

**ST. PBN PUBLIC SCHOOL**  
**UNIT TEST – I**  
**CLASS –XII**  
**MATHEMATICS**  
**SAMPLE PAPER**

**TIME: 2 Hours**

**M.M.50**

**General Instructions:**

- Section A consists of 9 questions of 1 mark each.
- Section B consists of 3 questions of 2 marks each.
- Section C consists of 3 questions of 4 marks each.
- Section D consists of 3 questions of 5 marks each.
- Section E has 2 case based questions of 4 marks each.

**SECTION – A**

1. Let  $f: \mathbb{R} \rightarrow \mathbb{R}$  be defined as  $f(x) = x^2$ . Choose the correct answer.  
(i)  $f$  is one-one onto  
(ii)  $f$  is many-one onto  
(iii)  $f$  is one-one but not onto  
(iv)  $f$  is neither one-one nor onto
2. The number of all possible matrices of order  $3 \times 3$  with each entry 1 or 2 is:  
(i) 27  
(ii) 18  
(iii) 81  
(iv) 512
3.  $\sin\left(\frac{\pi}{3} - \sin^{-1}\left(-\frac{1}{2}\right)\right)$  is equal to  
(i) 1  
(ii)  $\frac{1}{2}$   
(iii)  $\frac{1}{3}$   
(iv)  $\frac{1}{4}$
4. Let  $A$  be a square matrix of order  $3 \times 3$ , then  $|kA|$  is equal to  
(i)  $k|A|$   
(ii)  $k^2|A|$   
(iii)  $k^3|A|$   
(iv)  $3k|A|$
5. If the matrix  $A$  is both symmetric and skew symmetric, then  
(i)  $A$  is diagonal matrix  
(ii)  $A$  is a zero matrix  
(iii)  $A$  is a square matrix  
(iv) None of these
6. Find the value of  $\cos^{-1}\frac{1}{2} + 2\sin^{-1}\frac{1}{2}$ .
7. Evaluate:  $\sin(\cos^{-1}\frac{1}{2})$ .
8. Find the value of  $x$  from the matrix  $\begin{bmatrix} 2x - y & 5 \\ 3 & y \end{bmatrix} = \begin{bmatrix} 6 & 5 \\ 3 & -2 \end{bmatrix}$ . ?
9. Show that the Modulus function  $f: \mathbb{R} \rightarrow \mathbb{R}$ , given by  $f(x) = |x|$  is neither one-one

**SECTION – B**

10. If  $f: \mathbb{R} \rightarrow \mathbb{R}$  given by  $f(x) = 4x + 3$ . Show that  $f$  is invertible. Find the inverse of  $f$ .
11. Using determinants find the area of a triangle whose vertices are  $(1, 4)$ ,  $(2, -3)$ ,  $(-5, -3)$

12. If  $A = \begin{bmatrix} -2 \\ 4 \\ 5 \end{bmatrix}$ ,  $B = [1 \quad 3 \quad -6]$ , verify that  $(AB)' = B'A'$ .

### SECTION – C

13. Express the following matrix as the sum of symmetric and a skew symmetric matrix.

$$\begin{bmatrix} 3 & 5 \\ 1 & -1 \end{bmatrix}$$

14. If  $A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$ , show that  $A^2 - 5A + 7I = 0$ . Hence find  $A^{-1}$ .

15. Use product  $\begin{bmatrix} 1 & -1 & 2 \\ 0 & 2 & -3 \\ 3 & -2 & 4 \end{bmatrix} \begin{bmatrix} -2 & 0 & 1 \\ 9 & 2 & -3 \\ 6 & 1 & -2 \end{bmatrix}$  to solve the system of equations

$$x - y + 2z = 1$$

$$2y - 3z = 1$$

$$3x - 2y + 4z = 2$$

### SECTION – D

16. Solve the following system of equations by matrix method.

$$3x - 2y + 3z = 8$$

$$2x + y - z = 1$$

$$4x - 3y + 2z = 4$$

17. Obtain the inverse of the following matrix

$$A = \begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{bmatrix}$$

18. Show that each of the relation R in the set  $A = \{x \in \mathbb{Z} : 0 \leq x \leq 12\}$  given by

(i)  $R = \{(a, b) : |a - b| \text{ is a multiple of } 4\}$

(ii)  $R = \{(a, b) : a = b\}$  is an equivalence Relation.

### SECTION E

19. Case Study I:

The management committee of a residential colony decided to award some of its members (say x) for honesty, some (say y) for helping others and some others (say z) for supervising the workers to kept the colony neat and clean. The sum of all the awardees is 12. Three times the sum of awardees for cooperation and supervision added to two times the number of awardees for honesty is 33. The sum of the number of awardees for honesty and supervision is twice the number of awardees for helping.

**Based on the given information, answer the following questions.**

1.  $x + y + z =$  \_\_\_\_\_

2. The value of z is \_\_\_\_\_

3. The value of  $x + 2y =$  \_\_\_\_\_

4. The value of  $2x + 3y + 5z =$  \_\_\_\_\_

## 20. Case Study II:

On her birthday, Seema decided to donate some money to children of an orphanage home. If there were 8 children less, everyone would have got ₹ 10 more. However, if there were 16 children more, everyone would have got ₹ 10 less. Let the number of children be  $x$  and the amount distributed by Seema for one child be  $y$  (in ₹).

**Based on the given information, answer the following questions.**

1. The equations in terms  $x$  and  $y$  are
2. The number of children who were given some money by Seema, is
3. How much amount is given to each child by Seema?
4. How much amount Seema spends in distributing the money to all the students of the Orphanage?

**ST. PBN PUBLIC SCHOOL, GURUGRAM**

**UNIT TEST-1  
SAMPLE PAPER  
CLASS – XII  
SUBJECT – ENGLISH**

**TIME – 2 HRS**

**MM. 50**

**GENERAL INSTRUCTIONS:**

- 1. All questions are compulsory.**
- 2. Your answer should be to the point, and strictly adhere to the prescribed word limit.**

1. An ecosystem is a community of organisms that live and interact within a particular environment. In an aquatic ecosystem, that environment is water and all the system's plants and animals live either in or on that water. The specific setting and type of water, such as a freshwater lake or saltwater marsh, determines which animals and plants live there. Marine, or ocean, systems cover about 70 per cent of the Earth's surface and are identified by the presence of dissolved salts in the water. The level of salinity averages about 35 parts per thousand g of water, but it can vary in response to climate or a nearby source of freshwater. Marine organisms must adapt to either a constantly changing or stable level of salt content and cannot move successfully from one to the other. Saltwater ecosystems range from the abundant life of coastal areas to the nearly barren ocean bottom. In marine habitats, the food chain begins with plankton, micro-organisms that require sunlight for energy and growth, so systems closest to the surface or in relatively shallow water support more life. These include estuaries, salt marshes, coral reefs and other tropical habitats, and intertidal areas such as lagoons and kelp beds.

2. Animal life in marine ecosystems ranges from microscopic zooplankton through fish of all sizes to marine mammals, including seals, whales and manatees. Freshwater-water that is either drinkable or has little or no salt content-supports its own aquatic ecosystems. These include river and streams, lakes and ponds, wetlands and even groundwater. Each of these systems is unique and even within categories, any specific habitat is affected by altitude/temperature and humidity. For instance, a plant native to a warm shallow lake in the tropics could not survive on the steep banks of a cold, fast-moving mountain stream. Freshwater ecosystems provide homes for a wide variety of animal life including insects, amphibians and fish. One estimate of fish species puts the number that lives in freshwater at 40 per cent of the Earth's total. Worms, molluscs, algae and bacteria all live in freshwater systems, as do innumerable varieties of plants.

In addition, animals such as birds, otters and bears use freshwater ecosystems as a food source. (10)

Based on your understanding of the passage, answer the questions given below.

i. Which of the following statement is True according to the passage?

- (a) 70 per cent of the Earth's surface is covered in oceans
- (b) 70 per cent of the Earth's surface are marine bodies only
- (c) 70 per cent of the Earth's surface is solid landmass
- (d) 70 per cent of the Earth's surface form the entire aquatic system

ii. Select the option that best captures the central idea of the passage from the given quotes.

(a) There is a deep interconnectedness of all life on earth, from the tiniest organisms, to the largest

ecosystems, and absolutely between each person." - Bryant McGill

(b) "Where there is a smoke, there is an ecologist." - Ljupka Cvetanova

(c) "When we reconnect with nature, we will be restore ourselves." - Lailah Gifty Akita

(d) "We can only predict the future ecological changes, by emergence of the past into the present." -Lailah Gifty Akita

iii. Select the option that corresponds to the following relation below:

Saltwater ecosystems range from the abundant life of coastal area to the nearly barren ocean bottom.

(a) In the season of spring, plenty of fl owers grow while in the season of autumn, the leaves wither and

fall making it a barren season for the growth of plant.

(b) The distinct is the most barren and backward portion of the province.

(c) The room was austere, nearly barren of furniture and decoration.

(d) This zone has an abundant rainfall, dense forests and a fertile soil.

iv. Complete the following with a phrase from paragraph 1:

Opinion	Reason
_____	An ecosystem that lives and interacts within a particular environment.

v. The writer uses two contrasting words in the line:

Marine organisms must adopt to either a constantly changing or stable level of salt content. (Paragraph 1)

State one point of difference between constantly changing and stable.

vi. Based on your reading of the text, list 2 reasons why the writer says that: Shallow water relatively support more aquatic life.

1. \_\_\_\_\_

2. \_\_\_\_\_

vii. The writer says, "Freshwater supports its own aquatic ecosystems".

Select the reason that appropriately justifies the statement.

(a) Freshwater has little or no salt content.

(b) Freshwater provides oxygen to support the growth of aquatic ecosystem.

(c) It help to prevent erosion.

(d) It provides natural protection from flooding.

viii. Micro-organisms in the saltwater ecosystem grow in shallow water or near the surface because:

(a) the content of salt is low

(b) they get sunlight to grow

(c) they cannot breathe in deep water

(d) Both (a) and (b)

ix. Supply 1 point to justify the following:

Micro-organisms in the saltwater ecosystem grow in shallow water or near the surface.

x. State whether the following statement is True or False :

**Saltwater ecosystems range from the abundant life of coastal areas to the nearly barren ocean bottom.**

**Q2.** You are the President of RWA Sector-17 Gurugram , the election of the office bearers of the association will be held on 28<sup>th</sup> June 2019 at community centre. Draft a notice inviting all members to take part in the election, secretary and treasurer and other posts for a new 3 year term. words limit 50.

(5M)

**Q3.** As Mukul / Mahima of Alps Public School, write a speech to be delivered in school assembly highlighting the importance of cleanliness suggesting that the state of cleanliness reflects the character of its citizens. (150-200 words)

10 M

**Q4. Read the extract given below and answer the questions that follow: (1x5=5M)**

But after the airports  
security check, standing a few yards  
away, I looked again at her, wan, pale  
as a winters moon and felt that old  
familiar ache, my childhoods fear,  
but all I said was see you soon,  
Amma,

1. Why did the poet compare her mother's face to a late winter's moon?
2. Name the poetic device in the above passage.
3. Name the Poem and the Poet.
4. Why does the poet say 'see you soon Amma?'
5. What was poet's childhood fear?

**Q5. Read the passage given below and answer the questions that follow: (1x5=5M)**

Tiny vestiges of the old terror would return. But now I could frown and say to that terror, "Trying to scare me, eh? Well, here's to you! Look!" And off I'd go for another length of the pool. This went on until July. But I was still not satisfied.

I was not sure that all the terror had left. So, I went to Lake Wentworth in New Hampshire, dived off a dock at Triggs Island, and swam two miles across the lake to Stamp Act Island. I swam the crawl, breast stroke, side stroke, and back stroke. Only once did the terror return. When I was in the middle of the lake, I put my face under and saw nothing but bottomless water. The old sensation returned in miniature.

1. Why did Douglas go to swim at Lake Wentworth?
2. What was the reason for the 'return' of terror?
3. Douglas mentions that the old sensation returned in miniature. What does he mean?
4. How did Douglas handle the 'old sensation'?
5. Name the chapter of the above extract and the writer.

**Q6. Answer the following questions in 30 – 40 words. (Any Five) (2x5=10m)**

1. What did Franz find much more tempting than the rule of participles? What did Franz do?
2. How is Mukesh's attitude to his situation different from that of his family?
3. How did the instructor make a swimmer out of Douglas?
4. Do you think that the third level was a medium of escape for Charley? Why?
5. What is the situation of the slum children? How can it be improved?
6. What picture of the slum children is depicted in the poem?

Q7. Answer the following question in 100 – 120 words. (5x1=5m)

**'Garbage to them is gold'. How do rag pickers of Seemapuri survive? Explain.**

OR

Roosevelt said "All we have to fear is fear". Do you agree? Take evidence from Deep Water and express your views in 100 – 125 words.



**ST. PBN PUBLIC SCHOOL**  
**UNIT TEST-I EXAMINATION**  
**SAMPLE PAPER**  
**CLASS XII**  
**CHEMISTRY (043)**

**Time :2 hours**

**MM: 50**

**GENERAL INSTRUCTIONS:**

Read the following instructions carefully.

1. There are 18 questions in this question paper .
  2. SECTION A - Q. No. 1 to 13 are multiple choice questions carrying 1 mark each.
  3. SECTION B - Q. No. 14 to 17 are short answer questions carrying 2 marks each.
  4. SECTION C - Q. No. 18 to 22 are short answer questions carrying 3 marks each.
  5. SECTION D- Q. No. 23 is case based question carrying 4 marks.
  6. SECTION E- Q. No. 24 and 25 are long answer questions carrying 5 marks each
6. All questions are compulsory.

**SECTION-A**

1. The boiling point of an azeotropic mixture of water and ethanol is less than that of water and ethanol. The mixture shows  
(a) no deviation from Raoult's Law.  
(b) positive deviation from Raoult's Law.  
(c) negative deviation from Raoult's Law.  
(d) that the solution is unsaturated.
2. Osmotic pressure of a solution is 0.0821 atm at a temperature of 300 K. The concentration in moles/litre will be  
(a) 0.33  
(b) 0.666  
(c)  $0.3 \times 10^{-2}$   
(d) 3
3. People add sodium chloride to water while boiling eggs. This is to  
(a) decrease the boiling point.  
(b) increase the boiling point.  
(c) prevent the breaking of eggs.  
(d) make eggs tasty.
4. The most reactive nucleophile among the following is  
(a)  $\text{CH}_3\text{O}^-$                       (b)  $\text{C}_6\text{H}_5\text{O}^-$                       (c)  $(\text{CH}_3)_2\text{CHO}^-$                       (d)  $(\text{CH}_3)_3\text{CO}^-$

5. Aryl halides are less reactive towards nucleophilic substitution reactions as compared to alkyl halides due to

(a) formation of a less stable carbonium ion in aryl halides

(b) resonance stabilization in aryl halides

(c) presence of double bonds in alkyl halides

(d) inductive effect in aryl halides

6. p-dichlorobenzene has higher melting point than its o- and m- isomers. Why?

(a) m- dichlorobenzene is more polar than o-isomer

(b) p-isomer has a symmetrical crystalline structure

(c) boiling point of o- isomer is more than p-isomers

(d) All of these are correct

7. A disaccharide is formed when two monosaccharides are bonded together by a bond.

a) glycosidic

b) peptide

c) ionic

d) phosphodiester

8. Sucrose is a \_\_\_\_\_ chemical, and the hydrolysis product combination is \_\_\_\_\_ in nature.

a) dextrorotatory; dextrorotatory

b) laevorotatory; laevorotatory

c) laevorotatory; dextrorotatory

d) dextrorotatory; laevorotatory

9. RNA lacks the nitrogen base of \_\_\_\_\_

a) Thymine

b) Cytosine

c) Uracil

d) Adenine

10. Which of the following statements about starch is incorrect?

a) It gives blue colour with iodine

b) It is a polymer of  $\alpha$ -D-glucose

c) It is a reducing carbohydrate

d) It consists of branched chains

Directions: These questions consist of two statements, each printed as Assertion and Reason. While answering these questions, you are required to choose any one of the following four responses.

(a) If both Assertion and Reason are correct and the Reason is a correct explanation of the Assertion.

(b) If both Assertion and Reason are correct but Reason is not a correct explanation of the Assertion.

(c) If the Assertion is correct but Reason is incorrect.

(d) If both the Assertion and Reason are incorrect.

11. Assertion : D(+)- Glucose is dextrorotatory in nature. Reason : 'D' represents its dextrorotatory nature.

12. Assertion : When methyl alcohol is added to water, boiling point of water increases. Reason : When a volatile solute is added to a volatile solvent elevation in boiling point is observed.

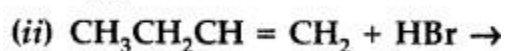
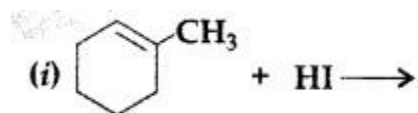
13. Assertion : Alkylbenzene is not prepared by Friedel-Crafts alkylation of benzene. Reason : Alkyl halides are less reactive than acyl halides.

### **SECTION-B**

14. (i) Write equation for preparation of 1-iodobutane from 1-chlorobutane.

(ii) Out of 2-bromopentane, 2-bromo-2-methylbutane and 1-bromopentane, which compound is most reactive towards elimination reaction and why?

15. Complete the following reaction equations



16. Define the following terms :

(i) Mole fraction                      (ii) Isotonic solutions

17. What are Anomers? Give example.

### **SECTION-C**

18. (i) Which of the following biomolecules is insoluble in water? Justify. Insulin, Haemoglobin, Keratin.

(ii) Draw the Haworth structure for  $\alpha$ -D-Glucopyranose.

(iii) Write chemical reaction to show that glucose contains aldehyde as carbonyl group.

19. (i) State one use each of DDT and iodoform.

(ii) Which compound in the following couples will react faster in  $S_N2$  displacement and why?

(a) 1-bromopentane or 2-bromopentane

(b) 1-bromo-2-methylbutane or 2-bromo-2-methylbutane.

20. Give three reactions of glucose which cannot be explained by its chain structure.

21. Give reasons for the following:

(i) Benzyl chloride is highly reactive towards the  $S_N1$  reaction.

(ii) 2-bromobutane is optically active but 1-bromobutane is optically inactive.

(iii) Electrophilic reactions in haloarenes occur slowly

22. A solution prepared by dissolving 1.25 g of oil of winter green (methyl salicylate) in 99.0 g of benzene has a boiling point of  $80.31^\circ\text{C}$ . Determine the molar mass of this compound. (B.P. of pure benzene =  $80.10^\circ\text{C}$  and  $K_b$  for benzene =  $2.53^\circ\text{C kg mol}^{-1}$ )

### **SECTION-D**

23. Carbohydrates are polyhydroxy aldehydes and ketones and those compounds which on hydrolysis give such compounds are also carbohydrates. The carbohydrates which are not hydrolysed are called monosaccharides. Monosaccharides with aldehydic group are called aldose and those which free ketonic groups are called ketose. Carbohydrates are optically active. Number of optical isomers =  $2^n$

Where  $n$  = number of asymmetric carbons. Carbohydrates are mainly synthesised by plants during photosynthesis. The monosaccharides give the characteristic reactions of alcohols and carbonyl group (aldehydes and ketones). It has been found that these monosaccharides exist in the form of cyclic structures. In cyclization, the -OH groups (generally  $C_5$  or  $C_4$  in aldohexoses and  $C_5$  or  $C_6$  in ketohexoses) combine with the aldehyde or keto group. As a result, cyclic structures of five or six membered rings containing one oxygen atom are formed, e.g., glucose forms a ring structure. Glucose contains one aldehyde group, one  $1^\circ$  alcoholic group and four  $2^\circ$  alcoholic groups in its open chain structure.

**The following questions are multiple choice questions. Choose the most appropriate answer:**

(i) First member of ketos sugar is

- |            |             |             |            |
|------------|-------------|-------------|------------|
| (a)        | (b)         | (c)         | (d)        |
| ketotriose | ketotetrose | ketopentose | ketohexose |

(ii) In  $\text{CH}_2\text{OHCHOHCHOHCHOHCHOHCHO}$ , the number of optical isomers will be

(a) 16      (b) 8      (c) 32      (d) 4

(iii) Some statements are given below:

1. Glucose is aldohexose.
2. Naturally occurring glucose is dextrorotatory.
3. Glucose contains three, chiral centres.
4. Glucose contains one  $1^\circ$  alcoholic group and four  $2^\circ$  alcoholic groups.

Among the above, correct statements are

(a) 1 and 2 only      (b) 3 and 4 only  
(c) 1,2 and 4 only      (d) 1,2,3 and 4

(iv) Which of the following reactions of glucose can be explained only by its cyclic structure?

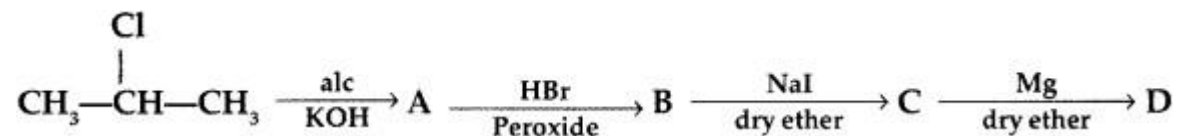
- (a) Glucose forms cyanohydrin with HCN  
(b) Glucose reacts with hydroxylamine to form an oxime  
(c) Pentaacetate of glucose does not react with hydroxylamine  
(d) Glucose is oxidised by nitric acid to gluconic acid .

### **SECTION-E**

24.(a) The vapour pressures of benzene and toluene at 293 K are 75 mm Hg and 22 mm Hg respectively. 23.4 g of benzene and 64.4 g of toluene are mixed. If the two form an ideal solution, calculate the mole fraction of benzene in the vapour phase assuming that the vapour pressures are in equilibrium with the liquid mixture at this temperature.

(b) What is meant by +ve and -ve deviations from Raoult's law and how is the sign of  $\Delta H$  solution related to +ve and -ve deviations from Raoult's law?

25. (a) Write the structural formula of A, B, C and D in the following sequence of reaction:



(b) Illustrate Sandmeyer's reaction with the help of a suitable example.

**ST. PBN PUBLIC SCHOOL, GURUGRAM**  
**UNIT TEST - 1**  
**Sample Paper**  
**CLASS-XII**  
**PHYSICS**

**TIME: 2 HRS.**

**M.M.: 50**

**General Instructions:**

1. This question paper contains 23 questions. All questions are compulsory.
2. This question paper is divided into five sections- **Sections A,B,C,D** and **E**.
3. Section A has 10 questions. Each question carries 1 mark each.
4. Section B has 5 questions each carries 2 marks.
5. Section C has 4 questions. Each carries 3 marks.
6. Section D has 2 Case-based questions. Each carries 4 marks.
7. Section E has 2 questions. Each carries 5 marks. Attempt all the questions.
8. There is no overall choice given in the question paper. However, an internal choice has been provided in few questions in all the Sections except Section A.

**SECTION-A**

1. In a region of constant potential
  - (a) the electric field is uniform
  - (b) the electric field is zero
  - (c) there can be no charge inside the region.
  - (d) the electric field shall necessarily change if a charge is placed outside the region.
2. Which of the following characteristics of electrons determines the current in a conductor?
  - (a) Drift velocity alone.
  - (b) Thermal velocity alone.
  - (c) Both drift velocity and thermal velocity.
  - (d) Neither drift nor thermal velocity
3. Equipotential at a great distance from a collection of charges whose total sum is not zero are approximately
  - (a) spheres.
  - (b) planes.
  - (c) paraboloids
  - (d) ellipsoids.
4. Consider a region inside which there are various types of charges but the total charge is zero. At points outside the region
  - (a) the electric field is necessarily zero.
  - (b) the electric field is due to the dipole moment of the charge distribution only.
  - (c) the dominant electric field is  $\propto 1/r^3$ , for large  $r$ , where  $r$  is the distance from a origin in this region.
  - (d) the work done to move a charged particle along a closed path, away from the region, will be zero.
5. The Electric field at a point is
  - (a) always continuous.
  - (b) continuous if there is no charge at that point.
  - (c) discontinuous only if there is a negative charge at that point.
  - (d) discontinuous if there is a charge at that point..
6. A resistance  $R$  is to be measured using a meter bridge. Student chooses the standard resistance  $S$  to be  $100\Omega$ . He finds the null point at  $l_1 = 2.9$  cm. He is told to attempt to improve the accuracy. Which of the following is a useful way?
  - (a) He should measure  $l_1$  more accurately.
  - (b) He should change  $S$  to  $1000\Omega$  and repeat the experiment.

- (c) He should change  $S$  to  $3\Omega$  and repeat the experiment.  
 (d) He should give up hope of a more accurate measurement with a meter bridge.
7. A hemisphere is uniformly charged positively. The electric field at a point on a diameter away from the centre is directed  
 (a) perpendicular to the diameter  
 (b) parallel to the diameter  
 (c) at an angle tilted towards the diameter  
 (d) at an angle tilted away from the diameter
8. A positively charged particle is released from rest in an uniform electric field. The electric potential energy of the charge  
 (a) remains a constant because the electric field is uniform.  
 (b) increases because the charge moves along the electric field.  
 (c) decreases because the charge moves along the electric field.  
 (d) decreases because the charge moves opposite to the electric field.
9. **Assertion (A)** : When identical cells are connected in parallel to the external load, the effective e.m.f increases.

**Reason (R)** : All the cells will be sending unequal current to the external load in the same direction.

- (a) both Assertion and Reason are correct and the Reason is a correct explanation of the Assertion.  
 (b) both Assertion and Reason are correct but Reason is not a correct explanation of the Assertion.  
 (c) the Assertion is correct but Reason is incorrect.  
 (d) both the Assertion and Reason are incorrect.

**Assertion** : A metallic shield in form of a hollow shell may be built to block an electric field.

**Reason** : In a hollow spherical shield, the electric field inside it is zero at every point.

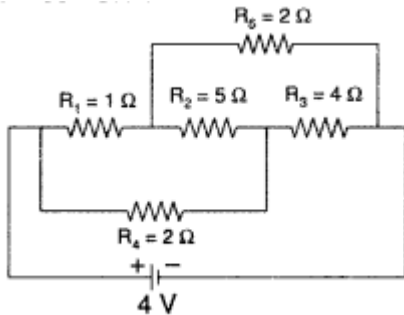
- (a) both Assertion and Reason are correct and the Reason is a correct explanation of the Assertion.  
 (b) both Assertion and Reason are correct but Reason is not a correct explanation of the Assertion.  
 (c) the Assertion is correct but Reason is incorrect.  
 (d) both the Assertion and Reason are incorrect.

### **SECTION- B**

10. Two metallic wires of the same material have the same length but cross-sectional area is in the ratio 1 : 2. They are connected  
 (i) in series and  
 (ii) in parallel. Compare the drift velocities of electrons in the two wires in both the cases (i) and (ii). (All India)
11. Derive an expression for the resistivity of a good conductor, in terms of the relaxation time of electrons.
12. If the total charge enclosed by a surface is zero, does it imply that the electric field everywhere on the surface is zero? Conversely, if the electric field everywhere on a surface is zero, does it imply that net charge inside is zero.
13. An uncharged capacitor is connected to a battery. Show that half the energy supplied by the battery is lost as heat while charging the capacitor.
14. A metallic spherical shell has an inner radius  $R_1$  and outer radius  $R_2$ . A charge  $Q$  is placed at the centre of the spherical cavity. What will be surface charge density on (i) the inner surface, and (ii) the outer surface?

### **SECTION-C**

15. A capacitor has some dielectric between its plates, and the capacitor is connected to a DC source. The battery is now disconnected and then the dielectric is removed. State whether the capacitance, the energy stored in it, electric field, charge stored and the voltage will increase, decrease or remain constant.
16. Two conductors are made of the same material and have the same length. Conductor A is a solid wire of diameter 1mm. Conductor B is a hollow tube of outer diameter 2mm and inner diameter 1mm. Find the ratio of resistance  $R_A$  to  $R_B$ .
17. A paisa coin is made up of Al-Mg alloy and weighs 0.75g. It has a square shape and its diagonal measures 17 mm. It is electrically neutral and contains equal amounts of positive and negative charges. Treating the paisa coins made up of only Al, find the magnitude of equal number of positive and negative charges. What conclusion do you draw from this magnitude?
18. Calculate the current drawn from the battery in the given network.



### SECTION-D

#### CASE-BASED

19. Concept of field lines was introduced by Michael Faraday as an aid in visualizing electric and magnetic fields. Electric line of force is an imaginary straight or curved path along which a unit positive charge tends to move in an electric field. Properties of lines of forces observed by the scientist such as: Lines of force start from positive charge and terminate at negative charge, Lines of force never intersect, the tangent to a line of force at any point gives the direction of the electric field  $E$  at that point, the number of lines per unit area, through a plane at right angles to the lines, is proportional to the magnitude of  $E$ . This means that, where the lines of force are close together,  $E$  is large and where they are far apart,  $E$  is small. Each unit positive charge gives rise to  $1/\epsilon_0$  lines of force in free space. Hence number of lines of force originating from a point charge  $q$  is  $N = q/\epsilon_0$  in free space.

1. Choose correct statement regarding electric lines of force:

- (a) Emerges from (-ve) charge and meet at (+ve) charge.
- (b) Electric field in a region is strong when the electric lines of force at that region is closely spaced.
- (c) Just as it is shown for a point system in the same way it represents for a solid sphere. (d) has a physical nature.

2. Two electric field lines due to a point charge:

- (a) Never intersect
- (b) May intersect near the charge
- (c) Always intersect at 2 points
- (d) None of these

3. The tangent at any point on the electric field line gives:

- (a) The direction of magnetic field at that point
- (b) The direction of electric field at that point
- (c) The direction of acceleration due to gravity
- (d) All of the above



4.If the direction of the electric field line due to two unlike point charges is from left to right then:

- (a) Positive charge is at left and negative charge is at right
- (b) Negative charge is at left and positive charge is at right
- (c) Both charges are at left
- (d) Both charges are at right

20. Read the source given below and answer any four out of the following questions: The rate of flow of charge through any cross-section of a wire is called electric current flowing through it. Electric current ( $I$ ) =  $q/t$ . Its SI unit is ampere (A). The conventional direction of the electric current is the direction of motion of positive charge. The current is the same for all cross-sections of a conductor of the non-uniform cross-section. Resistance is a measure of the opposition to current flow in an electrical circuit

I An example of non-ohmic resistance is:

- A tungsten wire
- B carbon resistance
- C diode
- D copper wire

II Current is:

- A scalar quantity
- B vector quantity
- C both scalar and vector quantity
- D none of the above

III In a current-carrying conductor, the net charge is:

- A  $1.6 \times 10^{-19}$  coulomb
- B  $6.25 \times 10^{-18}$  coulomb
- C . zero
- D . infinite

IV The current which is assumed to be flowing in a circuit from the positive terminal to negative is called:

- A direct current
- B pulsating current
- C conventional current
- D none of these

#### **SECTION-E**

21. i) Two charges  $q_1$  and  $q_2$  are placed at  $(0, 0, d)$  and  $(0, 0, -d)$  respectively. Find locus of points where the potential is zero.

ii) Two charges  $-q$  each are separated by distance  $2d$ . A third charge  $+q$  is kept at mid point  $O$ . Find potential energy of  $+q$  as a function of small distance  $x$  from  $O$  due to  $-q$  charges. Sketch P.E.  $v/s$   $x$  and convince yourself that the charge at  $O$  is in an unstable equilibrium.

22. In 1959 Lyttleton and Bondi suggested that the expansion of the Universe could be explained if matter carried a net charge. Suppose that the Universe is made up of hydrogen atoms with a number density  $N$ , which is maintained a constant. Let the charge on the proton be:  $e_p = -(1 + y)e$  where  $e$  is the electronic charge.

- (a) Find the critical value of  $y$  such that expansion may start.
- (b) Show that the velocity of expansion is proportional to the distance from the centre.

**ST. PBN PUBLIC SCHOOL, GURUGRAM**  
**UNIT TEST - I**  
**CLASS - XII**  
**PHYSICAL EDUCATION**  
**SAMPLE PAPER**

**Time: 2 Hours**

**MM: 50**

**General Instructions:-**

- 1. All questions are compulsory.**
- 2. Questions 1-7 carry 1 mark each and are multiple choice questions.**
- 3. Questions 8-10 carry 2 marks each and their answers should not exceed 40-60 words.**
- 4. Questions 11-13 carry 3 marks each and their answers should not exceed 80-100 words.**
- 5. Questions 14-15 carry 4 marks each and their answers should not exceed 120-140 words.**
- 6. Questions 16-19 carry 5 marks each.**

1. Effective Planning can help in:

- |                          |                                  |
|--------------------------|----------------------------------|
| (a) Improving Efficiency | (c) Reducing chances of mistakes |
| (b) Proper Coordination  | (d) All the above                |

2. Pre-tournament tasks are done :

- |                           |                              |
|---------------------------|------------------------------|
| (a) During the tournament | (c) After the tournament     |
| (b) Before the tournament | (d) After the award ceremony |

3. How many byes will be given if 29 teams are participating in a knock-out tournament?

- |       |       |
|-------|-------|
| (a) 3 | (c) 5 |
| (b) 4 | (d) 6 |

4. If the spine has a sideways curve, it is called

- |               |               |
|---------------|---------------|
| (a) Flat back | (c) Lordosis  |
| (b) Kyphosis  | (d) Scoliosis |

5. Which asana is known as Mountain pose?

- |                |                  |
|----------------|------------------|
| (a) Matsyasana | (c) Parvatasana  |
| (b) Tadasana   | (d) Shalabhasana |

6. The other name of League tournament is

- |                            |                            |
|----------------------------|----------------------------|
| (a) Knock out tournament   | (c) Challenge tournament   |
| (b) Round Robin tournament | (d) Combination tournament |

7. At what point is blood pressure considered high:

- |            |             |
|------------|-------------|
| (a) 80/120 | (c) 140/90  |
| (b) 130/80 | (d) 210/120 |

8. Briefly discuss Lordosis.

9. What are the causes of bad posture?

10. Briefly mention the benefits of Halasana.

11. Briefly explain about types of league tournament.

12. Explain the term 'Menarche'.

13. What do you mean by triad? Discuss its symptoms.

14. Discuss the procedure of Pawanmuktasana.

15. Mention the benefits of Gomukhasana.

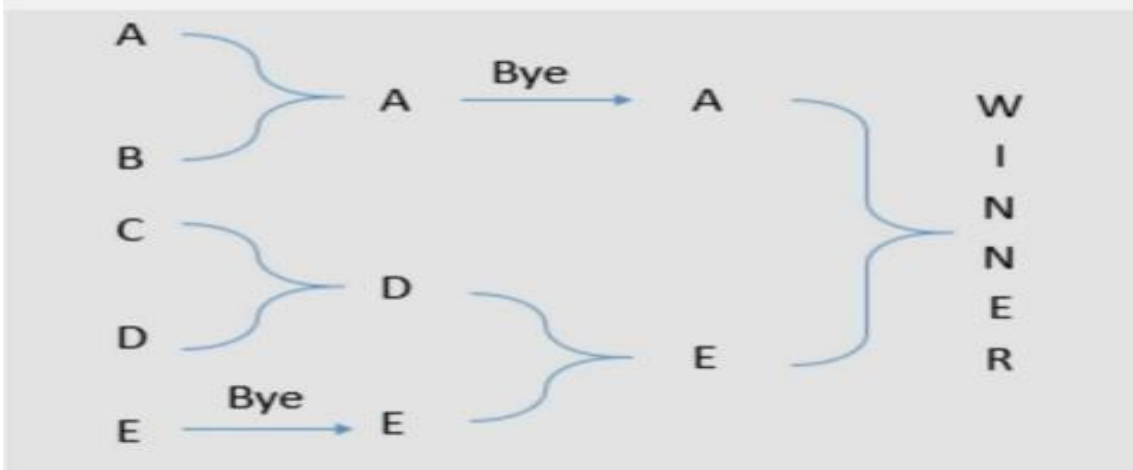
16. Write in detail the symptoms and causes of amenorrhoea.

17. Define and classify 'fixtures'. Draw a league fixture of 16 teams.

18. What do you mean by back pain? Discuss the procedure and benefits of Shalabhasana.

19. Case based questions:

Competing in physical activities has been the natural tendency of humans. The competitions or tournaments are held according to the set rules and regulations. The success of the tournament depends upon suitable fixture. Observe the below given fixture and answer the questions.



- (i). The method followed in drawing the fixture is \_\_\_\_\_
- a) League  
b) Knockout  
c) Ladder  
d) Combination
- (ii). Number of matches played can be calculated by the formula \_\_\_\_\_
- a) N  
b) N-1  
c) N+1  
d) N+2
- (iii). The advantage of this tournament is \_\_\_\_\_
- a) Economical  
b) Less time  
c) both (a) and (b)  
d) none of these
- (iv). In this type of tournament, a team once defeated gets
- a) Eliminated  
b) Bye  
c) another chance  
d) wild card entry
- (v). A privilege given to a team to play at a higher round is called \_\_\_\_\_
- a) Fixture  
b) Bye  
c) Reward  
d) All of these

**St. PBN PUBLIC SCHOOL, GURUGRAM**

**UNIT TEST- I EXAMINATION  
CLASS XII  
COMPUTER SCIENCE  
(SUBJECT CODE-083)  
SAMPLE PAPER**

**Time: 2 Hours**

**M.M:50**

**GENERAL INSTRUCTIONS:**

1. This question paper contains five sections, Section A to E.
2. All questions are compulsory.
3. Section A have 12 questions carrying 01 mark each.
4. Section B has 04 Very Short Answer type questions carrying 02 marks each.
5. Section C has 04 Short Answer type questions carrying 03 marks each.
6. Section D has 02 Long Answer type questions carrying 05 marks each.
7. Section E has 02 questions carrying 04 marks each. One internal choice is given in Q23 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 12 = 12)**

1. Which function is used to display the message?  
(a) float( ) (b) string( )  
(c) print( ) (d) input( )
2. Which of the following is an identifier?  
(a) d (b) 'H'  
(c) ## (d) 101
3. What will be the output of **print("Amita" > "amit")**  
(a) True (b) False  
(c) Error (d) None of these
4. What will be the data type of L where L =[1,2,3] ?  
(a) tuples (b) list  
(c) string (d) integer
5. Which operator is used to concatenate string?  
(a) + (b) \*  
(c) ^ (d) //

6. Which of the following mode in file operating statement results or generates an error if the file does not exist?
- (a) a+ (b) r+  
(c) w+ (d) None of the above
7. Which of the following is not a valid namespace?
- (a) Global namespace (b) Local namespace  
(c) Built-in namespace (d) public namespace
8. What will be the output of the following code : **print("Str"[1:2])**
- (a) t (b) no output  
(c) error (d) none of these
9. Which of the statements is used to import all names from a module into the current calling module?
- (a) import (b) from  
(c) import\* (d) dir( )
10. Which values are used by the functions to communicate information back to the caller?
- (a) local (b) global  
(c) return (d) random

**Q11 and 12 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

**11. Assertion (A):**The while statement executes a block of code repeatedly as long as the control condition of the loop is false.

**Reason (R):**If the condition of the while loop is initially false, the body is not executed even once.

**12. Assertion (A):**Built in function are predefined in the language that are used directly.

**Reason (R):**print( ) and input( ) are built in functions.

### SECTION B

(2x 4 = 8)

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

```
sound()
def sound():
    print("sound" * 2)
```

(ii) What will be the output of following Python code?

```
a = "Blog"
a = 'a'
print(a)
```

(1+1)

14. Write a Python program that accepts two integers from the user and prints a message saying if first number is divisible by second number or if it is not. (2)

15. (i) Why is indexing of strings called two-way indexing?

(ii) What are the two ways of creating a list in Python? (1+1)

16. (i) Write a Program to enter the number of terms and to print the Fibonacci Series.

17. (ii) Write a Program to enter the string and to check if it's palindrome or not using loop..

**OR**

Write a program to receive a two number in a function and return the result of all arithmetic operators (+, - , / , \*) (2)

### SECTION C

(3x 4 = 12)

18. (i) Predict the output of following code fragment?

```
Def func (message,num=1)
Print (message*num)
Func('python')
Func("easy",3)
```

(ii) Define List, Tuple, Modules? (1+2)

19. How can you generate random numbers in Python? Explain with the help of Python code.

**OR**

Write a definition of a method Odd Sum (NUMBERS) to add those values in the list of NUMBERS, which are odd. (3)

20. (i) Differentiate between local variable and global variable

(ii) Write a program to print the elements of list in descending order using the insertion sort technique using functions.

(1+2)

21. . Write a program to check if a number is odd or even.

**OR**

What is pickling and unpickling? Write a Python program to read the contents of binary file. (3)

### SECTION D

**(5x 2 = 10)**

22. Hindustan Chemicals Ltd. is a company that deals in manufacture and export of chemicals across the world and has hundreds of employees on its roll. It wishes to computerize the process of salary generation. Write a Python program to enter the names of employees and their salaries as input and store them in a dictionary and also represent the data as Salary Generation Report.

(5)

23. (i) Write the term suitable for the following descriptions:

- (a) A name inside the parenthesis of a function header that can receive a value.
- (b) A argument passed to a specific parameter using the parameter name.
- (c) A value passed to a function parameter.
- (d) A value assigned to a parameter name in the function call.
- (e) A name defined outside all function definitions.
- (f) A variable created inside a function body.

(ii) From the program code given below, identify the parts mentioned below:

```
def processNumber (x) :  
    x = 71  
    return x+3  
y = 90  
result = processNumber (y)
```

Identify these parts: function header, function call , actual arguments, formal argument (2+3)

### SECTION E

**(4 x 2 = 8)**

24. Consider the following code and answer the following questions:

```

total = _____ # Line 1
def sum(arg1, arg2) _____ # Line 2
    total= arg1 + _____ # Line 3
    print(total)
    return _____ # Line 5
total = sum(10,20)
print(_____) # Line 7

```

- (i) Which value or constant will be equal to variable total in line 1?
- (ii) Which symbol is used to terminate the function def in line 2?
- (iii) Fill in the blank in line 3.

**OR (Option for part iii only)**

What value will be return in line 5?

- (iv) Fill in the blank in line 7. (1+1+1+1)

24. Ankit has been assigned the task to complete the code and print details of roll number 1.

```

def search():
    f = open("student.dat", _____) # Statement-1
    try:
        while True:
            rec = pickle. _____ # Statement-2
            if( _____ ): # Statement-3
                print(rec)
    except: pass
    _____ # Statement-4

```

- In which mode Aman should open the file in Statement-1?
- Identify the function (with argument), to be used at blank space in line marked Statement-2.
- What will be the suitable code for blank space in line marked as Statement-3?
  - What statement Aman should use at blank space in line marked as Statement-4 to close the file?

(1+1+1+1)