।। ओ३म् ।।

आचार्यकुलम्

वैदिक समन्वित बी.एस.बी. आवासीय शिक्षण संस्थानम्

शिक्षा संस्कारः अभ्युदयः निःश्रेयसः

Acharyakulam

A Vaidic Integrated BSB affiliated Residential(Co-ed) Educational Institute

।। पुरुषार्थ एव हि सफलतायाः कुञ्चिका ।।

Diwali-Break Holiday Home Work and Assignment (Session 2025 – 2026) Class – XI Science

वैदिक-विभाग:

शैत्यावकाशस्य गृहकार्यम् {2025-26}

१. सामूहिकं यज्ञं कृत्वा सामूहिकं योगप्रशिक्षणं च दत्वा तस्य सामूहिकछायाचित्रम् एकस्मिन् A4 sheet कर्गदे संश्लेश्य तस्य विवरणं संस्कृतेन लिखत |

२. स्वकीय पाठ्यपुस्तकस्य प्रथमपाठस्य श्लोकान् स्मरणं कृत्वा टिप्पणी-पुस्तिकायां लिखत |

३. एकत:पञ्चमपाठपर्यन्तं पठितपाठेभ्य: सन्धि-प्रत्ययपदानि चित्वा उत्तमेषु कर्गदेषु विलिख्य FILE निर्माणं कुरुत |

४. सर्वे संलग्न-दैनिक-क्रियाकलापस्य पत्रकं नीत्वा अवश्यम् आनयन्तु |

दैनिक- क्रियाकलापा:

कक्षा-V-XII {सर्वेषां कृते}

क्रम.सं.	दिनाङ्क:	अभिवादनम्	योग:	यज्ञ:	भोजनमन्त्र:	संस्कृतवाक्यम्	शयनमन्त्र:	अभिभावक-हस्ताक्षरम्
1.	18.10.25							
2.	19.10.25							
3.	20.10.25							
4.	21.10.25							
5.	22.10.25							
6.	23.10.25							
7.	24.10.25							
8.	25.10.25							
9.	26.10.25							
10.	27.10.25							
11.	28.10.25							
12.	29.10.25							
13.	30.10.25							
14.	31.10.25							
15.	01.11.25							
16.	02.11.25							
17.	03.11.25							

धातव्य-

1. भो छात्र ! प्रतिदिन आपको उपरोक्त क्रिया कलाप अवश्य करने हैं और प्रतिनित्य अपने अभिभावकों के हस्ताक्षर इस आशय से कराने हैं कि आपने उनके समक्ष किया है |
2. प्रतिदिन किये गये क्रिया कलाप को चित्र के माध्यम से प्रमाण सहित उपस्थित करना अनिवार्य है |
3. संस्कृत वाक्य में प्रतिदिन अपने अभिभावकों को एक-एक संस्कृत का वाक्य सिखाना है |

SUBJECT: ENGLISH

Section A: Reading Skills

Read the passage given below carefully and answer the questions that follow:

Plastic pollution has become one of the most pressing environmental issues, as rapidly increasing production of disposable plastic products overwhelms the world's ability to deal with them. Plastic pollution is most visible in developing Asian and African nations, where garbage collection systems are often inefficient or nonexistent but the developed world, especially countries with low recycling rates, also has trouble properly collecting discarded plastics. Plastic trash has become so ubiquitous it has prompted efforts to write a global treaty negotiated by the United Nations.

QUE. 1. Prepare notes on the passage using proper format.

QUE. 2. Write a summary of the passage in about 80 words.

Section B: Writing Skills

QUE. 3. You are Sakshi / Sameer, a student of Class XI. Write a speech on the topic: "The Importance of Mental Health Awareness Among Teenagers."
(Word limit: 150-200 words)

Section C: Grammar

QUE. 4. Re-order the following sentences to form a meaningful paragraph:

a) was / the old house / haunted / believed to be.

b) noises / people / strange / heard / often.

c) into / nobody / wanted / go / it.

d) brave / finally / boy / decided / enter / the / a / house.

QUE. 5. Fill in the blanks with the correct form of the verbs in brackets:

a) She _____ (go) to the market before I reached.

b) By the time the teacher arrived, the students _____ (complete) the assignment.

c) I _____ (read) this book for two hours.

d) If he had studied well, he _____ (pass) the exam.

QUE. 6. Combine the following pairs of sentences using suitable connectors:

a) He was tired. He continued to work.

b) It was raining. We decided to go for a walk.

c) I respect him. He is an honest man.

d) She didn't attend the meeting. She was unwell.

Section D: Literature (Hornbill & Snapshots)

The Adventure – Hornbill

QUE. 7. What is the significance of the parallel world in the story “The Adventure” by Jayant Narlikar? How does it reflect the theme of alternate histories?

QUE. 8. Describe Professor Gaitonde's experience in the parallel world. How did it affect his understanding of history?

The Birth – Snapshots

QUE. 9 Discuss the transformation in Andrew Manson's character in “The Birth.” What does the story convey about professional dedication?

QUE. 10. How does the story “The Birth” highlight the challenges faced by doctors during critical situations? Give examples from the text.

SUBJECT: MATHEMATICS

General Instructions:

(i) Homework is divided in two sections A and B.
(ii) Complete the homework in separate note book/file.
(iii) Try to keep the work neat and clean and answer the questions exactly as asked.

Section-A (Short answer type questions)

1. Describe each of the following sets in Roster from:
   (i) $\{x: x \in Z \text{ and } |x| \leq 2\}$ (ii) $\{x: x = \frac{n}{1+n^2}, 1 \leq n \leq 3 \text{ and } n \in N\}$
2. Write down the subsets of following sets:
   (i) $\{1, \{1\}\}$ (ii) $\{\emptyset, \{\emptyset\}, \{0, \emptyset\}\}$
3. Show that $3^{2n+2} - 8n - 9$ is divisible by 8, by using binomial theorem.
4. Find the domain and range of following functions:
   (i) $f(x) = \sqrt{4-x} + \frac{1}{\sqrt{x^2-1}}$ (ii) $f(x) = \frac{1}{\log(8-x^2)}$
5. How many diagonals and triangles make in regular octagon?
6. $\frac{100}{10!} = \frac{1}{8!} + \frac{X}{9!}$, Find x.
7. Find the number of lines and triangles that are formed by choosing the points from a set of 12 points, seven of which are collinear.
8. Solve the equation: $(1+i)y^2 + (6+i) = (2+i)x$
9. Simplify: $i^9 + i^{19} + i^{-999}$
10. Solve the equation: $\sqrt{3}x^2 - \sqrt{2}x + 3\sqrt{3} = 0$.
11. Find the modulus and multiplicative inverse: $\sqrt{-3} + 4i^2$
12. Which term is greater $(1.2)^{4000}$ or 800 (Use binomial theorem)?
13. If ${}^{n}C_{n-3} = 720$, find n.
14. If the coefficient of x in $\left(x^2 + \frac{k^2}{x}\right)^5$ is 270, then k = _____.
15. Which term is free from x in the expansion of $\left(3x^3 + \frac{1}{2x^3}\right)^{10}$

Section-B

16. In a town of 10,000 families it was found that 40% families buy newspaper A, 20% families buy newspaper B and 10% families buy newspaper C. 5% families buy A and B , 3% buy B and C and 4% buy A and C. If 2% families buy all the three newspapers, find the number of families which buy (i) A only (ii) B only (iii) none of A, B and C.

17. In a survey of 25 students, it was found that 15 had taken mathematics, 12 had taken physics and 11 had taken chemistry, 5 had taken mathematics and chemistry, 9 had taken mathematics and physics, 4 had taken physics and chemistry and 3 had taken all the 3 subjects. Find the number of students that had (i) only chemistry,(ii) physics and chemistry, but not mathematics, (iii) only one of the subjects, (iv) at least one of the three subjects, (v) none of the subjects.

18. A group consists of 4 girls and 7 boys. In how many ways can a team of 5 members be selected if a team has (i) no girl (ii) at least 3 girls (iii) at least one girl and one boy?

19. From a class of 15 students, 10 are to chosen for a picnic. There are two students who decide that either both will join or none of them will join. In how many ways can the picnic be organized?

20. Find the number of arrangements of the letters of the word EQUATION. In how many of these arrangements,
(i) do the words start with E
(ii) do all the vowels always occur together
(iii) do the vowels never occur together
(iv) do the word s begin with E and end in N?

21. Simplify: $\left(x+\sqrt{x-1}\right)^6+\left(x-\sqrt{x-1}\right)^6$.

22. If the coefficients or (r – 5)th and (2r – 1)th terms in the expansion of $(1 + x)^{34}$ are equal, find r.

23. Find the complex number z = x + iy satisfying the equation |z + 1| = z + 2 (1 + i).

24. If $\frac{3-4ix}{3+4ix}=\alpha+i\beta$, then find the value of $\alpha^2+\beta^2$.

25. Draw the graph of function and find range of f(x) = $|x-2|+|x+2|, -3 \le x \le 3$.

SUBJECT: (Non PCA) Biology

Read the following chapters of your biology textbook and solve the given worksheet

Chapter: Locomotion and Movement.

Chapter: Excretory Products and Their Elimination

Chapter: Locomotion and Movement

1. Differentiate between voluntary, involuntary, and non-voluntary muscles with suitable examples.
2. Explain the structure of a myofibril with the help of a neatly labelled diagram.
3. Describe the sliding filament theory of muscle contraction.
4. What is a synovial joint? Mention any two types with examples.
5. Discuss the role of calcium ions and ATP during muscle contraction and relaxation.

Chapter: Excretory Products and Their Elimination

1. Compare ammoniotelic, ureotelic, and uricotelic modes of excretion with examples.
2. Draw a labelled diagram of the nephron and explain its main parts.
3. Describe the process of urine formation under the following steps: filtration, reabsorption, and secretion.
4. Explain the counter current mechanism in the nephron. How does it help in the formation of concentrated urine?
5. Write short notes on any two disorders of the excretory system in humans.

SUBJECT: PHYSICS (NON PCA) ASSIGNMENT

(BASED ON CHAPTER MECHANICAL PROPERTIES OF FLUIDS)

WORKSHEET

1. Derive Poiseuille's formula for the volume of a liquid flowing per second through a pipe under streamlined flow.
2. Obtain the expression for the excess of pressure inside a liquid drop and liquid bubble
3. Obtain an equation of continuity for a flow of fluid on the basis of conservation of mass.
4. State and prove Pascal's law. Discuss its two practical applications.

5. What is meant by term coefficient of viscosity? State Stokes' law. Define terminal velocity and find an expression for terminal velocity in case of a sphere falling through a viscous fluid.
6. What is the phenomenon of capillarity? Derive an expression for rise of liquid in capillary tube.
7. Explain principle and working of hydraulic lift with the help of schematic diagram.
8. Define streamlined flow. Write two properties of streamlines. Derive equation of continuity.

SUBJECT: CHEMISTRY

1. Determine value of pH of 0.01 mol dm^{-3} of CH_3COOH if Ka = 1.74×10^{-5}.

2. Which of the following will produce a basic buffer solution when mixed in equal volumes?
(a) 0.1 mol dm^{-3} NH_4OH and 0.1 mol dm^{-3} HCl
(b) 0.1 mol dm^{-3} NH_4OH and 0.1 mol dm^{-3} HCl
(c) 0.1 mol dm^{-3} NH_4OH and 0.1 mol dm^{-3} HCl
(d) 0.1 mol dm^{-3} CH_3COONa and 0.1 mol dm^{-3} NaOH

3. How can we increase the yield of product in the reaction given below?
$A_2(g) + 2B(g) \rightleftharpoons C(g) + Q$ Kj

4. Which of the following cannot act as a Lewis base?
(a) SF_4 (b) PCl_5 (c) ClF_3 (d) NF_3

5. Calculate pH of dimethylammonium acetate solution if the pKb of dimethylamine and pKa of acetic acid are 3.27 and 4.77 respectively at 298 K.

6. If the solubility of $Zr_3(PO_4)_4$ is denoted by Ksp and its molar solubility is denoted by S, then what would be the relation between S and Ksp?

7. The equilibrium constants of the following reactions are:
$N_2 + 3H_2 \rightleftharpoons 2NH_3$; K_1
$N_2 + O_2 \rightleftharpoons 2NO$; K_2
$H_2 + ½\ O_2 \rightleftharpoons H_2O$; K_3
What would be the equilibrium constant (K) of the reaction:
$2NH_3 + 5/2\ O_2 \rightleftharpoons 2NO + 3H_2O$

8. Which of the following cannot act as both Bronsted acid and and Bronsted base?
(a) HCO_3^- (b) NH_3 (c) HCl (d) HSO_4^-

9. Assertion: pH of a buffer solution is not affected by dilution.
Reason: On dilution, the ratio of concentration of salt and acid (or base) remains unchanged.

10. Derive Handerson equation for basic buffer solution.

Happy Holidays