

Sri Guru Harkrishan Public School
Sept-Oct Exam- 2022 Class-XI
Subject – Chemistry

MM. =70

GENERAL INSTRUCTIONS :-

- The Question Paper Comprises of Five Sections.
- SECTION-A consists of 11 MCQ carrying 1 mark each.
- SECTION-B consists of 9 Very short answer questions carrying 2 marks each.
- SECTION-C consists of 7 Short answer questions carrying 3 marks each.
- SECTION-D consists of Case based questions carrying 5 marks each
- SECTION-E consists of 4 long questions (with choice) carrying 5 marks each.

SECTION- A

1. Which of the following gives de-broglie relationship
a) $p=h/mv$ b) $\lambda=h/mv$
c) $\lambda= h/mp$ d) $\lambda m=v/p$
2. Which of the following is dependent on temperature
a) Molarity b) Molality
c) Mole fraction d) Weight percentage
3. The designation of an orbital with $n= 4$ and $l = 3$ is
a) 4s b) 4p c) 4d d)4f
4. Which of following has maximum no.of unpaired electrons
a) Mg^{2+} b) Ti^{3+} c) V^{3+} d) Fe^{3+}
5. Assertion (A): One atomic mass unit is defined as the one twelfth of mass of one carbon-12 atom .
Reason (R) : Carbon -12 isotope is the most abundant isotope of carbon and has been chosen as standard .
a) Both A and R are true and R is correct explanation of A .
b) Both A and R are true but R is not correct explanation of A.
c) A is true but R is false.
d) Both A and R are false.
6. The Maximum number of elements in 3rd period is –
a) 8 b) 18 c) 32 d) between 8 & 18
7. The Family of elements with highest ionization enthalpy –
a) Alkaline Earth Metals b) Halogens
c) Noble Gases d) Alkali metals
- 8 Assertion(A) : For Outermost electron in Na atom the orbital angular momentum is zero.
Reason (R) :For 3s electron , $l=0$ and orbital angular momentum is zero.
a) Both A and R are true and R is correct explanation of A.
b) Both A and R are true but R is not correct explanation of A.
c) A is true but R is false .
d) Both A and R are false .

9. Assertion (A) : The Size decreases in order: $O^{2-} > Mg^{2+} > Al^{3+}$

Reason (R) : In isoelectronic ions ,size decreases with increase in atomic number.

- Both A and R are true and R is correct explanation of A .
- Both A and R are true but R is not correct explanation of A.
- A is true but R is false .
- A is false but R is true .

10. The ratio of masses of oxygen & nitrogen in a gaseous mixture is 1: 4(w/w).
The ratio of number of their molecules is

- 3:16
- 1:4
- 1: 8
- 7: 32

11. The Spectral line in hydrogen spectrum obtained when the electron jumps from $n=5$ to $n= 2$ energy level belongs to

- Lyman Series
- Balmer Series
- Paschen Series
- Pfund Series

SECTION – B

12. Define Gay –Lussac's law of gaseous volumes with suitable example.

13. What is Difference between Covalent Radius and Vanderwaals Radius.

14. (a) An Electron is present in 3d- subshell .Give the possible value of its four quantum numbers.

(b) How many neutrons and protons are in nuclei $^{88}Sr_{38}$

15. What is Concentration of Sugar $C_{12}H_{22}O_{11}$ in mol L^{-1} if its 20g are dissolved in enough water to make volume upto 2L?

16. (a) Define Pauli's Exclusive Principle .

(b) What are nucleons ?

17. (a) State Newlands law of Octaves .

(b) What do you mean by magic numbers ?

18. (a) Which of following are isoelectronic species - Na^+ , K^+ , Mg^{2+} , Ca^{2+} , S^{2-} , Ar .

(b) Define Subshell.

19. (a) Calculate the mass of an atom of silver (at. mass= 108)

(b) Calculate mass of one molecule of Naphthalene $C_{10}H_8$.

20. What are isotopes and isobars ? Give two examples for each .

SECTION – C

21. Explain Quantum Mechanical Model of an atom .

22. A Solution is 25% Water , 25% ethanol and 50% acetic acid by mass .Calculate the mole fraction of each component .

23. (a) Electron gain enthalpy values of Noble gases are positive while those of Be, Mg , N and P are almost zero. Give reason.

(b) How are 0.50 mol Na_2CO_3 and 0.50 M Na_2CO_3 different?

24. What are Factors on which electronegativity depends upon?

25. (a) Draw the shapes of p and d orbitals .

(b) Give Electronic Configuration of Ni and Ni^{2+} and also find no. of unpaired electrons in each case.

26. Define Ionic Radius. How radius of cation is smaller than that of an atom ?

give reason.

27. (a) Yellow light emitted from sodium lamp has a wavelength of 580 nm .Calculate frequency and wave number of this light .

(b) Define Law of conservation of mass.

SECTION – D

The following questions are case-based questions. Read the passage carefully and answer the questions.

Modern Periodic table is essentially the consequence of periodic variation in electronic configuration of atoms, which determines the physical and chemical properties of elements and compounds. In this table , the elements are arranged in horizontal rows called periods and vertical columns called groups.

1. How many periods and groups are present in modern periodic table ?
2. What is basic difference between Mendeleev 's periodic law and modern periodic law?
3. An Element has outer electronic configuration : $3s^2 3p^6$ to which period and group does this element belong?
4. How many elements are present in third period of p- block elements?
5. Five Elements A,B,C,D and E have atomic numbers 6, 12,32,36 and 14 respectively. Which of these belong to same group?

SECTION-E

Attempt any 3 question

28. What is Ionization Energy ? Explain the factors on which I.E depends upon. Also find its variation in periodic table.

29. Explain Bohr's Model of an atom in details. Also write its limitations.

30. (a) Define Hund's Rule. Explain the extra stability of half filled and completely filled electronic configuration.

(b) What do you mean by Aufbau's principle, explain in details.

31. (1) Define the following:

- (a) Law of Definite Proportion
- (b) Law of Multiple Proportion
- (c) Law of Reciprocal Proportion

(2) The Density of 3M Solution of NaCl is 1.25gmL^{-1} . Calculate the Molality of Solution.

SRI GURU HARKRISHAN PUBLIC SCHOOL

DEC EXAMS -2022 (CLASS- XI)

SUBJECT – CHEMISTRY

M.M =50

GENERAL INSTRUCTIONS:-

- The Question paper comprises of five sections.
- Section - A consists of 14 MCQs carrying 1 mark each.
- Section - B consists of 4 very short answer questions carrying 2 marks each.
- Section - C consists of 4 short answer questions (with choice) carrying 3 marks each.
- Section - D consists of case based questions carrying 4 marks each.
- Section - E consists of 4 long answer questions (with choice) carrying 5 marks each.

SECTION – A

1. What will be molarity of solution, which contains 5.85 g of NaCl per 500 ml?
(a) 4 mol L^{-1} (b) 20 mol L^{-1}
(c) 0.2 mol L^{-1} (d) 2 mol L^{-1}
 2. Which of following orbital's does not make any sense?
(a) 6s (b) 3p (c) 2d (d) 4f
 3. The Element with positive electron gain enthalpy is:-
(a) Hydrogen (b) Sodium
(c) Neon (d) Fluorine
 4. A Subshell with $n=6, l=2$ can accommodate a maximum of:-
(a) $10 e^{-1}$ (b) $12 e^{-1}$ (c) $36 e^{-1}$ (d) $72 e^{-1}$
 5. The anion O^{-} is isoelectronic with:-
(a) N^{2-} (b) F^{-} (c) N^{3-} (d) Ne^{-}
 6. In which of following, the bond angle between two covalent bonds is maximum ?
(a) H_2O (b) NH_3 (c) CO_2 (d) CH_4
 7. Among the following, the one having longest chain is:-
(a) Neopentane (b) Isobutane
(c) 2- Methyl pentane (d) 2,2-Dimethylbutane
 8. For Spontaneous Reaction, ΔG should be:-
(a) positive (b) negative
(c) equal to zero (d) may be positive or negative
 9. In an Octahedral Structure, the pair of d- orbitals involved in d^2sp^3 hybridisation:-
(a) $d_{x^2-y^2}, d_{xz}$ (b) d_z^2, d_{zx}
(c) d_{xy}, d_{yz} (d) $d_{x^2-y^2}, d_z^2$
 10. Which of following represents first law of thermodynamics:-
(a) $q = \Delta U - w$ (b) $\Delta H = q + w$
(c) $\Delta U = \Delta H + p \Delta V$ (d) $\Delta U = p \Delta V$
- # In the questions (11 to 14),two statements are given – one labeled as

Assertion (A)

and other is Reason (R). Select the most appropriate answer from options:-

- (a) Both A and R are true and R is correct explanation of A.
- (b) A is true but R is false.
- (c) A is false but R is true.
- (d) Both A and R are false.

11. **Assertion (A):** Combustion of 16g of methane gives 18 g of water.

Reason (R): In the combustion of methane, water is one of products.

12. **Assertion (A):** All microscopic bodies in motion have wave character.

Reason (R): Microscopic bodies have large mass

13. **Assertion (A):** Pent-1-ene and Pent-2-ene are position isomers.

Reason (R): Position isomers differs in position of functional group or substituent.

14. **Assertion (A):** Atomic radius in general decreases along a period.

Reason (R): In a period, effective nuclear charge decreases.

SECTION – B

15. (a) What is difference between Isobaric and Isochoric process ?

(b) What are Extensive properties ? give suitable examples.

16. Explain why Ice is lighter than water ?

17. (a) Which of following has highest ionization enthalpy: C, N and O and why ?

(b) Arrange the following in increasing order of their size: F, Li⁺, Na⁺ and Cl

18. What is Elimination Reaction ? also explain its types.

SECTION – C

Attempt any 3 questions.

19. Calculate Molality of solution containing 20.7 g of potassium carbonate dissolved in 500ml of solution. (assume density of solution = 1 g m L⁻¹)

20. (a) What is relationship between C_P and C_V.

(b) Define term Entropy.

21. (i) An atomic orbital has n= 3, what are possible values of l and m_l?

(ii) List the Quantum numbers (m_l and l) of electrons for 3d- orbital.

(iii) Which of following orbital are possible - 1p, 2s, 2p and 3f.

22. Explain why PCl₅ is Trigonal bipyramidal where as IF₅ is Square pyramidal, on the basis of VSEPR Theory.

SECTION –D

Read the passage carefully and answer the following questions:-

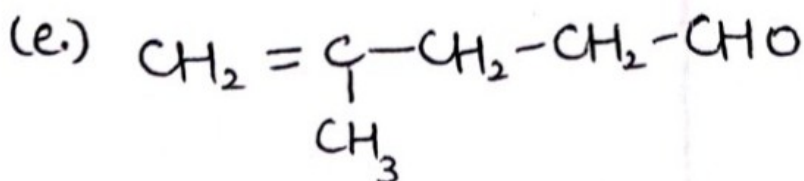
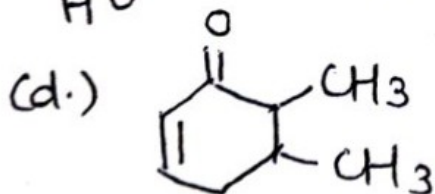
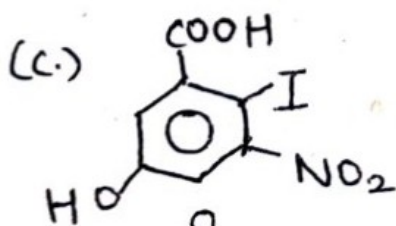
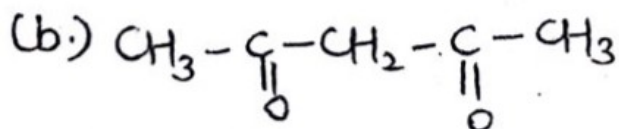
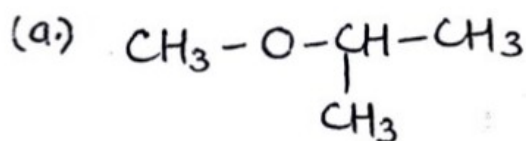
23. The Properties of Elements such as atomic or ionic radii, ionization enthalpy, electron gain enthalpy and electro negativity are directly or indirectly related to their electronic configuration and are called periodic properties. A part of the periodic table is given below:

2. Which of following is not correct:-
 (a) Electron Gain Enthalpy: $\text{Cl} > \text{F} > \text{Br}$
 (b) Atomic Size: $\text{N} > \text{O} < \text{F}$
 (c) Ionization Enthalpy: $\text{N} > \text{O} > \text{F}$
 (d) Ionic Size: $\text{N}^{3-} > \text{O}^{2-} > \text{F}^-$
3. The highest negative electron gain enthalpy is of:-
 (a) F (b) N (c) S (d) Br
4. Which of following has largest size?
 (a) N (b) O (c) S (d) P

SECTION - E

Attempt any 3 questions:-

24. (a) Explain First Law of thermodynamics. Derive its mathematical expression.
 (b) What do you mean by Hess's law of constant heat summation? Explain it with suitable example.
25. (a) Draw the Energy level diagram for Oxygen molecule. Also calculate its Bond order and magnetic behavior.
 (b) What do you mean by Hydrogen Bonding? Explain conditions for Hydrogen Bonding also write its types with valid examples.
26. (a) Explain Enthalpy of Phase Transitions in details.
 (b) What do you mean by Inductive Effect? Explain it on basis of their types.
27. Write the IUPAC names of following compounds:-



Sri Guru Harkrishan Public School

Dugri Road, Ludhiana

Class – XI

Paper – Mathematics

M.M 40

Section – A

- Express $(-\sqrt{3} + \sqrt{-2})(2\sqrt{3} - i)$ in the form of $a + ib$.
- Find the multiplicative inverse of $-i$.
- Solve $7x + 3 < 5x + 9$, show the graph of solutions on number line.
- Solve: $x^2 - 2x + \frac{3}{2} = 0$
- Define: A complex number
- What is the additive inverse of $-2 + 3i$
- Find the multiplicative inverse of $3 + 4i$
- Define conjugate of a Complex number.
- Solve: $7x + 3 < 5x + 9$
- Name the octants in which the following points lie:
 $(1, 2, 3), (4, -2, 3)$
- Fill in the blanks:
 - Coordinate plane divides the space into ----- octants
 - The coordinates of points in XY plane are in the form -----
 - The X axis and Y axis taken together determine a plane known as -----
- Express: i^{-39} in the form of $a+bi$
- Find the multiplicative inverse of $-i$.
- Define an inequality.
- Solve $5x - 15 > 0$.
- A point is in xz plane what can you say about y coordinate?
- A point is on x axis, what are its y coordinates and z coordinates?
- Prove that $1 + i^{10} + i^{100} - i^{1000} = 0$

1*20=20

Section – B

- If $\left(\frac{1+i}{1-i}\right)^m = 1$, then find the least integral value of m .
- Let $Z_1 = 2 - i, Z_2 = -2 + i$, find $Im\left(\frac{1}{Z_1 Z_2}\right)$.

3*2=6

11. Fill in the blanks:

- 1) Coordinate plane divides the space into ----- octants
 - 2) The coordinates of points in XY plane are in the form -----
 - 3) The X axis and Y axis taken together determine a plane known as -----
12. Express: i^{-39} in the form of $a+bi$
13. Find the multiplicative inverse of $-i$.
14. Define an inequality.
15. Solve $5x - 15 > 0$.
16. A point is in xz plane what can you say about y coordinate?
17. A point is on x axis, what are its y coordinates and z coordinates?
18. Prove that $1 + i^{10} + i^{100} - i^{1000} = 0$

1*20=20

Section – B

- 4) If $\left(\frac{1+i}{1-i}\right)^m = 1$, then find the least integral value of m .
- 5) Let $Z_1 = 2 - i, Z_2 = -2 + i$, find $Im\left(\frac{1}{Z_1 Z_2}\right)$.

3*2=6

Section – C

- 6) If $(x + iy)^3 = u + iv$, then show that $\frac{u}{x} + \frac{v}{y} = 4(x^2 - y^2)$.
- 7) The longest side of a triangle is 3 times the shortest side and third side is 2cm shorter than the longest side. If the perimeter of the triangle is at least 61cm, find the minimum length of the shortest side.

4*2=8

Section – D

- 8) A solution of 8% boric acid is to be divided by adding a 2% boric acid solution to it. The resulting mixture is to be more than 4% but less than 6% boric acid. If we have 640 liters of the 8% solution, how many liters of the 2% solutions will have to be added?

1x6=6

VERY SHORT ANSWER QUESTIONS

1. Show that the function is not differentiable at the point mentioned $f(x) = |x|$ at $x = 0$.
2. Find the derivatives of the function $\frac{1}{\sqrt{x}}$
3. For some constants a and b , find the derivatives of the function $\frac{x-a}{x-b}$
4. Find the derivatives of the function $(5x^3 + 3x - 1)(x - 1)$
5. Find the derivatives of the function $(ax + b)^n (cx + d)^n$.
6. Find the derivative of $(2x + 3)(5x^2 - 7x + 1)$.
7. Find the derivatives of the function $5 \sec x + 4 \cos x$
8. Find the derivatives of the function $2 \tan x - 7 \sec x$.

9. Find the derivatives of the function $\frac{\sin(x+a)}{\cos x}$

10. Find the derivatives of the function $(x + \sec x)(x - \tan x)$

SHORT ANSWER QUESTIONS

1. Find the derivative of the following functions from first principle.

(i) $(x - 1)(x - 2)$

(ii) $\frac{x + 1}{x - 1}$

9. Find the derivatives of the function $\frac{\sin(x+a)}{\cos x}$

[NCERT]

10. Find the derivatives of the function $(x + \sec x)(x - \tan x)$

[Ans. : $\cos a \sec^2 x$]

SHORT ANSWER QUESTIONS

[NCERT]

1. Find the derivative of the following functions from first principle.

(i) $(x-1)(x-2)$

(ii) $\frac{x+1}{x-1}$

[NCERT]

2. Find the derivative of $\frac{1}{\sqrt{3x+1}}$ at $x=2$.

[Ans. : (i) $2x-3$ (ii) $\frac{-2}{(x-1)^2}$]

3. For the function $f(x) = \frac{x^{100}}{100} + \frac{x^{99}}{99} + \dots + \frac{x^2}{2} + x + 1$. Prove that $f'(1) = 100f'(0)$.

[Ans. : $-3/14\sqrt{7}$]

4. Differentiate the following functions w.r.t. x

[NCERT]

(i) $\frac{x-1}{3x^3+2}$, $x \neq \sqrt[3]{-\frac{2}{3}}$

(ii) $\frac{(x+2)(1-3x)}{2x+1}$; $x \neq -\frac{1}{2}$

[Ans. : (i) $\frac{-6x^3+9x^2+2}{(3x^3+2)^2}$ (ii) $\frac{-6x^3-6x-9}{(2x+1)^2}$]

5. Find the derivative of $x \sin x$ from the first principle.

[NCERT Exemplar]

6. Differentiate $\sqrt{\sin x}$ from first principles.

[Ans. : $\sin x + \cos x$]

[NCERT Exemplar]

[Ans. : $\frac{\cos x}{2\sqrt{\sin x}}$]

LONG ANSWER QUESTIONS

1. For some constants a and b , find the derivatives of the following functions :

(i) $(x-a)(x-b)$

(ii) $(ax^2+b)^2$

(iii) $\frac{x-a}{x-b}$

[NCERT]

[Ans. : (i) $2x - (a+b)$ (ii) $4a^2x^3 + 4abx$ (iii) $\frac{a-b}{(x-b)^2}$]

2. Find the derivatives of the following :

(i) $x^{-4}(3-4x^{-5})$

(ii) $\frac{2}{x+1} - \frac{x^2}{3x-1}$

(iii) $\frac{1+\frac{1}{x}}{1-\frac{1}{x}}$

[NCERT]

[Ans. : (i) $\frac{-12}{x^5} + \frac{36}{x^{10}}$ (ii) $\frac{-2}{(x+1)^2} - \frac{3x^2-2x}{(3x-1)^2}$ (iii) $\frac{-2}{(x-1)^2}$]

[NCERT]

3. Find the derivatives of the following functions from first principle :

(i) $\sin(x+1)$

(ii) $\cos\left(x - \frac{\pi}{8}\right)$

[Ans. : (i) $\cos(x+1)$ (ii) $-\sin\left(x - \frac{\pi}{8}\right)$]

4. Find the derivatives of the following :

(i) $\frac{px^2+qx+r}{ax+b}$ [NCERT]

(ii) $(ax+b)^n (cx+d)^n$

Class-11
Sub- bio

MCQ

1. What is the right sequence
 - a. Kingdom ,Phylum ,class ,order, family ,genus, species.
 - b. Kingdom, class ,order, family ,species, genus, phylum
 - c. Kingdom, family ,class ,genus, species, phylum, order
2. What is perianth
 - a. No distinction between petal and sepal
 - b. No distinction between pedicel and petal
 - c. No distinction between pistil and sepal
3. Name of the fat storing tissue
 - a. Nervous tissue
 - b. adipose tissue
 - c. areolar tissue
 - d. epithelial tissue
4. Cockroaches have how many legs
 - a. 8.
 - b. 6.
 - c. 4.
 - d. 7
5. Name the hardest part of human body
 - a. Nails.
 - b. Enamel
 - c. Bone
 - d. muscle
6. The only gaseous phytohormone is-----
7. Full form of ATP is-----
8. Oxygen scavenger in nitrogen fixing plants is-----
9. Division of nucleus is called as -----
10. Define phyllotaxy?
11. Name the Smallest living organism ?
12. What is the average size cycle span for a mammalian cell?
13. Plants follow different pathways in response to environment this ability is called plasticity (T/F)
14. Yeast shows anaerobic respiration (T/F)
15. Full form of PEP is phospho enol phosphate (T/F)
16. How will you differentiate between C3 and C4 plants by looking in at its morphology ?
17. Where do you find sphincter of Oddi?
18. Match the column:

A.	B
Salivary gland	Lipase
Digestion of fat.	Goblet cells
Mucus.	Parotid
19. Name the muscle which is immune to fatigue?
20. Write the floral formula of *Pisum sativum*?

2marks questions

1. Define the following terms
 - a. Placentation.
 - b. aestivation

2. Both lysosomes and vacuoles are Endomembrane structure yet their functions are different .comment?

3. What is polysome? Write its function?

4. What is plasmolysis and Deplasmolysis?

5. Name the enzyme is responsible for

a. Converting starch in to maltose

b. Digesting proteins in stomach

6. Write difference between karyokinesis and cytokinesis?

7.. Draw a well labelled diagram of human digestive system?

3 marks questions:

1. How is respiration regulated in human beings?

2. Why abscisic acid also known as stress hormone?

3. Define respiratory quotient ? Write RQ value of carbohydrate, protein and fat?

4. What is the significance of meiosis?

5. Name three organelles which are double membrane bound? Draw diagram of anyone of them?

6. Draw a flowchart of Calvin cycle?

7. What are the following and where do you find them in animal body

a. Chondrocytes b. Axon c. Ciliated epithelium

5 marks questions

1. Write the functions of the following in cockroach

a. Crop b. Compound eye. C. Malpighian tubule d. Ootheca
OR

Draw a flowchart of TCA cycle ?

2 . Draw a flow chart of non-cycling photophosphorylation?

OR

Write a note on the following

a. Alveoli b. Liver. C. Villis, d. Pleura

3. Differentiate between striated and non-striated and cardiac muscle?

OR

Describe the flower of *Solenum nigrum* ? Draw its floral diagram?

Class +1

Sub-Biology

M M-.50

PART-A (1 MARK QUESTIONS)

1. Select the correctly written scientific name of Mango which was first described by Carolus Linnaeus.

- (a) *Mangifera Indica*
- (b) *Mangifera indica* Car. Linn.
- (c) *Mangifera indica* Linn.
- (d) *Mangifera indica*

2. Names of Schleiden and Schwann are associated with

- (a) protoplasm as the physical basis of life
- (b) cell theory
- (c) theory of cell lineage
- (d) nucleus functions as control centre of cell.

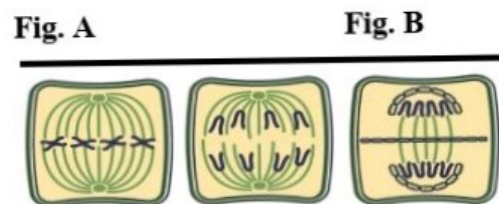
3. The site of respiration in bacteria is

- (a) ribosome
- (b) microsomes
- (c) episomes
- (d) mesosomes

6. Which of the following pairs of organelles does not contain DNA?

- (a) Nuclear envelope and Mitochondria
- (b) Mitochondria and Lysosomes
- (c) Chloroplast and Vacuoles
- (d) Lysosomes and Vacuoles

7. Which stages of cell division do the following figures A and B represent respectively?



- | | |
|--|--|
| <p>A</p> <ul style="list-style-type: none"> (a) Metaphase (b) Telophase (c) Anaphase (d) Prophase | <p>B</p> <ul style="list-style-type: none"> Telophase Metaphase Prophase Anaphase |
|--|--|

8. Lungs are enclosed in

- (a) periosteum (b) perichondrium
(c) pericardium (d) pleural membrane.

9. In the ABO system of blood groups, if both antigens are present but no antibody, the blood group of the individual would be

- (a) B (b) O (c) AB (d) A.

10 From the column I and column II select the correct option given below

Column I

- A. Glycosuria
B. Gout
C. Renal calculi
D. Glomerular nephritis

Column II

- (i) Accumulation of uric acid in joint
(ii) Mass of crystallised salts within the kidney
(iii) Inflammation in glomeruli
(iv) Presence of glucose in urine

A B C D

- (a) (iii) (ii) (iv) (i)
(b) (i) (ii) (iii) (iv)
(c) (ii) (iii) (i) (iv)
(d) (iv) (i) (ii) (iii)

11. The 24 hour (diurnal) rhythm of our body such as the sleep-wake cycle is regulated by the hormone

- (a) calcitonin (b) prolactin
(c) adrenaline (d) melatonin

12. Diabetes is due to

- (a) enzyme deficiency (b) iodine deficiency
(c) Na⁺ deficiency (d) hormonal deficiency

Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

- A. Both A and R are true and R is the correct explanation of A
B. Both A and R are true and R is not the correct explanation of A
C. A is true but R is false
D. A is False but R is true

13. Assertion: Bacteria are prokaryotic.

Reason : Bacteria do not possess true nucleus and membrane bound cell organelles

14. Assertion: Plasmids are double-stranded extra chromosomal DNA.

Reason: Plasmids are possessed by eukaryotic cells

PART-B (2 marks)

15. Why is mitosis called equational and meiosis as reductional division?
16. What is common and what is different in cats and dogs with respect to their taxonomic categories?
17. Identify the diseases
a. Caused due to damaged alveoli b. Caused due to inflammation of bronchioles
18. What are the characteristics of prokaryotic cells?

OR

Identify the hormones :

- A] hyposecretion of this results in Dwarfism. B] hyposecretion of this causes Goitre.

PART- C (3 Marks)

21. Draw the diagram of relaxed and contracted muscle fibre?
22. Discuss the parts of hind brain mention their functions?
23. Name the three organelles which are double membrane bound .discuss the detailed structure of nucleus?

PART –D (4 MAarks)

CASE STUDY

Plastids are found in all plant cells and in euglenoides. These are easily observed under the microscope as they are large. They bear some specific pigments, thus imparting specific colours to the plants. Based on the type of pigments plastids can be classified into chloroplasts, chromoplasts and leucoplasts. The chloroplasts contain chlorophyll and carotenoid pigments which are responsible for trapping light energy essential for photosynthesis. In the chromoplasts fat soluble carotenoid pigments like carotene, xanthophylls and others are present. This gives the part of the plant a yellow, orange or red colour. The leucoplasts are the colourless plastids of varied shapes and sizes with stored nutrients: Amyloplasts store carbohydrates (starch), e.g., potato; elaioplasts store oils and fats . the aleuroplasts store proteins. Majority of the chloroplasts of the green plants are found in the mesophyll cells of the leaves. These are lens-shaped, oval, spherical, discoid or even ribbon-like organelles having variable length (5-10 μ m) and width (2-4 μ m). Their number varies from 1 per cell of the Chlamydomonas, a green alga to 20-40 per cell in the mesophyll. Like mitochondria, the chloroplasts are also double membrane bound.

- 24 (A). Plastid and mitochondria both are semiautonomous organelles

(B) formed by division of pre-existing organelles and they contain DNA but lack protein synthesizing machinery.

Which one of the following options is correct?

- (a) (A) is true but (B) is false. (b) Both (A) and (B) are false.
(c) Both (A) and (B) are correct. (d) (B) is true but (A) is false

25. From the following select the double membrane bound organelles

- i. chloroplast ii ribosome
iii .Endoplasmic reticulum iv Mitochondria

- A i.iv B i.ii C iii.i D ii. Iv

26. Which of the following types of plastid does not contain stored food material?

- (a) Chromoplasts (b) Elaioplasts (c) Aleuroplasts (d) Amyloplasts

27. Which of the following cell organelle are found only in a plant cell?

- (a) Plastids (b) Mitochondria (c) Golgi complex (d) Ribosomes

**PART –D (5 MARKS)
DO ANY THREE**

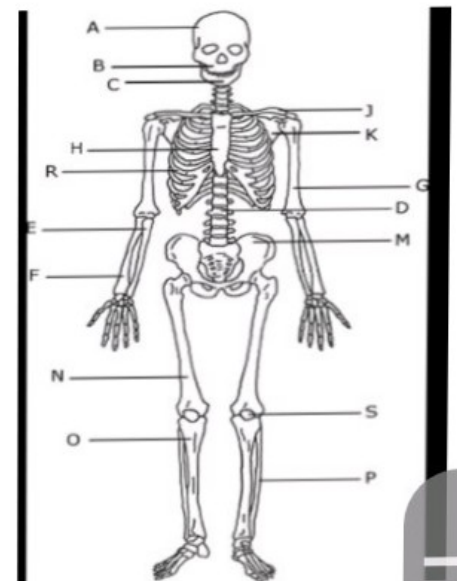
28. 1.Explain the mechanism of action of peptide and steroid hormones

2.Discuss osteoporosis, angina,pacemaker,ECG,renal calculi

29 Write the significance and differences of mitosis and meiosis.

30.Discuss in detail mechanism of muscle contraction.

31.Label the given diagram



May test.
Class. +1.
Subject. Bio

Time- 40 min
MM -40

Part- A

1. 70 percent of Carbon dioxide is transported in dissolved form as
 - a. Carbaminoheamoglobin
 - b. Oxyhemoglobin
 - c. Bicarbonate
 - d. Carbon dioxide

2. Reproductive units of flowering plant are
 - a. androecium, gynoecium
 - b. Calyx, Corolla
 - c. pistil, perianth
 - d. Gynoecium, carpel

3. select the right order of taxonomical categories
 - a. Species—→order—→.phylum—→kingdom
 - b. Species—→genus—→order—→phylum
 - c. genus—→ species—→order—→kingdom

4. Calvin cycle is also known as
 - a. TCA cycle
 - b. Dark reaction
 - c. Krebs cycle

5. Which one of the following is written correctly
 - a. Mangifera Indica
 - b. Mangifera, Indica
 - c. mangifera Indica

d. Mangifera indica

6. Brachial respiration is found in

- a. Fishes
- b. Adult frogs
- c. Parrots
- d. Whales

7. Example of Drupe are

- a. Banana
- b. Strawberry
- c. Mango
- d. Coconut

8. Function of Alveoli is

- a. Production of sound
- b. Exchange of gases
- c. Reduce friction
- d. Prevent trachea of collapsing

9. TCA cycle occurs in

- a. Mitochondria
- b. Cytoplasm
- c. Plastid
- d. Nucleous

10. Plumule of embryo give rise to

- a. Roots
- b. stomata
- c. Shoots
- d. root hairs

11. Write down the scientific name of wheat plant.
12. Name the byproduct formed after reduction in Calvin cycle.
13. Name the parts which transformed into fruit and seed after fertilisation in flowering plants
14. How do we represent Actinomorphic and Ebracteate in symbolic form.
15. What type of Curve is formed in oxygen transportation
16. In sponges, flatworms exchange of gases occurs by ———
17. . ——— is the Muscular layer which partitions the thoracic cavity and abdominal cavity
18. Haemoglobin carries ——— molecules of oxygen
19. Chemosensitive area of brain is sensitive for ———
20. Group of organisms which resemble each other and can interbreed with each other are called ———

Part-B

21. What is common and what is different in cats and dogs with respect to their taxonomic categories(2)
22. What do you understand by apocarpous and syncarpous ovaries (2)
23. Define the terms
Perianth, parthenocarpy, staminode
(3)
24. Identify the diseases
 - a. Caused due to damaged alveoli
 - b. Caused due to inflammation of bronchioles
 - c. Proliferation of fibrous tissue of lungs.
 (3)
25. Label a, b, c, d, e of following diagram (5)

26. Define aestivation. Discuss its various types along with the diagrams. (5)

General Instruction.

- i) There are 35 questions in all. The question paper has five sections: Section A, Section B, Section C, Section D and Section E. All the sections are compulsory
- ii) (Section A contains ten Qs of 1 mark each, Section B contains three questions of two marks each, Section C contains five questions of three marks each, section D contains three long questions of five marks each and Section E contains one case study based questions of marks each

SECTION A

1. The dimensions of kinetic energy is
i. $[M^2L^2T]$. ii. $[ML^2T]$ iii. $[ML^2T^{-2}]$ iv. $[ML^2T^1]$
2. In SI system the fundamental units are
(a) meter, kilogram, second, ampere, Kelvin, mole and candela
(b) meter, kilogram, second, coulomb, Kelvin, mole and candela
(c) meter, Newton, second, ampere, Kelvin, mole and candela
(d) meter, kilogram, second, ampere, Kelvin, mole and joule
3. Define critical velocity.
4. What is elastic limit?
5. A boy starts from a point A, travels to a point B at a distance of 3 km from A and returns to A. If he takes two hours to do so, his speed is
a) 3 km/h b) zero c) 2 km/h d) 1.5 km/h
6. If T is the angle between two vectors, then the resultant vector is maximum, when value of T is
(a) 0 b) 90° c) 180° d) Same in all cases.
7. How many minimum number of vectors in different planes can be added to give zero resultant?
a) 2 b) 3 c) 4 d) 5
8. Real gases show marked deviation from that of ideal gas behavior at
(a) High temperature and low pressure
(b) Low temperature and high pressure
(c) High temperature and high pressure
(d) Low temperature and low pressure
9. Moon has no atmosphere because
(a) It is far away from the surface of the earth
(b) Its surface temperature is 10°C
(c) The r.m.s. velocity of all the gas molecules is more than the escape velocity of the moon's surface
(d) The escape velocity of the moon's surface is more than the r.m.s. velocity of all molecules
10. A missile is launched with a velocity less than the escape velocity. The sum of its kinetic and potential energy is
a) Positive b) Negative c) Zero d) may be positive or negative

SECTION B

11. Differentiate between Boyle's and Charles's law.
12. State Triangle law of vector addition

13. Two trains each of the length 109 m and 91 m are moving in opposite directions with velocities 34 km h^{-1} and 38 km h^{-1} respectively. At what time the two trains will completely cross each other?

SECTION C

14. State Newton's law of gravitation and derive its formula.

15. What is Reynold's number? Derive its formula .

16. The ceiling of a long hall is 25 m high. What is the maximum horizontal distance that a ball is thrown with a speed of 40 m/s can go without hitting the ceiling of the hall?

17. Velocity is defined as the rate of change of displacement.

a) Distinguish between average velocity and instantaneous velocity.

b) When does the average velocity become equal to the instantaneous velocity?

c) A car travels from A to B at 60 km/hr and returns to A at 90 km/hr . What is its average velocity and average speed?

18. Draw stress-strain curve. What does it depict? Explain.

SECTION D

19. Derive an expression for orbital and escape velocity.

20.a) Derive the third equation of motion with integration technique.

b) Why uniform circular motion is known as accelerated motion?

21.a) Define modulus of elasticity and discuss its types.

b) What is Poisson ratio and discuss its formula.

22. State and prove Bernoulli's principle.

23.a) State homogeneity principle and prove it for $\frac{1}{2} mv^2 = mgh$

b) Calculate the formula for force if it depends upon radius, velocity and coefficient of viscosity.

SECTION E

We know that the earth attracts every object with a certain force and this force depends on the mass (m) of the object and the acceleration due to the gravity (g). The weight of an object is the force with which it is attracted towards the earth. Mathematically

$$W = m \times g$$

Where, W = weight of object

m = mass of object

g = acceleration due to the gravity. As the weight of an object is the force with which it is attracted towards the earth, the SI unit of weight is the same as that of force, that is, Newton (N). The weight is a force acting vertically downwards; it has both magnitude and direction. We have learnt that the value of g is constant at a given place. Therefore at a given place, the weight of an object is directly proportional to the mass, say m , of the object, that is, $W \propto m$. It is due to this reason that at a given place, we can use the weight of an object as a measure of its mass. Answer the following questions:-

(i) Unit of acceleration due to the gravity (g) is

a) m/s b) m/s^2 c) N d) None of these

(ii) Direction of weight of any object is

- a) Always towards centre of earth
- b) Always away from centre of earth
- c) Weight don't have direction
- d) None of these

(iii) Which of the following has same unit

- (a) Mass and weight. (b) Weight and force
- (c) v and a d) None of these

(iv) Whether weight is scalar quantity or vector quantity? Justify your answer.

Pressure worksheet

Definition and derivation based questions

Question 1 Define term thrust and give its SI unit.

Question 2 Describe three practical applications from daily life which make use of concept of pressure.

Question 3 What do you mean by specific gravity or relative density of a substance.

Question 4 State and prove Pascal's law of transmission of fluid pressure.

Question 5 With the help of detailed diagram explain how Pascal's law is applied in a hydraulic lift.

Question 6 Discuss the variation of fluid pressure with depth. Also explain how is Pascal's law affected in the presence of gravity.

Question 7 Describe mercury barometer for measuring atmospheric pressure.

Question 8 Deduce an expression for apparent weight of a body immersed in a fluid.

Question 9 State and explain the law of flotation. (give detailed answer)

Question 10 State the conditions for the equilibrium of floating bodies. Also discuss the stability of a floating body.

Numerical based problems

Question 1 A force of 40 N is applied on a nail, whose tip has an area of cross-section of 0.001 cm^2 . Find the pressure on the tip. (Answer: $-4 \times 10^8 \text{ Nm}^{-2}$)

Question 2 Torricelli's barometer used mercury. Pascal duplicated it using French wine of density 984 Kg m^{-3} . Determine the height of the wine column for normal atmospheric pressure. (Answer: -10.5 m)

Question 3 A hydraulic automobile lift is designed to lift cars with a maximum mass 3000 Kg. The area of cross-section of the piston carrying the load is 425 cm^2 . What maximum pressure would the smaller piston have to bear? (Answer: $-6.29 \times 10^5 \text{ Nm}^{-2}$)

Question 4 A sample of milk diluted with water has density of 1032 Kg m^{-3} . If pure milk has density 1080 Kg m^{-3} , find the percentage of water by volume in milk. (Answer: -60%)

Question 5 A piece of ice floats in liquid in a beaker. What happens to the level of liquid in beaker, when ice melts completely?

Question 6 The density of ice is 917 Kg m^{-3} . What fraction of the volume of a piece of ice will be above water, when floating in fresh water? Density of water is 1000 Kg m^{-3} . (Answer: -0.083)

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Question 7 The neck and bottom of a bottle are 2 cm and 10 cm in diameter respectively. If the cork is pressed with a force of 1.2 Kgf in the neck of the bottle, calculate the force exerted the bottom of the bottle.

(Answer:- 30 Kgf)

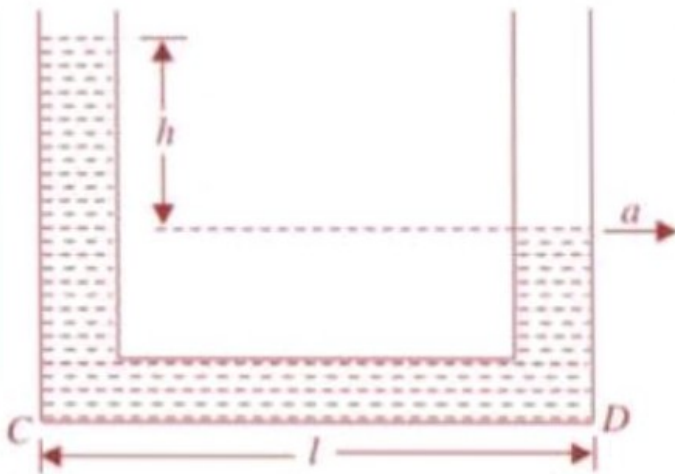
Question 8 A piece of metal of mass 17 g is tied to a cork of mass 5 g and the two remain suspended under water without sinking, when lowered into water. If the density of cork is 0.25 g-cm^{-3} , find the density of metal.

(Answer:- 8.5 g-cm^{-3})

Question 9 A body floats with $\frac{2}{5}$ of its volume above the surface of water. Calculate the density of material of the body. (Answer:- 600 Kg-m^{-3})

Question 10 A liquid stands at the same level in the U-tube when at rest. If A is the area of cross-section of the tube and g is the acceleration due to gravity, what will be the difference in height of the liquid in the two limbs when the system is given acceleration 'a' towards the right as shown in

Figure. (Answer:- $h = \frac{al}{g}$)



SRI GURU HARKRISHAN PUBLIC SCHOOL, LDH

DECEMBER EXAMINATION, 2022

SUBJECT- ENGLISH

CLASS- XI

M.M-50

SECTION-A (READING)

Q1. Read the following passage carefully:-

8M

1. Khadi is an Indian fabric. Khadi is also known by another name khaddar. It is made by spinning the threads on an instrument known as Charkha. During pre-independence era the movement of khadi manufacturing gained momentum under the guidance of father of the nation, Mahatma Gandhi. This movement of Khadi manufacturing and wearing started as to discourage the Indians from wearing of foreign clothes.

2. Khadi before independence was considered as the fabric for the political leaders and the rural people. But now it has found its way into the wardrobe of fashion conscious people. The correct situation is that the demand is more than the supply. Earlier the type of khadi available was khadi cotton which had very coarse texture and feel. However many varieties of khadi like khadi silk, khadi wool and khadi cotton are available now, which makes it a fashionable fabric and likeable by the masses.

3. Its concept was developed by Mahatma Gandhi. It was the symbol for political agendas during the fight for independence in India against the British rule. It was primarily a means to provide employment to the unemployed rural population of India at that time. The Indian flag has to be also made from khadi material. Thus, it holds national importance, we could even call it the national fabric of India.

4. Khadi is a versatile fabric. It has the unique property of keeping the wearer warm in winter as well as cool in summer season. This fabric has coarse texture and gets crumpled, therefore in order to keep it firm and stiff, starch is to be added. This fabric on washing is more enhanced thus the more you wash it, better the look. Khadi is not easily worn out for years together, at least for 4-5 years. Very attractive and designer apparel is made by doing handwork on garments made from it. Khadi spinning is generally done by girls and women and weaving mostly by men. During spinning of khadi, the threads are interwoven in such a manner that it provides passage of air circulation in the fabric. Apart from this unique property, it also provides warmth in winter season which is quite surprising factor. Khadi cotton is required to be starched so that it does not get easily crumpled. It comes in many colours and is not harmful to the skin as synthetic fabrics. This cotton is very soothing in summer season as ample amount of air ventilation is there. It has the capacity to absorb moisture therefore it easily soaks the sweat and keeps the wearer cool and dry. Khadi cotton comes in plain as well as in printed fabrics. The most common outfit made from khadi cotton is the Kurta. Many types of apparel are manufactured from khadi cotton like saris, salwar suits, fabric yarns, western tops, shirts, trousers, skirts, handkerchief etc., it is a very durable fabric.

On the basis of understanding of the above passage, make notes on it using heading and subheadings. Use recognizable abbreviations (minimum four). Also apply suitable article to it. Write summary of the passage in about 100 words.

SECTION-B (WRITING AND GRAMMAR)

Q2. You are Vikram/Sonia, an electronic engineer who has recently returned from the U.S. and looking for a suitable job in the IT Industry. Draft an advertisement in about 50 words for the situation wanted column of a national newspaper. **4M**

Q3. Write an article in about 120 to 150 words, 'Problem of Increasing Population in India.' You may use the clues given below along with your own ideas. You are Rajni/Rajiv. **4M**

HINTS:- Largest population—over populated—rapidly increased—basic facilities **4M**

Q4. Rearrange the following to form meaningful sentences:- ANY 3 **3M**

- i. without/time/any stop/on/flows
- ii. things/this/is why/changing/always/are
- iii. a specialist/nervous/Doctor Weil/ troubles/ was/in
- iv. understood/easily/he/problem/Albert's

Q5. The following passage has not been edited. There is one error in each line. Write the incorrect word and the correction in your answer sheet as given below against the correct blank number. ANY 3 **3M**

	Incorrect	Correct
While at work into the coal-mine, I	a.
happened to overheard two miners	b.
talking about the great school for coloured	c.
people. This was the first time if I had ever	d.
heard of such a school.		

Q6. Fill in the blanks with an appropriate option given below. :- **2M**

An automobile designer works (a) the vehicle manufacturing industry. Engineers hired (b).reputed auto companies go through (c)year's training in which they are (d)everything about designing a vehicle.

- a. (i) for ii. of iii. between iv. since
- b. (i) from ii. on iii. of iv. by
- c. (i) a ii. an iii. the iv. this
- d. (i) teach ii. teaches iii. teaching iv. taught

SECTION-C (LITERATURE)

Q7. Read the following extract carefully and answer the questions that follow:- ANY 1 **3M**

(i) Father and son, we both must live
 On the same globe and the same land
 He speaks : I cannot understand
 Myself, why anger grows from grief.
 We each put out an empty hand,
 Longing for something to give

Choose the correct option to answer each question:

(i) Where have the father and the son live?

- (a) On the same globe (b) On the same land
- (c) Both (a) and (b) (d) Neither (a) nor (b)

(ii) What is it that father can't understand?

- (a) He can't understand why there is grief
- (b) He can't understand there is anger
- (c) He can't understand why grief grows from anger
- (d) He can't understand why anger grows from grief

(iii) What do words 'an empty hand' signify?

- (a) they signify that the father does not like his son
- (b) they signify that the son does not like his father
- (c) they signify that both the father and the son have gained nothing from the present state of estrangement
- (d) they signify that both the father and the son are empty-handed and have no money with them.

OR

(ii) When did my childhood go?

Was it the time I realized that adults were not
All they seemed to be,
They talked of love and preached of love
Was that the day!

Choose the correct option to answer each question:

i. What does the poet lament about?

- a. the loss of his youth
- b. the loss of his childhood
- c. the loss of his beloved
- d. the loveless life of adults

ii. What has the poet realized about adults?

- a. that they are greedy
- b. that they are selfish
- c. that they are hypocritical
- d. that they are logical

iii. Name the poet who wrote these lines.

- a. Elizabeth Jennings
- b. Walt Whitman
- c. Markus Natten
- d. Ted Hughes

Q8. Read the following extract carefully and answer the questions that follow:- ANY 1 3M

"Where's the child?"

The midwife made a frightened gesture. She had placed it beneath the bed.

In a flash Andrew knelt down. Fishing amongst the sodden newspapers below the bed, he pulled out the child. A boy, perfectly formed. The limp, warm body was white and soft as tallow. The cord, hastily slashed, lay like a broken stem. The skin was of a lovely texture, smooth and tender. The head lolled on the thin neck. The limbs seemed boneless.

Choose the correct option to answer each question:-

1. Where did the midwife place the child?

- a. beside the mother
- b. among the dirty newspapers
- c. on the table
- d. in a cradle

2. Why did the midwife place the new born child under the bed?

- a. she thought it was still born
- b. she thought the lifeless child was beyond any remedy
- c. both (a) and (b)
- d. neither (a) nor (b)

3. How did the child look when it was born?

- a. the body was limp and white
- b. the skin was smooth and tender
- c. the limbs seemed boneless
- d. All of these three

OR

ii. His five volumes duly arrived on his table. He started from the beginning. Volume one took the history up to the period of Ashoka, volume two up to Samudragupta, volume three up to Mohammad Ghor and volume four up to the death of Aurangzeb. Up to this period history was as he knew it. The change evidently had occurred in the last volume.

Choose the correct option to answer each question:-

1. What five volumes arrived on the table?

- a. Narlikar's five volumes of history
b. Vinay Gaitonde's five volumes of history
c. Rajendra Deshpande's five volumes of history
d. Gangadharpant's five volumes of history

2. What did the volume two deal with?

- a. History up to the death of Aurangzeb
b. History from Mohammad Ghori to the death of Aurangzeb
c. History from Samudragupta to Mohammad Ghori
d. History from Ashoka to Samudragupta

3. What did he conclude about the last volume?

- a. That it told history as he knew it
b. That it didn't tell anything about history
c. That history had taken a change in this volume
d. That history had been repeated in this volume

Q9. Answer the following questions briefly:- ANY 5

5X2=10

- i. "You have passed through a fantastic experience: or more correctly a catastrophic experience." Explain briefly. (The Adventure)
ii. In what state of mind did the doctor enter Morgan's house? (The Birth)
iii. Who discovered Tut's tomb and what discoveries did he make? (Discovering Tut...)
iv. Why is Mrs Pearson initially reluctant to pursue a tough approach towards her family members on the advice of Mrs. Fitzgerald? (Mother's Day)
v. Why does the father wonder he has "killed the seed"? (Father to Son)
vi. What loss does the poet Markus Natten regret? What does he speculate? (The Childhood)

Q10. Answer the questions in detail.

- i. a. Explain the statement: "You need some interaction to cause a transition." (The Adventure)

5M

OR

- b. "King Tut's demise was a big event, even by royal standards." What does the author mean by this statement? (Discovering Tut...)

- ii. "I have done something; oh God! I've done something real at last." Why does Dr. Andrew say so? What does he mean? (The Birth)

5M

OR

What values governed Mrs. Pearson's character when her personality is swapped with that of Mrs. Fitzgerald and to what effect? (Mother's Day)

Question 1:

You are the Secretary of the English Literary Association of Tagore Memorial School, Patna. Write out a notice for notice-board, inviting names of those who would like to participate in the proposed inter-house debate, oratorio! and elocution contest.

Question 2:

Hotel Lake View, Udaipur, needs young & smart lady receptionists. Write an advertisement to be published in the 'Situation Vacant' column of a local newspaper.

Question: Read the following passage carefully and answer the questions that follow:

1. How does television affect our lives? It can be very helpful to people who carefully choose the shows that they watch. Television can increase our knowledge of the outside world; there are high quality programmes that help us understand many fields of study, science, medicine, the arts and so on. Moreover, television benefits very old people who can't often leave the house, as well as patients in hospital. It also offers non-native speakers the advantage of daily informal language practice. They can increase their vocabulary and practice listening.

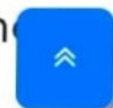
2. On the other hand, there are several serious disadvantages to television. Of course, it provides us with a pleasant way to relax and spend our free time, but in some countries, people watch the 'boob-tube' for an average of six hours or more a day. Many children stare at a television screen for more hours each day than they do anything else, including studying and sleeping. It's clear that the tube has a powerful influence on their lives and that its influence is often negative.



3. Recent studies show that after only thirty seconds of watching television, a person's brain 'relaxes' the same way that it does just before the person falls asleep. Another effect of television on the human brain is that it seems to cause poor concentration. Children who view a lot of television can often concentrate on a subject for only fifteen to twenty minutes. They can pay attention only for the amount of time between commercials.

4. Another disadvantage is that television often causes people to become dissatisfied with their own lives. Real life does not seem as exciting to these people as the lives of actors on the screen. To many people television becomes more real than reality and their own lives ... boring. Also many people get upset or depressed when they can't solve problems in real life as quickly as television actors seem to.

5. Before a child is fourteen years old, he or she views eleven thousand murders on the tube. He or she begins to believe that there is nothing strange about fights, killings and other kinds of violence. Many studies show that people become more violent after certain. Programmes they may even do the things that they saw in a violent show.



things that they saw in a violent show.

Ques **Make notes on the above passage using proper abbreviations (04) and suggest a suitable title.**

Ans. (a) Title : **The Impact of Television**

Question 4.

Write an article titled "Joint Family – A Boon to the Growing Child", to be published in your school magazine in 150–200 words. You are Shashi/Shashibala.

Question 6.

What was weighing on Andrew's mind as he waited with the patient?

Question 7.

What does the father wish for?

Question 8.

What is the poet trying to convey when he says that childhood is hidden in an infant's face?

Question 9.

What was the effect of the victory of the Peshwas on the East India Company?

Question 10.

What do Doris and Cyril feel about Mrs Pearson's changed behaviour?

Answer:

Doris and Cyril discuss that there is something wrong with their mother as she is not behaving in character. They discuss how Mrs Pearson behaved oddly with each of them. They try to fathom if she had gone crazy or had a concussion.