



DELHI PUBLIC SCHOOL VISAKHAPATNAM

HALF YEARLY REVISION ASSIGNMENT



Class: XII Science

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Subject: ENGLISH

In recent years, there has been a surge in both group and solo travel among young adults in India. A survey conducted among young adults aged 18-25 aimed to explore the reasons behind their travel preferences and recorded the percentage variation for 10 common points that influence travel choices. Among those who prefer solo travel, the most common reason cited was the desire for independence and freedom (58%), followed closely by the opportunity for introspection and self-discovery (52%). Additionally, solo travellers appreciated the ability to customize their itinerary to their preferences (44%) and the chance to meet new people on their own terms (36%).

On the other hand, those who prefer group travel often cited the desire for socializing and making new friends (61%) as their primary reason. Group travel also provided a sense of security and safety in unfamiliar places (52%) and allowed for shared experiences and memories with others (48%). Additionally, group travellers enjoyed the convenience of having pre-planned itineraries and organized transportation (38%).

Interestingly, both groups had similar levels of interest in exploring new cultures and trying new experiences (40% for solo travellers, 36% for group travellers). Similarly, both groups valued the opportunity to relax and escape from the stresses of everyday life (36% for solo travellers, 32% for group travellers).

However, there were also some notable differences between the two groups. For example, solo travellers placed a higher priority on budget-friendly travel options (38%) compared to group travellers (24%). Conversely, group travellers were more likely to prioritize luxury and comfort during their travels (28%) compared to solo travellers (12%).

Overall, the survey results suggest that both group and solo travel have their own unique advantages and appeal to different individuals, based on their preferences and priorities.

- i. Infer two possible ways that the survey, mentioned in paragraph (1) could be beneficial. Answer in about 40 words.
- ii. Which travel choice point of the survey would influence tour operators to incorporate group dinners, social events, and shared accommodations in their itinerary?
 - A. Freedom to customise itinerary
 - B. Luxury and comfort
 - C. Security and safety
 - D. Desire for making new friends
- iii. What do the top choices in the survey, for traveling solo and in a group suggest about young adults?
- iv. Identify the solo traveller from the following three travellers:
 - (a) Reshma- I don't want to keep hunting for rickshaws or taxis. A pre-booked vehicle is perfect.
 - (b) Nawaz-I'm happy sharing a room in a hostel. I don't need hotel accommodation.
 - (c) Deepak-I'm not worried about my well-being, even while exploring remote areas.
- v. Which of the following is an example of an opportunity for self-discovery, as mentioned in para2?
 - A. Trying new cuisine
 - B. Hiring a tour guide
 - C. Purchasing local artifacts
 - D. Advance booking travel tickets
- VI. How might the differences in budget priorities between solo and group travellers impact the types of accommodations and activities offered by the travel industry in India?
- vii. Complete the sentence appropriately.

The similarities in the percentage of both solo and group travellers who are interested in exploring new cultures and trying new experiences may be due to _____.
- viii. State TRUE or FALSE.

The title, "Wanderlust: The Solo Travel Trend Among Young Adults in India", is appropriate for this passage.

II. You are the Secretary of the Neighbourhood Watch Scheme, Jastinapur, Sector D-3 personnel, Head Security, Gate 2 and share necessary details. Also, include the news of installation of the much-awaited security camera, on the Eastern periphery of the Society.

III. Smt. Leelavati Khatri, your grandmother, has received an invitation from her childhood friend, residing at a distance in the same city. The invite is for the blessing ceremony and celebratory dinner, marking the birth of her granddaughter. Your grandmother wishes to attend the event but would need to be accompanied by a family member to assist her with her wheelchair.

Create an appropriate reply, accepting this invitation, on behalf of your grandmother.

IV. Despite being an essential component of road safety infrastructure, many people do not respect zebra crossings and fail to follow traffic rules, which results in hazardous situations on the roads. Write a letter to the editor of a national daily, sharing your concern, and examining the reasons for such behaviour. Provide suggestions for spreading awareness of rules and etiquettes involved, and ways to ensure adherence. Use the given cues along with your own ideas to compose this letter. You are Soma Baruah, a concerned city resident.

V. You are Sohail Hassan of class XII-B. Write an article for your school magazine, sharing the importance of young adults, as volunteers in one's local community, the need to do so and the benefits involved. Use the given cues along with your own ideas to compose this article.

Importance of personal growth + community development

Benefits: For self- new skills, experiences, a sense of purpose

For community: positive impact

What are the ways one could be involved

Reference to context.

*And such too is the grandeur of the dooms
We have imagined for the mighty dead;
All lovely tales that we have heard or read:
An endless fountain of immortal drink,
Pouring unto us from the heaven's brink.* (A Thing of Beauty)

i Which of the following themes is best represented in the given extract?

- | | |
|--|-------------------------------|
| A. The beauty of nature | B. The power of imagination |
| C. The immortality of art and literature | D. The inevitability of death |

ii State whether the given statement is TRUE or FALSE, with reference to the extract.

By referring to the dead as "mighty", the poet emphasizes their importance and the power they exerted on the people.

iii Complete the sentence appropriately.

The "endless fountain of immortal drink" is an apt analogy for the tales of the mighty dead because _____.

iv The use of the word "brink" in the extract suggests that the immortality that is being poured onto us is on the verge of overflowing. This creates a powerful image of _____.

v Based on the poem rhyme scheme, evident in lines 2-5, of the given extract, which word would rhyme with line 1?

vi Select the option that is NOT true about the lack of punctuation at the end of line 1 in the extract.

- | |
|--|
| A. Creates a sense of continuity and flow that connects the line with the second line. |
| B. Encourages the reader to continue reading seamlessly without any pause. |
| C. Creates a sense of anticipation and expectation for the reader. |
| D. Encourages a revisit to the ideas in the preceding lines. |

Subject: MATHEMATICS

1. Classify the function $f: \mathbb{N} \rightarrow \mathbb{N}$ given by $f(x) = x^3$ as injection, surjection or bijection.
2. Find the domain of $f(x) = \sin^{-1}(-x^2)$.
3. Find the value of $\tan^{-1}\left(\tan \frac{3\pi}{5}\right) + \cos^{-1}\left(\cos \frac{13\pi}{6}\right) + \sin^{-1}\left(-\frac{1}{2}\right)$
4. If $\begin{bmatrix} x & 2y & -y & 3x & 4 \end{bmatrix} = \begin{bmatrix} -4 & 3 & 6 & 4 \end{bmatrix}$, find the values of x and y .
5. If $A = \begin{bmatrix} 1 & 2 & 4 & 1 & 5 & 6 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 2 & 6 & 4 & 7 & 3 \end{bmatrix}$ then verify that: $(A - B)' = A' - B'$.
6. If $A = \begin{bmatrix} \cos\theta & \sin\theta & -\sin\theta & \cos\theta \end{bmatrix}$ then for any natural number, find the value of $\text{Det}(A^n)$.
7. Using determinant show that the points $(3, -2)$, $(8, 8)$ and $(5, 2)$ are collinear.
8. Show that $f(x) = x^3$ is continuous as well as differentiable at $x = 3$.
9. If $y = \sin^{-1}\left\{\frac{\sqrt{1+x}-\sqrt{1-x}}{2}\right\}$, find $\frac{dy}{dx}$.
10. Find the area of the minor segment of the circle $x^2 + y^2 = 4$ cut off by the line $x = 1$, using integration.
11. Find the area of the region bounded by the curve $ay^2 = x^3$, the y -axis and the lines $y = a$ and $y = 2a$.
12. Solve the differential equation: $\frac{dy}{dx} = (\cos^2 x - \sin^2 x) \cos^2 y$
13. Verify that the function $y = x \sin 3x$ (implicit or explicit) is a solution of the differential equation $\frac{d^2 y}{dx^2} + 9y - 6 \cos 3x = 0$
14. The vertices A, B, C of triangle ABC have respectively position vectors $\vec{a}, \vec{b}, \vec{c}$ with respect to a given origin O . Show that the point D where the bisector of $\angle A$ meets BC has position vector $\vec{d} = \frac{\beta \vec{b} + \gamma \vec{c}}{\beta + \gamma}$, where $\beta = |\vec{c} - \vec{a}|$ and, $\gamma = |\vec{a} - \vec{b}|$.
Hence, deduce that the incentre I has position vector $\frac{\alpha \vec{a} + \beta \vec{b} + \gamma \vec{c}}{\alpha + \beta + \gamma}$, where $\alpha = |\vec{b} - \vec{c}|$.
15. Let $\vec{a}, \vec{b}, \vec{c}$ be three non-zero vectors such that $\vec{c}$ is a unit vector perpendicular to both $\vec{a}$ and $\vec{b}$. If the angle between $\vec{a}$ and $\vec{b}$ is $\frac{\pi}{6}$, prove that $[\vec{a} \vec{b} \vec{c}]^2 = \frac{1}{4} |\vec{a}|^2 |\vec{b}|^2$.
16. Let $f: \mathbb{N} \rightarrow \mathbb{N}$ be defined by $f(n) = \begin{cases} \frac{n+1}{2}, & \text{if } n \text{ is odd} \\ \frac{n}{2}, & \text{if } n \text{ is even} \end{cases}$
Examine whether the function f is onto, one-one or bijective
17. If R is a relation defined on the set of natural numbers $\mathbb{N}$ as follows: $R = \{(x, y) : x \in \mathbb{N}, y \in \mathbb{N} \text{ and } 2x + y = 24\}$, then find the domain and range of the relation R . Also, find whether R is an equivalence relation or not.
18. Evaluate: $-\operatorname{cosec}^{-1}\left(-\frac{2}{\sqrt{3}}\right) + 2 \cot^{-1}(-1)$
19. If $A = \begin{bmatrix} 1 & -1 & 0 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 0 & 1 & -1 & 3 & 4 & 0 & 5 & 1 \end{bmatrix}$ and $C = \begin{bmatrix} 2 & 3 & 4 \end{bmatrix}$, are three matrices, then find ABC .
20. Find the adjoint of the matrix $A = \begin{bmatrix} 1 & -1 & 0 \end{bmatrix}$
21. Show that the function $f(x) = \begin{cases} x^m \sin\left(\frac{1}{x}\right), & x \neq 0 \\ 0, & x = 0 \end{cases}$ is neither continuous nor differentiable, if $m < 0$
22. Find the intervals in which the function $(x+1)^3(x-3)^3$ is strictly increasing or strictly decreasing.
23. Find the maximum and minimum values of $x + \sin 2x$ on $[0, 2\pi]$.
24. Find two numbers whose sum is 24 and whose product is as large as possible.
25. Integrate the rational function $\frac{3x+5}{x^3-x^2-x+1}$
26. Evaluate: $\int_0^{1/2} \frac{1}{(1+x^2)\sqrt{1-x^2}} dx$
27. Evaluate: $\int \frac{x^2}{(x^2+4)(x^2+25)} dx$.
28. Find the area of a minor segment of the circle $x^2 + y^2 = a^2$ cut off by the line $x = \frac{a}{2}$.
29. Find the particular solution of the differential equation $\cos x \frac{dy}{dx} + y = \sin x$, given that $y = 2$ when $x = 0$.
30. Find the sine of the angle between the vectors $\vec{a} = 2\hat{i} - \hat{j} + 3\hat{k}$, $\vec{b} = \hat{i} + 3\hat{j} + 2\hat{k}$

Subject: PHYSICS

1. (a) The charging current for a capacitor is 0.25 A. What is the displacement current across its plates? (b) How is displacement current produced between the plates of a parallel plate capacitor during charging?
2. (a) Name the electromagnetic radiations used for (i) water purification, and (ii) eye surgery. (b) How are electromagnetic waves produced by accelerating charges?
3. The power factor of a series LCR circuit at resonance will be. (a) 1 (b) 0 (c) $1/2$ (d) $1/\sqrt{2}$
4. A series LCR circuit with $R = 20 \text{ ohm}$, $L = 2 \text{ H}$ and $C = 50 \text{ micro F}$ is connected to a 200 volts ac source of variable frequency. What is (a) the amplitude of the current, and (b) the average power transferred to the circuit in one complete cycle, at resonance? (c) Calculate the potential drop across the capacitor.
5. Two concentric circular loops of radius 1 cm and 20 cm are placed coaxially. (a) Find mutual inductance of the arrangement. (b) If the current passed through the outer loop is changed at a rate of 5 A/ms, find the emf induced in the inner -loop. Assume the magnetic field on the inner loop to be uniform.
6. (a) Current in a circuit falls from 5 A to 0 A in 0.1 s. If anything average emf of 200 V is induced, calculate the self - inductance of the circuit. (b) A pair of adjacent coils has mutual inductance of 1.5 H. If the current in one coil changes from 0 to 20 A in 0.5 s, what is the change of magnetic flux linkage with the other coil?
7. A bar magnet of magnetic moment 6 J/T is aligned at 60° with a uniform external magnetic field of 0.44 T. Calculate (a) the work done in turning the magnet to align magnetic moment (i) normal to the magnetic field, (ii) opposite to the magnetic field, and (b) the torque on the magnet in the final orientation in case (ii).
8. Write any two points of difference between a diamagnetic and paramagnetic substance.
9. (a) State Biot - Savart's law, derive an expression for magnetic field at any point on axial line of a current carrying circular loops. Hence, find magnitude of magnetic field intensity at the centre of circular coil.
10. Two co-axial circular loops L1 and L2 of radii 3 cm and 4 cm are placed. What should be the magnitude and direction of the current in the loop L2 so that the net magnetic field at the point O between the coils be zero?

Subject: CHEMISTRY

Ch-7- Alcohols, Phenols and Ethers

1. Ethereal solution of an organic compound A when heated with magnesium gave B. B on treatment with ethanol followed by acid hydrolysis gave 2-propanol. Identify A and B. Write the reactions involved.
2. Give one chemical test each to distinguish between the following pairs of compounds:
a) Phenol and Benzyl alcohol b) 1-Propanol and 2-Propanol
3. A compound(X) with the molecular formula C_3H_8O can be oxidized to another compound(Y) whose molecular formula is $C_3H_6O_2$. Identify X and Y and write the reactions involved.
4. Give reasons:
i) p-nitro phenol is more acidic than p-methyl phenol.
ii) Bond length of C-O bond in phenol is shorter than that of CH_3OH
iii) $(CH_3)_3CBr$ on reaction with CH_3ONa gives alkene as major product and an ether.
iv) Phenylmethyl ether reacts with HI to give phenol and Methyl iodide and not Iodobenzene and Methyl alcohol.
v) Phenol undergoes electrophilic substitution more easily than benzene.
vi) C-O-H bond angle in alcohols is slightly less than the tetrahedral angle(109.28°)
5. How do you convert the following:
i) Phenol to 2-hydroxy acetophenone. ii) Cumene to p-nitro phenol.
iii) 1-Chloropropane to 1-Propanol iv) 2-Methyl-1-Pentene to 2-Methyl-2-pentanol
v) Acetone to 2-methyl propene vi) Anisole to 2-methoxy toluene

Ch-5- Coordination Compounds

1. Why chelate complexes are more stable than complexes with unidentate ligands?
2. What is spectrochemical series? What is the difference between a weak field ligand and a strong field ligand?
3. Calculate the spin only magnetic moment of the complex $[CoF_6]^{3-}$.
4. Write the IUPAC names of the following.
i. $[CrCl_2(H_2O)_4]Cl$ ii. $K_2[PdCl_4]$
5. $[NiCl_4]^{2-}$ is paramagnetic while $[Ni(CO)_4]$ is diamagnetic though both are tetrahedral. Why?
6. For the complexes $[Fe(en)_2Cl_2]Cl$, $[Pt(NH_3)_2Cl_2]$ Identify the following.
i. Hybrid orbitals and shape of the complex.

- ii. Magnetic behaviour of the complex.
 - iii. Number of its geometrical isomers.
 - iv. Whether there may be optical isomer also.
 - v. Name of the complex and oxidation number of central metal atom
7. When a chromite ore(A) is fused with sodium carbonate in free excess of air and the product is dissolved in water, a yellow solution of compound(B) is obtained. After treatment of this yellow solution with sulphuric acid, compound(C) can be crystallised from the solution. When compound(C) is treated with KCL, orange crystals of compound(D) crystallise out. Identify (A) to (D) and also explain the reactions.

Subject: BIOLOGY

1. Name the primary and secondary lymphoid organs
2. Differentiate between dominance, co-dominance and incomplete dominance.
3. In angiosperms, the functional megaspore develops into:
 - (a) Embryo sac (b) Ovule (c) Endosperm (d) Embryo
4. Which hormone is responsible for the development of secondary sexual characteristics in males?
 - (a) LH (b) FSH (c) Testosterone (d) Estrogen
5. The barrier method of contraception includes:
 - (a) IUDs (b) Condom (c) Pills (d) Tubectomy
6. Sickle cell anaemia is an example of:
 - (a) Point mutation (b) Frame shift mutation (c) Chromosomal deletion (d) Chromosomal duplication
7. The decrease in T- lymphocyte count in human blood will result in:
 - a) decrease in antigens b) decrease in antibody
 - c) increase in antibodies d) increase in antigens
8. A couple with normal vision gives birth to a colorblind child. The woman has a colorblind father. What is the genotype of the mother?
 - (b) What is the inheritance pattern of this disorder?
 - (c) Give a Punnett square for the cross.
 - (d) Comment on the possibility of the daughter being colorblind.
9. Draw a well labelled diagram of antibody molecule.
10. Do you think that friends can influence one to take alcohol/drugs? If yes, how may one protect himself / herself from such an influence?
11. Explain the term metastasis.
12. a) Patients who have undergone myocardial infarction are given clot buster. Mention the clot buster administered and its microbial source.
- b) A person recuperating from illness is advised to have curd regularly. Why?
13. List the components of biogas. What is BOD? How its amount is related to contamination of water?
14. What are molecular scissors? Give an example.
15. Explain any two methods of vector-less gene transfer.
16. List three steps involved in PCR.
17. What is the basic principle involved in RNA interference in silencing the preferred gene?
18. Why do lepidopterans die when they feed on Bt cotton plants. Explain how that happens?

Subject: ARTIFICIAL INTELLIGENCE

1. Explain the process of big data analytics.
2. What are the major challenges in handling in big data?
3. Why is big data analytics important in modern industries and decision-making processes?
4. Discuss the concept of Computer Vision (CV). How does it enable machines to “see” and interpret images? Compare its functionality with human vision.
5. Discuss the real-world applications of computer Vision in various industries.

Subject: PHYSICAL EDUCATION

SAI Khelo india fitness tests for age group 5-8years and 9-18years.