Delhi Public School Gwalior

(Under the aegis of DPS Society, New Delhi)

Holiday Assignment

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, 2024.

SUBJECT – ENGLISH

Prepare a file with A4 size sheets with the following tasks for the project -

Task 1

Advertising is an impersonal form of communication, which is paid for by the marketers for promotion. Cut advertisements from the classifieds pages of newspapers and make a separate collage for each of the following topics -

* For Sale
* For Purchase
* Situation wanted
* Accommodation wanted

Task 2

You have to deliver a speech on the topic **"Education Gives One Power"**. You have jotted down the following notes:

— Education trains mind — Sharpens skill and abilities — Education: a source of power —improve self—be independent—earn money—ignorance to knowledge—removes superstition—develops a free spirit—important for women: gives them freedom from social ills—independent—responsible.

Write your speech in 200-300 words.

 # Please note attraction in presentation and organisation of ideas is essential

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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 If $\sin\theta + \operatorname{cosec}\theta = 2$, then $\sin^2\theta + \operatorname{cosec}^2\theta$ is equal to

(a) 1 (b) 4 (c) 2 (d) None of these

Q.2 If $\tan\theta = 3$ *and* θ lies in III quadrant, then the value of $\sin\theta$ is

(a) $\frac{1}{\sqrt{10}}$ (b) $-\frac{1}{\sqrt{10}}$ (c) $\frac{-3}{\sqrt{10}}$ (d) $\frac{3}{\sqrt{10}}$

Q.3 $\cos 2x.\cos\frac{x}{2} - \cos 3x.\cos\frac{9x}{2}$ is equal to

(a) $-\sin 5x.\sin\frac{5x}{2}$ (b) $\sin 5x.\sin\frac{5x}{2}$ (c) $\sin 3x.\sin\frac{3x}{2}$ (d) None of these

Q.4 The expression cot $4x(\sin 5x + \sin 3x)$ in simplified form is

(a) $2\cos x$ x $\sin 4x$ (b) 2 $\sin x$ x $\sin 4x$ (c) 2 $\cos x$ x $\cos 4x$ (d) $\sin x$

Q.5 If A = {1, 2, 3, 4, 5}, then the number of proper subsets of A is
(a) 120 (b) 30 (c) 31 (d) 32

Q.6 Two finite sets have *m* and *n* elements. The total number of subsets of the first set is 48 more than the total number of subsets of the second set. The values of *m* and *n* are
(a) 7, 6 (b) 6, 3 (c) 6, 4 (d) 7, 4

Q.7 If *x* is real, then the expression $\frac{x^2+34x-71}{x^2+2x-7}$
(a) cannot lie between 5 and 9. (b) always lies between 5 and 9
(c) is not real (d) none of these

Q.8 The domain of the function *f* defined by $f(x)=\sqrt{4-x}+\frac{1}{\sqrt{x^2-1}}$ is equal to
(a) $(-\infty,1)\cup(1,4]$ (b) $(-\infty,1]\cup(1,4]$ (c) $(-\infty,-1)\cup[1,4]$ (d) $(-\infty,1]\cup[1,4)$

Q.9 If $[x]^2 - 5[x] + 6 = 0$, where [.] denotes the greatest integer function, then
(a) $x \in [3,4]$ (b) $x \in (2,3]$ (c) $x \in [2,3]$ (d) $x \in [2,4]$

Q.10 If $X = \{8^n - 7n - 1 : n \in N$ and $Y = \{49n - 49 : n \in N\}$. Then
(a) $X \subset Y$ (b) $Y \subset X$ (c) $X = Y$ (d) $X \cap Y = \phi$

Assertion Reasoning Questions

Direction of questions : In the following questions, A statement of Assertion (A) is followed by a statement of Reason (R).

(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.11 **Assertion (A) :** $3 \notin \{x : x^4 - 5x^3 + 2x^2 - 112x + 6 = 0\}$

Reason (R) : $496 \notin \{y$: the sum of all the positive factors of y is $2y\}$

Q.12 If *A* and *B* subsets of the universal set U, then

Assertion (A) : $A \subset A \cup B$

Reason (R) : $(A \cap B) \subset A$

Q.13 **Given :** $A = \{a, b, c\}$, $B = \{a, e, i, o, u\}$ and $C = \{x, y, z\}$

Assertion (A) : $(A \cup B) \cap C = \phi$

Reason (R) : $A \cup B = (a, b, c) \cup \{a, e, i, o, u\} = \{a, b, c, e, i, o, u\}$
$(A \cup B) \cap C = \{a, b, c, e, i, o, u) \cap \{x, y, z\} = \phi$

Q.14 **Assertion (A) :** Domain of $f(x) = x|x|$ is R.

Reason (R) : Domain of $f(x) = x|x|$ is N.

Q.15 **Assertion (A) :** If $f(x)=\frac{x-1}{x+1}$, then $f\left(\frac{1}{x}\right)=-f(x)$

Reason (R) : If $f(x)=\frac{x-1}{x+1}$, then $f\left(\frac{-1}{x}\right)=\frac{-1}{f(x)}$

Q.16 **Assertion (A) :** If A x B = {(*a*, *x*), (*a*, *y*), (*b*, *x*), (*b*, *y*)}, then A = {*a*, *b*}, B = {*x*, *y*}

Reason (R) : If A x B = {(*a*, *x*), (*a*, *y*), (*b*, *x*), (*b*, *y*)}, then A = {*x*, *y*} and B = {*a* , *b*}

Q.17 **Assertion (A) :** In a unit circle, radius of circle is 1 unit.

Reason (R) : 1 minute is divided into 60 second.

Q.18 **Assertion (A) :** If *cos x* + *sin x* = $\sqrt{2}$ *cos x* then *cos x* – *sin x* = $\sqrt{2}\sin x$

Reason (R) : The number of radius is an angle subtended by an arc of a cricel at the centre is equal to arc/radius.

Q.19 **Assertion (A) :** $\frac{\sin 2x}{1+\cos 2x}=\tan x$

Reason (R) : *sin 2x* = *2sin x* + *cos x* &*1* + *cos 2x* = *2cos*^{2} *x*

Q.20 **Assertion (A) :** The domain of function $f(x)=\frac{1}{\sqrt{x-5}}$ is (5, ∞)

Reason (R) : The range of function $f(x)=\frac{1}{\sqrt{x-5}}$ is R^+.

Solve the following :

Q.21 Let $T=\left\{x;\frac{x+5}{x-7}-5=\frac{4x-40}{13-x}\right\}$. Is T an empty set? Justify.

Q.22 Prove that : $\cos\theta\cos\frac{\theta}{2}-\cos3\theta\cos\frac{9\theta}{2}=\sin7\theta\sin8\theta$.

Q.23 Prove that : $\cos^3 A+\cos^3(120^0+A)+\cos^3(240^0+A)=\frac{3}{4}\cos3A$

Q.24 For sets A, B and C using properties of sets prove that : $A\cap(B-C)=(A\cap B)-(A\cap C)$.

Q.25 Let R be the relation of the set Z of all integers defined by (*x*, *y*) ∈ R ⇒ *x*-*y* divisible by *n* prove that.

(i) (*x*,*x*) ∈ R for all *x*∈Z.

(ii) (*x*,*y*) ∈ R ⇒ (*y*, *x*) ∈ R for all *x*, *y*∈*z*.

(iii) (*x*,*y*) ∈ R and (*y*, *z*) ∈ R ⇒ (*x*, *z*) ∈ R for all *x*, *y*, *z* ∈ R.

Q.26 Find the domain and range of $f(x)=\frac{1}{1-|x-3|}$.

Q.27 Prove that : $\sin\frac{\pi}{14}\sin\frac{3\pi}{14}\sin\frac{5\pi}{14}\sin\frac{7\pi}{14}\sin\frac{9\pi}{14}\sin\frac{11\pi}{14}\sin\frac{13\pi}{14}=\frac{1}{64}$

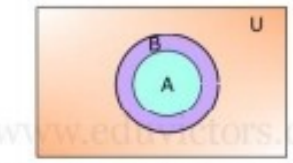
Q.28 If for any three sets A, B, C prove that A x (B-C) = (A x B) – (A x C)

Q.29 Let f & g be real functions defined by $f(x)=\sqrt{x+2}$ and $g(x)=\sqrt{4-x^2}$, then find each of the following function (i) $f+g$ (ii) $f-g$ (iii) fg (iv) $\frac{f}{g}$ (v) ff (vi) gg

Q.30 Show that : $\sqrt{2+\sqrt{2+\sqrt{2+2\cos 8x}}}=2cox x, 0<x<\frac{\pi}{8}$

Case Study Based Questions

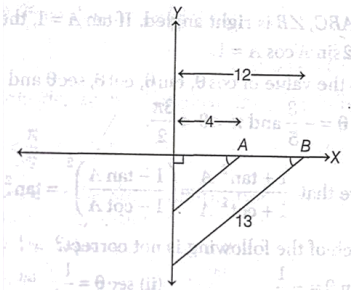
Q.31 Two non-empty sets A and B are given by:
A = {x : x is a letter in I LOVE MATHEMATICS}
B = {x : x is a letter in I LOVE STATICS}



A ⊂ B ⊂ U, where U is the universal set.

Answer the following questions based on the above information.
(i) Find the number of proper subsets of set B.
(ii) Find $A \cap B$.
(iii) Find A ∪ B.

Q.32 Rajiv construct two right angles triangle in the fourth quadrant in such a way that the measure of triangle gives $\cos A=\frac{4}{5}$ and $\cos B=\frac{12}{13}$, where $\frac{3\pi}{2}<A$ and B > 2π.



Answer the following questions based on the above information.
(i) Find the value of *cos* (A - B)
(ii) Find the value of *sin* (A + B)
(iii) Find the value of *tan* (A + B)

Q.33 Mr. Sumit explained the following topic to class XI students

Measure of an Angle

There are two types of measure of angles.

Sexagesimal System (Degree Measure)

One degree is divided into 60 equal parts, called minutes and 1 minute is denoted by $1'$.One minute is divided into 60 equal parts, called second and 1 second is denoted by $1''$. Thus $1^0 = 60'$, $1' = 60''$.

Circular System (Radian Measure)

A circle of radius r having an arc of length l will subtend an angle θ radian at the centre, where

$$\theta = \frac{l}{r} = \frac{length\ of\ are}{Radius} \text{ or } l = r\,\theta$$

Relation between Degree and Radian

2π radian = 360^0

or π radian = 180^0

$$1 \text{ rad} = \frac{180^0}{\pi} = 57^0 16' 22'' \text{ (approx.)}$$

Also, $1^0 = \frac{\pi}{180} rad = 0.01746\, rad$ (approx.)

Hence, Radian measure = $\frac{\pi}{180} \times$ Degree measure

Degree measure = $\frac{180}{\pi} \times$ Radian measure

Answer the following questions based on the above information.

(i) Convert 25^0 in radian.

(ii) Find the radian measure of $40^0 20'$.

(iii) Find the angle subtended at the centres of a circle of diameter 50 cm by an arc11 cm.

Q.34 Mr Narang explained the following topic to class XI students

Algebra of real functions In this Section, we shall learn how to add two real functions, subtract a real function from another, multiply a real function by a scalar (here by a scalar we mean a real number), multiply tow real functions and divide one real function by another.

(i) Addition of two real functions Let $f : X \to \mathbf{R}$ and $g : X \to \mathbf{R}$ be any two real functions, where $X \subset \mathbf{R}$. Then, we define $(f + g) : X \to \mathbf{R}$ by

$(f + g)(x) = f(x) + g(x)$, for all $x \in X$.

(ii) Subtraction of a real function from another Let $f : X \to \mathbf{R}$ and $g : X \to \mathbf{R}$ be any two real functions, where $X \subset \mathbf{R}$. Then, we define $(f - g) : X \to \mathbf{R}$ by $(f - g)(x) = f(x) - g(x)$, for all $x \in X$.

(iii) Multiplication by a scalar Let $f : X \to \mathbf{R}$ be a real valued function and α be a scalar belonging to R. Here by scalar, we mean a real number. Then the product αf is a function from X to **R** defined by $(\alpha f)(x) = \alpha f(x)$, $x \in X$.

(iv) Multiplication of two real functions The product (or multiplication) of two real functions $f : X \to \mathbf{R}$ and $g : X \to \mathbf{R}$ is a function $fg : X \to \mathbf{R}$ defined by $(fg)(x) = f(x)\, g(x)$, for all $x \in X$.
This is also called *pointwise multiplication.*

(v) Quotient of two real functions Let f and g be two real functions defined from $X \to \mathbf{R}$, where $X \subset \mathbf{R}$. The quotient of f by g be two real functions defined from $X \to \mathbf{R}$, where $X \subset \mathbf{R}$. The quotient of f by g denoted by $\frac{f}{g}$ is a function defined by $\left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)}$, provided $g(x) \neq 0$, $x \in X$.

Answer the following questions based on the above information.

(i) Let f & g be real function defined by $f(x) = \sqrt{x+1}$ and $g(x) = \sqrt{9-x^2}$. Then find the following:
(a) $(f+g)(x)$ (b) $(f-g)(x)$ (c) $ff(x)$

(ii) Let $f(x) = x^2$ & $g(x) = 2x+1$ be two real functions find
(a) $(f+g)(x)$ (b) $\left(\frac{f}{g}\right)(x)$

(iii) Let $f(x) = \sqrt{x}$ & $g(x) = x$ be two functions defined over the set of non negative real numbers, find
(a) $fg(x)$ (b) $(f-g)(x)$

Q.35 For finding these two sets, we write first element of each ordered pair in first set say A and corresponding second, element in second set B (say).
Number of Elements in Cartesian Product of Two Sets.

If there are p elements in set A and q elements in set B, then there will be pq elements in A X B i.e., if $n(A) = p$ and $n(B) = q$, then $n(A \times B) = pq$

Answer the following questions based on the above information.

(i) If $A \times B = \{(a,1), (b,3), (b,4), (a,3), (b,1), (a,2), (b,2), (a,4)\}$. Then find A and B.

(ii) If the set A has 4 elements and set B has 5 elements, then find the number of elements in $A \times B$.

(iii) If $A = \{1, 2, 3, 4\}$, $B = \{6, 7, 8\}$ then find $A \times B$.

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SUBJECT – APPLIED MATHEMATICS

- The following guidelines are issued by CBSE to schools for the session 2024-25.
- 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**:

Choose a topic
↓
✓ Collect the research material/data
↓
Organize material/data
↓
Present material/data
↓
Analyse the material/data for conclusion
↓
Draw the relevant conclusion
↓
Presentation of the Project Work

- **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

Objective questions

Q.1 Which of the following is not a system of units?
a) MKS b) CGS c) SI d) Decibel

Q.2 Which one of the following units can be used to measure matter?
a) Kilogram b) Newton c) Second d) Mile

Q.3 How many milliseconds make one second?
a) 10 b) 60 c) 45 d) 80

Q.4 Which of the following types of motion can be used for describing the motion of a car on a straight road?
a) Rectilinear b) Circular c) Periodic d) Harmonic

Q.5 Which of the following are obtained by dividing total displacement by total time taken?
a) Average velocity b) Instantaneous velocity
c) Uniform velocity d) Speed

Q.6 What is the rate of change of displacement of a body?
a) Velocity b) Acceleration c) Force d) Jerk

Q.7 Multiplying $2\hat{i} + 7\hat{j}$ by 5 gives _____
a) $10\hat{i} + 35\hat{j}$ b) $2\hat{i} + 35\hat{j}$ c) $10\hat{i} + 7\hat{j}$ d) $2\hat{i} + 7\hat{j}$

Q.8 The operation which does not give you a vector as an output from two vector inputs is _____
a) Dot product b) Cross product c) Vector addition d) Vector subtraction

Q.9 What is a scalar?
a) A quantity with only magnitude
b) A quantity with only direction
c) A quantity with both magnitude and direction
d) A quantity without magnitude

Q.10 Which of the following is not true about projectile motion?
a) It is an example of motion in a plane
b) It is an example of motion along a curve
c) It is not an example of motion in space
d) The acceleration keeps changing in projectile motion

Descriptive questions.

Q.1 Find the dimensions of latent heat and specific heat?

Q.2 If velocity, time and force were chosen the basic quantities, find the dimensions of mass?

Q.3 A woman leaves her house at 9.00 a.m., walks at a speed of 5 km/hr on a straight road to her office, which is 2.5 km away, works there until 5.00 p.m., and then returns home by auto at a speed of 25 km/hr. Select appropriate scales and draw the x-t graph of her motion.

Q.4 A man walks from his house to a market 2.5 kilometres away at a speed of 5 kilometres per hour on a straight road. When he discovers that the market is closed, he immediately turns around and walks back home at a speed of 7.5 km/h. What exactly is the (a) the average velocity magnitude, and (b) the average speed of the man over the time intervals?
(i) 0 to 30 minutes
(ii) 0 to 50 minutes
(iii) 0 to 40 minutes

Q.5 What causes a particle's velocity to vary?

Q.6 Give the characteristics of displacement.

Q.7 Differentiate between average speed and average velocity.

Q.8 A jet airplane travelling at the speed of 500 km h^{-1} ejects its products of combustion at the speed of 1500 km h^{-1} relative to the jet plane. What is the speed of the latter with respect to an observer on the ground?

Q.9 Explain the following statement.
"To call a dimensional quantity 'large' or 'small' is meaningless without specifying a standard for comparison".

Q.10 Define S.I. unit of solid angle?

Q.11 Name physical quantities whose units are electron volt and pascal?

Q.12 A new unit of length is chosen such that the speed of light in vacuum is unity. What is the distance between the Sun and the Earth in terms of the new unit if light takes 8 min and 20 s to cover this distance?

Q.13 If velocity, time and force were chosen the basic quantities, find the dimensions of mass?

Q.14 Derive time period of simple pendulum.

Q.15 A vector has both magnitude and direction. From this statement, can we conclude that anything that has magnitude and direction is a vector?

Q.16 Derive position-time relation.

Q.17 Differentiate between scalar and vector quantities.

Q.18 Define unit vector.

Q.19 What is the minimum number of coplanar vectors of different magnitudes which can give zero resultant?

Q.20 When a - b = a + b condition holds good than what can you say about b?

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SUBJECT – CHEMISTRY

Objective questions

Q.1 The molecular weight of O_2 and SO_2 are 32 and 64 respectively. If one litre of O_2 at 15^0C and 750 mm contains N molecules, the number of molecules in two litres of SO_2 under the same conditions of temperature and pressure will be

(a) N/2 (b) N (c) 2N (d) 4N

Q.2 Five grams of each of the following gases at 87^0C and 750 mm pressure are taken. Which of them will have the least volume?

(a) HF (b) HCl (c) HBr (d) HI

Q.3 Which one of the following is the standard for atomic mass ?

(a) ${}^{1}_{1}H$ (b) ${}^{12}_{6}C$ (c) ${}^{14}_{6}C$ (d) ${}^{16}_{8}O$

Q.4 Rearrange the following (I to IV) in the order of increasing masses and choose the correct answer from (a) (b) (c) and (d). Atomic masses: N = 14, O 16, Cu = 63

I. 1 molecule of oxygen
II. 1 atom of nitrogen
III. 1×10^{10} g molecular weight of oxygen
IV. 1×10^{-18} g atomic weight of copper

(a) II < I < III < IV (b) IV < III < II < I (c) II < III < I < IV (d) III < IV < I < II

Q.5 The number of moles of H_2 in 0.224 litres of hydrogen gas at STP (273 K, 1 atm) (assuming ideal gas behaviour) is

(a) 1 (b) 0.1 (c) 0.01 (d) 0.001

Q.6 Two containers P and Q of equal volume (1 litre each) contain 6g of O_2 and SO_2 respectively at 300 K and 1 atmosphere. Then

(a) No. of molecules in P is less than that in Q
(b) No. of the molecules in Q is less than that in P
(c) No. of molecules in P and Q are same
(d) Either (a) or (b)

Q.7 The maximum amount of $BaSO_4$, precipitated on mixing $BaCl_2$ (0.5M) with H_2SO_4 (1M) will cor-respond to

(a) 0.5 M (b) 1.0 M (c) 1.5 M (d) 2.0 M

Q.8 Given the numbers: 161 cm, 0.161 cm, 0.0161 cm. The number of significant figures for the three numbers are

(a) 3, 4 and 5 respectively (b) 3, 3 and 3 respectively
(c) 3, 3 and 4 respectively (d) 3, 4 and 4 respectively.

Q.9 Haemoglobin contains 0.33% of iron by weight. The molecular weight of haemoglobin is approximately 67200. The number of iron atoms (at. wt. of Fe = 56 present in one molecule of haemoglobin is

(a) 6 (b) 1 (c) 4 (d) 2

Q.10 In the reaction $4\ NH_3\ (g) + 5\ O_2\ (g) \longrightarrow 4\ NO\ (g) + 6\ H_2O\ (l)$, when 1 mole of ammonia and 1 mole of O_2 are made to react to completion

(a) 1.0 mole of H_2O is produced (b) 1.0 mole of NO will be produced
(c) all the oxygen will be consumed (d) all the ammonia will be consumed.

Descriptive questions.

LAWS OF CHEMICAL COMPOSITION

Q.1 What mass of sodium chloride would be decomposed by 9.8 g of sulphuric acid , if 12 g of sodium bisulphate and 2.75 g of hydrogen chloride were produced in a reaction assuming that the law of conservation of mass is true? (4.95 g).

Q.2 4.9 g KClO3 when pyrolysed gives the residue of 2.96 g. calculate the mass of oxygen released, using law of conservation of mass. (1.94g)

Q.3 Naturally occurring Neon consists of three isotopes, 20Ne,21Ne,22Ne their percentage abundance in nature are 90.51, 0.27 & 9.2 respectively. Calculate the average atomic mass of Neon. (20.179 amu).

Q.4 Carbon occurs in nature as a mixture of carbon 12 & C13. The average atomic mass of carbon is 12.011. What is the percentage abundance of carbon 12 in nature (98.9%).

Q.5 How many molecules of water & oxygen atoms are present in 0.9 g of water? (3.01*1022 both oxygen atom & water molecule).

Q.6 Calculate the number of moles in 25 g of calcium carbonate & number of oxygen atoms.(no. of moles=.25, no of oxygen atom=4.515*1023).

CONCENTRATION TERMS

Q.1 One litre sample of sea water is found to contain 5.8 ×10-3 g of dissolved oxygen. Calculate the concentration of dissolved oxygen in sea water in ppm.

Q.2 What is the conc. of glucose in Mol L-1, if 40 g of it is dissolved in enough water to make a final volume upto 2L.

Q.3 If the density of methanol is 0.793 g/ml. what is its volume needed for making 2.5 L of its 0.25M solution.

Q.4 A 6.9 M solution of KOH in water contains 30% by mass of KOH. Calculate the density of KOH solution.

EMPERICAL, MOLECULAR FORMULA & PERCENTAGE COMPOSITION

-------X------

SUBJECT – BIOLOGY

Objective questions

Q.1 Different species of a genus
(a) Are very different from each other in their basic properties.
(b) Have morphological similarities
(c) Can be placed in different families.
(d) Cannot be differentiated on the basis of their morphological features.

Q.2 A herbarium sheet does not give the information about
(a) Family of plant. (b) Generic name of plant.
(c) Habitat of plant. (d) Place of collection.

Q.3 The number and types of organisms present on earth refers to
(a) Diversity in living world. (b) Population of a species.
(c) Habitat (d) Animal Kingdom.

Q.4 The lowest category of plants that is characterised on the basis of both vegetative and reproductive feature is:
(a) Genus (b) Species. (c) Class. (d) Family.

Q.5 All viruses are/ have
(a) Protein coat and DNA. (b) Parasites.
(c) Both DNA and RNA. (d) Inert inside living cell.

Q.6 Organisms with soap box like body
(a) Are very good indicators of water pollution.
(b) Have silica impregnated cell membrane.
(c) Are called flagellated Golden protists.
(d) Lack chlorophyll a

Choose the incorrect ones
1. A, B and C
2. B, C and D
3. A only
4. B and D only

Q.7 Majority of bacteria
(a) Are chemoautotroph.
(b) Are pathogenic.
(c) Depend on dead organic matter for food.
(d) Synthesise their food from inorganic substrates.

Q.8 All of the following organisms move with the help of flagella except
(a) Euglena (b) Gonyaulax (c) Paramecium. (d) Trypanosoma

Q.9 Agaricus sexually reproduces through
(a) Somatogamy
(b) Endogenously produced non - motile spores.
(c) Haploid mitospores.
(d) Gametangial copulation.

Q.10 Protozoan without locomotory structure is :
(a) Entamoeba. (b) Trypanosoma (c) Plasmodium. (d) Paramecium.

Descriptive questions.

Q.1 Discuss the useful activities of cyanobacteria.

Q.2 Write three distinct features of fungi.

Q.3 Give at least three differences between ascomycetes and basidomycetes.

Q.4 Draw a well labelled diagram of bacteriophage.

Q.5 Compare the silent features of Monera and Protista

Q.6 Differentiate between ascus and basidium.

Q.7 What are slime moulds? How are they different from true fungi ?

Q.8 Give reasons why fungi should not be included in plant kingdom.

Q.9 Write silent features of viruses.

Q.10 Write the distinct characters of fungi .

Q.11 Write short notes on the following
A. Mixotrophic nutrition.
B. Nuclear dimorphism.

Q.12 What is meant by living? Give any three determining features of life forms.

Q.13 Describe the hierarchical system of classification currently being followed?

Q.14 Give the taxonomic position of man and mango plant.

Q.15 Explain the binomial system of nomenclature.

Q.16 Make an outline of the five kingdom classification.

Q.17. Highlight the criteria used for the five kingdom system of classification.

Q.18. With the help of well labelled diagram describe the structure of a typical bacterial cell.

Q.19 What are the physiological relationships between the algal and fungal components of lichens.

Q.20. Distinguish between.
A. Plant viruses and animal viruses on the basis of genetic material.
B. Plant viruses and bacteriophages on the basis of genetic material.
C. Plant viruses and animal viruses on the basis of the symptoms of diseases caused by them.

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SUBJECT – ACCOUNTANCY

A) MULTIPLE CHOICE QUESTIONS

1. **Basic function of financial accounting is to**
   (a) record all business transactions. (b) interpret financial data.
   (c) assist the management. (d) None of these

2. **Which of the following will not be recorded in the books of account?**
   (a) Sales of goods (b) Payment of salary
   (c) Quality of staff (d) Purchase of Goods

3. **Which of the following transaction is not of financial character?**
   (a) Purchase of asset on credit
   (b) Purchase of asset for cash
   (c) Withdrawing of money by proprietor from business
   (d) Strike by employees.

4. **Which of the following limitations of accounting states that accounts may be manipulated to conceal vital facts :**
   (a) Accounting is not fully exact
   (b) Accounting may lead to window dressing
   (c) Accounting ignores price level changes
   (d) Accounting ignores qualitative elements

5. **Which external user of accounting information is most interested in knowing the long-term solvency position of the firm?**
   (a) Employees (b) Management
   (c) Bank and Financial Institutions (d) Researchers

6. **During the life-time of an entity, accounting produces financial statements in accordance with which of the following accounting concept?**
   (a) Matching (b) Conservatism (c) Accounting period (d) Cost

7. **M/s Future Ltd. has invested ₹ 10,000 in the shares of Relicam Industries Ltd. Current market value of these shares is ₹ 10,500. Accountant of Future Ltd. wants to show ₹ 10,500 as value of investment in the books of accounts, which accounting convention restricts him from doing so?**
   (a) Full disclosure (b) Consistency (c) Conservatism (d) Materiality

8. **According to the Cost Concept**
   (a) Assets are recorded at lower of cost and market value.
   (b) Assets are recorded by estimating the market value at the time of purchase.
   (c) Assets are recorded at the value paid for acquiring it.
   (d) Assets are not recorded

9. **According to Convention of Conservatism closing stock is valued at:**
   (a) At cost Price (b) At Realisable value
   (c) Cost price or realizable whichever is less (d) At Real value

10. **Convention of conservatism takes into account:**
    (a) All future profits and losses (b) All future profits and not losses
    (c) All future losses and not profits (d) Neither profits nor losses of the future

Case Study

1. Mohan started business for buying and selling of readymade garments with ₹40,00,000 as an initial investment. Out of this he paid ₹20,00,000 for the purchase of garments,₹2,50,000 for furniture, ₹2,50,000 for computer and theremaining amount was deposited into the bank.He sold some of the ladies and kids garments for ₹15,00,000 for cash and some garments for 7,50,000 on credit to Rajesh.
   Subsequently, he bought men's garments of ₹10,00,000 from Satish. In the first week of next month, a fire broke out in his office and stock of garments worth ₹5,00,000 was destroyed. Later on, some garments which cost ₹6,00,000 were sold for ₹6,50,000. Expenses paid during the year were ₹45,000. Mohan withdrew ₹1,00,000 from business for his domestic use.
   From the above, answer the following:
   a) What is the amount of capital with which Gopal started business?
   b) What Non-current assets dis he buy?
   c) What is the value of goods purchased?
   d) Who is the creditor and state the amount payable to him?
   e) Who is the debtor and what amount is receivable from him?
   f) What is the amount of Expense?
   g) What is the amount of drawings of Mohan?

Project: Collect the different vouchers (Invoice, Cash Memo, Pay-in-slip, Withdrawal form, cheque) and explain them.

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SUBJECT – ECONOMICS

A) MULTIPLE CHOICE QUESTIONS

1. Which of the following statements reflects the actual relationship between the marginal opportunity cost and production possibility frontier?
   a. When the marginal opportunity cost remains constant, the production possibility frontier is a downward sloping straight line
   b. When the marginal opportunity cost remains constant, the production possibility frontier is an upward sloping straight line
   c. When the marginal opportunity cost remains constant, the production possibility frontier is a central sloping straight line
   d. There is no relation between the marginal opportunity cost and the production possibility frontier

2. Which of the following statements is the actual meaning of scarcity?
   a. The actual meaning of scarcity is that there is an increase in the resources
   b. The actual meaning of scarcity is that there is a shortage in the resources
   c. The actual meaning of scarcity is that there is no change in the resources
   d. None of the above

3. Which of the following statements about the economy is correct?
   a. An economy is a system that helps in the production of goods and also enables people to earn a living
   b. An economy is a system that helps in the production of services and also enables people to earn a living
   c. Both a and b are correct
   d. Both a and b are incorrect

4. Which of the following statements reflect the correct situation related to the allocation of the resources?
   a. Allocation of the resources comes under the causes of economic problems
   b. Allocation of the resources comes under the causes of opportunity cost
   c. Allocation of the resources comes under the causes of central problems
   d. Allocation of the resources comes under the causes of marginal demand

5. The branch of economics that deals with the allocation of resources is _____.
   a. Econometrics
   b. Macroeconomics
   c. Microeconomics
   d. None of the above

6. Which of the following is a type of economic activities
   a. Production
   b. Consumption
   c. Exchange and Investment
   d. All of these

7. Which of the following statements about the production possibility curve is true?
   a. If a point falls inside the production possibility curve, it indicates that the resources are over utilised

b. If a point falls inside the production possibility curve, it indicates that the resources are underutilised
c. If a point falls inside the production possibility curve, it indicates that there is adequate employment in the economy
d. If a point falls inside the production possibility curve, it indicates that there is inadequate employment in the economy

8. Which of the following is a sign of a free economy?
   a. The prices are regulated
   b. The prices are partly regulated
   c. The prices are determined with the help of the forces of demand and supply
   d. None of these

9. Which is the first law of Gossen:
   a. Law of Demand
   b. Law of Diminishing Marginal Utility
   c. Consumer Surplus
   d. Law of Equi-marginal utility

10. Which of the following is true
    a. TU increases till MU is positive
    b. TU is maximum when MU is equal to zero
    c. TU declines when MU is negative
    d. All of these

Project: a) Explain Types of Economies with Pictures
b) Explain Production Possibility Curve with diagram and its properties.

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SUBJECT – BUSINESS STUDIES

Answer the following questions:

Q.1 Nikhil wants to start a wholesale business of stationery items. But he is hesitating as it will involve hindrances related to finding consumers, moving goods from place of production to market, storing goods because of time gap between production and consumption, risk of theft, fire, accidents, procurement of capital to finance above activities, providing information to the consumers about products etc.

He approaches his friend Anant to discuss his problem. Anant, who himself imports the electric appliances for the purpose of exporting them to other countries, advises Nikhil to carry on with his plan and explains to him various functions performed by the second limb of business i.e., Commerce.

Anant elaborates on various advantages of 'trade' and 'auxiliaries to trade'. After getting convinced by the advice given by Anant, Nikhil starts the business named Nikhil Ltd. and finds no major problems at all in converting his desire into abusiness venture. Nikhil gets his company registered under the companies Act 2013.

(a) Name the part of commerce which exclusively helps in the process of trading the goods and services.
(b) Name the type of trade under which Anant was doing his business.
(c) Name the service which helps Nikhil to remove the hindrance of storing the stationery items.
(d) Name the service which helps Nikhil to remove the hindrance of place.

Q.2 Abdul is a single owner of a shoe manufacturing business. His business was suffering from continuous losses. To revive his business and to expand, he took a loan of '20 lakhs form 'Progressive Finance Co.' In suffer losses. This resulted in the declining assets and mounting debts. Abdul started defaulting on his repayment schedule. Finance company served him final notice to repay the loan and settle the account. He proposed the finance company to take over the business assets and clear their dues. Finance company took over the assets of the business in part settlement of their dues as the assets were not sufficient to settle the debts and they claimed the remaining amount from Abdul from his personal assets. Abdul refused to do so on the ground that loan was taken for the business and by him for personal use.

(1) Name the form of business organization followed by Abdul.
(2) Is the finance company justified in asking for remaining amount form Abdul's personal assets? Justify your answer by giving suitable feature of the business organization.

Q.3 'A', 'B', 'C', 'D' and 'E' are partners in partnership firm. The firm has different types of partners. Mr. A has contributed capital and participates in the management of firm. He shares profits and losses and is liable to an unlimited extent to the creditors of the firm. Mr. B has contributed capital and shares its profits and losses. He also has unlimited liability but he does not take part in day to day activities of business.
Association of Mr. C is not known to the general public but in all other respects he is like an active partner.

Mr. D has allowed the firm to use his name as he enjoys good reputation among clients but he does not either contribute capital or take part in the management.

Mr. 'E', 15 years of age is entitled to the benefits of partnership with mutual consent of all their members. He is not eligible to take part in management of firm and shares only profits and not losses of the firm.

(i) How many partners of the firm has?
(ii) Who is the active partner and what is the nature of his liability in the firm?
(iii) Who is the sleeping partner in the firm and what is the nature of his liability?
(iv) What king of partner is Mr. C and what king of liability does he have in the firm?
(v) How does the partnership relationship of Mr. C differs from Mr. D ? How do they differ in their liability?
(vi) Is Mast. E legal partner? Can be held liable for the liability of the firm?

Q.4 Sharma brothers inherited some ancestorla property. They decided to form a Hindu undivided family consisting of four male members. Mr. Raman Sharma was eldest brother so he became 'Karta'. The business took a loan of Rs.20 lac from Canara Bank, which was to be returned within 5 years. Due to poor financial position of the buinsess, they were unable to repay the loan. Brother sold the ancestoral property for Rs.10 lac and pain the amaount to Canara Bank. The Bank filed a case for recovery of balance amount. Mr. Raman Sharma pleaded the court that the loan was taken for the pourpose of Business; so all memebers of business are liable to repay. The court said all membes are responsible only to the extent of their share in business and business property is already sold, but you being karta will have to repay whole amout even by selling your personal property.

(a) In this case who has unlimited liability.
(b) Was the decision of court to clain only from Raman is justified?

Q.5 Sneha after her course in designing started taking jobs for designing logo, wedding cards, panphelts, advertisements etc. Her work became quite popular and she had continuous orders. She decided to have a separate office with some staff to help her. She was suggested by her father to have a business organization and run it properly.

(a) Her business was constantly growing and she was facing problems with handling all orders and finishign them on time. Her friend Pooja, who was also a designer, proposed to join her as a business partner. Sneha was confused whether to continue her business as a sole trader or convert in into a partnership firm. As a true frined of sneha, you are required to suggest the advantages and disadvantages of a partnership business. (two each)
(b) Sneha and Pooja decide to form a partnership firm and do the business together. Suggest them on the following issues with proper reasons.
    (i) What kind of liability will they have and how will it affect them?
    (ii) Is it necessary for them to have an agreement and register their firm?

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SUBJECT – HISTORY

Project -
Choose any topic from the new book. On rough pages or old note-book please bring summariesed content of the topic with pictures, maps, etc. Refer other History book, refer library, any learned persons discussion. You are suppose to research facts on that topic other than NCERT.

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SUBJECT – GEOGRAPHY

1. Prepare a project file on the different types of natural vegetation in India and highlight the factors causing damage to our natural vegetation.
(Note : use A4 size papers and pictures from the newspapers)

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SUBJECT – POLITICAL SCIENCE

I News Collection -

- Election Lok-Sabha 2024-25
- Collage of News-paper cuttings.
- Graph of Results in detail.
- Agenda of the parties. Vote of etc.

Note - All this should be done in the Note Book.

II Project

Choose any topic from any of the Political Science text of your course of study. Write the summary of that topic as rough add interviews, surveys, extra content from other books, library etc.

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SUBJECT – PSYCHOLOGY

Q.1 Give answer of given questions.

- Explain the three terms utilized in the definition of Psychology.
- What are the 7 different types of Psychology?
- State four points to point out the connection between mind and behaviour.
- Define the following terms:
  a) Objectivity b) Sample c) Data d) Population e) Hypothesis
- Differentiate between:
  a) Naturalistic and controlled observation.
  b) Participant and non participant observation.
  i) Give examples in support of your answer.
  ii) Write the advantage and disadvantage of the above.

Q.2 Write about enquiry methods and prepare a questionnaire for Survey with survey report.
Topics for Survey (Choose any one topic)

- Can screen time habit change your thinking and perception about life?
- Bullying can affected someone's student life.
- Effect of meditation on health.

N.B. : (Do Q.1 and Q.2 in Practical File)

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SUBJECT – SOCIOLOGY

1) Public Transport
2) Honour Killing
3) Crony Capitalism
4) Divorce
5) Mob Leanching
6) Ethnicity
7) Migration etc.

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.

Checklist for the dissertation paper

Choose a Title / Topic
↓
Need of the study, objective of the study
↓
Hypothesis

Content – Time line, Mind maps, Pictures etc.
↓
[Primary / Secondary data]
(Questionnaire)
↓
Analysing of Data for
↓
Conclusion, Draw the Relevant Conclusion
↓
Bibliography, Deferences

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SUBJECT – ENTREPRENEURSHIP

A. PROJECT WORK:

Case study of Karsanbhai Patel (Founder of NIRMA)

Introduction
Journey towards Entrepreneurship
Contribution in Economy
Achievements and Acknowledgements
Business Mantra
Message to youth

Collect the information covering the above aspects and then write neatly on A4 size ruled thick sheets. Project should be hand written with minimum of 15 sheets. Be creative.

B. Answer the following Questions:

Q1. Define Entrepreneurship. Discuss the process of Entrepreneurship.
Q2. Discuss the Advantages and Disadvantages of Entrepreneurship.
Q3. Describe any five Managerial functions of an entrepreneur.
Q4. Discuss the various myths surrounding Entrepreneurship.

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SUBJECT – MASS MEDIA

* Any 5 camera angles with the pictures and description from the video shared in the group
* Watch the movie Godfather Part-1 .Select a character which you find the most fascinating and write about him /her.
* There are various portfolio questions given in the pdf after the chapters from unit 1and 2 choose any three and complete.
* Compile the work in a file and submit it after summer vacations.

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SUBJECT – HINDI

परियोजना–विषय

1. भारत के स्वतंत्रता संग्राम में आदिवासियो के योगदान का उल्लेख निम्नलिखित किन्हीं तीन क्रांतिकारियों के माध्यम से कीजिए –
   - टंट्या भील – भारत के रॉबिनहुड
   - तिलका माँझी – स्वतंत्रता सेनानी
   - झलकारी बाई – रानी लक्ष्मीबाई की सेनापति
   - बिरसा मुंडा – मुंडा विद्रोही

   आदिवासी समाज पर शहरी अपसंस्कृति के प्रभावों का उल्लेख करते हुए एक आकर्षक परियोजना तैयार कीजिए।

2. स्वर कोकिला सुश्री लता मंगेशकर की संगीतमय जीवन–यात्रा पर एक आकर्षक परियोजना तैयार कीजिए।

3. मीरा और अक्कमहादेवी की भक्ति–भावना का तुलनात्मक विवेचन करते हुए, वर्तमान नारी सशक्तिकरण पर एक आकर्षक परियोजना तैयार कीजिए।

4. 'लडकियाँ हैं, वह घास–फूस की तरह बढ़ती चलीं जाती हैं।' कथन के आधार पर समाज में लड़कियों की वास्तविक स्थिति को स्पष्ट करते हुए केन्द्र सरकार की 'बेटी बचाओ–बेटी पढ़ाओ' योजना का उल्लेख एक आकर्षक परियोजना द्वारा कीजिए।

❖ **परियोजना संबंधी समस्त निर्देशों का पालन करते हुए उपरोक्त परियोजनाओं में से कोई एक आकर्षक परियोजना तैयार कीजिए।**

परियोजना हेतु निर्देश –

1. परियोजना का पहला पृष्ठ – विद्यार्थी का नाम, कक्षा , वर्ग, अनुक्रमांक, विद्यालय का नाम एवं विद्यालय का प्रतीक चिह्न (लोगो)
2. दूसरा पृष्ठ – आभार ज्ञापन
3. तीसरा पृष्ठ – प्रमाण–पत्र
4. चौथा पृष्ठ – अनुक्रमणिका
5. पाँचवा पृष्ठ – भूमिका
6. छठे पृष्ठ से – आकर्षक संपूर्ण परियोजना
7. अंतिम पृष्ठ – संदर्भ ग्रंथ

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SUBJECT – PHYSICAL EDUCATION

Write following topics in Practical Lab Manual:-

Practical 1: Labelled diagram of 400 M Track & Field with computations.

Practical 2: Describe Changing Trends in Sports & Games in terms of changes in Playing Surface, Wearable gears, Equipment, Technological advancements.

Practical 3: Anyone IOA recognized Sport/Game. Labelled diagram of Field & Equipment. Also mention its Rules, Terminologies & Skills.

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SUBJECT – COMPUTER SCIENCE

LIST OF PYTHON PROGRAMS

1. Write a Python Program to add two numbers inputted by the user.
2. Write a Python Program to calculate the square root of any given Number.
3. Write a Python Program to Calculate the Area of a Triangle using Herons Formula.
4. Write a Python Program to Solve Quadratic Equation.
5. Write a Python Program to Swap Two Variables
6. Write a Python Program to Generate a Random Number
7. Write a Python Program to Convert Kilometers to Miles
8. Write a Python Program to Convert Celsius To Fahrenheit
9. Write a Python Program to Check if a Number is Odd or Even
10. Write a Python Program to Check Leap Year

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SUBJECT – HINDUSTANI VOCAL MUSIC

1. तानपूरे के बारे में सचित्र वर्णन करें।
2. राग भीमपलासी के छोटे ख्याल को स्वरलिपिबद्ध लिखें।
3. तानसेन का जीवन परिचय लिखें।
4. राग भैरवी में भजन लिखें।
5. राग बिहाग में तीनताल में निबद्ध एक तराना लिखें।

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SUBJECT – PAINTING

Practical 1- Draw and color a color wheel on Buff sheet.
Medium : Poster color

Practical 2- Draw a fruit/ vegetable composition on Buff sheet.
Medium : Poster/ Water color