

ST PBN PUBLIC SCHOOL
ANNUAL EXAMINATION
CLASS XI
SAMPLE PAPER
CHEMISTRY (043)

MM:70

Time: 3 hours

General Instructions:

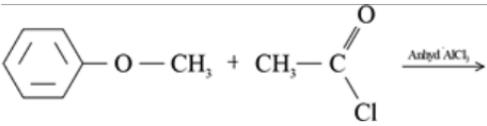
Read the following instructions carefully.

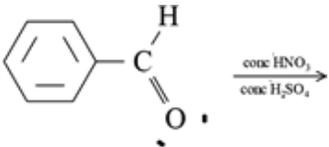
- a) There are 35 questions in this question paper with internal choice.
- b) SECTION A consists of 18 multiple-choice questions carrying 1 mark each.
- c) SECTION B consists of 7 very short answer questions carrying 2 marks each.
- d) SECTION C consists of 5 short answer questions carrying 3 marks each.
- e) SECTION D consists of 2 case- based questions carrying 4 marks each.
- f) SECTION E consists of 3 long answer questions carrying 5 marks each.
- g) All questions are compulsory.
- h) Use of log tables and calculators is not allowed.

Q.No	<u>Section A</u>
1	<p>45.4 L of Dinitrogen at STP reacted with 22.7L of Dioxygen, and 45.4L of Nitrous oxide was formed. The reaction is given below: $2\text{N}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2\text{N}_2\text{O}(\text{g})$</p> <p>Recognize the law being obeyed in this experiment.</p> <p>(a) Law of Multiple proportion (b) Avogadro's Law (c) Law of Conservation of mass (d) Gay Lussac's Law of Gaseous volumes.</p>
2	<p>A metallic ion M^{2+} has an electronic configuration of $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1 3d^5$ and the ionic weight is 56 amu. The number of neutrons in its nucleus is (a) 30 (b) 32 (c) 34 (d) 42</p>
3	<p>Which of the following information can be obtained on the basis of Le Chatelier's principle?</p> <p>a) Shift in equilibrium position on changing value of a variable b) Equilibrium constant of a chemical reaction c) Entropy change in a reaction d) Dissociation constant of a weak acid</p>

4	<p>The first element of a group in many ways differs from the other heavier members of the group. This is due to:</p> <p>a) all of the these b) the small size c) the high electronegativity and high ionisation potential d) the unavailability of d-orbitals</p>
5	<p>In which of the following molecules, carbon will behave as a nucleophilic centre:</p> <p>a. HCOCl b. CH_3NCS c. CH_3MgBr d. CH_3SCH_3</p>
6	<p>Select the species with least bond order :</p> <p>a. C_2 b. O_2 c. N_2^+ d. O_2^{2-}</p>
7	<p>Atomic number of the element with the symbol Uuu is :</p> <p>a. 100 b. 111 c. 110 d. 101</p>
8	<p>Compare the given compounds, and select the one in which nitrogen can be estimated by Kjeldahl's method.</p> <p>a. Azo compounds b. Nitrobenzene c. Pyridine d. Benzylamine</p>
9	<p>Choose the correct statement related to formation of Nitronium ion as an electrophile :</p> <p>a. Sulphuric acid acts as an acid and Nitric acid acts as a base. b. Sulphuric acid acts as a base and Nitric acid acts as an acid. c. Sulphuric acid and Nitric acid both act as acids. d. HSO_4^- acts as conjugate acid and H_2NO_3^+ acts as a conjugate base.</p>

10	<p>Which of the following is an example of a redox reaction?</p> <p>(a) $\text{XeF}_6 + \text{H}_2\text{O} \rightarrow \text{XeOF}_4 + 2\text{HF}$</p> <p>(b) $\text{XeF}_6 + 2\text{H}_2\text{O} \rightarrow \text{XeO}_2\text{F}_2 + 4\text{HF}$</p> <p>(c) $\text{XeF}_4 + \text{O}_2\text{F}_2 \rightarrow \text{XeF}_6 + \text{O}_2$</p> <p>(d) $\text{XeF}_2 + \text{PF}_5 \rightarrow [\text{XeF}]^+\text{PF}_6^-$</p>
11	<p>Identify the correct expression for internal energy change for an adiabatic process.</p> <p>a. $\Delta U = 0$</p> <p>b. $\Delta U = -q$</p> <p>c. $\Delta U = W$</p> <p>d. $\Delta U = +q$</p>
12	<p>The conformation of Ethane, with maximum torsional angle is-</p> <p>a. Staggered</p> <p>b. Eclipsed</p> <p>c. Skew</p> <p>d. Gauch</p>
13	<p>The correct inference with respect to Lassaigne's test is-</p> <p>a. The formation of Prussian blue colour indicates the presence of N</p> <p>b. The formation of yellow colour indicates the presence of S</p> <p>c. The formation of Red colour indicates the presence of N and P</p> <p>d. The formation of Violet colour indicates the presence of N</p>
14	<p>The mean C-H bond enthalpy in methane is 416 kJ/mol. The enthalpy of atomization for methane molecule would be-</p> <p>a. -1664 kJ/mol</p> <p>b. +104 kJ/mol</p> <p>c. + 1664 kJ/mol</p> <p>d. -104 kJ/mol</p>
15	<p>Given below are two statements labeled as Assertion (A) and Reason (R)</p> <p>Assertion (A): For the following reaction, $2\text{SO}_2(\text{g}) + \text{O}_2(\text{g}) \rightleftharpoons 2\text{SO}_3(\text{g}); \Delta H = 193.2 \text{ kJ}$, increase in temperature favours the decomposition of SO_3.</p> <p>Reason (R): Increase in temperature favours endothermic reactions.</p> <p>Select the most appropriate answer from the options given below:</p> <p>a. Both A and R are true and R is the correct explanation of A</p> <p>b. Both A and R are true but R is not the correct explanation of A.</p> <p>c. A is true but R is false.</p>

	d. A is false but R is true.
16	<p>Given below are two statements labeled as Assertion (A) and Reason (R)</p> <p>Assertion (A) : The H-N-H bond angle in NH₃ is smaller than H-O-H bond angle in H₂O</p> <p>Reason (R) : Nitrogen has one lone pair and oxygen has two lone pairs.</p> <p>a. Both A and R are true and R is the correct explanation of A .</p> <p>b. Both A and R are true but R is not the correct explanation of A.</p> <p>c. A is true but R is false.</p> <p>d. A is false but R is true.</p>
17	<p>Given below are two statements labeled as Assertion (A) and Reason</p> <p>Assertion (A): VIBGYOR signifies the seven colour of visible light.</p> <p>Reason (R): Red colour corresponds to higher frequency and blue colour to lower frequency region.</p> <p>a) Both A and R are true and R is the correct explanation of A.</p> <p>b) Both A and R are true but R is not the correct explanation of A.</p> <p>c) A is true but R is false.</p> <p>d) A is false but R is true.</p>
18	<p>Given below are two statements labeled as Assertion (A) and Reason</p> <p>Assertion (A) : The number of radial nodes in 3s and 4p orbitals is not equal.</p> <p>Reason (R) :The number of radial nodes in any orbital depends upon the values of 'n' & 'l' which are different for 3s and 4p orbitals.</p> <p>a. Both A and R are true and R is the correct explanation of A .</p> <p>b. Both A and R are true but R is not the correct explanation of A.</p> <p>c. A is true but R is false.</p> <p>d. A is false but R is true</p>
<u>Section B</u>	
19	Calculate the molarity of the solution obtained by dissolving 120g of urea [Mol wt.=60] in 880g of water. The density of the solution is 1.15g/mL.
20	Write the electronic configuration of element with atomic no. 25 and assign the position to the given element in the periodic table.
21	<p>Complete the following reactions :</p> <p>a.</p> 

	<p>b.</p> 
22	<p>(a) Determine the number of sub-shells associated with $n=5$. (b) How many electrons will be present in the subshells having m_s value of $+\frac{1}{2}$ for $n=5$?</p> <p style="text-align: center;">OR</p> <p>Explain the difference between Absorption and Emission spectrum.</p>
23	<p>Balance the following redox reaction: $MnO_4^{2-} \rightarrow MnO_4^- + MnO_2$ (Acidic medium)</p> <p style="text-align: center;">OR</p> <p>Balance the following redox reaction: $MnO_4^- + I^- \rightarrow I_2 + MnO_2$ (Basic medium)</p>
24	<p>An alkene C_6H_{10} on ozonolysis gives the following products : Propanone, ethandial and methanal. Formulate the alkene and Write its IUPAC name .</p>
25	<p>(a) Give the expression for de Broglie relation. (b) Comment on the significance of de Broglie relation for macroscopic particles.</p>
	<u>Section C</u>
26	<p>Calculate the enthalpy of combustion of ethylene given that the enthalpy of hydrogenation of ethylene , combustion of hydrogen and ethane are -135.6 kJ/mol , -286.2 kJ/mol and -1560.6 kJ/mol respectively at 298 K.</p>
27	<p>Explain the following :</p> <ol style="list-style-type: none"> Mg has larger first ionization enthalpy than Al. Zn is not considered as a transition element. Second electron gain enthalpy of oxygen is positive. <p style="text-align: center;">OR</p> <p>Arrange the following according to the property mentioned in bracket:</p> <ol style="list-style-type: none"> N , O , F (increasing order of electron gain enthalpy) N^{3-} , O^{2-} , F^- (increasing order of effective nuclear charge) Group 17 elements (increasing order of reactivity)

28	An aliphatic compound 'X' undergoes cyclic polymerisation to form aromatic compound 'Y' and 'X' also gives ethanal on warming with mercuric sulphate and dilute sulphuric acid at 333K . 'Y' reacts with Cl ₂ in the presence of UV light to form gamma-xylene. Write all the chemical equations involved.
29	An electron is emitted from a metal surface with a velocity of $5.84 \times 10^5 \text{ ms}^{-1}$, when a photon of wavelength $4 \times 10^{-7} \text{ m}$ strikes on it. Calculate a. Energy of photon in eV. b. K.E of emitted electron. c. Work function in eV. [$h=6.626 \times 10^{-34} \text{ Js}$; $c=3 \times 10^8 \text{ m/s}$; $1 \text{ eV}=1.602 \times 10^{-19} \text{ J}$]
30	<p>Consider the following reactions and answer the questions given below:</p> $\begin{array}{ccc} \text{CH}_3-\text{CH}-\text{CH}_3 & \xrightarrow[\text{ZnCl}_2]{\text{HCl}} & \text{CH}_3-\text{CH}-\text{CH}_3 \\ & & \\ \text{OH} & & \text{Cl} \\ \\ \text{CH}_3 & & \text{CH}_3 \\ & & \\ \text{CH}_3-\text{C}-\text{OH} & \xrightarrow{\text{conc HCl}} & \text{CH}_3-\text{C}-\text{Cl} \\ & & \\ \text{CH}_3 & & \text{CH}_3 \end{array}$ <p>a) Mention the type of fission taking place in the substrate molecules. b) Write the intermediate formed in both the cases. c) Identify the more stable intermediate giving reason.</p>
<u>Section D</u>	
31	<p>In order to explain the characteristic geometrical shapes of polyatomic molecules, Pauling introduced the concept of hybridisation. The orbitals undergoing hybridisation should have nearly the same energy. There are various type of hybridisations involving s, p and d-type of orbitals. The type of hybridisation gives the characteristic shape of the molecule or ion.</p> <p>I) Why all the orbitals in a set of hybridised orbitals have the same shape and energy? II) Out of XeF₂ and SF₂ which molecule has the same shape as NO²⁺ ion?</p>

	<p>III) Out of XeF_4 and XeF_2 which molecule doesn't have the same type of hybridisation as P(Phosphorus) has in PF_5?</p> <p style="text-align: center;">OR</p> <p>Unsaturated compounds undergo additional reactions. Why?</p>
32	<p>Read the passage carefully and answer the questions that follow :</p> <p>The process of rusting involves solid metal iron reacting with gaseous oxygen in presence of moisture to form solid hydrated ferric oxide. Going by the phase change, it is obvious that randomness (entropy) is decreasing as gaseous oxygen is consumed and solid oxide is being formed. This doesn't seem to support spontaneity. However the process of rusting is a self – supporting reaction as the surplus energy generated in the reaction ($-1648 \text{ kJ mol}^{-1}$) becomes dispersed to the surroundings as 'heat' and raises the entropy of the surrounding. On calculation ,overall entropy (system + surroundings) ΔS total is found to be ($4.98 \text{ kJmol}^{-1}\text{K}^{-1}$). Huge gain in entropy by surrounding makes the rusting reaction spontaneous.</p> <p>$\Delta G = \Delta H - T \Delta S = [-1648 - 298 \times 4.98]$, $\Delta G =$ Gibbs free energy</p> <p>$\Delta G = - 2840 \text{ kJ/mole}$, negative ΔG makes the reaction spontaneous. This is in accordance with the Second Law of Thermodynamics which tells us that on the transformation of energy from one form to another form ,entropy always increases and free energy always decreases.</p> <p>a. Is rusting of iron feasible at all temperatures ? Explain.</p> <p>b. State second law of thermodynamics .</p> <p style="text-align: center;">OR</p> <p>Define Entropy.</p> <p>c. Why is free energy a better way of predicting feasibility of a reaction as compared to entropy?</p>
	<u>Section E</u>
33	<p>a. Discuss the shape of AsF_5 using VSEPR theory.</p> <p>b. Draw the Lewis dot structure of NO_2.</p> <p>c. Explain the hybridization of AlCl_4^-</p> <p>d. Give an example of polyatomic species having zero dipole moment .</p>

	e. What type of hydrogen bond is present in 2-Hydroxybenzoic acid .
34	<p>Equilibrium constant K_c for the reaction, $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$ at 500 K is 0.061.</p> <p>At a particular time, the analysis shows that the composition of the reaction mixture is: 3.0 mol L^{-1} of N_2, 2.0 mol L^{-1} of H_2 and 0.50 mol L^{-1} of NH_3. Is the reaction at equilibrium? If not, in which direction does the reaction tend to proceed to reach the equilibrium?</p> <p style="text-align: center;">OR</p> <p>a. The value of K_c for the reaction, $4A \rightleftharpoons 2B + 2C$, is 2×10^{-4}. At a given time, the composition of reaction mixture is $[A]=[B]=[C]=5 \times 10^{-5} \text{ M}$.</p> <p>Predict whether at this composition, the reaction will favour the formation of A. Justify your answer.</p> <p>b. Define common-ion effect.</p> <p>c. The K_{sp} of $BaSO_4$ is 1.0×10^{-10}. Predict whether the precipitation will take place or not, when 40 mL of $1.0 \times 10^{-5} \text{ M}$ $BaCl_2$ solution is mixed with 40 mL of $5.0 \times 10^{-6} \text{ M}$ Na_2SO_4 Solution.</p>

35

a Write the structure for two functional isomers having the molecular formula $C_4H_{10}O$.

b. Give structure and IUPAC name for isobutyl alcohol.

c. For the complete neutralization of ammonia gas obtained from 2.8 g of inorganic compound, required 20 millimoles of H_2SO_4 . Calculate the percentage of nitrogen in the sample.

[At. mass N=14u; S=32u; O=16u; H=1u]

OR

Answer the following:

Neutrons can be found in all atomic nuclei except in one case. Which is this atomic nucleus and what does it consist of?

ii) On the basis of the equation $pH = -\log [H^+]$, the pH of 10^{-8} mol dm^{-3} solution of HCl should be 8. However, it is observed to be less than 7.0. Explain the reason.

iii) Which colour will appear in the Lassaigne's test if the compound contains both nitrogen and sulphur.

iv) Which of the two trans-but-2-ene or trans-pent-2-ene is non-polar?

v) Which orbital is non – directional?

St. PBN PUBLIC SCHOOL, GURUGRAM
ANNUAL EXAMINATION
CLASS XI
COMPUTER SCIENCE
(SUBJECT CODE-083)
SAMPLE PAPER

Time: 3Hours

M.M:70

GENERAL INSTRUCTIONS:

1. This question paper contains five sections, Section A to E.
2. All questions are compulsory.
3. Section A have 18 questions carrying 01 mark each.
4. Section B has 07 Very Short Answer type questions carrying 02 marks each.
5. Section C has 05 Short Answer type questions carrying 03 marks each.
6. Section D has 03 Long Answer type questions carrying 05 marks each.
7. Section E has 02 questions carrying 04 marks each. One internal choice is given in Q34 against part (iii) only.
8. All programming questions are to be answered using Python Language only.

SECTION- A

Choose the correct option and write in the answer sheet

(1 x 18 = 18)

1. How many bytes are in 1 Kilobyte?

- (i) 8 Bytes
- (ii) 128 Bytes
- (iii) 1024 Bytes
- (iv) 256 Bytes

2. Convert $(300)_{10}$ into Hexadecimal equivalent.

- (a) $(12C)_{16}$
- (b) $(4D)_{16}$
- (c) $(32A)_{16}$
- (d) $(16B)_{16}$

3. Which of the following statements assigns the value 25 to the variable x in Python:

- (a) $x \leftarrow 25$
- (b) $x = 25$
- (c) $x := 25$
- (d) $\text{int } x = 25$

4. The data or text enclosed with single quote, double quote or triple quote is known as _____.

- (a) String
- (b) List
- (c) Tuple
- (d) Dictionary

5. The interactive interpreter of python is termed as _____
- (a) Python Shell
 - (b) Python Script Mode
 - (c) Python Editor Mode
 - (d) Python Command Line
6. _____ are diagrams that show the step by step solution to a given problem.
- (a) Pie Chart
 - (b) Flow Chart
 - (c) Column Chart
 - (d) Bar Chart
7. Which of the following falls under utilities?
- a) Text editor
 - b) Backup
 - c) Disk defragmenter
 - d) All of these
8. Which abandons the current iteration of the loop?
- (a) continue
 - (b) break
 - (c) stop
 - (d) infinite
9. Identify the invalid identifiers from the given options.
- (a) 981a
 - (b) a
 - (c) a0
 - (d) _a0
10. Index of list starts from _____
- (a) 10
 - (b) 0
 - (c) 11
 - (d) 110
11. Which of the following operator is used to concatenate the strings
- (a) +
 - (b) *
 - (c) /

(d) -

12. Dictionary has a Unique _____

- a) value
- b) key
- c) both
- d) none of these

13. When a person is harassed repeatedly by being followed, called or written to, he/she is a target of:

- (a) Bullying
- (b) Identity theft
- (c) Stalking
- (d) Phishing

14. Which of the following is not a cybercrime?

- (a) Denial of Service
- (b) Man in the Middle
- (c) Malware
- (d) None of the above

15. Which of the following is an relational operator?

- a) =
- b) <=
- c) +=
- d) None of these

16. _____ software is made to perform a specific task

- a) System
- b) Application
- c) Utility
- d) None of these

Q17 and 18 are ASSERTION AND REASONING based questions. Mark the correct choice as

- a) Both A and R are true and R is the correct explanation for A
- b) Both A and R are true and R is not the correct explanation for A
- c) A is True but R is False
- d) A is false but R is True

17. Assertion (A):Higher precedence operator is evaluated before the lower precedence operator.

Reason (R):For operators with equal precedence, the expression is evaluated from right to left.

18. Assertion (A):Data types are used to identify the type of data.

Reason (R):Data types are two types as numbers and strings.

SECTION B

(2x 7 = 14)

19. (i) What will be the output of following code?

```
>>> print("14<=46:", 14<=46)
```

(ii) What will be the output of the following snippet?

```
list1=[8,0,9,5]
```

```
print(list1[::-1])
```

(1+1)

20. (i) Write the python statement to type cast the float value of r = 98.40 into an integer type.

(ii) Which statement is used in python to terminate the infinite loop?

(1+1)

21. (i) Convert (ABCD)₁₆ to ()₂

(ii) Draw a truth table of XOR Gate.

(1+1)

22. Write a program to calculate the sum of all the elements of a list

23. Write Python code to find the number of words in a string input by the user.

OR

Write a Python program to print Fibonacci series of n terms.

(2)

24. (i) Predict the output of the following code.

```
Keys = {1,2,3,4,5}
```

```
print(dict.fromkeys(keys))
```

(ii) What is packing of tuples?

(1+1)

25. What is the difference between Syntax error and Run-time error?

OR

Differentiate between for loop and while loop.

(2)

SECTION C

(3x 5 = 15)

26. Draw the truth table and logical circuit of the given Boolean expression: $F = P.Y + D.T + (A.B)$ (3)

27. Write a Program in python to check whether the given string is Palindrome or not

OR

Write a program that takes a string with multiple words and capitalizes the first letter of each word and forms a new string out of it. (3)

28. What do you mean by Flowchart? Explain with example. (3)

29. Explain the following terms:

(i) Application software

(ii) EEPROM

(iii) Bar code reader

(3)

30. Write an algorithm to check whether a number is prime number or not.

OR

Draw a flowchart to print the sum of first 10 natural numbers.

(3)

SECTION D

(5x 3 = 15)

31. Draw the logic circuit and truth table for the following Boolean expression:

i. $(P' + D) \cdot S + R'$

ii. $(A \cdot B) \cdot (B + C \cdot D')$

(2+3)

32. (i) Write a Python program to accept a list of all the subject of Class X and display the list of subjects.

(ii) Write a Python program to calculate area of circle and area of rectangle using concept of functions.

OR

(2+3)

(i) Explain any three ways which the websites use to track their visitors.

(ii) What are the effects of cyber bullying and trolling?

(3+2)

33. (i) Write a Python program to input line(s) of text from the user until enter is pressed. Count the total number of characters in the text (including white spaces), total number of alphabets, total number of digits, total number of special symbols and the total number of words in the given text. (Assume that each word is separated by one space).

(ii) Write a Python program to find the frequency of a number in a list.

OR

(i) Why is it important to recycle e-waste?

(ii) What are the techniques used in India for E-waste management?

(3+2)

SECTION E

(2 x 4 = 8)

34. ABC Technologies deals in hardware components required for assembling computer systems in the Nehru Place market. They provide reliable and efficient data storage devices to their customers.

Four storage devices in which they deal are described below. Name the storage device being described and also list the appropriate category of storage.

(i) Optical media which use one spiral track; red lasers are used to read and write data on the media surface; makes use of dual-layering technology to increase storage capacity.

(ii) Non-volatile memory chip: contents of the chip cannot be altered; it is often used to store the start-up routines in a computer.

(iii) Optical media which use blue laser technology to read and write data on the media surface.

OR (Option for part iii only)

(iii)Magnetic disc with very large storage capacity; can be used to store vast amounts of data; mostly fixed in computer cases and serves as the main storage device. (1+1+2)

35. (i) Write a python program to print the following pattern:

```
A
B B
C C C
D D D D
E E E E E
F F F F F F
G G G G G G G
```

(ii) Write a program to create a dictionary of phone numbers and person's name. Also write the code to search the phone number of a particular person name inputted by user. (2+2)

ST. PBN PUBLIC SCHOOL
SAMPLE PAPER
CLASS XI -ENGLISH CORE

TIME: 3 HRS.

MM 80

Name

Class & section

Date

SECTION A READING – 26 MARKS

Q1. Read the passage given below.

1. Global warming is the warming up of the Earth due to the trapping of gases like carbon dioxide, methane and nitrous oxide, when the atmosphere fails to perform its function of acting as a productive blanket. The incoming solar radiation is partly absorbed by carbon dioxide, though a vastly higher amount of the outgoing radiation is trapped in the atmosphere.

2. Carbon dioxide possesses immense staying properties in the atmosphere. It is being speculated that carbon dioxide concentrations may double in about a century. This increased carbon dioxide level according to predictions, indicates an increase in temperature ranging from 1.5 - 4 degrees Celsius for a rise in sea levels by about 50 cm by AD 2100.

3. However, Earth apparently has its own system of checks and balances. Water vapour in the atmosphere is known to absorb radiation more than any other atmospheric component. A doubling of carbon dioxide concentration would increase the capacity of the Earth's surface to absorb infra-red radiation by about 4 watts per square meter, though overall, the levels of absorption would be small.

4. Volcanic eruptions, too, are believed to be responsible for reduction in the carbon dioxide content in the atmosphere. A massive volcanic eruption in Philippines had in fact a cooling impact. Cooling through volcanic eruptions is believed to release certain gases, which are responsible for increase in the carbon dioxide content in the atmosphere. Measurement of the incident of carbon dioxide in the atmosphere made in Hawaii indicate that during 1992-93 about two billion tons of the gas was found missing from the atmosphere.

5. As far as the impact of ozone depletion is concerned, it seems to be dictated more by political considerations than any other factor. The increased burning of fossil fuels for energy is largely responsible for the increase in temperature through ozone depletion.

6. A tug-of-war has been going on among the industrialized countries and the developing countries on the share of the blame. In fact, the USA, the erstwhile USSR, Brazil and China account for almost half of the net global emissions of harmful gases such as CFCs. While North America generates about 5 tons per head of carbon dioxide, Africa, China and India together generate approximately 1 ton of carbon dioxide per head. Developing countries, on the other hand, are charged with emission of Methane largely generated from paddy fields and discharge of animals.

7. However, despite the fact that 1995 was one of the hottest years of the 20th century, heavy snow falls have been recorded in some parts of the world – notably on the Eastern coast of America and in Jammu and Kashmir. Moreover, during the latter half of the 20th century, the Arctic climate has not been undergoing any noticeable temperature changes. In fact, till 1975, global temperatures had been undergoing a downward trend. Could the recent spurt in temperatures be a natural cyclical process, or a temporary offshoot of the shifting pressure belts?

8. Given the rising temperatures, growing seasons would be prolonged. Higher temperatures would also lead to increased evaporation from oceans, thereby intensifying cloudiness, leading to moderate temperatures during the day and warmer nights. Warmer temperatures during the night enhance agricultural productivity. Increased carbon dioxide in the atmosphere will also result in an increase in fertility. Global warming will also have an impact on the El Nino phenomenon - the circulation of weather disturbances around the world as a result of the warming of Pacific Ocean around the tropics.

9. However, a few questions remain in the ongoing debate on global warming. The process of heat transfer in the atmosphere-convection – is a field in which a lot of research needs to be done. Secondly, clouds and vapour are known to be major absorbers of incoming radiation from space. If the cloud cover, as a result of increased evaporation due to rising temperature, were to increase, it would result in more containment. Plants, which both absorb and release carbon dioxide, too have a crucial role to play. Their role, however, has been till now underestimated.

On the basis of the understanding of the passage, answer **ANY TEN** of the questions given below with the help of the options that follow. (10)

- (i) It is being surmised that carbon dioxide concentrations may ____ in about a century
 - a) increase slightly
 - b) increase 100%
 - c) triple
 - d) remain the same
- (ii) Which atmospheric component is absorbed by water vapours in the atmosphere?
 - a) Radiation
 - b) Sunlight
 - c) Carbon dioxide
 - d) All of these
- (iii) The major reason for the increase in temperature through ozone depletion is ____
 - a) increased burning of fossil fuels
 - b) increased rainfall
 - c) generation of CFCs
 - d) None of these
- (iv) What is the impact of rising temperature on the growing seasons?
 - a) Their duration will decrease.
 - b) Their duration will increase.
 - c) Their duration will remain the same.
 - d) They will give more yield.
- (v) The cause of a tug-of-war between the industrialized and developing countries is the ____
 - a) problem of containment
 - b) emission of harmful gases
 - c) sharing of blame for ozone depletion
 - d) none of these
- (vi) The increase in the levels of methane in the atmosphere results from ____
 - a) CFCs
 - b) animal discharge
 - c) increased burning of fossil fuels
 - d) pressure changes
- (vii) The rules of which of the following regarding global warming is underestimated?
 - a) Volcanic eruptions

- b) Cyclical changes of pressure
 - c) Cloud cover
 - d) Flora and fauna
- (viii) The word _____ in para 6 means 'tussle'.
- a) Tug- of- war
 - b) Share
 - c) Account
 - d) Charged
- (ix) The word _____ in para 8 is an antonym of 'massive'.
- a) Prolonged
 - b) Intensifying
 - c) Enhance
 - d) Moderate
- (x) Which of the following sentence does not give the correct meaning of 'spurt' as used in the passage?
- a) There was a spurt in Corona cases after the lockdown was removed.
 - b) Share of Tata Steel spurted of rupees 2,200
 - c) There was a sudden spurt of activity in the market after curfew was withdrawn.
 - d) The water came out in spurts.
- (xi) Pick the option that correctly lists the things that affect global warming
- | | |
|--------------------|-----------------------|
| 1. Clouds | 2. Water vapour |
| 3. Plants | 4. Volcanic eruptions |
| 5. Heavy snowfalls | 6. El Nino phenomenon |
- a) 2,3 and 4
 - b) 1,5 and 6
 - c) 1,3 and 5
 - d) 2,4 and 6

Q2. Read the passage given below.

(8)

1. India's labour market is the second largest in the world, after China, with a working age population of about 520 million people. In 10 years, it is expected to be the world's largest as China's population aged 15 to 64 drops from 20.5 to 18.3 per cent.

2. While this positive demographic growth should be advantageous for business, only a small portion of India's working age population is actually engaged in the formal workforce. The primary reason being that barely one in four women are part of the country's workforce. Today, industry estimates show that women in India only make up five to six per cent of directorships at most listed companies; this after amendments to the Companies Act mandated at least one woman on company boards.

3. These figures underline the highly distorted nature of India's labour market where women hold 45 per cent of university degrees but are either denied employment opportunities or experience much slower career growth trajectories due to gender-based discrimination.

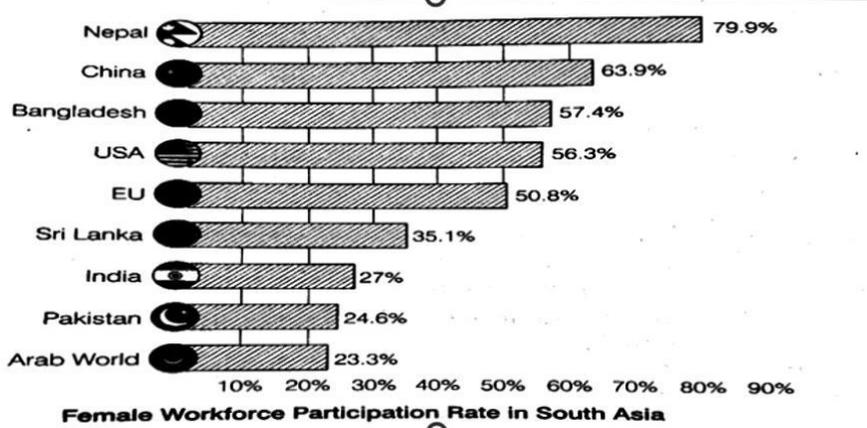
4. India has the lowest female labour force participation rate in its neighbourhood. At about 27 per cent, it falls well below Sri Lanka, Bangladesh, and Nepal. While female employment is higher in rural India, it is mostly as underpaid and temporary labour, though even here the rate of participation is declining.

5. The overall rate of female labour force participation declined as the Indian economy opened up, urbanized, and diversified with the growth of new industries, unlike most other regions in the world. In fact, rapid growth experienced by the US and China in the past century illustrate how improving the gender balance in the workforce

contributes to a nation's economic growth. Female labour force participation is 56 per cent in the US and 64 per cent in China.

6. The above correlation is also strengthened by a 2017 IMF study, which states that increasing the female labour force participation will grow India's GDP by an estimated 27 per cent contrast this with the projections made by the government's big idea reforms 'Make in India and Digital India', which aim to boost India's growth by 16 per cent and 5 per cent, respectively.

7. Yet, GDP goals aside, the gender imbalance in India's workforce stunts future prospects for inclusive growth in the country. It deprives women and girls from role models in the workplace, reduces their motivation to study further, and perpetuates unhealthy socio - cultural attitudes. Leaving out one half of the population from its workforce will also prolong India's status as a developing country.

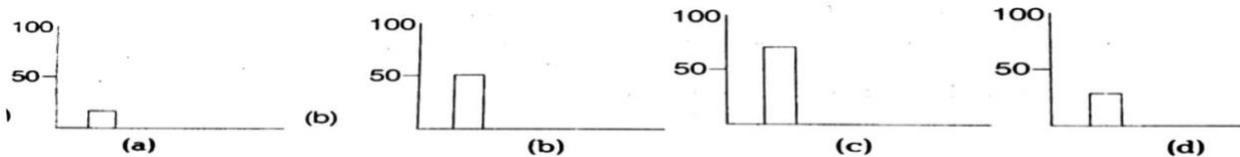


On the basis of the understanding of the passage, answer **ANY EIGHT** of the questions given below with the help of the options that follow.

(i) What does the given passage highlight?

- (a) The reasons for declining GDP
- (b) Need of more female workforce.
- (c) Gaps in women empowerment in the workforce.
- (d) Why India can remain a developing country for long?

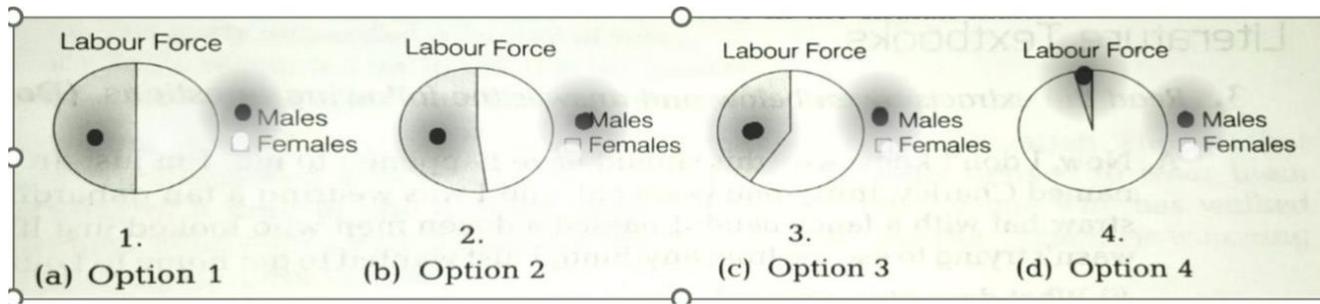
(ii) Which of the following figure depicts the correct percentage of female labour force participation in India?



(iii) According to the passage, what may be a negative factor that can impact the positive growth of the Indian labour force?

- (a) Lack of skilled labour.
- (b) Lack of female workforce.
- (c) Lack of the younger working population in the formal workforce.
- (d) Lack of equal opportunities for all.

(iv) Based on the graphical chart in the passage, choose the option that correctly states the depiction of male and female labour force in the Indian market.



(v) What is the reason for the highly distorted nature of female workforce of India's labour market?

- (a) Women are unskilled and uneducated.
- (b) Women are denied employment opportunities.
- (c) Women have slower career growth.
- (d) Both (b) and (c)

(vi) Based on the given graphical representation of data in the passage, choose the option that lists the statements that are TRUE with respect to the Indian Labour market.

- 1. The female labour force participation reduces India's GDP.
 - 2. The gender imbalance in Chinese workforce is the highest.
 - 3. The overall rate of female labour force declined in the Arabic economy urbanized.
 - 4. Nepal has the lowest female labour force participation rate in its neighbourhood.
- (a) 1 and 2
 - (b) 3 and 4
 - (c) 1 and 4
 - (d) 2 and 3

(vii) Why was there a decline in Indian female workforce?

- (a) Traditional belief related to females.
- (b) Urbanization and industrialization.
- (c) Rising rates of crimes against females.
- (d) Lack of the professional skills that came in demand.

(viii) Which countries show that economic growth is directly proportional to gender balance?

- (a) USA and China
- (b) Nepal and China
- (c) USA and Nepal
- (d) USA and EU

(ix) Which of the following statements is NOT substantiated by information in paragraph 4?

- (a) Rapid growth experienced by the US and China in the past century illustrate how improving the gender balance contributes to a nation's economic growth.
- (b) The female labour force participation declined in the Indian economy.
- (c) Female labour force participation is 56 per cent in the US and 64 per cent in China.
- (d) Leaving out one half of the population from its workforce will also prolong India's status as a developing country.

Q3. Read the following passage carefully:

- 1. Artificial intelligence (AI) has become commonplace. When it comes to medicine, AI helps surgeons to streamline tasks, improve operational efficiencies and simplify complex procedures.

2. Despite its potential to unlock new insights, AI may bring considerable threats of privacy, ethical concerns, and medical errors. The need is of a human-artificial intelligence interface, the knowledge handler and the empathetic communicator.
3. Although AI has come a long way in the medical world, human surveillance is still essential. For example, surgery robots operate logically, as opposed to empathetically. Surgeons may notice vital behavioural observations that can help diagnose or prevent medical complications. AI can identify potential ailments faster than human doctors, but when it comes to decision-making, AI cannot yet fully and safely surpass human physicians. AI cannot adapt to the variety of situations arising during a difficult surgery as it has a pre-fixed analytic, but a surgeon can not only adapt to the situation, but find new ways on the operating table to save a person's life.
4. Despite the fact that robots are in many ways seen as more accurate and reliable than human surgeons, people are inevitably worried about putting their lives in the hands of a machine. Fears surrounding the safety and accuracy of procedures are prevalent among members of the public, however it is highly likely that the widespread use of medical robotics is set to continue.
5. AI is a new tool and can perform more complicated tasks and detect minor errors which can be missed by humans, but there are costs and risks if it is utilized incorrectly. There is always some scope for human error or mechanical failure with these advanced robots. A single mechanical malfunction can cost human lives.

(Source- India Today- Empathy, Key to Quick Healing)

- i. On the basis of your reading of the above passage, make notes using headings and sub-headings. Use recognisable abbreviations wherever necessary. Suggest a suitable title for the passage. (5)
- ii. Write a summary of the above passage in not more than 50 words using the notes made by you. (3)

SECTION B GRAMMAR – 7 MARKS

Q4. Fill in the blanks with the correct form of verb.

- i. It ----- me five minutes to get to school .

a. have taken	b. has taken	c. is taking	d. takes
---------------	--------------	--------------	----------
- ii. This is the first time I ----- about him.

a. am listening	b. have listened.	c. listened	d. have been listened
-----------------	-------------------	-------------	-----------------------
- iii. Since when ----- he ----- coaching?

a. has , been taking	b. has , been taken	c. is , taken	d. is , been taken
----------------------	---------------------	---------------	--------------------
- iv. When I visit , they ----- for three hours .

a. has been studying	b. have been studying	c. will have been studying	d. are studying
----------------------	-----------------------	----------------------------	-----------------

Q5. Identify the correct type of clauses from the given options :

- i. I don't remember when he left . Here' when he left' is -----
-- clause.

a. Noun	b. Adverb	c. Adjective	d. Co-ordinate
---------	-----------	--------------	----------------
- ii. I know the place where he lives . Here' where he lives 'is ----- clause.

a. Noun	b. Adverb	c. Adjective	d. Independent
---------	-----------	--------------	----------------
- iii. I know the man whom I met yesterday . Here 'whom I met yesterday ' is -----
clause.

a. Adverb	b. Adjective	c. Noun	d. Co – ordinate
-----------	--------------	---------	------------------

CREATIVE WRITING SKILL - 16 MARKS

Q6. (i). You are shifting with family from Delhi to Mumbai due a change in your job and looking for an

accommodation on rent near Juhu Beach. Draft an ADVERTISEMENT in 50 words for the classified column 'Accommodation Wanted'. Invent necessary details. (3)

OR

A multinational company requires a suitable candidate for the post of Store Supervisor for their newly opened showroom at Gurugram. Draft a suitable ADVERTISEMENT in 50 words for the classified column 'Situation Vacant' giving details of the requirements.

Q7. You are Shalin/ Shalini working with an NGO 'Animal Protection'. Encouraged by the steps taken by the Indian government in bringing Cheetahs to India, your organization deputed you to draft a POSTER in 50 words to be published in newspapers celebrating the arrival of cheetahs which was declared as extinct from India in 1952. Also include a message sensitizing people against exploiting and destroying the beautiful grasslands, the natural habitat of cheetahs. (3)

OR

On the occasion of your school's Golden Jubilee Celebration, you are organizing a Musical Concert by a renowned artiste. Mr. Raj Kumar Rao, an eminent film personality has consented to grace the occasion as the Guest of Honour. Design a POSTER in 50 words for the same with necessary details.

Q8. Women play a crucial and integral role in the development and prosperity of the society. The government has provided a conducive atmosphere to make them self-reliant while ensuring their safety, self-respect and dignity. Write a SPEECH in 120-150 words to be delivered in the morning assembly taking hints from the table given below. (5)

Establishments setup in U.P. alone

- Mission Shakti Cells
- Women helpdesk in all 1584 police stations
- Additional women police stations/ women outposts
- Beti Bachao- Beti Padhao Yojana
- 2.61 cr. toilets constructed under Swachh Bharat Mission

OR

Mobile phones have influenced children in a big way. Write a SPEECH in 150-200 words on how they have affected the younger generation. You are Ekta/Eklavya, School Captain of Surya Public School, Patna.

Q9. You are Asim/ Asima of class XI participating in a debate competition. Write a DEBATE either for or against the motion: 'Indian festivals are all about gifts, food, shopping and enjoyment.' (Word limit 120- 150 words) (5)

OR

In sports, aggression is a characteristic that can have many negative as well as positive effects on performance. Taking clues from the inputs given below write a DEBATE on the topic- 'Aggression is a Vital Part of Sports'. You are Asim/Asima of class XI. (Word limit 120- 150 words) Notes:

Aggression mostly viewed as- negative psychological characteristic/sports psychologists opine- aggression improves performance-termed as assertive behaviour/player plays- within rules of the sporting domain- at high intensity/no intention to harm an opponent/aggression-defined into two categories: hostile aggression and instrumental aggression/ hostile aggression- aim-to cause harm or injury to opponent/Instrumental aggression aim-to achieve a goal by using aggression

SECTION C LITERATURE - 31 MARKS

Q10. Read the given extract carefully and answer the questions that follow:

(3)

“Now she’s been dead nearly as many years As that girl lived.

And of this circumstance There is nothing to say at all.

Its silence silences.”

a) Identify the phrase from the extract that conveys the following: It has been twelve years since the death of the poet’s mother.

b) The tone of the poet in the above extract is

- * pessimistic
- * optimistic
- * aggressive
- * sentimental

c) Which figure of speech has been used in the last line of the extract-

OR

“When did my childhood go?

Was it the time I realised that adults were not all they seemed to be,

They talked of love and preached of love, But did not act so lovingly, Was that the day!”

a) The trait of adults highlighted in the extract is- _____

b) Which lines justify the following idiom-

‘Actions speak louder than words.’

c) Choose the poetic device used in the first line of the extract.

- * Repetition
- * Transferred epithet
- * Personification
- * Refrain

Q11. Read the given extract carefully and answer the questions that follow:

(3)

When I went in to comfort the children, Jon asked, “Daddy, are we going to die?” I tried to assure him that we could make it. “But, Daddy,” he went on, “we aren’t afraid of dying if we can all be together — you and Mummy, Sue and I.”

I could find no words with which to respond, but I left the children’s cabin determined to fight the sea with everything I had. To protect the weakened starboard side, I decided to heave-to - with the undamaged port hull facing the oncoming waves, using an improvised sea anchor of heavy nylon rope and two 22 litre plastic barrels of paraffin.

a) An apt title of the above extract could be *Power of Words

- * Child is the Father of Man
- * Struggle for Survival
- * Struggle at Sea

b) Which group of words from the following options aptly describes the relationship between the father and the son-

- * Unquestionable, friendly, hesitant
- * Trusting, strong bonding, unconditional love
- * Doubtful, feeble bonding, conditional love

* Faithful, affable, unpleasant

c) Choose the word which means the same as 'improvised'.

* prepared

* planned

* rehearsed

* devised

OR

A FLAWLESS half-moon floated in a perfect blue sky on the morning we said our goodbyes. Extended banks of cloud like long French loaves glowed pink as the sun emerged to splash the distant mountain tops with a rose-tinted blush. Now that we were leaving Ravu, Lhamo said she wanted to give me a farewell present. One evening I'd told her through Daniel that I was heading towards Mount Kailash to complete the kora, and she'd said that I ought to get some warmer clothes. After ducking back into her tent, she emerged carrying one of the long-sleeved sheepskin coats that all the men wore.

a) Identify the figure of speech in "Extended banks of cloud like long French loaves". *

personification

* hyperbole

* metaphor

* simile

b) Lhamo's farewell present to Nick Middleton highlights her-

* simplicity

* friendliness

* concern

* greed

c) Choose the option that displays the correct usage of the word 'ducking' in the above extract.

* This ducking was the very thing he needed.

* He walked around to the driver's side, ducking his head as he folded his tall frame into the car.

* The slower class of meteors ducking the earth have a velocity of about 8 to 10m.

* The movement of traffic was made impossible due to the ducking of tracks.

Q12. Read the given extract carefully and answer the questions that follow:

(4)

I stopped, horrified. I was in a room I knew and did not know. I found myself in the midst of things I did want to see again but which oppressed me in the strange atmosphere. Or because of the tasteless way everything was arranged, because of the ugly furniture or the muggy smell that hung there, I don't know; but I scarcely dared to look around me. The girl moved a chair. I sat down and stared at the woollen table-cloth. I rubbed it. My fingers grew warm from rubbing. I followed the lines of the pattern. Somewhere on the edge there should be a burn mark that had never been repaired.

a) Which room is the narrator referring to in the given context?

* dining room

* living room

* lobby

* attic

b) Identify the literary device in the given statement- "I was in a room I knew and did not know." * Repetition

* Contrast

* Oxymoron

* Paradox

c) Ascertain the reason that doesn't correspond to the narrator feeling horrified- * oppressed by the strange atmosphere

- * plagued by the tasteless way everything was arranged
 - * upset by Mrs. Dorling's reluctance to acknowledge her
 - * dismayed by the ugly furniture or the muggy smell
- d) Select the option which means the same as 'hardly/barely'?
- *oppressed
 - * scarcely
 - * muggy
 - *midst

OR

It suddenly dawned on me that he had been taking these early morning rides for some time and had come for me this morning only because he knew how much I longed to ride.

Who said anything about stealing a horse? he said.

Anyhow, I said, how long ago did you begin riding every morning?

Not until this morning, he said.

Are you telling the truth? I said.

Of course not, he said, but if we are found out, that's what you're to say. I don't want both of us to be liars. All you know is that we started riding this morning.

a) Aram's conclusion about Mourad taking early morning rides was based on-

- *Mourad's love for the horse
- *Mourad not willing to be caught with the horse
- *Mourad skillfully riding the horse
- *Mourad inviting Aram for a ride

b) Highlight one trait of Mourad from his statement "I don't want both of us to be liars."

- *conspiring
- * scrupulous
- * honesty
- * manipulative

c) What made Mourad visit Aram with a horse?

- * because he had been taking early morning rides himself
- * because he wanted company
- * because he didn't want to be found out alone
- * because he knew Aram's longing to ride a horse

d) Statement-A: Mourad had become adept at riding the horse.

Statement-R: Mourad had stolen the horse that day only and had come to Aram to offer him a ride.

- * Both A and R are true and R is the correct explanation of A.
- * Both A and R are true but R is NOT the correct explanation of A.
- * Both A and R are false.
- * A is false but R is true.

Q13. Answer the following questions in about 40-50 words each:

(3x2=6)

a) A fairly universal issue of friction between a father and son is exclusively personal also. Do you agree or disagree with the statement? Explain with reference to 'Father to Son'.

OR

Draw a parallel between a goldfinch and a lizard as depicted by Ted Hughes.

b) Give evidence of the fact that Tut's burial took place in the month of March or April.

OR

'To her music had lewd associations'. Comment on the statement in the light of the story 'The Portrait of a Lady'.

Q14. Answer the following question in about 40-50 words: (3)

a) "Love for an animal or bird is pure because in that love you don't expect anything in return."
Substantiate with reference to 'The Summer of the Beautiful White Horse.'

OR

b) An unwarranted enthusiasm for rules and regulations may lead to chaos and anarchy. Explain in the wake of the theme of the poem 'The Tale of Melon City'.

Q15. Answer the following question in about 120-150 words: (6)

a) An adventure is an unusual, exciting and daring experience. Compare and contrast the element of adventure in the chapters 'The Adventure' and 'Silk Road'.

OR

b) Nature plays an important part in human life. To keep it alive, man needs to respect the necessity of rain on earth. Reinforce this idea as reflected in the poem 'The Voice of the Rain'.

Q16. Answer the following question in about 120-150 words: (6)

a) "I have done something; oh, God! I've done something real at last". Justify Andrew's comment with reference to the title of the story. (Birth)

OR

b) 'All's well that ends well' effectively summarizes the essence of the play 'Mother's Day'. Elucidate.

ST. PBN PUBLIC SCHOOL, GURUGRAM
ANNUAL EXAMINATION
CLASS - XI
MATHEMATICS
SAMPLE PAPER

TIME: 3 Hours

MM: 80

NAME: _____ **DATE:** _____

General instructions:

- All questions are compulsory.
- Section A consists of 20 questions of 1 mark each.
- Section B consists of 6 questions of 2 marks each.
- Section C consists of 6 questions of 4 marks each.
- Section D consists of 4 questions of 6 marks each.
- Use of calculator is not allowed.

Section A

1. For two sets $A \cup B = A$ iff
 - (i) $B \subseteq A$
 - (ii) $A \neq B$
 - (iii) $A \subseteq B$
 - (iv) $A = B$
2. The number of subsets of a set containing n elements is
 - (i) n
 - (ii) n^2
 - (iii) 2^n
 - (iv) $2^n - 1$
3. The range of the function $f(x) = \frac{x}{|x|}$ is
 - (i) $\mathbb{R} - \{0\}$
 - (ii) $\mathbb{R} - \{-1, 1\}$
 - (iii) $\{-1, 1\}$
 - (iv) none of these
4. Which of the following is incorrect?
 - (i) $\sin \theta = -\frac{1}{5}$
 - (ii) $\cos \theta = 1$
 - (iii) $\sec \theta = \frac{1}{2}$
 - (iv) $\tan \theta = 20$.
5. The value of $\tan \theta \sin\left(\frac{\pi}{2} + \theta\right) \cos\left(\frac{\pi}{2} - \theta\right)$ is
 - (i) 1
 - (ii) -1
 - (iii) $\frac{1}{2} \sin 2\theta$
 - (iv) none of these
6. The value of $(1 + i)(1 + i^2)(1 + i^3)(1 + i^4)$ is
 - (i) 2
 - (ii) 0
 - (iii) 1
 - (iv) none of these
7. If $\frac{3+2i\sin \theta}{1-2i\sin \theta}$ is a real number and $0 < \theta < 2\pi$, then $\theta =$
 - (i) $\frac{\pi}{6}$
 - (ii) $\frac{\pi}{3}$
 - (iii) $\frac{\pi}{2}$
 - (iv) π
8. If x is a real number and $|x| < 5$ then

- (i) $x \geq 5$ (iii) $-5 < x < 5$
(ii) $x \leq -5$ (iv) $-5 \leq x \leq 5$
9. The number of words from the letter of the word 'BHARAT' in which B and H will never come together is
(i) 360 (iii) 120
(ii) 240 (iv) none of these
10. In how many ways can a committee of 5 be made out of 6 men and 4 women containing at least one woman?
(i) 246 (iii) 186
(ii) 222 (iv) none of these
11. The term without x in the expansion of $(2x - \frac{1}{2x^2})^{12}$ is
(i) 495 (iii) -7920
(ii) -495 (iv) 7920
12. If 7th and 13th term of an A.P. be 34 and 64 respectively, then its 18th term is
(i) 87 (iii) 89
(ii) 88 (iv) 90
13. If second term of a G.P. is 2 and the sum of its infinite terms is 8, then its first term is
(i) 1/4 (iii) 2
(ii) 1/2 (iv) 4
14. The line segment joining the points (-3, -4) and (1, -2) is divided by y-axis in the ratio
(i) 1:3 (iii) 3:1
(ii) 2:3 (iv) 3:2
15. The angle between the lines $2x-y+3=0$ and $x+2y+3=0$ is
(i) 90° (iii) 45°
(ii) 60° (iv) 30°
16. The eccentricity of the ellipse $4x^2+9y^2=36$ is
(i) $\frac{1}{2\sqrt{3}}$ (iii) $\frac{1}{\sqrt{3}}$
(ii) $\frac{\sqrt{5}}{3}$ (iv) $\frac{\sqrt{5}}{6}$
17. $\lim_{x \rightarrow a} \frac{x^n - a^n}{x - a}$ is equal to
(i) na (iii) na^n
(ii) 1 (iv) na^{n-1}
18. The mean deviation of the numbers 3, 4, 5, 6, 7 from the mean is
(i) 25 (iii) 1.2
(ii) 5 (iv) 0
19. Two dice are thrown simultaneously. The probability of obtaining total score of seven is
(i) 5/36 (iii) 8/36
(ii) 6/36 (iv) 7/36
20. A pack of cards contains 4 aces, 4 kings, 4 queens and 4 jacks. Two cards are drawn at random. The probability that at least one of them is an ace is
(i) 1/5 (iii) 1/9
(ii) 3/16 (iv) 9/20

Section B

21. Find the domain and range of the function $f(x) = \sqrt{9 - x^2}$.

22. Find the modulus and argument of the complex number $\frac{1+i}{1-i}$.

Or

Find the multiplicative inverse of $2 - 3i$.

23. What is the number of ways of choosing 4 cards from a pack of 52 playing cards? In how many of these

- (i) Four cards of same suit
- (ii) Are face cards

Or

A committee of 7 has to be formed from 9 boys and 4 girls. In how many ways can this be done when the committee consistsof:

- (i) Exactly 3 girls
- (ii) Atleast 3 girls

24. Find the distance of the point (3, -5) from the line $3x-4y-26=0$.

25. Evaluate: $\lim_{x \rightarrow 0} \frac{\sin 4x}{\sin 2x}$.

or

Evaluate: $\lim_{x \rightarrow 2} \frac{3x^2-x-10}{x^2-4}$.

26. Compute the derivative of $f(x) = \sin^2 x$.

Section C

27. In a survey it was found that 21 people liked product A, 26 liked product B and 29 liked product C. if 14 people liked products A and B, 12 people liked products C and A, 14 people liked product B and C and 8 liked all the three products. Find how many liked product C only.

28. Line through the points (-2, 6) and (4, 8) is perpendicular to the line through the points (8, 12) and (x, 24). Find the value of x.

29. The coefficients of the $(r-1)^{\text{th}}$, r^{th} and $(r+1)^{\text{th}}$ terms in the expansion of $(x+1)^n$ are in the ratio 1:3:5. Find n and r.

Or

Find a if the 17th and 18th terms of the expansion $(2+a)^{50}$ are equal.

30. (i) Find the equation of the parabola which is symmetric about the y-axis and passes through the point (2, -3).

(ii) Find the equation of the ellipse, whose length of major axis is 20 and foci are $(0, \pm 5)$.

31. Show that the points A(1, 2, 3), B (-1, -2, -1), C (2, 3, 2) and D (4, 7, 6) are vertices of a parallelogram ABCD, but it is not a rectangle.

Or

Find the lengths of the medians of the triangle with vertices A (0, 0, 6), B (0, 4, 0) and C (6, 0, 0).

32. (i) A die is rolled. Let E be the event "die shows 4" and F be the event "die shows even number". Are E and F mutually exclusive?

(ii) A coin is tossed. If the outcome is head, a die is thrown. If the die shows up an even number, the dice is thrown again. What is the sample space for the experiment?

Section D

33. Prove that $\cos^2 x + \cos^2 \left(x + \frac{\pi}{3}\right) + \cos^2 \left(x - \frac{\pi}{3}\right) = \frac{3}{2}$.

Or

Prove that $\frac{\cos 4x + \cos 3x + \cos 2x}{\sin 4x + \sin 3x + \sin 2x} = \cot 3x$.

34. Solve the following system of inequality graphically

$$3x + 2y \leq 150$$

$$x + 4y \leq 80$$

$$x \leq 15, y \geq 0$$

35. The p th, q th and r th terms of an A.P are a, b, c respectively. Show that

$$(q - r)a + (r - p)b + (p - q)c = 0$$

Or

Let S be the sum, P be the product and R the sum of reciprocals of n terms in a G.P. prove that $P^2 R^n = S^n$.

36. Find the mean, variance and standard deviation using short cut method

Height	70-75	75-80	80-85	85-90	90-95	95-100	100-105	105-110	110-115
No of children	3	4	7	7	15	9	6	6	3

Or

Calculate mean, variance and standard deviation for the following distribution

Classes	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	3	7	12	15	8	3	2

.....

ST. PBN PUBLIC SCHOOL, GURUGRAM
ANNUAL EXAMINATION
CLASS - XI
PHYSICAL EDUCATION

TIME: 3 Hours

MM: 70

NAME: _____

DATE: _____

General Instructions:

- 1) The question paper consists of 5 sections and 37 Questions.
- 2) **Section A** consists of question 1-18 carrying 1 mark each and is multiple choice questions. **All questions are compulsory.**
- 3) **Sections B** consist of questions 19-24 carrying 2 marks each and are very short answer types and should not exceed 60-90 words. **Attempt any 5.**
- 4) **Sections C** consist of Question 25-30 carrying 3 marks each and are short answer types and should not exceed 100-150 words. **Attempt any 5.**
- 5) **Sections D** consist of Question 31-33 carrying 4 marks each
- 6) **Section E** consists of Question 34-37 carrying 5 marks each and are short answer types and should not exceed 200-300 words. **Attempt any 3.**

Q.NO	SECTION A	MARKS
1.	Coaching Career is a _____ career in Physical Education. a) Ancient b) Modern c) Original d) Traditional	1
2.	In which Olympics, the Olympic flag was hoisted for the first time? a) 1920 Antwerp b) 1924 Paris c) 1928 Amsterdam d) 1932 Los Angeles	1
3.	What is the meaning of 'Fortius'? a) Faster b) Bigger c) Higher d) Stronger	1
4.	The process to concentrate on some object or point without blinking is called _____ a) Basti b) Dhouti c) Tartaka d) Neti	1

5.	<p>_____ is done to the stomach.</p> <p>a) Dhugdhdh neti b) Jal neti c) Dhouti d) Tartaka</p>	1																																													
6.	<p>Given below are the two statements labelled Assertion (A) and Reason (R). Assertion: (A) “Disability is physical since it relates to physical functioning of body parts including sense organs.” Reason: (R) “Illness like cancer, heart attack or diabetes causes majority of long term physical disability”.</p> <p>In the context of the above two statements, which one of the following is correct?</p> <p>a) Both (A) and (R) are true and (R) is the correct explanation of (A). b) Both (A) and (R) are true, but (R) is not the correct explanation of (A). c) (A) is true, but (R) is false. d) (A) is false, but (R) is true.</p>	1																																													
7.	<p>Which of the following is NOT a component of Physical Fitness?</p> <p>a) Speed b) Endurance c) Strength d) Cardiovascular endurance</p>	1																																													
8.	<p>Rohit’s height is 5 feet 1 inch measured with the help of stadiometer. The 5 feet 1 inch is an example of _____.</p> <p>a) Test b) Measurement c) Evaluation d) Assessment</p>	1																																													
9.	<p>Match the following;</p> <table border="1" data-bbox="310 1205 1333 1423"> <thead> <tr> <th colspan="2">LIST I</th> <th colspan="2">LIST II</th> </tr> </thead> <tbody> <tr> <td>a. Heart</td> <td>(i)</td> <td>Carry blood to the heart.</td> <td></td> </tr> <tr> <td>b. Arteries</td> <td>(ii)</td> <td>Carry blood away from the heart.</td> <td></td> </tr> <tr> <td>c. Veins</td> <td>(iii)</td> <td>Prevent the blood flowing backward.</td> <td></td> </tr> <tr> <td>d. Valves</td> <td>(iv)</td> <td>Cone shaped muscular organ.</td> <td></td> </tr> </tbody> </table> <table border="1" data-bbox="310 1507 1182 1726"> <thead> <tr> <th colspan="5">CODES</th> </tr> </thead> <tbody> <tr> <td>a)</td> <td>(iv)</td> <td>(ii)</td> <td>(i)</td> <td>(iii)</td> </tr> <tr> <td>b)</td> <td>(i)</td> <td>(ii)</td> <td>(iii)</td> <td>(iv)</td> </tr> <tr> <td>c)</td> <td>(iii)</td> <td>(iv)</td> <td>(ii)</td> <td>(i)</td> </tr> <tr> <td>d)</td> <td>(ii)</td> <td>(i)</td> <td>(iv)</td> <td>(iii)</td> </tr> </tbody> </table>	LIST I		LIST II		a. Heart	(i)	Carry blood to the heart.		b. Arteries	(ii)	Carry blood away from the heart.		c. Veins	(iii)	Prevent the blood flowing backward.		d. Valves	(iv)	Cone shaped muscular organ.		CODES					a)	(iv)	(ii)	(i)	(iii)	b)	(i)	(ii)	(iii)	(iv)	c)	(iii)	(iv)	(ii)	(i)	d)	(ii)	(i)	(iv)	(iii)	1
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10.	<p>The scientific study that deals with structure of human body is called _____.</p> <p>a) Biology b) Physiology</p>	1																																													

	c) Anatomy d) Kinesiology	
11.	The circular motion combining flexion, extension, adduction and abduction is called: a) Inversion b) Elevation c) Circumduction d) Extension	1
12.	The term flexion refers to: a) Turning b) Bending c) Twisting d) Straightening	1
13.	Moving a part away from your body is called _____. a) Adduction b) Abduction c) Supination d) Pronation	1
14.	During _____ stress, tension and strife are common.	1
15.	'Psyche' is related to: a) Behaviour b) Science c) Soul d) None of these	1
16.	Which one of the following is a physical doping method? a) Anabolic steroids b) Beta blockers c) Peptide hormones d) Gene doping	1
17.	Cramps and dehydration are side effects of _____. a) Stimulants b) Anabolic steroids c) Corticosteroids d) Diuretics	1
18.	Owing to systematic training the resting heart rate of a Marathon runner will _____. a) Decrease b) Increase c) Remain normal d) Become critical	1
SECTION – B		
19.	Mention the rules of competitions in ancient Olympics.	2
20.	Write a note on Asanas.	2
21.	Discuss 'Body Composition' as a component of health-related fitness.	2

22.	Write any two functions of circulatory system.	2
23.	Differentiate between 'Task Cohesion' and 'Social Cohesion'.	2
24.	Differentiate between Autologous and Homologues blood doping.	2
SECTION-C		
25.	Briefly write a note on IOC.	3
26.	Enlist the importance of yoga and explain any TWO.	3
27.	Differentiate between cognitive and physical disability.	3
28.	Discuss about any THREE components of physical fitness.	3
29.	Discuss any THREE factors that affect team cohesion.	3
30.	Mention the anti-doping rules set forth by WADA.	3
SECTION – D		
31.	Elaborate Khelo India programme in detail.	4
32.	Explain any four causes of disability.	4
33.	Elaborate freely movable joints with suitable examples.	4
SECTION – E		
34.	Explain the objectives of Physical Education in detail.	5
35.	Elucidate the importance of Test, Measurement and evaluation in sports.	5
36.	Define Doping. Discuss the Physical methods of doping.	5
37.	Enlist and explain any two classifications of test in Physical Education and sports.	5

**ST. PBN PUBLIC SCHOOL
ANNUAL EXAMINATION
CLASS-XI
PHYSICS
SAMPLE PAPER**

TIME: 3 HRS.

M.M.: 70

General Instructions:

1. The question paper comprises two sections – A and B. Attempt all the sections.
2. All questions are compulsory.
3. Internal choice is given in each section.
4. All questions (Q.no. 1 to 33) in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type, case based type questions. They are to be answered in one word or in one sentence.
5. All questions (Q.no. 34 to 42) in Section B are three marks and five-marks, short –answer and long-answer type questions.
6. This question paper consists of a total of 42 questions.

SECTION-A

1. At critical temperature, the surface tension of a liquid
 - (a) Is zero
 - (b) Is infinity
 - (c) Is the same as that at any other temperature
 - (d) Can not be determined
2. Two blocks of ice when pressed together join to form one block. This happens because
 - (a) melting point rises with pressure
 - (b) melting point falls with pressure
 - (c) heat is rejected to outside
 - (d) heat is absorbed from outside
3. Gas thermometers are more sensitive than liquid thermometers as the gases
 - (a) have low specific heat
 - (b) have high specific heat
 - (c) have large coefficient of expansion
 - (d) are lighter
4. An engine has an efficiency of $1/6$. When the temperature of sink is reduced by 62°C , its efficiency is doubled. Temperature of the source is:
 - (a) 124°C
 - (b) 37°C
 - (c) 62°C
 - (d) 99°C
5. At a given volume and temperature, the pressure of a gas
 - (a) varies inversely as its mass
 - (b) varies inversely as the square of its mass
 - (c) varies linearly as its mass
 - (d) is independent of its mass
6. The frequency of the note produced by plucking a given string increases as
 - (a) The length of the string increases
 - (b) The tension in the string increases

- (c) The tension in the string decreases
 - (d) The mass per unit length of the string increases
7. Latent heat of ice is
- (a) Less than external latent heat of fusion
 - (b) Equal to external latent heat of fusion
 - (c) More than external latent heat of fusion
 - (d) Twice the external latent heat of fusion
8. One mole of which of the following has the highest entropy?
- (a) Liquid Nitrogen
 - (b) Hydrogen Gas
 - (c) Mercury
 - (d) Diamond
9. In damped oscillation the directions of the restoring force and the resistive force
- (a) are the same
 - (b) are opposite
 - (c) may be same or opposite
 - (d) have no relation with each other
10. With the increase in temperature, the frequency of the sound from an organ pipe
- (a) Decreases
 - (b) Increases
 - (c) Remain unchanged
 - (d) Changes erratically

Directions: (a) If both assertion and reason are true and the reason is the correct explanation of the assertion.

(b) If both assertion and reason are true but reason is not the correct explanation of the assertion.

(c) If assertion is true but reason is false.

(d) If the assertion and reason both are false.

11. **Assertion :** Acceleration is proportional to the displacement. This condition is not sufficient for motion in simple harmonic.
- Reason :** In simple harmonic motion direction of displacement is also considered.
12. **Assertion (A) :** The ratio of specific heat of a gas at constant pressure and specific heat at constant volume for a diatomic gas is more than that for a monatomic gas.
- Reason (R) :** The molecules of a monatomic gas have more degree of freedom than those of a diatomic gas.
13. **Assertion :** In isothermal process whole of the heat energy supplied to the body is converted into internal energy.
- Reason :** According to the first law of thermodynamics $\Delta Q = \Delta U$.
14. **Assertion :** Identical springs of steel and copper are equally stretched. More work will be done on the steel spring.
- Reason :** Steel is more elastic than copper.
15. **Assertion :** Gravitational force between two particles is negligibly small compared to the electrical force.
- Reason :** The electrical force is experienced by charged particles only.
16. **Assertion :** When you lean behind over the hind legs of the chair, the chair falls back after a certain angle.
- Reason :** Centre of mass lying outside the system makes the system unstable.

17. **Assertion :** The change in kinetic energy of a particle is equal to the work done on it by the net force.

Reason : Change in kinetic energy of particle is equal to work done only in case of a system of one particle.

18. Read the 'Following two statements below carefully and state, with reasons, if it is true or false.

(a) The Young's modulus of rubber is greater than that of steel;

(b) The stretching of a coil is determined by its shear modulus.

19. $3.0 \text{ m s}^{-2} = \dots \text{ km h}^{-2}$

20. What is the dimensional formula for momentum?

21. Can an object with constant acceleration reverse its direction of travel? Explain.

22. Can you have zero acceleration but non-zero velocity? Explain with the help of a graph.

23. Rocket works on which principle of conservation?

24. What happens to the acceleration of an object if the net force on it is doubled?

25. Where is the speed of the swinging pendulum maximum?

26. A light and a heavy body have equal momentum. Which one of them has more K.E.?

27. What is the relation between torque and angular momentum?

28. State conservation of angular momentum.

29. Is it possible to put a satellite into an orbit by firing it from a huge canon?

30. Two satellites are at different heights. Which would have greater orbital velocity? Why?

31. What will happen to the potential energy if a wire is

(a) compressed,

(b) stretched?

32. How does Young's modulus change with rising in temperature?

33. Mention two essential characteristics of an ideal heat engine

SECTION- B

34. A piece of copper having a rectangular cross-section of 15.2 mm x 19.1 mm is pulled in tension with 44,500 N force, producing only elastic deformation. Calculate the resulting strain? Shear modulus of elasticity of copper is $42 \times 10^9 \text{ N/m}^2$.

35. A 50 kg girl wearing high heel shoes balances on a single heel. The heel is circular with a diameter 1.0 cm. What is the pressure exerted by the heel on the horizontal floor?

36. The acceleration due to gravity on the surface of moon is 1.7 ms^{-2} . What is the time period of a simple pendulum on the surface of moon if its time-period on the surface of Earth is 3.5 s? (g on the surface of Earth is 9.8 ms^{-2} .)

37. A steel wire has a length of 12.0 m and a mass of 2.10 kg. What should be the tension in the wire so that speed of a transverse wave on the wire equals the speed of sound in dry air at $20^\circ\text{C} = 340 \text{ ms}^{-1}$.

38. A steel wire of length 4.7 m and cross-sectional area $3.0 \times 10^{-5} \text{ m}^2$ stretches by the same amount as a copper wire of length 3.5 m and cross-sectional area of $4.0 \times 10^{-5} \text{ m}^2$ under a given load. What is the ratio of the Young's modulus of steel to that of copper?

39. Explain why

(a) The angle of contact of mercury with glass is obtuse, while that of water with glass is acute.

(b) Water on a clean glass surface tends to spread out while mercury on the same surface tends to form drops. (Put differently, water wets glass while mercury does not.)

40. Explain why

(a) To keep a piece of paper horizontal, you should blow over, not under, it.

(b) When we try to close a water tap with our fingers, fast jets of water gush through the openings between our fingers.

(c) The size of a needle of a syringe controls flow rate better than the thumb pressure exerted by a doctor while administering an injection.

(d) A fluid flowing out of a small hole in a vessel results in a backward thrust on the vessel.

41. The transverse displacement of a string (clamped at its two ends) is given by $y(x, t) = 0.06 \sin 2\pi / 3 x \cos (120\pi t)$

where x, y are in m and t in s. The length of the string is 1.5 m and its mass is 3×10^{-2} kg. Answer the following:

(i) Does the function represent a travelling or a stationary wave?

(ii) Interpret the wave as a superimposition of two waves travelling in opposite directions. What are the wavelength, frequency and speed of propagation of each wave?

(iii) Determine the tension in the string.

42. (a) What is the absolute temperature of normal melting point of sulphur as read by thermometers A and B ?

(b) What do you think is the reason behind the slight difference in answers of thermometers A and B ? (The thermometers are not faulty). What further procedure is needed in the experiment to reduce the discrepancy between the two readings?

ST. PBN PUBLIC SCHOOL, GURUGRAM
ANNUAL EXAMINATION
CLASS XI
BIOLOGY
SAMPLE PAPER

TIME:3HRS.

M.M.:70

General Instructions:

1. The question paper comprises two sections–A and B. Attempt all the sections.
2. All questions are compulsory.
3. Internal choice is given in each section.
4. All questions (Q.no. 1 to 33) in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type, case based type questions. They are to be answered in one word or in one sentence.
5. All questions (Q.no. 34 to 42) in Section B are three marks and five-marks, short-answer and long-answer type questions.
6. This question paper consists of a total of 42 questions.

SECTION-A

1. _____ prevents the collapsing of the trachea.
(a) Jugular foramen (b) Cartilaginous rings (c) Diaphragm (d) None of the above
2. When body tissues are injured resulting in the loss of blood, the process of blood clot begins and the blood platelets release
(a) Fibrinogen (b) Thrombin (c) Prothrombin (d) Thromboplastin
3. Ornithine cycle leads to the formation of
(a) NH_3 (b) $(\text{NH}_2)_2\text{CO}$ (c) $\text{C}_5\text{H}_4\text{N}_4\text{O}_3$ (d) $\text{C}_5\text{H}_4\text{N}_4$
4. The _____ secretes a fluid that cushions and lubricates the joints
(a) Cutaneous membrane (b) Synovial membrane
(c) Mucous membrane (d) None of the above
5. The gap in the myelin sheath between adjacent Schwann cells is called
(a) Soma (b) Dendrite (c) Node of Ranvier (d) None of above
6. _____ is a chemical substance that is released by an organism that can affect the behavior of another individual of the same species.
(a) Pheromone (b) Androgen (c) Testosterone (d) All of the above
7. Energy transformation is never 100% efficient because of
(a) Catabolism (b) Entropy (c) Homeostasis (d) Anabolism
8. Phylogenetic classification is based on _____
(a) Overall similarities (b) Habit of plants
(c) Common evolutionary descendants (d) All of these
9. Koshland's theory of enzyme action is known as
(a) Lock and key theory (b) Reduced fit theory

(c) Induced fit theory

(d) Enzyme coenzyme theory

10. Veins of the leaves are useful for

(a) Mechanical support

(b) Transport of water & minerals

(c) Transport of organic nutrients

(d) All of the above

ASSERTION-REASONS

In the following questions, two statements are given—one labeled Assertion (A) and the other labeled Reason (R).

Select the correct answer to the questions from the codes (a), (b), (c) and (d) as given below:

(a) Both Assertion (A) and Reason (R) are correct statements, and Reason (R) is the correct explanation of the Assertion (A).

(b) Both Assertion (A) and Reason (R) are correct statements, but Reason (R) is not the correct explanation of the Assertion (A).

(c) Assertion (A) is correct, but Reason (R) is incorrect statement.

(d) Assertion (A) is incorrect, but Reason (R) is correct statement.

11. **Assertion:** Monocot stem has collateral open vascular bundle.

Reason: Open vascular bundle is without vascular cambium.

12. **Assertion:** Root caps are absent in floating aquatic plants.

Reason: Root pockets are present in aquatic plants

13. **Assertion:** Inspiration occurs due to muscular relaxation.

Reason : During inspiration the diaphragm and external intercostal muscles contract simultaneously

14. **Assertion :** Type 'O' blood group individuals are called 'universal donors'.

Reason: RBC of 'O' blood group consists of both A and B surface antigens.

15. **Assertion:** If human urine is allowed to stand for some time, it smells strongly of ammonia.

Reason: Main constituent of human urine is ammonia.

16. **Assertion :** Extra oxygen consumption in human body is known as oxygen debt.

Reason: Extra oxygen is required by the body to exercise the accumulated lactic acid produced during strenuous exercise.

17. **Assertion :** The imbalance in concentration of Na^+ , K^+ and proteins generates resting potential.

Reason: To maintain the unequal distribution of sodium ion and potassium ion, the neurons use electrical energy.

18. Case based questions-

Fermentation is a metabolic process in which an organism converts a carbohydrate, such as starch or a sugar, into an alcohol or an acid. For example, yeast performs fermentation to obtain energy by converting sugar into alcohol. Bacteria

perform fermentation, converting carbohydrates into lactic acid. The study of fermentation is called **zymology**.

Answer the following questions:

a) Fermentation is considered a wasteful process. Justify by giving two reasons.

- b) What would be the maximum concentration of alcohol in beverages that are naturally fermented? Give reason.
- c) Name the enzymes used in alcoholic fermentation.

Objective Questions

21. Name the endocrine gland that secretes cortisol hormone?
22. Name the main parts of the human brain.
23. In adults, insufficient thyroxine can lead to which disease ?
24. What are antagonistic muscles?
25. What is the cardiac cycle?
26. Why does smoking cigarette cause emphysema?
27. Define a monograph.
28. Blue green alga belongs to which group ?
29. In which phylum do the adults exhibit radial symmetry and larva exhibit bilateral symmetry?
30. What are Thylakoids?
31. What is synapsis ?
32. What is karyokinesis ?
33. Which plant hormone is present in gaseous state?
34. Name the colourless gas that is used as signalling hormone.
35. Which biomolecule is distributed more widely in a cell?

Section-B

Short Questions

36. Explain the role of intercostal muscles in respiration.
37. (a) Which is the site where RBCs are formed?
(b) Name the part of the heart that initiates and maintains the rhythmic activity
(c) What is the heart of crocodiles is specific amongst reptilians?
38. What is the remedial measure advised for the correction of acute renal failure? Explain briefly.
39. Write difference between red & white muscle fibres.
40. Draw a labelled diagram of neuron.
41. i) Diagrammatically indicate the location of various endocrine glands in our body
ii) Write different types of plant hormones

Long Questions

42. (a) Cell is a basic unit of life. Discuss in brief.
(b). Why is abscisic acid also known as stress hormone?
43. (a) Why is the colour of a leaf kept in the dark frequently yellow or peel green which pigment do you think is more stable?
(b) Define RQ. Write its value for carbohydrates.
44. (a) When and where does reduction division take place in the life cycle of a liver sperm and an angiosperm
(b) "All vertebrates are chordates but all chordates are not vertebrates "justify the statement.