 3 & 4 \end{bmatrix}$ satisfies the equation $x^2 - 6x + 17 = 0$. Hence find A^{-1} .

Q.50 Find the intervals in which the function f given by $f(x) = \frac{4 \sin x - 2x - x \cos x}{2 + \cos x}$, $0 \leq x \leq 2\pi$ is

(i) increasing (ii) decreasing.

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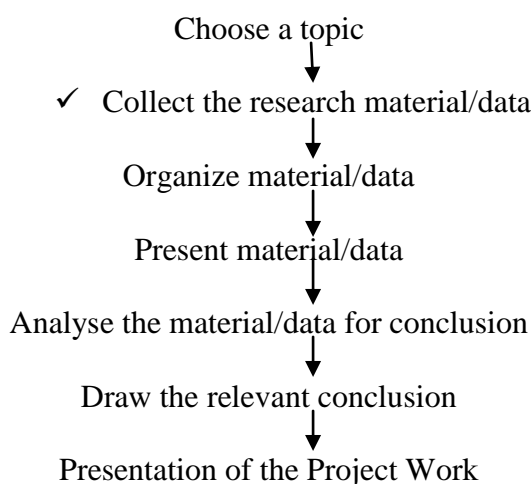
SUBJECT – APPLIED MATHEMATICS

- The following guidelines are issued by CBSE to schools for the session 2023-24.
- Project work and record : 5 marks and year end presentation/ viva : 5 marks

Following are the topics for the projects to be done individually. One has to select any one topic and prepare a detailed report on it

- 1) Predicting the Outcome of an Election- Exit Polls
- 2) Weather Prediction (To study how weather is predicted and understand the use of mathematics in weather prediction.
- 3) Risk Assessments by Insurance Firms from Data
- 4) Stock Price Movements
- 5) To show application of mathematics in real life in maximizing the profit of Kirana stores
- 6) Effect of Temperature and Rain Variations on Various Crops.
- 7) To analyze what the infant mortality rate of a country is and how we can predict it.
- 8) Predicting a Stock Market Crash.

- **Steps involved in the conduct of the project:**



- **Expected Checklist for the project work:**

- ✓ Introduction of topic/title
- ✓ Identifying the causes, events, consequences and/or remedies
- ✓ Various stakeholders and effect on each of them.
- ✓ Advantages and disadvantages of situations or issues identified.
- ✓ Short term and long term implications of strategies suggested in the course of research
- ✓ Validity, reliability, appropriateness and relevance of data used for research work and for presentation in the project file.
- ✓ Presentation and writing that is succinct and coherent in project file.
- ✓ Citation of the material referred to, in the file in footnotes, resources section, bibliography etc.

- The project report should include

Title page, Acknowledgements, Certificate, Contents page(Index), Introduction, Body of report, Evaluation, Conclusions and Future Work, Bibliography and Appendix.

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SUBJECT – PHYSICS

General instructions:

1. Do all the questions in a folder or available notebook.
2. Write answers in a proper sequence.
3. Do neat & clean work.
4. Draw diagrams where ever required.

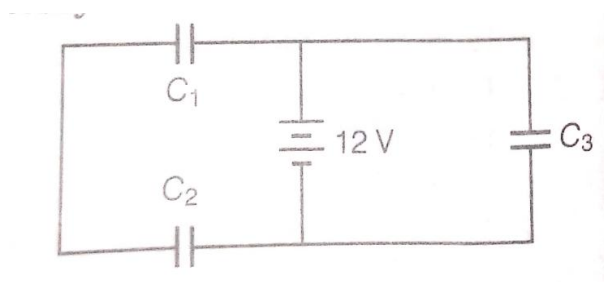
Objective Questions

- Q.1 Force per unit charge is known as _____.
(a) Electric field (b) Current (c) Electric flux (d) Electric potential
- Q.2 The magnitude of electric force experienced by a charged particle in an electric field depends on:
(a) charge of the particle (b) the velocity of the particle
(c) the direction of the electric field (d) mass of the particle
- Q.3 The intensity of the electric field at any point on the surface of a charged conductor is
(a) zero (b) perpendicular to surface
(c) tangential to surface (d) infinite
- Q.4 Consider a uniform electric field in the z-direction. The potential is a constant
(a) for any x for a given z (b) for any y for a given z
(c) on the x-y plane for a given z (d) all of these
- Q.5 Equipotential surfaces
(a) are closer in regions of large electric fields compared to regions of lower electric fields.
(b) will be more crowded near sharp edges of a conductor.
(c) will always be equally spaced.
(d) both (a) and (b) are correct.
- Q.6 A test charge is moved from lower potential point to a higher potential point. The potential energy of test charge will
(a) remain the same (b) increase (c) decrease (d) become zero
- Q.7 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
- Q.8 In a Wheatstone bridge if the battery and galvanometer are interchanged then the deflection in galvanometer will
(a) change in previous direction (b) not change
(c) change in opposite direction (d) none of these.
- Q.9 The resistivity of alloy manganin is
(a) Nearly independent of temperature (b) Increases rapidly with increase in temperature
(c) Decreases with increase in temperature (d) Increases rapidly with decrease in temperature

- Q.10 In parallel combination of n cells, we obtain
(a) more voltage (b) more current (c) less voltage (d) less current

Descriptive Questions

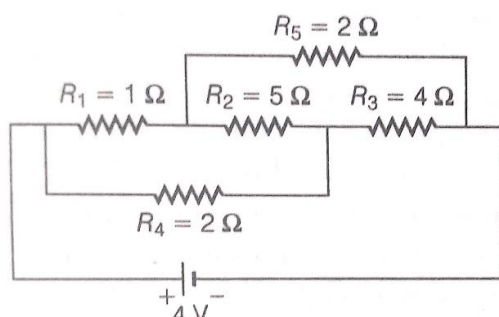
- Q1. Drive the expression for electric field at a point on the equatorial line of an electric dipole.
- Q2. An electric dipole is kept in a uniform electric field. Drive an expression for the net torque acting on it and write its direction.
- Q3. Define electric flux. Write its SI unit. A charge q is enclosed by a spherical surface of radius R . Find the electric flux.
- Q4. State Gauss' law in electrostatics. Using this law derive an expression for the electric field due to a long straight wire.
- Q5. Using Gauss' law derives an expression for the electric field due to a uniformly charged infinite plane sheet.
- Q6. Draw the plot showing the variation of (i) electric field (ii) electric potential with distance r due to point charge.
- Q7. Can two equipotential surfaces intersect each other? Give reason.
- Q8. Derive an expression for the electric potential due to an electric dipole at a point on its axial line.
- Q9. An electric dipole of length 2cm when placed with its axis making an angle of 60° with a uniform electric field, experience a torque of $8\sqrt{3}$ N-m. Calculate the potential energy of the dipole if it has charge $\pm 4\text{nC}$.
- Q10. Distinguish between a dielectric and a conductor.
- Q11. A uniformly charged conducting sphere of 1.4 m diameter has a surface charge density of $40\mu\text{Cm}^{-2}$.
(i) Find the charge on the sphere
(ii) What is the total electric flux leaving the surface of the sphere?
- Q12. The sum of two point charges is $7\mu\text{C}$. they repel each other with a force of 1N when kept 30cm apart in free space. Calculate the value of each charge.
- Q13. Three identical capacitors C_1 , C_2 and C_3 of capacitances $6\mu\text{F}$ each are connected to a 12V battery as shown below.



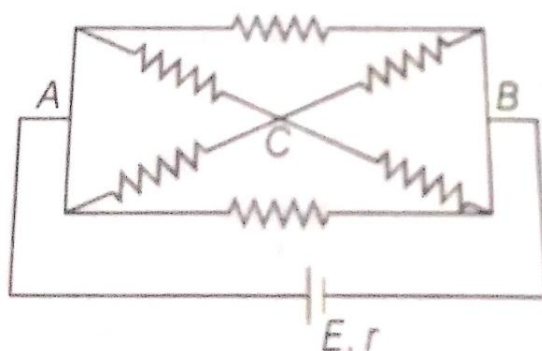
Find

- The charge on each capacitor
- The equivalent capacitances of the network
- The energy stored in the network of capacitors.

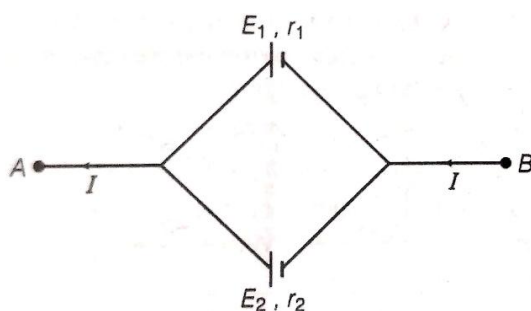
Q14. Calculate the current drawn from the battery in the given network



- Q15. (i) State the two Kirchhoff's laws. Explain briefly, how these rules are justified?
 (ii) The current is drawn from a cell of emf E and internal resistance r connected to the network of resistors each of resistance r as shown in figure. Obtain the expression for (a) the current drawn from the cell and (b) the power consumed in the network.



Q16. Two cells of emf E_1 , E_2 and internal resistances r_1 and r_2 respectively are connected in parallel as shown in figure.



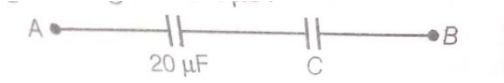
Deduce the expression for

- The equivalent emf of the combination.
- The equivalent resistance of the combination
- The potential difference between the points A and B.

Q17. A slab of material of dielectric constant K has the same area as that of the plates of a parallel plate capacitor, but has the thickness $d/2$, where d is the separation between the

plates. Find out the expression for its capacitance when the slab is inserted between the plates of the capacitor.

- Q18. The equivalent capacitance of the combination between point A and B in the given figure is $4\mu\text{F}$.



- Calculate the capacitance of the capacitor C .
 - Calculate the charge on each capacitor if a 12V battery is connected across terminal A and B
 - What will be the potential drop across each capacitor?
- Q19. Distinguish between emf and terminal voltage of a cell having internal resistance r . Draw a plot showing the variation of terminal voltage versus the current drawn from the cell.
- Q20. Define the term mobility of charge carriers in a conductor. Write its SI unit.

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SUBJECT – CHEMISTRY

Objective questions

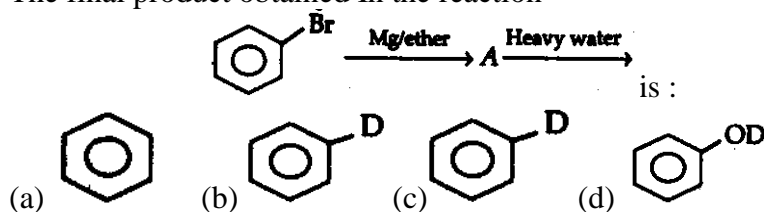
Q 1. The chlorine atom in chlorobenzene is ortho and para director because:

- (a) resonance effect predominates over Inductive effect
- (b) Inductive effect predominates over resonance effect
- (c) both Inductive and resonance effects are evenly matched
- (d) only resonance effect and not inductive effect is operating

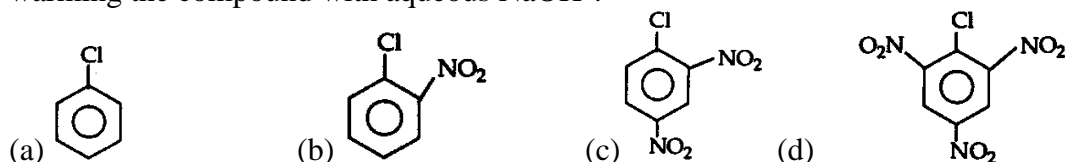
Q 2. The reagents required to obtain 1-iodobutane from 1-butene is/are:

- (a) $I_2/\text{red P}$ (b) KI (c) HI/ H_2O_3 (d) HBr/ H_2O_2 and KI/acetone

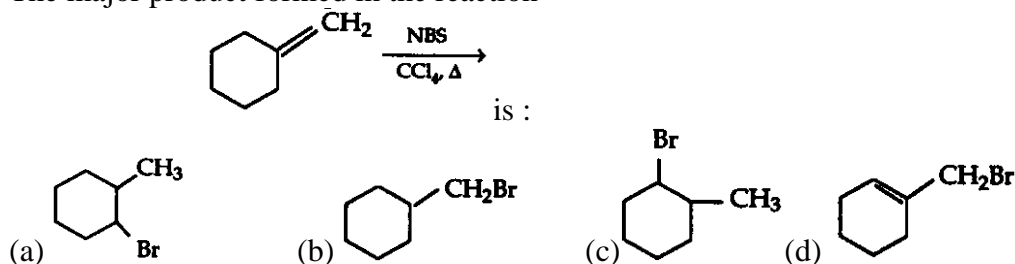
Q 3. The final product obtained in the reaction



Q 4. Which of the following compounds undergoes replacement of $-\text{Cl}$ by $-\text{OH}$ by merely warming the compound with aqueous NaOH?



Q 5. The major product formed in the reaction



Q 6. The reaction of ethyl alcohol and bleaching powder gives:

- (a) acetaldehyde (b) chloroform (c) chloral (d) all of these

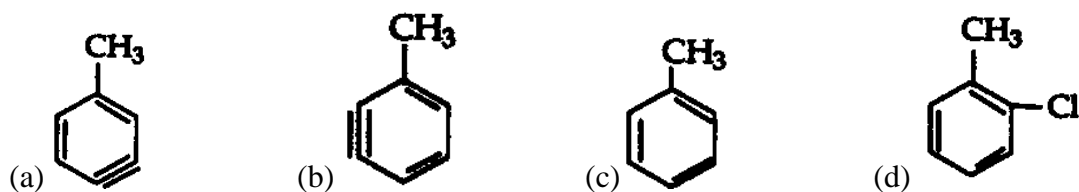
Q 7. The order of reactivities of the following alkyl halides for a S_N2 reaction is :

- (a) $\text{RF} > \text{RCl} > \text{RBr} > \text{RI}$ (b) $\text{RF} > \text{PBr} > \text{RCl} > \text{RI}$
- (c) $\text{RCl} > \text{RBr} > \text{RF} > \text{RI}$ (d) $\text{RI} > \text{RBr} > \text{RCl} > \text{RF}$

Q 8. Aryl halides undergo:

- (a) the Fittig reaction (b) the Ullmann reaction
- (c) the Grignard reaction (d) all of the above

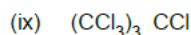
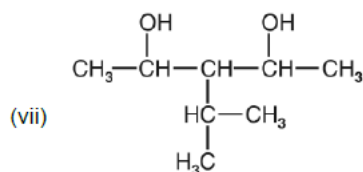
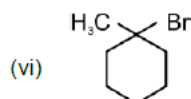
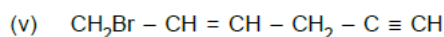
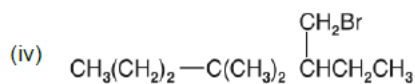
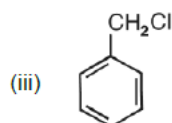
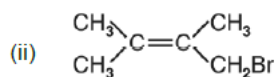
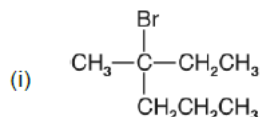
Q 9. o-chlorotoluene reacts with sodamide in liquid NH_3 to give o-toluidine, and m-toluidine. This proceeds through an intermediate:



Q 10. The process which does not occur during CHCl_3 formation from $\text{C}_2\text{H}_5\text{OH}$ and bleaching powder :

- (a) oxidation (b) reduction (c) hydrolysis (d) chlorination

Q.11 Write the IUPAC names of the following compounds.



Q.12 Write the structure of following halogen compounds

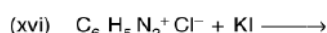
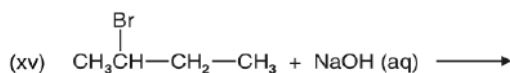
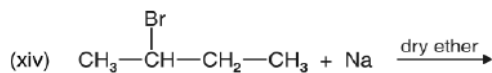
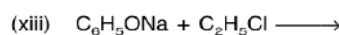
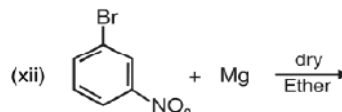
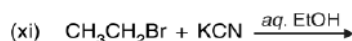
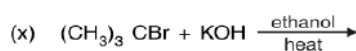
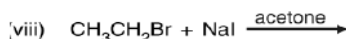
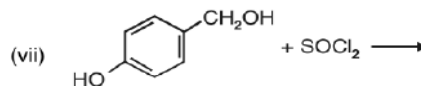
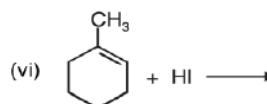
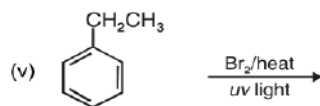
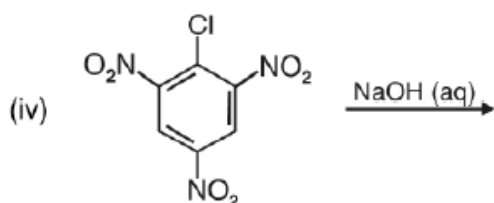
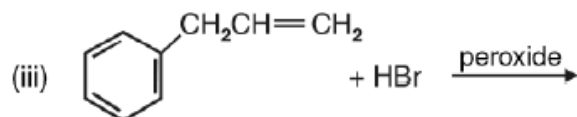
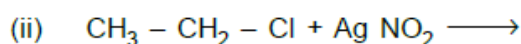
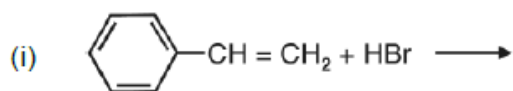
(i) 2-chloro-3-methylpentane (ii) 2-(2-chlorophenyl)-1-iodooctane

(iii) 1-bromo-4-sec-butyl-2-methylbenzene. (iv) p-bromotoluene. (v) chlorophenylmethane

Q.13 Arrange the following in the increasing order of properly indicated :

- (i) bromomethane, chloromethane, dichloromethane. (Increasing order of boiling points).
 (ii) 1-chloropropane, isopropyl chloride, 1-chlorobutane (Increasing order of boiling point)
 (iii) dichloromethane, chloroform, carbon tetrachloride. (Increasing order of dipole moment.
 (iv) CH_3F , CH_3Cl , CH_3Br , CH_3I (Increasing reactivity towards nucleophilic substitution and increasing order of dipole moment)
 (v) *o,m,p*-dichlorobenzene (Increasing order of melting points).

Q.14 Complete the following reactions :



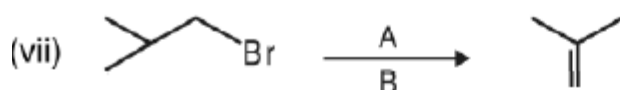
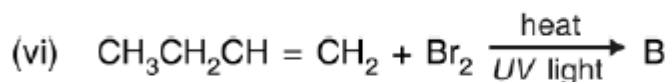
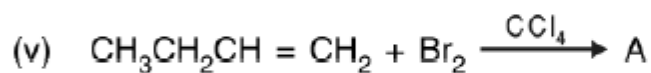
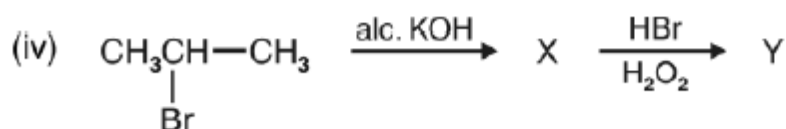
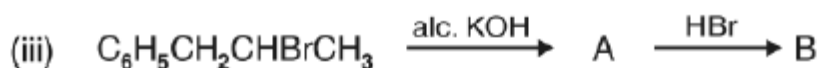
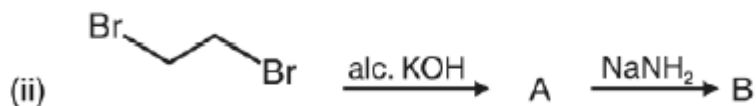
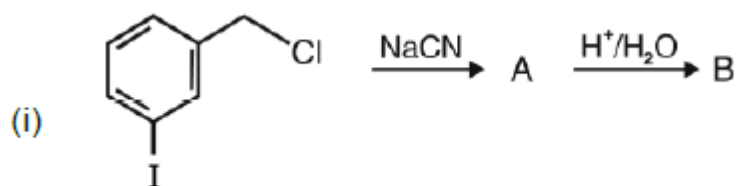
Q.15 How will you bring about the following conversions?

- benzene to 3-bromonitrobenzene
- ethanol to but-1-yne
- 1-bromopropane to 2-bromopropane
- benzene to 4-bromo-1-nitrobenzene
- aniline to chlorobenzene
- 2-methyl-1-propene to 2-chloro-2-methylpropane
- ethyl chloride to propanoic acid
- but-1-ene to n-butyl iodide
- benzene to phenylchloromethane.
- tert-butyl bromide to isobutyl bromide.

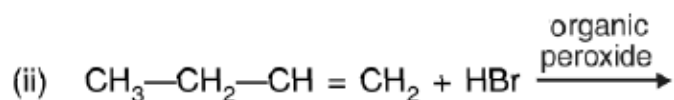
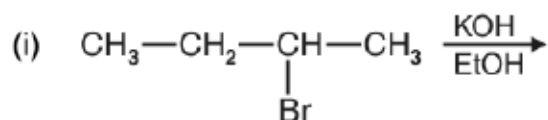
Q.16 Explain the following reactions with suitable example :

- Finkelstein reaction.
- Swarts reaction.
- Wurtz reaction.
- Wurtz-Fitting reaction
- Friedel-Craft's alkylation reaction.
- Friedel-Craft's acylation reaction
- Sandmeyer reaction.

Q.17 Identify the products formed in the following sequence :



Q.18 Write the major products and name the rule responsible for the formation of the product.



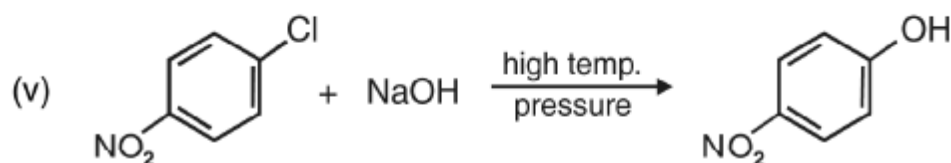
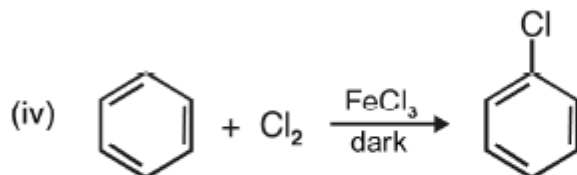
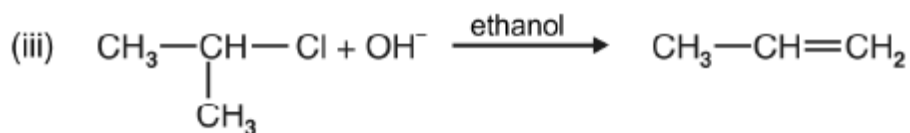
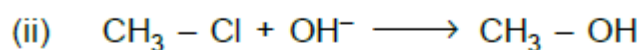
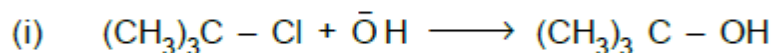
Q.19 Write the difference between

- enantiomers and diastereomers
- retention and inversion of configuration.
- electrophilic and nucleophilic substitution reactions.

Q.20 Give a chemical test to distinguish between the following pairs of compounds:

- chlorobenzene and cyclohexylchloride.
- vinyl chloride and ethyl chloride.
- n-propyl bromide and isopropyl bromide.

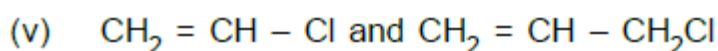
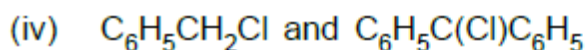
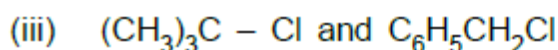
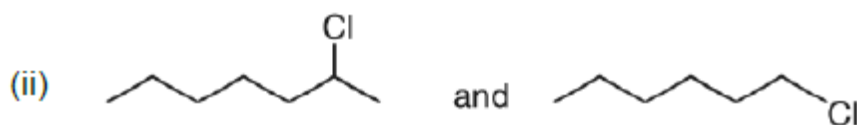
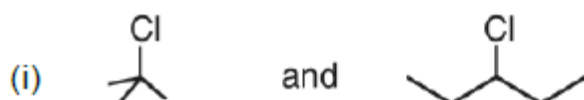
Q.21 Give mechanism of the following reactions :



Q.22 Which compound in each of the following pairs will react faster in S_N2 reaction with OH[−] and why?

(i) CH₃Br or CH₃I (ii) (CH₃)₃CCl or CH₃Cl

Q.23 In the following pairs which halogen compound undergoes faster S_N1 reaction?



Q.24 Give reasons for the following :

- The bond length of C-Cl bond is larger in haloalkanes than that in haloarenes.
- Although alkyl halides are polar in nature but are not soluble in water.
- tert-butyl bromide has lower boiling point than n-Butyl bromide.
- haloalkanes react with KCN to form alkyl cyanide as main product while with AgCN alkyl isocyanide is the main product.

- (v) sulphuric acid is not used in the reaction of alcohol with KI.
- (vi) thionyl chloride is the preferred reagent for converting ethanol to chloroethane.
- (vii) haloalkanes undergo nucleophilic substitution reaction easily but haloarenes do not undergo nucleophilic substitution under ordinary conditions.
- (viii) chlorobenzene on reaction with fuming sulphuric acid gives ortho and para-chlorosulphonic acids.
- (ix) 2, 4-dinitro chlorobenzene is much more reactive than chlorobenzene towards hydrolysis reaction with NaOH.
- (x) Grignard reagent should be prepared under anhydrous conditions.
- (xi) the dipole moment of chlorobenzene is lower than that of cyclohexyl chloride.
- (xii) neopentyl bromide undergoes nucleophilic substitution reactions very slowly.
- (xiii) vinyl chloride is unreactive in nucleophilic substitution reaction.
- (xiv) An optically inactive product is obtained after the hydrolysis of optically active 2-bromobutane.

Q.25 Give one use of each of the following :

- (i) Freon-12 (ii) DDT (iii) Carbon tetrachloride (iv) Iodoform

Q.26 An optically active compound having molecular formula $C_7H_{15}Br$ reacts with aqueous KOH to give $C_7H_{15}OH$, which is optically inactive. Give mechanism for the reaction.

Q.27 An organic compound C_8H_9Br has three isomers A, B and C. A is optically active. Both A and B gave the white precipitate when warmed with alcoholic $AgNO_3$ solution in alkaline medium.

Benzoic acid, terephthalic and p-bromobenzoic acid were obtained on oxidation of A, B and C respectively. Identify A, B and C.

Q.28 An alkyl halide X having molecular formula $C_6H_{13}Cl$ on treatment with potassium tert-butoxide gives two isomeric alkenes Y and Z but alkene Y is symmetrical. Both alkenes on hydrogenation give 2, 3-dimethylbutane. Identify X, Y and Z.

Q.29 An organic compound (A) having molecular formula C_3H_7Cl on reaction with alcoholic solution of KCN gives compound B. The compound B on hydrolysis with dilute HCl gives compound C. C on reduction with H_2/Ni gives 1-aminobutane. Identify A, B and C.

Q.30 Why are haloarenes less reactive than haloalkanes towards nucleophilic substitution reaction?

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SUBJECT – BIOLOGY

General instructions:

1. Do all the questions in a folder or available notebook.
2. Write answers in a proper sequence.
3. Do neat & clean work.
4. Draw diagrams where ever required.

Objective Questions

- Q.1 Dioecy states :
(a) Unisexuality of a flower (b) Bisexuality of a flower
(c) Bisexuality of a plant (d) Unisexuality of a plant
- Q.2 Number of chromosomes in polar body of human is –
(a) 23 (b) 46 (c) 21 (d) 1
- Q.3 Identify the odd one from the following:
(a) Labia minora (b) Fimbriae (c) Infundibulum (d) Isthmus
- Q.4 Which of the following is not a cause of population explosion in India?
(a) Better health care (b) Increased IMR
(c) Decline MMR (d) Increased population of reproduction
- Q.5 In sickle cell anaemia glutamic acid is replaced by valine. Which one of the following triples codes for valine?
(a) GGG (b) AAG (c) GAA (d) GUG
- Q.6 ZZ/ZE type of sex determination is seen in –
(a) Platypus (b) Snails (c) Cockroach (d) Peacock
- Q.7 In the F₂ generation of a Mendelian dihybrid cross the number of phenotypes and genotypes are –
(a) Phenotypes – 4, Genotypes -16 (b) Phenotypes -9 , Genotypes -4
(c) Phenotypes – 4 , Genotypes – 8 (d) Phenotypes – 4 , Genotypes – 9
- Q.8 What will never be father's blood group if the mother has blood group B and child blood group O?
(a) A (b) B (c) AB (d) O
- Q.9 Spermiogenesis is the process of the release of sperms from –
(a) Seminiferous tubules (b) Vas deferens
(c) Epididymis (d) Prostate gland
- Q.10 In an embryo sac, the cells that degenerate after fertilisation are –
(a) Synergids and primary endosperm cell
(b) Synergids and antipodals
(c) Antipodal and primary endosperm cell
(d) Egg and antipodals

Descriptive Questions

- Q.1 "Pollen grains in wheat are shed at 3-celled stage while in peas they are shed at 2-celled stage." Explain where are germ pores present in a pollen grains?

- Q.2 (i) Differentiate between : autogamy, geitonogamy and xenogamy.
 (ii) Explain the events that occur during pollen-pistil interaction.
- Q.3 Draw a diagram of the structure of a human ovum surrounded by corona radiata. Label the following parts:
 (a) Ovum (b) Plasma membrane
 (c) Zona pellucida (d) State the function of zona pellucida
- Q.4 'Parturition is induced by a complex neuro endocrine mechanism'. Justify.
- Q.5 Why is 'Saheli' considered an effective contraceptive for woman to space children?
- Q.6 Why is ZIFT a boon to childless couples? Explain the procedure.
- Q.7 How does a test cross help to determine the genotype of an individual?
- Q.8 (i) Explain polygenic and multiple allelism with the help of suitable examples.
 (ii) "Phenylketonuria is a good example that explains Pleiotropy." Justify.
- Q.9 A male honeybee has 16 chromosomes whereas its females has 32 chromosomes. Give one reason.
- Q.10 A couple with normal vision bear a colour blind child. Work out a cross to show how it is possible and mention the sex of the affected child.
- Q.11 Why is that the father never passes on the genes for haemophilia to his son?
- Q.12 Explain three out breeding devices.
- Q.13 Differentiate giving one example of each between the following :
 (i) Parthenogenesis and parthenocarpy.
 (ii) Perisperm and pericarp.
- Q.14 Write the function of tapetum in anthers.
- Q.15 Explain the process of emasculation and bagging of flowers. State their importance in breeding experiments.
- Q.16 Explain the genetic basis of blood grouping in human population.
- Q.17 Aneuploid chromosomes in human beings result in certain disorders. Draw out the possibilities of the Karyotype in common disorders of this kind in human beings and its consequences in individuals.
- Q.18 Why pollen grains can be best preserved as fossils. Explain it.
- Q.19 Gynoecium of a flower may be apocarpous or syncarpous. Explain with the help of an example each.
- Q.20 Geitonogamous flowering plants are genetically autogamous but functionally cross-pollinated. Justify.

SUBJECT – ACCOUNTANCY

A) MULTIPLE CHOICE QUESTIONS

1. Ram and Mohan were partners in a firm sharing profit and losses in the ratio of 3:2. Their capitals were ₹2,40,000 and ₹4,80,000 respectively. They were entitled to interest on capital @ 10%. The firm earned profit of ₹36,000 during the year. The interest on Ram's capital will be
a) ₹24,000 b) ₹21,600 c) ₹14,400 d) ₹12,000
2. A manager gets 5% commission on net profit after charging such commission. Gross profit ₹2,90,000 and expenses of indirect nature other than manager's commission are ₹80,000. Commission amount will be:
a) ₹10,500 b) ₹10,000 c) ₹7,500 d) ₹11,000
3. A and B are partners. They draw for personal use ₹24,000 and ₹16,000 respectively. Interest is chargeable @ 6% p.a. on drawings. What is the interest on drawings?
a) A ₹720 and B ₹480 b) A ₹1,440 and B ₹960
c) A ₹120 and B ₹80 d) None of these
4. A, B and C are partners sharing profits in the ratio of 5:4:1. C is given guarantee that his share in a year will not be less than ₹50,000. Profit for the year ended 31st March, 2021 is ₹4,00,000. Deficiency in the guaranteed profit of C is to be borne by B. Deficiency to be borne by B is:
a) Deficiency of C ₹15,000 met by B b) Deficiency of C ₹10,000 met by B
c) Deficiency of C ₹40,000 met by B d) None of these
5. A, B and C are partners in a firm without a partnership deed. C demands interest on loan of ₹60,000 advanced by him at the market rate of 12%. The amount of interest received by him will be:
a) ₹7,200 b) Nil c) ₹5,400 d) ₹3,600
6. If equal amount is withdrawn in the beginning of each month for personal use, period for which interest will be charged will be:
a) 7 months b) 6 months c) 5 months d) 6.5 months
7. Following factors affect the goodwill except
a) Nature of business b) The form of business entity
c) Technical Know-how d) Efficiency of Management
8. The term 'Number of Years' Purchase' means
a) The number of years during which the purchaser of goodwill expects that the profit due to goodwill are likely to arise in future.
b) Number of years in which goodwill is purchased.
c) Number of years for which goodwill purchased will not help the firm in earning similar profits.
d) None of the above
9. Capital employed by a partnership firm is ₹25,00,000. Its average profit is ₹3,00,000. The normal rate of return in similar type of business is 10%. The amount of super profit is;
a) ₹2,50,000 b) ₹50,000 c) ₹30,000 d) ₹2,80,000
10. A firm earns profit of ₹60,000. Normal rate of return being 10%. Assets of the firm are ₹7,20,000 and liabilities are ₹2,40,000. Find the value of goodwill by capitalization of average profit method.
a) ₹2,40,000 b) ₹1,80,000 c) ₹1,20,000 d) ₹60,000

B) ASSERTION AND REASON BASED QUESTIONS

Read the following statements: Assertion (A) and Reason (R). Choose one of the correct alternative.

- a) both (A) & (R) both are true and (R) is correct explanation of (A)
- b) both (A) & (R) both are true and (R) is not correct explanation of (A)
- c) (A) is true but (R) is false
- d) (A) is false but (R) is true

- 1) **Assertion :** Interest on Loan to partner is charged @ 6% p.a., if partnership deed does not provide for charging of interest.

Reason : In the absence of partnership deed, provisions of the Partnership Act, 1932 apply. Thus, Interest on Loan to partner should be charged @ 6% p.a. otherwise interest is allowed at the agreed rate of interest.

- 2) **Assertion :** Value of goodwill calculated on Average Profit Method or Super Profit Method is same.

Reason : Value of goodwill on Average profit method and super profit method cannot be same as the basis of valuation is different.

C) NUMERICALS

1. The partners of a firm Jay, Veeru and Gabbar distributed the profits for the year ended 31st March, 2022, ₹6,40,000 in the ratio of 3:3:2, without providing for the following adjustments:
- a) Jay and Gabbar were entitled to a salary of ₹12,000 each p.a.
 - b) Veeru was entitled for a commission of ₹32,000.
 - c) Veeru and Gabbar had guaranteed a minimum profit of ₹2,80,000 p.a. to Jay and any deficiency to be borne equally by Veeru and Gabbar.

Pass the necessary journal entry for the above adjustment in the books of the firm.

2. A, B and C are in partnership, profits being shared in the ratio of 3:2:1. subject to the following:
- a) C's share of profit guaranteed to be not less than ₹2,40,000 p.a.
 - b) B gives a guarantee to the effect that gross fee earned by him for the firm shall be equal to his average gross fee for the preceding five years when he was carrying on profession alone, which on an average works out at ₹ 4,00,000.
The profit for the first year of the partnership are ₹ 12,00,000. The gross fee earned by B for the firm is ₹ 2,56,000. You are required to show Profit and Loss Appropriation Account after giving effect to the above.
3. On 1st April, 2018, a firm had assets of ₹5,00,000 excluding stock of ₹1,00,000. Partners' Capital Account showed a balance of ₹3,00,000. The current liabilities were ₹50,000 and the balance constituted the reserve. If the normal rate of return is 8%, the Goodwill of the firm is valued at ₹3,00,000 at four year of purchase of super profit, find average profit of the firm.
4. The average profit earned by a firm is ₹4,50,000 which includes undervaluation of stock of ₹30,000 on an average basis. The capital invested in the business is ₹42,00,000 and the normal rate of return is 7%. Calculate goodwill of the firm on the basis of 5 times the super profit.

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SUBJECT – ECONOMICS

A) MULTIPLE CHOICE QUESTIONS

1. Which of the following agency is responsible of issuing ₹1 currency note in India?
a) Reserve Bank of India b) Ministry of Commerce
c) Ministry of Finance d) Niti Aayog
2. In India, coins of ₹10 are issued by:
a) State Bank of India b) Reserve Bank of India
c) Ministry of Finance d) Department of Revenue
3. Demand Deposits include:
a) saving account deposits and fixed deposits
b) saving account deposits and current account deposits
c) current account deposits and fixed deposits..
4. A thing which is commonly accepted as medium of exchange is called:
a) Commodity b) money c) material d) item
5. Money serves as a common denomination. The function of money highlighted is:
a) Store of value b) Standard of deferred payments
c) Unit of account d) Medium of exchange
6. Credit creation in commercial banks is determined by
a) Cash Reserve ratio b) Statutory liquidity Ratio
c) Initial Deposits d) All the above
7. Which of the following is not a quantitative Method of credit control?
a) Open Market Operation b) Margin Requirements
c) Variable reserve Ratio d) Bank Rate Ratio
8. The percentage of demand deposits which the commercial banks are legally required to maintain as their liquid assets is called:
a) Statutory liquidity Ratio b) Deposit ratio
c) Cash Reserve ratio d) Legal reserve ratio
9. Which of the following is not the function of Central bank?
a) Bank facilities to government b) Lending to commercial bank
c) Bank facilities to Public d) Lending to Public
10. Reverse repo rate:
a) Generates interest income b) is increased to control inflation
c) is not a policy rate d) Both (a) and (b)

B) ASSERTION AND REASON BASED QUESTIONS

Read the following statements: Assertion (A) and Reason (R). Choose one of the correct alternative.

- a) both (A) & (R) both are true and (R) is correct explanation of (A)
- b) both (A) & (R) both are true and (R) is not correct explanation of (A)
- c) (A) is true but (R) is false
- d) (A) is false but (R) is true

1. **Assertion (A)** - Central bank holds the foreign exchange reserves to influence exchange rate.

Reason (R) - Selling and purchasing of foreign exchange influences the exchange rate.

2. **Assertion (A)** - Credit creation process increases the money supply in economy .

Reason (R) - through the credit creation process commercial banks can distribute loans many times as compare to their primary deposits.

C) CASE STUDY BASE QUESTIONS

1. CASE STUDY -1

Read the following case study paragraph carefully and answer the questions on the basis of the same.

The Reserve Bank of India raised inflation forecasts on the back of higher oil and other raw materials while it maintained the growth forecast at 9.5% for FY22 despite anemic investment demand. Governor Shaktikanta Das said inflation measured by the consumer price index (CPI) might remain close to the upper tolerance band of 6% up to September expecting easing of pressure thereafter on kharif harvest arrivals. [RBI has fixed inflation rate target in between 2%-6 %.] The central bank projected CPI at 5.7% for FY22 compared to its earlier projection of 5.1%. “The supply-side drivers could be transitory while demand-pull pressures remain inert, given the slack in the economy. A pre-emptive monetary policy response at this stage may kill the nascent and hesitant recovery that is trying to secure a foothold in extremely difficult conditions,” Das said. 11 KVS RO RAIPUR Crude oil prices are volatile with implications for imported cost pressures on inflation, RBI said. “The combination of elevated prices of industrial raw materials, high pump prices of petrol and diesel with their second-round effects, and logistics costs continue to impinge adversely on cost conditions for manufacturing and services, although weak demand conditions are tempering the pass-through to output prices and core inflation.

1. How does RBI promote growth process of country:-
 - a) By controlling price level in country
 - b) By changing various interest rates and money supply
 - c) By increasing supply of products
 - d) All of above
2. Why does RBI fix the inflation target?
 - a) To make growth process fast
 - b) To make coordination with government
 - c) To manage exchange rate
 - d) To stabilize economy
3. Why increasing crude oil prices are matter of concern :-
 - a) Increasing crude oil prices are increasing transportation cost
 - b) Increasing crude oil prices are making economy potentially unstable
 - c) Increasing crude oil prices are volatising growth process
 - d) Increasing crude oil prices are adversely affecting demand

2. CASE STUDY -2

Read the following case study paragraph carefully and answer the questions on the basis of the same.

India's total Money Supply (M3) stood at Rs 18907383 crore as on April 9th 2020, recording a rise of 11.3% over the same time last year. Currency with the public stood at Rs 2787941 crore, up 16.7% over the year. Demand deposits with banks were up 17% at Rs 1867606 crore. Time deposits with banks were also up 9.6% at Rs 14205545 crore. The bank credit to commercial sector edged up 5.1% on year to Rs 11552069 crores. However, this indicates moderation from 7.2% at the same time last year.

1. How does increase in deposits with commercial banks will affect credit creation process :-
 - a) Credit creation process will increase
 - b) Credit creation process will remain unaffected
 - c) Credit creation process will reduce
 - d) None of above
2. M3 is consist of:-
 - a) C +OD + Time deposits 12 KVS RO RAIPUR
 - b) C + DD + OD + time deposits
 - c) M1 + deposits of post office saving bank
 - d) All of above
3. What is indicated by increasing deposits:-
 - a) People prefer to save more now
 - b) Income level of people are increasing
 - c) People prefer to keep money in the bank accounts after demonetization
 - d) All of above

PROJECT:

Role of RBI in Control of Credit (350- 400 words)

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SUBJECT – BUSINESS STUDIES

A. PROJECT WORK:

Students have to select and make only one project from the following topics:

1. Elements of Business Environment
2. Principles of Management
3. Marketing Management

Topics already discussed and allotted in the class.

Rules:

Minimum 30 pages, handwritten, supplemented by pictures, graphs, charts etc. Be creative and write neatly on A4 size colored or white sheets.

B. ANSWER THE FOLLOWING CASE STUDIES:

Q.1 Neeraj is selected for the post of software developer in an IT Company. On the first day of his joining Mehul, his project manager tells Neeraj the during the course of his work he will come across many such opportunities which may tempt him to misuse his powers for individual or family's benefit at the cost of larger general interest of the company. In such situations, he should rather exhibit exemplary behavior as it will raise his stature in the eyes of the company. Also, for interacting with anyone in the company on official matters, he should adopt the formal chain of authority and communication.

In context of the above case:

- (a) Identify and explain the various principles of management that Mehul is advising Neeraj to follow while doing his job.
- (b) List any two values that Mehul wants to communicate to Neeraj.

Q.2 Harshita has successfully emerged as the owner of the best modular kitchen manufacturer firm in Delhi. Her friend Vartika is highly inspired by Harshita's success in business. In order to understand the essence of successful business management Vartika decides to spend a week in her office. Vartika observes that a deliberated effort is made to integrate the diverse activities of the organisation. Like whenever the sales manager makes a plan to raise the sales target, he also consults other department managers i.e the production manager, the purchase manager, the finance manager, etc. in order to avoid any problem that may raise in future. Moreover, work among the people working in the production department is divided in such a manner that where the work of one person ends, the work of the next person begins. Therefore, everybody makes efforts to complete his/her work on time, and the workers do not create obstruction in each other's work.

In context of the above case:

- (a) Identify the concept being described in the above paragraph.
- (b) How does the concept as identified in part (a) of the question help in carrying out management functions successfully?

Q.3 Hema is one of the most successful managers of her company. 'Kobe Ltd'. She uses her creativity and initiative in handling challenging situations at work. The knowledge gained by her during her student days at a renowned management institute as well as through her observation and experience over the years is applied by Hema in a skillful manner in the context of the realities of a given situation. She often reads books and other literature in various fields of management to keep her knowledge updated.

- (i) An aspect of the nature of management is being highlighted in the above description. Identify the aspect.
- (ii) Explain any three features of the aspect identified in part (i)

Q.4 Production manager of Beta Ltd. took special care of the interest and ability of his subordinates while distributing work among them. He was of the firm opinion that a worker should be given one work again and again so that he may become expert in it. One day he took round of his department and noticed that the workers were not doing their job quickly. On enquiry, he learnt that the workers worked non-stop which is main cause of their slow speed. He immediately issued an order that during their working hours, the workers will have an interval to take rest.

(a) State the principle of management followed here. Explain.

(b) Which technique of scientific management is indicated in above para?

Q.5 Karan Nath took over 'D' north Motor Company' from his ailing father three months ago. In the past the company was not performing well. Karan was determined to improve the company's performance. He observed that the methods of production as well as selection of employees in the company were not scientific. He believed that there was only one best method to maximise efficiency. He also felt that once the method is developed, the workers of the company should be trained to learn that 'best method'. He asked the production manager to develop the best method and carry out the necessary training. The production manager developed this method using several parameters right from deciding the sequence of operations, place for men, machines and raw materials till the delivery of the product to the customers. This method was implemented throughout the organisation.

It helped in increasing the output, improving the quality and reducing the cost and wastage.

Identify the principles of scientific management being discussed above:

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SUBJECT – HISTORY

Project:

I Topics

1. The Indus Valley Civilization
2. Mauryan Empire
3. Mahabharat
4. Budha the legend (The history of Buddhism)
5. The Royal Empire Vijayanagra
6. Through the eyes of Travellers
7. Mahatma Gandhi the legend
8. Framing the constitution

- ❖ Read the topic chose anyone out of these
- ❖ Explore the content from other sources
i.e. Books, Internet, Authentic sites, Surveys, Reports, Interviews , etc.
- ❖ Collect the related pictures and maps.
- ❖ The above material to be brought as rough for discussion after vacations.

For Project –

- A4 size thick sheet one side rules and one side plane to be used. (minimum 25)
- It could be white or coloured.
- It has to be creative , informative and authentic.

Note – First show the material on re-opening.

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SUBJECT – GEOGRAPHY

- ❖ Write about the modes of transportation.
 - Railways, Roadways, Airways, Waterways etc.
 - Their evolution, distribution and benefits.

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SUBJECT – POLITICAL SCIENCE

Project:

- ❖ Politics since Independence.
- ❖ Contemporary World Politics.
 - Chose any topic from your NCERT book.
 - It is individual project but more than 3 students should not take the same topic so co-ordinate among yourselves.
 - Explore the content other than NCERT from source like books, Google, Newspapers, Biographies, Authentic sites, Experiences, Interviews etc.
 - Collect pictures, maps, cartoons etc. on the chosen topic.
 - Bring rough material for discussion.

Required Material

- ❖ A4 size pages one side ruled and one side plain, white or coloured but thick.
- ❖ Project should have minimum 25 handwritten pages.
- ❖ It has to be creative, innovative, authentic and well managed.

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SUBJECT – PSYCHOLOGY

1. Watch any 2 or movies or read books (related to psychological disorders)

- * Dear Zindgi (Depression)
- * Taare Zameen Per (Disleksiya)
- * Like a beautiful kind (Paranoid Schizophrenia)
- * Rain Man (autism)
- * Good will hunting (gifted / counseling/ PTSD)
- silver linings, playbook (bipolar disorders / depression)

2. Prepare any one case study on given topics

- Eating disorders
- Alcohol dependence
- Anxiety disorder (PTSD, PHOBIA, OCD, SAD)
- Dyslexia
- Autism

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SUBJECT – SOCIOLOGY

Submit a project work using method of your choice – survey, interview, observation or combination of more than one method on any one of the following topics.

1. Public transport
2. Role of communication media in social life
3. Uniform Civil Code
4. The use of public space
5. Changing aspirations of different age groups
6. The biography of a commodity

Mention: Objective, Importance, Theoretical assumption, Statement of the purpose, Methodology, Technique and Conclusion Submit the holiday homework in file (shoelace file)with content and bibliography inserted.

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SUBJECT – ENTREPRENEURSHIP

Instructions:

1. Business idea should be unique and creative keeping in mind the current business environment.
2. Projects should be in neat and clean handwriting.
3. It should be in between 30 to 35 pages.

PROJECT : (BUSINESS PLAN)

- 1) Your business idea: (Main product or service, few examples are as follows:)

Product	Service	Trading
Chocolates	Tiffin service	Stationery
Soap	Crèche	Flower shop
Detergent powder/ liquid soap	Pet care center	
Sandwich		

- 2) Name of your business, its logo and tagline
- 3) Are there similar products or services in the market?
- 4) What is your competitive advantage and what is your unique selling proposition (USP)?
- 5) Marketing plan:
 - a) Your market research plan (Describe your competitor, demand for your product/ service – is it available or you think you can create it?)
Talk about at least 3 competitors if it is an existing product. If it is a new product, then analyse the demand for the product.
 - b) Your target customers and how will you reach them?
Example: children, teenager, homemaker, working persons etc.
 - c) Your advertising and promotion ideas
Just mention the tools of promotion mix which you will be using.
 - d) Packaging (if applicable)
Eco-friendly packaging
 - e) Distribution (How do you intend reaching your customers?)
Channel of distribution – direct and indirect
 - f) What does quality mean for your product or service?
ISI, Agmark, FPO etc.
- 6) What is the per Unit cost of your product or service?
- 7) What is your selling price and your reason for it?
- 8) Give details of your Start-up costs.
- 9) How would you meet your startup costs (be realistic)?
- 10) What is the Break-even point of your business? Show the computation assuring the selling price and units which will be sold.

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SUBJECT – MASS MEDIA

A. Engage yourself in watching a movie

The Godfather

OR

A Satyajit Ray Movie

- * Write the review of the movie
- * The plot of the same
- * Your favourite character and the reason why.
- * Also frame five questions you will ask your favourite character in the movie if you get to meet them.

B. REPORT WRITING :

Write a report on the initiatives taken by the Indian Government in at school level in the G20 Summit on an A4 size sheet.

NOTE: Compile the work in a file, paste pictures as well and submit the same in the first week of the reopening of the school after the summer vacations.

C. Revise all the chapters done.

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SUBJECT – HINDI

परियोजना–विषय

- 1) हरिवंश राय बच्चन जी के व्यक्तित्व और कृतित्व पर प्रकाश डालते हुए चित्र सहित एक आकर्षक परियोजना बनाइए।
- 2) भारत में ऋतु का क्रम एवं महत्त्व दर्शाते हुए शरद ऋतु की विशेषताओं पर चित्र सहित आकर्षक परियोजना बनाइए।
- 3) जीवन जगत की व्यापक अनुभूति और मार्मिक प्रसंगों की अचूक समझ तुलसीदास जी को महाकवि बनाती है कथन के आधार पर तुलसीदास जी की काव्यगत एवं शिल्पगत विशेषताओं को चित्रात्मक परियोजना द्वारा दर्शाइए।
- 4) स्त्री-अस्मिता की संघर्षपूर्ण आवाज के रूप में पढे गए पाठ 'भक्तिन' के आधार पर नारी सशक्तिकरण को आकर्षक परियोजना द्वारा अभिव्यक्त कीजिए।
- 5) बाज़ारवाद एवं उपभोक्तावाद की संस्कृति का उल्लेख करते हुए बाज़ार की जादुई ताकत से बचने के उपायों को एक आकर्षक चित्रात्मक परियोजना द्वारा दर्शाइए।
- 6) महान शिक्षक एवं भारत के शिल्पकार डॉ० भीमराव आंबेडकर के जीवन चरित्र को आकर्षक चित्रात्मक परियोजना द्वारा दर्शाइए।

अथवा

‘मैं ऐसे धर्म को मानता हूँ जो स्वतंत्रता, समानता और भाईचारा सिखाता है।’ आंबेडकर के इस कथन के आधार पर श्रम विभाजन और जाति प्रथा तथा मेरी कल्पना के आदर्श समाज के स्वरूप को एक आकर्षक चित्रात्मक परियोजना द्वारा रेखांकित कीजिए।

- * उपरोक्त परियोजनाओं में से किसी एक पर आकर्षक परियोजना तैयार कीजिए।

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SUBJECT – SANSKRIT

1. निम्नलिखित सर्वनाम-शब्दरूपाणि अपनी उत्तरपुस्तिका में स्पष्ट तथा सुन्दर हस्तलेखन में लिखें –
तत् (तीनों लिंगों में), एतत् (तीनों लिंगों में), इदम् (तीनों लिंगों में)।
अस्मद् तथा युष्मद्।
2. धातुरूपाणि-(परस्मैपदी) : पठ् , गम्-गच्छ् , वद् , भू-भव् , क्रीड् , नी , दृश् , अस् , कृ , पा-पिब्
धातुओं को – लट्लकार , लृट्लकार , लोट्लकार , लंगलकार तथा विधिलिङलकार में लिखिए।
(आत्मनेपदी) : लभ् तथा सेव् धातुओं को लट् तथा लृट्लकार में लिखिए।
(कंठस्थ/याद कर के संस्कृत की उत्तरपुस्तिका में सुंदर ढंग से लिखिए।)
3. “जी-20” समूह में आने वाले सभी देशों के नाम लिखें तथा इनमें से किन-किन देशों में संस्कृत भाषा का प्रचलन है उनसे संबंधित चित्र एवं विवरण पर आधारित प्रयोजना (Project) A4 शीट पर तैयार करें।

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SUBJECT – PHYSICAL EDUCATION

Write following topics in Practical Lab Manual:-

Practical 1: Fitness test administration for all items.

Practical 2: Procedure for Asanas, Benefits & Contraindications of any two Asanas for each lifestyle disease.

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