

SGJ DAV SEN. SEC. PUBLIC SCHOOL, HARIPURA

Class – 12th (Sci & Com)

Date – 04.01.2025

Instructions: Dear children, The work which is being sent to you, it must be done in a fair notebook and in beautiful handwriting. When the school will reopen this home work will be checked. This work is given for revision purpose.

ENGLISH

After passing the secondary school examination, a candidate has to make a very difficult choice from a number of streams available to him for further study at the senior school level. There is no valid mechanism to assess the suitability of a candidate for a particular stream. Write a letter to the editor of a national daily emphasising the need of educational counsellors for guidance in this matter in each school. You are Vinita/ Vinay, 48, Agra Fort, Agra.

PUNJABI

'ਸਲੀਕਾ' ਤੇ ਪੈਰਾ ਰਚਨਾ ਲਲਖੋ।

MATHS

1. The equation of a line is $5x-3=15y+7=3-10z$. Write the direction cosines of a line.
2. Find graphically, the maximum value of $Z=2x+5y$, subject to constraints given below:
 $2x+4y \leq 8; 3x+y \leq 6; x+y \leq 4; x \geq 0, y \geq 0$.
3. If a leap year is selected at random, what is the chance that it will contain 53 Tuesdays?
4. Determine for which values of x , the function $f(x)=x^4-2x^2$ is increasing or decreasing.
5. Find the area of the region bounded by $y^2=9x$, $x=2$, $x=4$ and the x -axis in the first quadrant.

PHYSICS

1. (a) Define dielectric constant in terms of the capacitance of a capacitor? On what factor does the capacitance of a parallel plate capacitor with dielectric depend?
(b) Find the ratio of the potential differences that must be applied across the
(1) parallel
(2) Series combination of two identical capacitors so that the energy stored in the two cases becomes the same.
2. (a) An air filled capacitor is given a charge of $2C$ raising its potential to $200 V$. If on inserting a dielectric medium, its potential falls to $50 V$, what is the dielectric constant of the medium?
(b) A conducting slab of thickness ' t ' is introduced without touching between the plates of a parallel plate capacitor separated by a distance d ($t < d$). Derive an expression for the capacitance of a capacitor?
3. Two charges and are located $16 cm$ apart. At what point(s) on the line joining the two charges is the electric potential zero? Take the potential at infinity to be zero.
4. A parallel plate capacitor with air between the plates has a capacitance of $8 pF$. What will be the capacitance if the distance between the plates is reduced by half, and the space between them is filled with a substance of dielectric constant 6 ?
5. A charge of $8 mC$ is located at the origin. Calculate the work done in taking a small charge of from a point $P(0, 0, 3 cm)$ to a point $Q(0, 4 cm, 0)$, via a point $R(0, 6 cm, 9 cm)$.
6. Two tiny spheres carrying charges 1.5 are located $30 cm$ apart. Find the potential and electric field:
 1. at the mid-point of the line joining the two charges, and
 2. at a point $10 cm$ from this midpoint in a plane normal to the line and passing through the mid-point.
7. Show that the normal component of electrostatic field has a discontinuity from one side of a charged surface to another given by
$$(E_2 - E_1) \cdot n = \frac{\sigma}{\epsilon_0}$$
Where n is a unit vector normal to the surface at a point and σ is the surface charge density at that point. (The direction of n is from side 1 to side 2). Hence show that just outside a conductor, the electric field is
 1. Show that the tangential component of electrostatic field is continuous from one side of a charged surface to another. [Hint: For (a), use Gauss's law. For, (b) use the fact that work done by electrostatic field on a closed loop is zero.]

CHEMISTRY

Q1 Describe the shape and magnetic behaviour of following complexes :

(i) $[\text{Co}(\text{NH}_3)_6]^{3+}$

(ii) $[\text{Ni}(\text{CN})_4]^{2-}$ (At. No. Co = 27, Ni = 28)

Q2 For the complex $[\text{Fe}(\text{en})_2\text{Cl}_2]$, Cl, (en = ethylene diamine), identify

(i) the oxidation number of iron,

(ii) the hybrid orbitals and the shape of the complex,

(iii) the magnetic behaviour of the complex,

(iv) the number of geometrical isomers,

(v) whether there is an optical isomer also, and

(vi) name of the complex. (At. no. of Fe = 26)

Q3. Write the name, the state of hybridization, the shape and the magnetic behaviour of the following complexes :

$[\text{CoCl}_4]^{2-}$, $[\text{Ni}(\text{CN})_4]^{2-}$, $[\text{Cr}(\text{H}_2\text{O})_2(\text{C}_2\text{O}_4)_2]^{-}$

(At No. : Co = 27, Ni = 28, Cr = 24)

Q4. Write the chemical reaction to explain Kolbe's reaction.

Q5 What happens when phenol is treated with bromine water?

Q6. Illustrate the following reactions giving a chemical equation for each :

(i) Kolbe's reaction

(ii) Williamson's synthesis of an ether

BIOLOGY

1. In the year 1963, two enzymes responsible for restricting the growth of bacteriophage in E. coli were isolated. How did enzymes act to restrict the growth of the bacteriophage?

2. How is the action of exonuclease different from that of endonuclease?

3. β -galactosidase enzyme is considered a better selectable marker. Justify the statement.

4. Explain the mode of action of Eco RI.

5. What is Eco RI? How does Eco RI differ from an exonuclease?

6. How does a restriction nuclease function? Explain.

7. State how Agrobacterium tumefaciens were made as a useful cloning vector to transfer DNA to plant cells.

8. How is insertional inactivation of an enzyme used as a Selectable marker to differentiate recombinants from non-recombinants?

FMM

Q.1 Explain the various money market instruments.

Q.2 Describe the trading and settlement procedure of stock exchange.

Q.3 Explain segments of NSE.

BUSINESS STUDIES

Q.1 Rajeev is a middle lever manager. He keeps all his subordinates under a lot of discipline. His employees however complain of wastage of time and efforts as they feel that nothing is being assigned in a proper way and a proper place, also no proper schedule is made for working. Which principle of management is violated here?

Q.2 Rajesh wants to become an ideal manager. For this he reads many management books. After reading various broad and general guidelines he prepares f to apply them and make his work more meaningful. The necessary outcome will be his improved output. Which concept of management has been highlighted here?

Q.3 Pakka employment is a company which takes care of the fact that the confidence of the employees should always be at its peak. For this reason they give surety to their employees for employment for a minimum fixed tenure of time. Which principle of management is followed here?

Q.4 A floor manager of a Mall is very capable as he utilises all the functions of management. He lays stress on developing mutual trust and spirit of cooperation amongst the employees. Under his guidance the employees admit that they learn a lot and are able to meet their targets. This has led to increase in their salaries. Identify the principle of Fayol followed by the floor manager in the above case.

IT

Answer the given questions in 20-30 words each

Q1. Explain Drop table with Cascade command.

Q2. The following code has some error(s).

Rewrite the correct code underlining all the corrections. Also categorize the loop as Entry / Exit Control

Loop.

```
int p
```

```
p = 14;
```

```
do;
```

```
p = p-2;
```

```
System.out.println(p); } while p >= 2
```

Q3. Differentiate between = and == operator in JAVA

Answer the given question in 30-50 words each

Q4. How eGovernance does empowers the citizens. Give 3 points.

Answer the given question in 50-80 words each

Q5. Aman wants to shop shoes online. Write detailed Steps/ procedure to be followed while shopping online.

ECONOMICS

Q1. Read the following statement carefully and write true or false with reason

- The commercial banks generate their profits by way of 'spread
- If reserve requirement is equal to 25% of deposits then the credit multiplier = 10.
- A fall in SLR increases money supply the economy.
- Open market operations are meant to increase or decrease the money supply in the economy.
- Qualitative instruments control the flow of credit to select sectors of the economy.
- The goal of central bank is to maximize profit.

Q2. Define 'Credit Multiplier'. What role does it play in determining the credit ratio power of the banking system? Use a numerical Illustration to explain.

Q3. If in a economy bank rate is increased, how will it effect demand for the credit? Explain?

Q4. Discuss briefly the credit creation process of banking system using a hypothetical numerical example

ACCOUNTANCY

Read the following statements carefully and pass necessary journal entry in each of the following cases (different situations of oversubscription)

• Empire Ltd. invited applications for 2,00,000 shares @ Rs10 each payable on Application Rs 3, On Allotment Rs 5 and Balance on Call. Applications were received for 2,50,000 shares.

Company rejected the excess applications. All the money has been duly received except allotment and call money on 6,000 shares held by Raavan and call money on 4,000 shares held by Kumbhkaran.

Pass entries.

• Empire Ltd. invited applications for 2,00,000 shares @ Rs 10 each payable on Application Rs 3, On Allotment Rs 5 and Balance on Call. Applications were received for 2,50,000 shares. Pro-rata allotment was made to all the applicants. All the money has been duly received except call money on 6,000 shares held by Raavan and on 4,000 shares held by Kumbhkaran.

• Empire. invited applications for 2,00,000 shares @ Rs 10 each payable on Application Rs 3, On Allotment Rs 5 and Balance on Call. Applications were received for 2,50,000 shares. Company rejected applications for 30,000 shares and Pro-rata allotment was made to remaining applicants. All the money has been duly received except call money on 6,000 shares held by Raavan and on 4,000 shares held by Kumbhkaran. Pass entries.

• Empire Ltd. invited applications for 2,00,000 shares @ Rs 10 each and Rs.1 premium. Share was payable on Application Rs 3, On Allotment Rs 6 and Balance on Call. Applications were received for 2,50,000 shares. Pro-rata allotment was made to applicants of 2,40,000 shares and remaining applications were rejected. All the money has been duly received except call money on 6,000 shares held by Raavan and on 4,000 shares held by Kumbhkaran. Pass entries. Empire Ltd. invited

applications for 2,00,000 shares @ Rs 10 each payable on Application Rs 3, On Allotment Rs 5 and Balance on Call. Applications were received for 3,50,000 shares. Allotment was made as under

- Applicants of 50,000 shares - Allotted in full
- Applicants of 2,80,000 shares - Allotted 1,50,000 shares
- Remaining applications were rejected.

• All the money has been duly received except call money on 6,000 shares held by Raavan and on 4,000 shares held by Kumbhkaran. Prepare Cash Book and pass entries.

FINE ARTS

Answer the following question (2X 6):

1. Symbolize the following colours in our National Flag?

- Saffron

- White
- Greer
- Navy Blue

2. Mention the artist of the painting 'Haldi Grinders'

3. Mention the sculpture made by the famous Artist D.P.Raj Choudhary.

PHYSICAL EDUCATION

TOPIC- SPORTS AND NUTRITION

Concept of balance Diet and Nutrition.

Write briefly about Macro and Micro Nutrients: Food Sources and Functions. ?

What are the types of Vitamins? Describe their sources and functions.