SUMMER ASSIGNMENT: 2024-25
Class: XI (Science Stream)

General Instructions:-
1. All the subject assignments have to be done in separate files using project papers.
2. Submission date:- 12ᵗʰ June, (Wednesday)
3. The Summer Break is scheduled from 05ᵗʰ May 2024 – 09ᵗʰ June, 2024. The students will resume the school from 10ᵗʰ June, 2024.

Note:- These assignments are a part of your internal assessment & will be marked accordingly out of 10.

ENGLISH CORE (301)

Q1. You are Manisha of 10, Rajaji Nagar, Bangalore. You want a Maths teacher for your son who is a class 10 student. Draft a suitable advertisement in not more than 50 words stating your requirements.

Q2. You want to sell your newly built flat. Draft a suitable advertisement in not more than 50 words to be inserted in the classified columns of 'The Hindu' giving all necessary details. You are Niranjan, 247, J.P. Nagar, Bengaluru

Q3. You are General Manager of Ivy Software Solutions, Agra Cantt, Agra. You need a software engineer for your organisation. Draft an advertisement in not more than 50 words to be published in 'The Times of India' under the classified columns.

Q4. You are Ramanuj am/Revathi, a student of Class XII, St. Xavier's School, Jhansi. You are interested in giving tuition in Maths to one or two students of class VIII. Draft an advertisement in not more than 50 words for a local newspaper.

Q5. You are Uttarq/Umesh, a visually challenged person, running a telephone booth in the Central Market, Delhi. Give a suitable advertisement in not more than 50 words for a telephone operator in 'Situation Vacant' column of Delhi Times, offering attractive remuneration.

Q6. Animals recognize and value a relationship established with human beings. Explain this by keeping in mind the relationship established by Kushwant Sing's grandmother with animals and birds.

Q7. A life of dedication and integrity can be lived even without college or university level education as the grandmother demonstrates. Elaborate.

Q8. Discuss the advantages and disadvantages of the joint family system. What values do you think children learn from grandparents?

Q9. The chapter "The Portrait of a Lady" displays the sad reality of old age. Old people face loneliness and seclusion. It gets you thinking about the pain of old age. Write an article about 'Pain of Old Age'.

Q10. The poet has paid a tribute to her mother. Similar instance can been seen in 'The Portrait of a Lady'. This made you think that writing about a loved one is much better than building their statues or drawing their portraits. Comment.

Q11. "Both wry with the labored ease of loss". The poet is missing her mother. What is the role of the mother in forming the personality of a child?

Q12. Aram justified the act of stealing the horse as he didn't consider it to be stealing. In fact he was Mourad's partner in crime. What would you have done if such a situation confronted you?

Q13. In today's materialistic world where greed and money are the most important things the example of the Garoghlanian tribe can teach us many things –to be honest, to discriminate between right and wrong. What values can we learn from the example of such a tribe?

Q14. How does the story 'The Summer of the Beautiful White Horse' convey the message of honesty and integrity and how do the characters maintain it irrespective of their desire to keep the horse with themselves? What other human values did the two young boys reflect in their character?

Q15. "We are nothing but a set of values". Discuss the statement with reference to the story 'The Summer of the Beautiful White Horse'.

PHYSICS (042)

Q1. The base quantity among the following is
(1) Speed   (2) Weight   (3) Length   (4) Area

Q2. Which of the following is a unit that of force?
(1) N m   (2) N   (3) N/m   (4) N s

Q3. The number of significant figures in a pure number 410 is

(1) Two   (2) Three   (3) One   (4) Infinite

Q4. The number of significant figures in the measured value 0.0204 is

(1) Five   (2) Three   (3) Four   (4) Two

Q5. The number of significant figures in the measured value 26000 is

(1) Five   (2) Two   (3) Three   (4) Infinite

Q6. The number of significant zeroes present in the measured value 0.020040, is

(1) Five   (2) Two   (3) One   (4) Three

Q7. The number of significant figures in the measured value 4.700 m is the same as that in the value

(1) 4700 m   (2) 0.047 m   (3) 4070 m   (4) 470.0 m

Q8. If a calculated value 2.7465 g contains only three significant figures, the two insignificant digits in it are

(1) 2 and 7   (2) 7 and 4   (3) 6 and 5   (4) 4 and 6

Q9. The dimensional formula for electric field is

(1) $[M^1L^1I^{-2}T^{-3}]$ (2) $[M^1L^2I^1T^{-3}]$ (3) $[M^{-1}L^1I^1T^{-3}]$ (4) $[M^1L^1I^{-1}T^{-3}]$

Q10. The pair of the quantities having same dimensions is

(1) Displacement, velocity   (2) Time, frequency

(3) Wavelength, focal length   (4) Force, acceleration

Q11. $\int \dfrac{1-\cos 2x}{1+\cos 2x}\, dx$

Q12. $\displaystyle\int_{\pi/2}^{9\pi/2} \cos x$

Q13. $\displaystyle\int cosec\, x\, (cosec\, x + \cot x)\, dx$

Q14. Find *dy/dx* of the function

    (i) $y = Sin\, (\,ax^2 + b)$

    (ii) $y = e^{2x} \log x$

Q15. The escape velocity v of a body depends on– (i) the acceleration due to gravity 'g' of the planet, (ii) the radius R of the planet. Establish dimensionally the relation for the escape velocity.

Q16. A calorie is a unit of heat energy and it equals about 4.2 J, where 1 J = 4.2 kgm2 s -2. Suppose we employ a system of units in which the unit of mass equals α kg, the unit of length equals β m, the units of time is ϒ sec. show that a calorie has a magnitude 4.2 α -1 β -2 ϒ 2 in terms of the new units.

Q17. A famous relation in physics relates moving mass m to the rest mass m0 of a particle in terms of its speed v and the speed of the light c. A boy recalls the relation almost correctly but forgets where to put the constant c. He writes: m = mo / (1 – v ^{2}) $^{1/2}$ Guess where to put the missing c.

Q18. If E,M,J and G respectively denote energy, mass, angular momentum and gravitational constant, Calculate the dimensions of EJ^2 /M^5G^2

Q19. What is meant by significant figures .State the rules for counting the number of significant figures in a measured quantity?

Q20. Give limitations of dimensional analysis.

CHEMISTRY (043)

Q1. What will be the mass of one atom of C-12 in grams?

Q2. What is the symbol for the SI unit of the mole? How is the mole defined?

Q3. Calculate the mass percent of calcium, phosphorus and oxygen in calcium phosphate $Ca_3(PO_4)_2$

Q4. 45.4 L of dinitrogen reacted with 22.7 L of dioxygen and 45.4 L of nitrous oxide was formed. The reaction is given below:

$2N_2(g) + O_2(g) \rightarrow 2N_2O(g)$

Which law is being obeyed in this experiment? Write the statement of the law.

Q5. If 4 g of NaOH dissolves in 36 g of H_2O, calculate the mole fraction of each component in the solution. Also, determine the molarity of solution (specific gravity of solution is 1g ml^{-1})

Q6. Nickel atom can lose two electrons to form Ni²+ ion. The atomic number of nickel is 28. From which orbital will nickel lose two electrons?

Q7. Calculate the total number of angular nodes and radial nodes present in the 3p orbital.

Q8. How many neutrons and protons are there in the following nuclei?
C,O,Mg.Cl

Q9. What is the difference between the terms orbit and orbital?

Q10. Arrange s, p and d sub-shells of a shell in the increasing order of effective nuclear charge (Z_{eff}) experienced by the electron present in them.

Q11. Write electronic configuration of the following:
Cu^{+2}, Cr^{+3}, Sc, P, Ca, Zn^{+2}.

Q12. (a) How many sub-shells are associated with n = 4?
(b) How many electrons will be present in the sub-shells having ms value of -1/2 for n = 4?

Q13. Among the following pairs of orbitals, which orbital will experience more effective nuclear charge
(i) 2s and 3s   (ii) 4d and 4f   (iii) 3d and 3p?

Q14. (a) A neutral atoms has 2K, 8L and 15M electrons. Find the total numbers of electrons in s,p,d and f subshell.
(b) How many unpaired electrons are present in the following ions Al^{+3}, Co^{+3}, Mn^{+2} (Given Atomic number: Al=13, Co=27 & Mn=25)
(c) One electron is present in 4f subshell. What is the sum n+l+m1+ms values assuming 'f' subshell follows -3 to +3 order of filling electron?

Q15. Hydrogen gas is prepared in the laboratory by reacting dilute HC1 with granulated zinc. Following reaction takes place:
$Zn + 2HC1 \rightarrow ZnCl_2 + H_2$
Calculate the volume of hydrogen gas liberated at STP when 32.65 g of zinc reacts with HC1. 1 mol of a gas occupies 22.7 L volume of STP; atomic mass of Zn = 65.3 u.

Q16. The density of 3 molal solution of NaOH is 1.110 g mL^{-1}. Calculate the molarity of the solution.

Q17. The reactant which is entirely consumed in reaction is known as limiting reagent. In the reaction 2A + 4B —> 3C + 4D, when 5 moles of A react with 6 moles of B, then (i) Which is the limiting reagent? (ii) Calculate the amount of C formed.

Q18. Define the law of multiple proportions. Explain it with two examples. How does this law point to the existence of atoms?

Q19. Calcium carbonate reacts with aqueous HCl to give $CaCl_2$ and CO_2 according to the reaction given below:
$CaCO_3 (s) + 2HCl (aq) \rightarrow CaCl_2(aq) + CO_2(g) + H_2O(l)$
What mass of $CaCl_2$ will be formed when 250 mL of 0.76 M HCI reacts with 1000 g of $CaCO_3$? Name the limiting reagent. Calculate the number of moles of $CaCl_2$ formed in the reaction.

Q20. A vessel contains 1.6 g of dioxygen at STP (273.15K, 1 atm pressure). The gas is now transferred to another vessel at a constant temperature, where pressure becomes half of the original pressure. Calculate: (i) volume of the new vessel.   (ii) number of molecules of dioxygen.

MATHEMATICS (041)

Q1. Let A and B be two sets. Then, prove that A=B ⇔ A ⊆ B and B ⊆ A.

Q2. Let A= {1, {2}, {3,4}, 5}. Which of the following are incorrect statements? Rectify each:
(i) 2 ∈ A   (ii) {2} ⊂ A   (iii) {φ}⊂ A   (iv) {1,2,3,4} ⊂ A

Q3. If A= {$\frac{1}{x}$: $x \in N$ and $x < 8$ } and A= {$\frac{1}{2x}$: $x \in N$ and $x \leq 4$ }, Find:
(i) A ∪ B   (ii) A∩B   (iii) A-B   (iv) B-A

Q4. For any two sets A and B, Prove that:
(i) $(A \cup B)' = (A' \cap B')$ (ii) $(A \cap B)' = (A' U B')$

Q5. For any sets A, B and C, Prove that:
A-(B ∪ C) = (A-B)∩ (A-C)

Q6. If A = {x: x ∈ R, x < 5 } and B = {x: x ∈ R, x > 4 } find A∩ B.

Q7. Let A and B be sets. If A∩X= B∩X= φ and A∪X= B∪X for some set X, show that A=B.

Q8. If (A∪B) = (A∩B) then prove that A=B.

Q9. If U = {1, 2, 3, 4, 5, 6, 7, 8, 9}, A = {1, 2, 3, 4}, B= {2, 4, 6, 8} and C= {1, 4, 5, 6} then find
(i) (A ∪ B)'   (ii) (A ∩ C)'   (iii) (B − C)'

Q10. Let A = {a, b, c, e, f}, B= {c, d, e, g} and C= {b, c, f, g} be subsets of the set $U = \{a, b, c, d, e, f, g, h\}$. Draw the Venn diagram to represent the following sets:

    (i)   A∪(B∩C)   (ii) A−(B∩C)   (iii) A-B

Q11. Find the values of a and b, when: $(a - 2, 2b + 1) = (b - 1, a + 2)$

Q12. Let $A \times B = \{(a, b): b = 3a - 2\}$. If (x, -5) and (2, y) belong to A×B, find the values of x and y.

Q13. For any sets A, B and C, prove that $A \times (B - C) = (A \times B) - (A \times C)$.

Q14. Let A = {1,2} and B = {2,3}. Then write all possible subsets of $A \times B$.

Q15. Let R = {(x, y): x, y ∈ Z and $x^2 + y^2 \leq 4$}. Write R in roaster form. Find domain(R) and Range(R).

Q16. Let g = {(1,2), (2,5), (3,8), (4,10), (5,12), (6,12)} Is g is a function? If Yes find its domain and range. If no, give reason.

Q17. If g is a function defined from R to R as follows: g(x) = x^2 +1. Find the range of the function.

Q18. Let f and g be real function, defined by f(x) = $\frac{1}{(x+4)}$ and g(x) = $(x + 4)^3$. Find (i) (f + g) (x) (ii) $\frac{f}{g}$ (x).

Q19. Let R^+ be the set of all positive real number. Let f: $R^+ \to$ R: f(x)= $\log_e x$.

    Find: (i) range(f).   (ii) {x: x ∈ R^+ and f(x)= -2}.

Q20. Find the domain and range of real function:

    (i)   f(x) = $\sqrt{4 - x^2}$ (ii) f(x) = $\sqrt{3 - x} + \frac{1}{\sqrt{x^2 - 1}}$ (iii) f(x) = $\frac{x}{1 + x^2}$

BIOLOGY (044)

Q1. Make the colourful Mind map for Chapter 1 and Chapter 2.

Q2. Write economic importance of the following:

    (a) Bacteria   (b) Fungi   (c) Protista

Q3. Write down the scientific names of following organisms.

    (a) human   (e) horse   (h) Brinjal

    (b) cat   (f) Okra   (i) Potato

    (c) monkey   (g) Mango   (j) periwinkle

    (d) cow

INFORMATICS PRACTICES (065)

Q1. Create an e-poster on latest launched input & output devices.

Students are requested to find the images and configuration of latest IT related devices from newspapers or magazines or take print outs as per their convenience and submit a collage on chart paper or Project paper or A4 size colour paper minimum of 5 devices and maximum of 10 devices.

PHYSICAL EDUCATION (048)

Write a Practical manual on Volleyball/ Basketball/ Handball with colored picture in your practical book according to CBSE board External practical 2024-25 (Refer the pdf file which was shared)

***Record File shall include:

➢ Practical-1: Fitness tests administration. (SAI Khelo India Test)

➢ Practical-2: Procedure for Asanas, Benefits & Contraindication for any two Asanas for each lifestyle disease.

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

    1. **Cover it with black color paper**
    2. Label it with all the details with plain white stickers (refer previous year practical manual)
    3. Stick pictures on blank pages only
    4. Detail index should be there

Decorate it appropriately (Inside)

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