**Section-A**

1. In an attempt to demonstrate electrical conductivity through an electrolyte, the following apparatus was set up. Which among the following statement(s) is(are) correct?
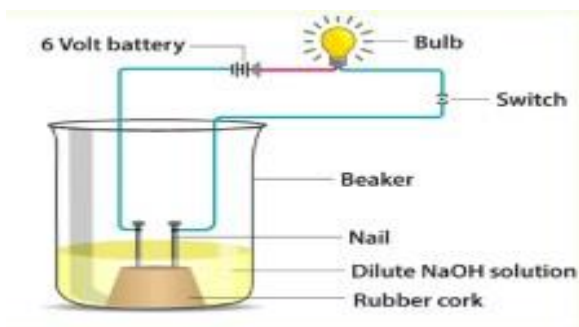
1) Bulb will not glow because the electrolyte is not acidic.
2) Bulb will glow because NaOH is a strong base and furnishes ions for conduction.
3) Bulb will not glow because the circuit is incomplete.
4) Bulb will not glow because it depends upon the type of electrolytic solution.
   a. (i) and (iii)
   b. (ii) and (iv)
   c. (ii) only
   d. (iv) only

2. A student prepared 20% sodium hydroxide solution in a beaker containing water. The observations noted by him are given below.
   (I) Sodium hydroxide is in the form of pellets.
   (II) It dissolves in water readily.
   (III) The beaker appears cold when touched from outside.
   (IV) Red litmus paper turns blue when dipped into the solution. The correct observations are:
   (a) (l), (II), and (III)
   (b) (II), (III) and (IV)
   (c) (II), (IV) and (I)
   (d) (I), (II) and (IV)

3. Bleaching powder's chemical name is ____
   a. Calcium hypo-Oxychloride
   b. Calcium Oxychloride
   c. Calcium Chloride
   d. Calcium Chloro-Oxide

4. A solution reacts with crushed egg shells to give a gas that turns lime water milky .The solution contains --------
   a. NaCl
   b. HCl
   c. LiCl
   d. KCl

5. The salt which will give an acidic solution on dissolving in water is:-
   (a) KCl   (b) NH_4Cl (c) Na_2CO_3 (d) CH_3COONa

6. In the schematic diagram for the preparation of hydrogen gas as shown in the figure, what would happen if the following changes are made? In place of zinc granules, the same amount of zinc dust is taken in the test tube.
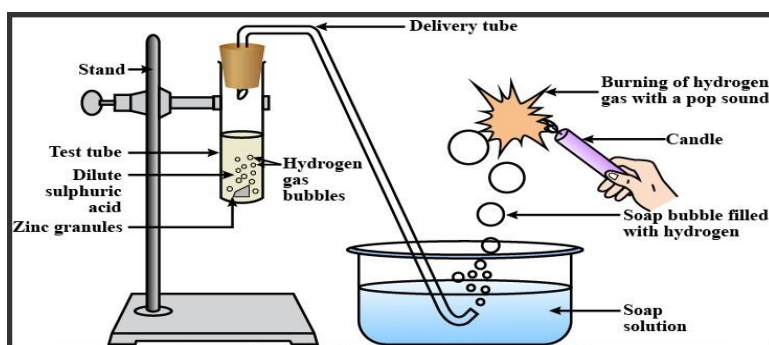
(a) Hydrogen gas will evolve with lesser speed
(b) Hydrogen gas will evolve with greater speed
(c) No gas would be evolved
(d) Zinc dioxide gas would be formed.

7. In terms of acidic strength, which one of the following is in the correct increasing order?

   (a) Water < Acetic acid < Hydrochloric acid
   (b) Water < Hydrochloric acid < Acetic acid
   (c) Acetic acid < Water < Hydrochloric acid
   (d) Hydrochloric acid < Water < Acetic acid

8. What is formed when zinc reacts with sodium hydroxide?
   (a) Zinc hydroxide and sodium
   (b) Sodium zincate and hydrogen gas

   (c) Sodium zinc-oxide and hydrogen gas
   (d) Sodium zincate and water
9. Brine is an
   (a) aqueous solution of sodium hydroxide
   (b) aqueous solution of sodium carbonate
   (c) aqueous solution of sodium chloride
   (d) aqueous solution of sodium bicarbonate
10. Sodium carbonate is a basic salt because it is a salt of a
   (a) strong acid and strong base
   (b) weak acid and weak base
   (c) strong acid and weak base
   (d) weak acid and strong base
11. Tooth enamel is made up of
   (a) Calcium phosphate
   (b) Calcium carbonate
   (c) Calcium oxide
   (d) Potassium
12. Which of the following phenomena occur, when a small amount of acid is added to water?
   (i) Ionisation
   (ii) Neutralisation
   (iii) Dilution
   (iv) Salt formation
   a) (i) and (ii)   (b) (i) and (iii)   (c) (ii) and (iii)   (d) (ii) and (iv)

Assertion and Reason Questions

Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:
(a) Both A and R are true and R is the correct explanation of A.

(b) Both A and R are true 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

13. Assertion (A) : The process of dissolving an acid or a base in water is a highly exothermic. Reason (R) : Mixing an acid or base with water results in decrease in concentration of ions (H_3O^+ / H^+)

14. Assertion (A) **:** During electrolysis of concentrated aqueous solution of sodium chloride, hydrogen is produced at anode and chlorine gas is produced at cathode.
Reason (R) **:** Ions get attracted to oppositely charged electrodes.

15. Assertion : HCl is a stronger acid than acetic acid.
Reason: On dissociation, HCl yields lesser hydrogen ions for the same concentration as compared to acetic acid.

16. Assertion : pH of ammonium nitrate solution is acidic.
Reason: Solution of a salt of weak base and strong acid is acidic.

Case study based questions

Read the following and answer any four questions:

Taj Mahal, the seventh wonder of the world, is made of white stone. This white stone contains the same substance 'A' that is present in chalk powder and lime-stone. It is turning yellow due to polluted air. If it is cleaned by an acidic cleaner, a gas 'B' is released, which when passed through a solution 'C', forms the same substance which is present in the white stone that was used to make Taj mahal.

17. The substance A is-
    a.) Ca_3CO_2
    b.) $CaCO_3$
    c) $Ca(OH)_2$
    d) $CaSO_4$

18. Gas B is-
    a.) Hydrogen
    b.) Nitrogen
    c) Chlorine
    d) Carbon dioxide

19. Solution C is-
    a) $CaCl_2$
    b) $CaCO_3$
    c) $Ca(OH)_2$
    d) $CaSO_4$

20. What is the nature of the substance A?
    a) Acidic
    b) Basic
    c) Neutral

d) None

21. Sodium carbonate is a basic compound because it is a salt of a
(a) Strong acid and strong base   (b) weak acid and weak base
(c) Strong acid and weak base (d) weak acid and strong base

ONE MARK QUESTIONS

21. Name the gas evolved when dilute HCl reacts with sodium hydrogen carbonate.
22. What is the name of the indicator which can be used for testing the pH of a solution?
23. Two solutions X and Y have pH=4 and pH=8 respectively. Which solution will give alkaline reaction and which one acidic?

THREE MARK QUESTIONS

24. (a) Define olfactory indicators. Name two substances which can be used as olfactory indicators.
    (b)Choose strong acids from the following:- CH3COOH, H2SO4, H2CO3, HNO3
25. You have four solutions A, B, C and D. The pH of solution A is 6, B is 9, C is 12 and D is 7.
    (i)   Identify the most acidic and most basic solutions.
    (ii)   Arrange the above four solutions in the increasing order of H+ ion concentration.
    (iii)   State the change in colour of pH paper on dipping in solution C and D.

26. Equal length of magnesium ribbon are taken in two test tubes A and B .H2SO4 is added to test tube A and H2CO3 in the test tube B in equal amounts.
    (a) Identify the test tube having vigorous reaction.
    (b) Give reason to support your answer.
    (c) Name the gas liberated in both the test tubes. How will you prove its liberation?
    (d) Write chemical equations for both the reactions.

27. It is prepared from brine.
    (a) Write the chemical name, common name and chemical formula of X.
    (b) Write the equation involved in its preparation.
    (c) What happens when it is treated with water containing Ca or Mg salts?

28. Why do acids not show acidic behaviour in the absence of water?

29. In one of the industrial processes used for manufacture of sodium hydroxide, a gas X is formed as by product. The gas X reacts with lime water to give a compound Y which is used as a bleaching agent in chemical industry. Identify X and Y giving the chemical equations of the reactions involved.

30. Identify the acid and base which form sodium hydrogen carbonate. Write chemical equation in support of your answer. State whether its compound is acidic, basic or neutral. Also write its pH value.

31. Why should curd and sour substances not be kept in brass and copper vessels ?

32. Compounds such as alcohol and glucose also contain hydrogen but are not categorised as acids. Describe an activity to prove it.

33. When copper powder is heated in a watch glass, a black substance is formed. (a) Why is this black substance formed? Name it. (b) How can this black substance be reversed to its original form?

34. Silver chloride kept in a china dish turns grey in sunlight
    (a) Write the colour of silver chloride when it was kept in the china dish.
    (b) Name the type of chemical reaction taking place and write the chemical equation for the reaction.
    (c) State one use of the reaction. Name one more chemical which can be used for the same purpose.

35. A shining metal 'M', on burning gives a dazzling white flame and changes to a white powder 'N'.

(a) Identify 'M' and 'N'.

(b) Represent the above reaction in the form of a balanced chemical equation.

(c) Does 'M' undergo oxidation or reduction in this reaction? Justify.

37. In the refining of silver, the recovery of silver from silver nitrate solution involved displacement by copper metal. Write down the reaction involved.

38 . A white salt on heating decomposes to give brown fumes and a residue is left behind. (a) Name the salt. (b) Write the equation for the decomposition reaction.

39. Identify the type of reactions in each of the following reactions: (i) Zn+H2SO4 → ZnSO4+H2 (ii) CaO+H2O → Ca(OH)2 (iii) CaCO3→CaO+ CO2

40. A Zinc plate was put into a solution of copper sulphate kept in a glass container. It was found that blue colour of the solution gets fader and fader with the passage of time. After a few days when the zinc plate was taken out of the solution, a number of holes were observed on it. (a) State the reason for changes observed on the zinc plate. (b) Write the chemical equation for the reaction involved.

41. Why do potato chips manufacturers fill the packet of chips with nitrogen gas?

42. Write one equation each for the decomposition reactions where energy is supplied in the form of (a) heat (b) light and (c) electricity

विभाग 'अ' - वाचन व आकलन

प्रश्न १) खालील उतारा काळजीपूर्वक वाचा व त्यावर आधारित विचारलेल्या प्रश्नांची उत्तरे लिहा.

महाबळेश्वर हे महाराष्ट्रातील एक थंड हवेचे निसर्गरम्य ठिकाण आहे. ते महाराष्ट्राचे नंदनवन आहे. हे एक प्रेक्षणीय स्थळ असून महाराष्ट्राच्या सातारा जिल्ह्यातील एक गाव आहे. उंचच उंच डोंगर व खोल खोल दऱ्या हे महाबळेश्वरचे प्रमुख वैशिष्ट्य आहे. दरवर्षी लाखों पर्यटक महाबळेश्वरला भेट देतात. महाबळेश्वर समुद्रसपाटीपासून तेराशे बहात्तर मीटर उंचीवर असून सह्याद्री पर्वत रांगांच्या कुशीत वसलेले आहे. महाबळेश्वरला पावसाचे प्रमाण खूप असून पावसाळ्यात हा परिसर जलमय होऊन जातो. सगळीकडे हिरवीगार दाट झाडी पसरलेल्या या भागात माकडे विपुल प्रमाणात आहेत. पर्यटकांच्या हातातील खाद्यपदार्थ पळवून नेण्यात माकडे फार पटाईत आहेत. महाबळेश्वर मधील विल्सन पॉईंट, ऑर्थर सीट पॉईंट, लॉडनिंग पॉईंट हे फार उंचावर असलेले डोंगरकडे आहेत. महाबळेश्वर येथून कृष्णा, कोयना, वेण्णा, सावित्री व गायत्री या पाच नद्या उगम पावतात. वेण्णा तलाव पर्यटकांच्या आकर्षणाचे केंद्र आहे. महाबळेश्वर स्ट्रॉबेरी, रासबेरी आणि जांभळाचा रस यासाठी सर्वत्र प्रसिद्ध आहेत. महाबळेश्वरचा माध् फार चविष्ट व प्रसिद्ध आहे. जिकडेतिकडे गुलाबाची रोपे आहेत. त्यामुळे गुलकंद ही मोठ्या प्रमाणात मिळतो.

प्रश्न १) अ) उतारा वाचून त्याआधारे खालील प्रश्नांची उत्तरे पर्यायामधून निवडा.

१) महाबळेश्वर समुद्रसपाटीपासून किती उंचीवर आहे ?

अ) १३७२   ब) १३७५   क) १४७२   ड) १३७५

२) महाबळेश्वरला कशाचे प्रमाण जास्त आहे ?

अ) नद्यांचे   ब) पर्वतांचे   क) पावसाचे   ड) प्रसिद्ध खाद्यपदार्थांचे

आ) खालील प्रश्नांची उताऱ्याच्या आधारे एका वाक्यात उत्तरे लिहा.

१) महाबळेश्वर येथे उंचावर असणारे डोंगरकडे कोणते आहेत ?

२) महाबळेश्वर येथून कोणकोणत्या नद्या उगम पावतात ?

इ) उताऱ्याच्या आधारे खालील प्रश्नांची उत्तरे थोडक्यात लिहा.

१) महाबळेश्वरची प्रमुख वैशिष्ट्ये लिहा.

२) महाबळेश्वर येथील प्रसिद्ध खाद्यपदार्थ कोणते ते लिहा.

प्रश्न २) खालील कविता काळजीपूर्वक वाचा व त्यावर आधारित विचारलेल्या प्रश्नांची उत्तरे लिहा.

सुंदर सुंदर शब्दांचे सुंदर सुंदर घर

त्यांतून काही हळवे हळवे राहात होते स्वर

घरात होता काना-मात्रा- वेलांटीचा मेळ

एकोप्याने खेळायचे सगळे अक्षर खेळ

विरामचिन्हांचीही होती सोबत वरचेवर

सुंदर सुंदर शब्दांचे सुंदर सुंदर घर

एखाद्याची धुसपुस सुद्धा हवीहवीशी छान

प्रत्येकाला अर्थ वेगळा दु:खाचे भान

मधले अंतर कुरवाळाया रेघांचे छप्पर

सुंदर सुंदर शब्दांचे सुंदर सुंदर घर

कानोकानी कुजबुजताना अंकुर मनकोवळा

वाट मोकळी होऊन लागे कवितेचाही लळा

अवतीभवती झिरपत राही गाणे काळीजभार

सुंदर सुंदर शब्दांचे सुंदर सुंदर घर

प्रश्न २) अ) कविता वाचून त्यावर आधारित प्रश्नांच्या उत्तरांचा योग्य पर्याय निवडा.

१) शब्दांच्या घरात कशाचा मेळ होता ?

अ) काना   ब) मात्रा   क) वेलांटी   ड) पर्याय 'अ' 'ब', 'क' बरोबर

२) शब्दांच्या घरात वरचेवर कशाची सोबत मिळते ?

अ) विरामचिन्हांची   ब) काना-मात्रा   क) आपुलकीची   ड) छप्पराची

२) कानोकानी काय कुजबुजत आहे ?

अ) गाणे   ब) हळवे हळवे स्वर   क) विरामचिन्हे   ड) मनकोवळा अंकुर

आ) कविता वाचून त्यावर आधारित प्रश्नांची एका वाक्यात उत्तरे लिहा.

१) शब्दांच्या घरात एकोप्याने कोण खेळते ?

२) शब्दांच्या घरात कोण राहतात ?

३) शब्दांच्या मधले अंतर भरून काढण्यासाठी काय आहे ?

विभाग 'ब' - व्याकरण

प्रश्न ३) सूचनेप्रमाणे उत्तरे लिहा.

१) खालीलपैकी योग्य विधाने कोणती?

क) सर्वनाम म्हणजे नामाऐवजी वापरला जाणारा शब्द होय.

ख) वस्तूविषयी विशेष माहिती सांगणारा शब्द म्हणजे सर्वनाम होय.

ग) सर्वनामाचे एकूण सहा प्रकार आहेत.

अ) 'क' बरोबर   ब) 'क' आणि 'ख' बरोबर   क) 'ख' बरोबर   ड) 'क' आणि 'ग' बरोबर

२) 'खडक' या शब्दाचे लिंग ओळखा.

अ) पुल्लिंग   ब) स्त्रीलिंग   क) नपुसकलिंग

३) 'अंतराळ' या शब्दाचा समानार्थी शब्द ओळखा व लिहा.

अ) अवकाश   ब) धरती   क) आकाश   ड) 'अ' आणि 'क' बरोबर

४) गुरुजी मुलांना नेहमी हसत खेळत शिकवतात. (क्रियाविशेषण अव्यय ओळखा.)

आ) गुरुजी   ब) हसत   क) नेहमी   ड) खेळत

५) आईने पलंगावर चादर ठेवली. (अधोरेखित शब्दाची जात ओळखा.)

अ) केवलप्रयोगी अव्यय   ब) क्रियापद   क) शब्दयोगी अव्यय   ड) सर्वनाम

६) वाल्मिकीने रामायण हा ग्रंथ लिहिला. (अधोरेखित नामाचा प्रकार लिहा.)

अ) सामान्यनाम   ब) भाववाचक नाम   क) विशेषनाम

७) 'शाळा', 'कागद', 'रस्ता', 'तलाव' यापैकी निश्चितपणे एकवचनी शब्द कोणता ते ओळखा.

८) पुरात सापडलेले लोक देवाला प्रार्थना करत होते. (काळ ओळखा)

९) 'पुस्तक', 'पेन्सिल', 'खडू', 'वही' यापैकी निश्चितपणे अनेकवचनी शब्द कोणता ते ओळखा.

१०) शिक्षक विद्यार्थ्यांना शिक्षणाचे महत्त्व पटवून सांगत आहेत. (काळ ओळखा)

११) स्मिता छान रांगोळी काढते. (अधोरेखित शब्दाचे वचन बदलून वाक्य पुन्हा लिहा.)

१२) मी छावा ही कादंबरी वाचेन. (काळ ओळखा)

१३) खालीलपैकी समास प्रकारांच्या आधारे गटात न बसणारा शब्द ओळखा व लिहा.

अ) सुंठसाखर   ब) राधाकृष्ण   क) आठवडा   ड) सुईदोरा

१४) पुढीलपैकी स्त्रीलिंगी शब्द कोणता ते लिहा.

अ) झरा   ब) समुद्र   क) नदी   ड) धबधबा

१५) लिंग विचारानुसार गटात न बसणारा शब्द ओळखा व लिहा.

अ) पगडी   ब) फेटा   क) टोप   ड) मुकुट

१६) खालीलपैकी विरुद्धार्थी शब्दाची योग्य जोडी कोणती ते लिहा.

अ) शरम x अशरम 　　ब) सुरक्षित x निसुरक्षित 　　क) सावध x बेसावध 　　ड) ख्याती x प्रसिद्धी

१७) 'दुष्काळ' या शब्दाच्या विरुद्ध अर्थाचा योग्य शब्द ओळखा व लिहा.

अ) सुकाळ 　　　　ब) सुष्काळ 　　　　क) सकाळ 　　　　ड) सुसकाळ

१८) स्मिता छान <u>रांगोळी</u> काढते. (अधोरेखित शब्दाचे वचन बदलून वाक्य पुन्हा लिहा.)

१९) 'केरकचरा' या शब्दाचा समास ओळखा.

अ) समाहार द्वंद्व समास 　　　　　　　　ब) अव्ययीभाव समास

क) इतरेतर द्वंद्व समास 　　　　　　　　ड) वैकल्पिक द्वंद्व समास

२०) ज्या तत्पुरुष समासातील पहिले पद संख्याविशेषण असते व दुसरे पद नाम असते त्या समासास _____ समास म्हणतात.

अ) समाहार द्वंद्व समास 　　　　　　　　ब) अव्ययीभाव समास

क) द्विगू समास 　　　　　　　　　　　ड) वैकल्पिक द्वंद्व समास

२१) खालीलपैकी समानार्थी शब्दाची योग्य जोडी कोणती ?

अ) खग- पक्षी 　　ब) उदय - अस्त 　　क) उदार - कंजूस 　　ड) अर्वाचीन- प्राचीन

२२) <u>हिरवीगार</u> झाडे वाऱ्यावर डुलत होती. (अधोरेखित शब्दाची जात ओळखा.)

अ) नाम 　　ब) क्रियाविशेषण अव्यय 　　क) विशेषण 　　ड) सर्वनाम

२३) भारताने विश्वचषक क्रिकेट स्पर्धा जिंकली. (काळ ओळखा)

विभाग 'क' - पाठ्यपुस्तक आधारित

प्रश्न ५) अ) एका वाक्यात उत्तरे लिहा.

१) विश्वकोशाचे अध्यक्ष या नात्याने वाईला कोण गेले होते ?

२) वजन कमी करण्यासाठी न बोलण्याचा उपाय पंतांना का जमणार नव्हता ?

३) लेखकाने दिलेल्या शालीचे भिक्षेकऱ्याने काय केले ?

४) २००४ च्या मराठी साहित्य संमेलनाचे अध्यक्ष कोण होते ?

५) 'बाळसेदार भाज्या' या संकल्पनेचा अर्थ स्पष्ट करा.

६) पंतांच्या उग्र साधनेचे घटक कोणते होते ?

७) धारोष्ण दुधासाठी पंत कोठे जात असत ?

८) एका बाईचे बाळ कडाक्याच्या थंडीने कुडकुडताना पाहिले असता लेखकाने काय केले ?

९) आहारपरिवर्तन म्हणजे काय ?

१०) पंतांना दोरीवरच्या उड्या का थांबवाव्या लागल्या ?

आ) खालील वाक्यातील रिकाम्या जागी योग्य पर्याय शोधून वाक्य पुन्हा लिहा.

१) _____ वर्षावाखाली त्यांची शालीनता कधी हरवली नाही.

अ) शालींच्या 　　ब) फुलांच्या 　　क) पाण्याच्या 　　ड) कौतुकाच्या

२) काशीनाथ नाडकर्णी यांनी लेखकाला _____ पदार्थ सोडायला सांगितला.

अ) बटाटा 　　ब) डाळ 　　क) तेल व तळलेले पदार्थ 　　ड) साखर

३) ती शाल मि माझ्या खोलीतल्या _____ ठेवून दिली.

अ) कपाटामध्ये 　　ब) सुटकेसमध्ये 　　क) पिशवीमध्ये 　　ड) पलंगामध्ये

४) दोन महिन्यात _____ पौंड वजन कमी करून दाखविन तर खरा !

अ) वीस 　　ब) तीस 　　क) चाळीस 　　ड) पन्नास

५) _____ जवळपास मध्यावर तो भिक्षेकरी म्हातारा दिसला.

अ) कट्ट्याच्या 　　ब) मंदिराच्या 　　क) पुलाच्या 　　ड) झाडाच्या

६) लिंबाचा रस पंतांना _____ सारखा वाटू लागला.

अ) अमृत ब) विष क) सरबत ड) कारले

७) सन्मानाची प्रतीके _____ आहेत.

अ) शाल ब) पुस्तक क) श्रीफळ ड) पर्याय 'अ' व 'क' बरोबर

८) प्रमोशन मिळालेल्या पंतांच्या सहकाऱ्याचे नाव _____ होते.

अ) भिकोबा मुसळे ब) जगदाळे क) आचार्य बर्वे ड) अण्णा नाडगौडा

९) लेखकाने निकटवर्ती मित्राला _____ दिले होते.

अ) कपडे ब) शालींचे गाठोडे क) पुस्तके ड) पैसे

१०) पंतांच्या डाएटबाबत _____ यांचा उत्साह अवर्णनीय होता.

अ) आचार्य बर्वे ब) त्यांच्या मुलांचा क) धर्मपत्नीचा ड) कु. कमलिनी केंकरे

इ) खालील प्रश्नांची ४० ते ५० शब्दांत उत्तरे लिहा.

१) 'भिक्षेकऱ्याने केलेला शालीचा उपयोग' याविषयी तुमचे मत लिहा. ?

२) 'पंतांच्या उपासबाबत त्यांच्या पत्नीचा अवर्णनीय उत्साह' तुमच्या शब्दांत लिहा.

३) 'शाल व शालीनता' यांचा पाठाच्या आधारे तुम्हाला कळलेला अर्थ लिहा.

४) 'चाळ संस्कृतीचे' पाठातून होणारे दर्शन स्पष्ट करा.

ई) कंसात दिलेल्या वाक्प्रचारांचा योग्य त्याठिकाणी वापर करून वाक्य पुन्हा लिहा.

(ख्याती मिळवणे, अंगाचा तिळपापड होणे, दरारा असणे, पोरकं होणे, चेहरा उतरणे)

१) सहलीला जायला न मिळाल्याने राजू नाराज होता.

२) सरपंच रामरावांचा आमच्या गावात वचक होता.

३) आमच्या गावातील मुलगा आय.ए.एस झाल्यामुळे आमच्या गावाला सर्वत्र प्रसिद्धी मिळाली.

४) मुलगा खोटे बोलतो आहे हे पाहून वडिलांना अतिशय राग आला.

५) अपघातामध्ये आईवडिलांचे निधन झाल्यामुळे रमेश अनाथ झाला.

प्रश्न ६) अ) खालील प्रश्नांची एका वाक्यात उत्तरे लिहा.

१) भुकेल्या वासराला पाहून कोण हंबरत आहे ?

२) कवीचे प्रत्येकी दोन दिवस कसे गेले ?

३) कवीचे आयुष्य कशासारखे शेकून निघाले ?

४) चातक पक्षी कोणाची विनवणी करतो ?

५) संत नामदेव यांचे श्लोक गुरुग्रंथसाहीबा मध्ये कोणत्या नावाने प्रसिद्ध आहेत ?

आ) खालील वाक्यातील रिकाम्या जागी योग्य पर्याय शोधून वाक्य पुन्हा लिहा.

१) भुकेले वत्सरावे । _____ हंबरत यावे ॥

अ) धेनु ब) गाय क) गवा ड) पक्षी

२) _____ विचार हरघडी केला, अगा जगमय झालो

अ) मित्रांचा ब) दुनियेचा क) कुटुंबाचा ड) सुखाचा

३) दोन दिवस वाट पाहण्यात गेले ; दोन _____ गेले.

अ) सुखात ब) दुःखात क) आनंदात ड) अभ्यासात

४) नामा म्हणे _____ जैसा । विनवितो चातक जैसा ॥

अ) पाऊस ब) वारा क) मेघा ड) वर्षा

५) _____ वेळा चंद्र आला; तारे फुलले, रात्र धुंद झाली;

अ) खूप ब) हजारो क) एक ड) शेकडो

इ) खालील काव्यपंक्तिंचे संदर्भासहित स्पष्टीकरण लिहा.

१) हरघडी अश्रू वाळविले नाहीत ; पण असेही क्षण आले,

तेव्हा अश्रूच मित्र होऊन साहाय्यास धावून आले

२) वणवा लागलासे वनीं । पाडस चिंतित हरणी ॥

प्रश्न ७) अ) खालील प्रश्नांची एका वाक्यात उत्तरे लिहा.

१) पहिल्या अनुभवातून लेखक कोणता धडा शिकले ?

२) "सर्वांना पुरेल इतके काम कुठे aahe इथे ?" कोण कोणास म्हणाले ?

३) डॉ. होमीभाभा यांचे व्यक्तिमत्त्व कसे होते ?

४) लेखकाने वेल्डर व फोरमनची मागणी केल्यावर कोणते उत्तर मिळाले ?

५) डॉ. होमीभाभा यांना काम करणाऱ्यांची कोणती वृत्ती चुकीची वाटत होती ?

<center>विभाग 'ड' - लेखन</center>

प्रश्न ८) अ) खालीलपैकी कोणत्याही एका विषयावर सुमारे १००–१५० शब्दांत निबंध लिहा.

१) **महापूर एक मोठे संकट**

मानवाची वैज्ञानिक प्रगती -------- निसर्गावर मात करण्याचा प्रयत्न ------- ग्लोबल वॉर्मिंग ----------

-------- निसर्गातील बदल -------- महापूर -------- जीवित हानी --------- वित्तहानी -------- उपाय

२) **मी पाहिलेला अपघात**

अपघाताची वेळ --------- अपघात होण्याचे कारण ----------- अपघातात झालेली हानी --------- जखमींना

केलेली मदत -------- भविष्यात अपघात टाळण्यासाठी केलेल्या उपाययोजना

३) **माझी अविस्मरणीय सहल**

दरवर्षी सहल जाणे -------- संस्मरणीय सहल ---------- मित्रमैत्रिणी, प्रवासातले प्रसंग, ---------

निसर्गरम्यता --------- प्राणी, पक्षी --------- कविता, गाणी -------- भेंड्या, खेळ -------- मौजमस्ती -----

आ) खालील विषयावर पत्र लिहा. (लिफाफा आवश्यक)

१) राजेश / रजनी साठे, वारजे, पुणे, 41107 येथील रहिवाशी या नात्याने विश्रांतवाडी पुणे येथे बसेस वेळेवर सोडण्याची मागणी करणारे पत्र आगार व्यवस्थापक, पुणे यांना लिहा.

<center>किंवा</center>

२) श्री. मिलिंद नेवासकर, मंगल पुस्तक भांडार, आळंदी, पुणे यांना प्रकशकाने पाठवलेली पुस्तके मागणी पेक्षा कमी असल्याची तक्रार करणारे पत्र प्रकाशक स्नेहल प्रकाशन, मेन बाजार रोड, औरंगाबाद यांना लिहा.

Class X   **Subject: Physics**

MCQ
1. The laws of reflection hold true for
(a) plane mirrors only
(b) concave mirrors only
(c) convex mirrors only
(d) all reflecting surface

2. When an object is kept within the focus of a concave mirror, an enlarged image is formed behind the mirror. This image is
(a) real
(b) inverted
(c) virtual and inverted
(d) virtual and erect (2020)List four characteristics of the images formed by plane mirrors.

3. The change in focal length of human eye is caused due to –
(a) Ciliary muscles
(b) Pupil
(c) Cornea
(d) Iris

4. The coloured light that reflects most while passing through a prism is :
(a) yellow
(b) Violet
(c) Blue
(d) Red

5. Coloured portion of eye that controls amount of light reaching retina is called :
(a) Cornea
(b) Pupil
(c) Retina control
(d) Iris

Very Short Answers
6. An object is placed at a distance of 30 cm in front of a convex mirror of focal length 15 cm. Write four characteristics of the image formed by the mirror

7. The magnification produced by a spherical mirror is -3". List four information's you obtain from this statement about the mirror/ image.

8. AB and CD, two spherical mirrors, from parts of a hollow spherical ball with its centre at O as shown in the diagram. If arc AB = 12 arc CD, what is the ratio of their focal lengths? State which of the two mirrors will always form virtual image of an object placed in front of it and why?

9. Write about power of accommodation of human eye. Explain why the image distance in the eye does not change when we change the distance of an object from the eye?

10. Do you know that the corneal-impairment can be cured by replacing the defective cornea with the cornea of the donated eye?
How and why should we organise groups to motivate the community members to donate their eyes after death?

Short Answers
11. (a)List the parts of the human eye that control the amount of light entering into it. Explain how they perform this function?
(b) Write the function of retina in human eye

12. (a) A person is suffering from both myopia and hypermetropia.
(i) What kind of lenses can correct this defect?
(ii) How are these lenses prepared?
(b) A person needs a lens of power +3 D for correcting his near vision and -3 D for correcting his distant vision. Calculate the focal lengths of the lenses required to correct these defects.

13. Draw a ray diagram to show the refraction of light through a glass prism. Mark on it (a) the incident ray, (b) the emergent ray and (c) the angle of deviation

14. How will you use two identical glass prisms so that a narrow beam of white light incident on one prism emerges out of the second prism as white light? Draw and label the ray diagram

15. Calculate the magnification of the image of an object placed perpendicular to the principal axis of a concave mirror of focal length 15 cm. The object is at a distance of 20 cm from the mirror.

Long answers
16. A star appears slightly higher (above) than its actual position in the sky. Illustrate it with the help of a labelled diagram.

17. The time difference between the actual sunset and the apparent sunset is about 2 minutes" What is the reason for the same? Explain with the help of a diagram

18. To construct a ray diagram we use two rays of light which are so chosen that it is easy to determine their directions after reflection from the mirror. Choose these two rays and state the path of these rays after reflection from a concave mirror. Use these two rays to find the nature and position of the image of an object placed at a distance of 15 cm from a concave mirror of focal length 10 cm

SECTION A
(Multiple Choice Questions)

1.Choose the correct nationality of the artist Frederic Sorrieu who visualised in his painting a society made up of Democratic and Social Republic.
(a) German
(b) Swiss
(c) French
(d) American

2.'Nationalism', which emerged as a force in the late 19th century, means
(a) strong devotion for one's own country and its history and culture.
(b) strong devotion for one's own country without appreciation for other nations.
(c) strong love for one's own country and hatred for others.
(d) equally strong devotion for all the countries of the world.

3. Which one of the following statements about power-sharing arrangements is correct?
(a) Power sharing is necessary only in societies which have religious, linguistic or ethnic divisions.
(b) Power sharing is suitable only for big countries that have regional divisions.
(c) Every society needs some form of power sharing even if it is small or does not have social divisions.
(d) Power-sharing is not necessary at all.

4. Match the term with the statements given below:
A 'Utopian Society' is
(i) a society under a benevolent monarchy
(ii) a society that is unlikely to ever exist
(iii) a society under the control of a chosen few wise men
(iv) a society under Parliamentary Democracy
(a) (i) and (ii)
(b) (ii) and (iii)
(c) (ii) only
(d) (iii) only

5. Materials in the environment which have the potential to satisfy human needs but human beings do not have appropriate technology to access them are called:
(a) Potential resource
(b) Stock
(c) Developed resource
(d) Reserves

6. Which of the following statements about the 'French Revolution' are correct?
(i) After the end of the French Revolution it was proclaimed that it was the people who would henceforth constitute the nation and shape its destiny.
(ii) France will have a constitutional monarchy and the new republic will be headed by a member of the royal family.
(iii) A centralised administrative system will be put in place to formulate uniform laws for all citizens.
(iv) Imposition of internal custom duties and dues will continue to exist in France.
(a) (ii) and (iii)
(b) (ii) and (iv)
(c) (i) and (iii)
(d) (iii) and (iv)

7.The French revolutionaries declared that the mission and destiny of the French nation was
(a) to conquer the people of Europe.
(b) to liberate the people of Europe from despotism.
(c) to strengthen absolute monarchies in all the countries of Europe.
(d) to propagate the ideals of liberty, equality, and fraternity in every part of the world.

8. Laterite soil is very useful for growing:
(a) Rice, wheat and mustard
(b) Tea, coffee and cashewnut
(c) Pulses, sugarcane and resin
(d) None of the above

9. Which of the following features are common to Indian and Belgian form of power-sharing arrangements?
A. Power is shared among governments at different levels.
B. Power is shared among different organs of government.
C. Power is shared among different social groups.
D. Power is shared among different parties and takes the form of competition.
(a) A, B, C, D
(b) B, C and D
(c) A and C
(d) A, C and D

10.A belief that the majority community should be able to rule a country in whichever way it wants, by disregarding the wishes and needs of the minority is:
(a) Power Sharing
(b) Central Government
(c) Majoritarianism
(d) Community Government

11.Which among the following are examples of 'Coming together federations'?
(a) India, Spain and Belgium
(b) India, USA and Spain
(c) USA, Switzerland and Australia
(d) Belgium and Sri Lanka

12.Consider the following statements on the practice of federalism in India. Identify those which hold true for decentralisation after 1992.
A. Local governments did not have any power or resources of their own.
B. It became constitutionally mandatory to hold regular elections to local government bodies.
C. The state governments are required to share some powers and revenue with local government bodies.
D. No seats are reserved in the elected bodies for scheduled castes, scheduled tribes and other backward classes.
(a) B and C
(b) A and C
(c) A and D
(d) B and D

13.Which of the following is not a feature or belief of 'Conservatism'?
(a) Conservatives believe in established, traditional institutions of state and policy.
(b) Conservatives stressed the importance of tradition and preferred gradual development to quick change.
(c) Conservatives proposed to return to the society of pre-revolutionary days and were against the ideas of modernisation to strengthen monarchy.
(d) Conservatives believed in the monarchy, church, and other social hierarchies.

14.The first great revolution which gave the clear idea of nationalism with its core words: 'Liberty, Equality and Fraternity' was:
(a) The Russian Revolution

(b) The French Revolution
(c) The American Revolution
(d) India's First War of Independence

15. Under the presidency of Jawahahar Lai Nehru, the Lahore Congress Session of 1929 formalised the demand of
(a) abolition of Salt Tax
(b) 'Puma Swaraj' or complete independence
(c) boycott of Simon Commission
(d) separate electorate for the 'dalits'

16. The 'Simon Commission' was boycotted because
(a) there was no British Member in the Commission.
(b) it demanded separate electorates for Hindus and Muslims.
(c) there was no Indian Member in the Commission.
(d) it favoured the Muslims over the Hindus.

Section B
(Very Short Answer Type Questions)

17. What is Human Development Index?
18. Name the report published by UNDP which compares countries based on the educational levels of the people, their health status and per capita income.
19. What term is used to describe the 'average number of years a person is expected to live at birth'?
20. Explain the effects of 'worldwide economic depression' on India, towards late 1920s.
21. Explain any three facts about the new economic situation created in India by the First World War.
22. What was the Rowlatt Act?
23. Why was the Khilafat movement started?

Section C
(Short Answer Type Questions)
24. Why is sustainable development essential? Give one reason.
25. Why is per capita income of different countries calculated in dollars and not in their own currencies by the World Bank?
26. "What may be development for one may not be development for the other." Explain with a suitable example.
27. Why is per capita income of different countries calculated in dollars and not in their own currencies by the World Bank?
28. Modern currency is without any use of its own'; then why is it accepted as a medium of exchange?
29. "Cheap and affordable credit is crucial for the country's development." Assess the statement.
30. Explain the reaction of Indian people against the Rowlatt Act passed through the Imperial Legislative Council in 1919.

Section D
(Long Answer Type Questions)
31. Kerala, with lower per capita income, has a better human development ranking than Punjab. Hence, per capita income is not a useful criterion at all and should not be used to compare States. Do you agree? Discuss.
32. 'Conflicting goals can also be developmental goals'. Elaborate with examples
33. "Money cannot buy all the goods and services that one needs to live well" Do you agree with this statement? Justify your answer with any three suitable arguments.
34. Why do people look at a mix of goals for development? Explain.
35. Explain with examples that there are other important development goals also besides income.
36. Explain how public sector contributes to the economic development of a nation.
37. "The problem of underemployment is not confined only to agriculture". Support the statement with examples.
38. What are final goods and intermediate goods? How do they help in calculating (GDP) Gross Domestic Product?
39. Explain any three ways to solve the problem of underemployment.

40. Why didn't shift out of primary sector happen in case of employment although there has been a change in the share of the three sectors in GDP?
41. Classify the economic sectors on the basis of nature of activities. Mention the main feature of each.
42. What is meant by Gross Domestic Product (GDP)? How is GDP measured in India?
43. How can we create more employment in secondary and tertiary sectors in rural India?
44. Explain reasons for the rising importance of the tertiary sector in India.
45. "There are several things needed by the society as a whole". In the light of this statement explain as to who can provide them at a reasonable cost, the private or the public sector and why?

Section E
(Case Based Questions)

46.Read the source given below and answer the questions that follow:
Development and growth are often used interchangeably, however, they represent distinct facets of progress. Growth primarily pertains to quantitative expansion, such as an augmentation in GDP, population, or production. It is quantifiable and readily observable. Conversely, development encompasses a broader range of factors. It encompasses enhancements in living standards, education, healthcare, and overall well-being. Development places emphasis on the quality of growth rather than mere quantity. It is possible for a nation to experience growth without truly developing, resulting in disparities and inequalities. Consequently, the pursuit of sustainable development is paramount, ensuring not only economic growth but also social progress, equity, and environmental sustainability. Striking a balance between growth and development is the ultimate challenge for societies striving for comprehensive advancement.
Answer the following question
1. **Is development only calculated in monetary terms?**?
2. **Give an example where a situation is development for one but not for other?**
3. **What are the two fundamental principle of development?**

47.Read the extracts and answer the question that follows:
'It is said of "passive resistance" that it is the weapon of the weak, but the power which is the subject of this article can be used only by the strong. This power is not passive resistance; indeed it calls for intense activity. The movement in South Africa was not passive but active ...
Satyagraha is not physical force. A satyagraha does not inflict pain on the adversary; he does not seek his destruction ... In the use of satyagraha, there is no ill-will whatever.
'Satyagraha is pure soul-force. Truth is the very substance of the soul. That is why this force is called satyagraha. The soul is informed with knowledge. In it burns the flame of love. ... Nonviolence is the supreme dharma. It is certain that India cannot rival Britain or Europe in force of arms. The British worship the war-god and they can all of them become, as they are becoming, bearers of arms. The hundreds of millions in India can never carry arms. They have made the religion of non-violence their own ...'

Answer the following question
1. Whose words are given above?
2. Satyagraha is a passive resistance of weak. True or false?
3. Satyagraha is based on?

48.Read the extracts and answer the question that follows
Sustainable development is a global imperative, seeking to meet the needs of the present without compromising the ability of future generations to meet their own needs. It encompasses economic, social, and environmental dimensions, recognizing their interdependence. In pursuit of sustainable development, societies are adopting eco-friendly technologies, promoting renewable energy, and reducing waste. Social equity and inclusion are also vital aspects, ensuring that the benefits of development reach all strata of society. Sustainable development necessitates responsible consumption and production, conservation of biodiversity, and addressing climate change. As we grapple with global challenges, it is crucial to remember that a sustainable future is not an option but an imperative. It requires collective action, innovative solutions, and a commitment to leaving behind a world that is both prosperous and habitable for future generations.

Answer the following question

1. What are the various problem arises due to irrational use of resources?
2. What is Agenda 21 in sustainable development?
3. What are the aspects of sustainable development?

Section F
(Map Skilled Based/ Picture based Questions)

49. Locate and label the following items on the given map

   i.   Regions covered under Alluvial soil
  ii.   Regions covered under Laterite Soil
 iii.   Regions covered under Black soil
 iv.   Sunderban National Park
  v.   Corbett National Park
 vi.   Sariska Wildlife Sanctuary
vii.   The place where the first Session of Indian National Congress was held in 1885
viii.   The place where the Indian National Congress Session was held in 1929.

Section A - Multiple choice questions. (1m)

1. A few drops of iodine solution were added to rice water. The solution turned blue-black in colour. This indicates rice water has –
A) complex proteins
B) simple proteins
C) starch
D) Fats

2. The figure given below shows a schematic plan of blood circulation in humans with labels (i) to (iv). Identify the correct label with its functions?
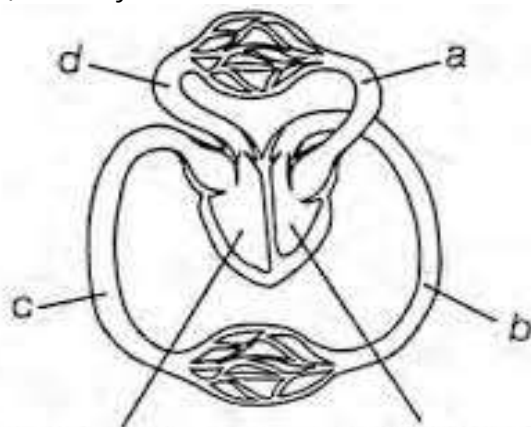
(a) (a) Pulmonary vein - takes impure blood from body part.
(b) (b) Pulmonary artery - takes blood from lung to heart.
(c) (c) Aorta - takes blood from heart to body parts.
(d) (d) Vena cava takes - blood from body parts to right auricle.

3. Which is the correct sequence –
A) mouth → stomach → small intestine → oesophagus → large intestine
B) mouth → oesophagus → stomach → large intestine → small intestine
C) mouth → stomach → oesophagus → small intestine → large intestine
D) mouth → oesophagus → stomach → small intestine → large intestine

4. **Assertion and reason questions.**

Directions:
(a) Both A and R are true and R is correct explanation of the assertion.
(b) Both A and R are true but R is not the correct explanation of the assertion.
(c) A is true but R is false.
(d) A is false but R is true.

i. Assertion: Photosynthesis takes place in green parts of the plants.
Reason: Photosynthesis always takes place in leaves.

ii. Assertion: Blood takes up oxygen from the alveolar air and release CO_2 during exchange.
Reason: The concentration of O_2 is more in alveolar air.

iii. Assertion: A neurons transmits message in both directions.
Reason: The response is slow and produced by all cells of target tissues.

iv. Assertion: Brain plays a secondary role in reflex action, when our hand touches a hot plate.
Reason: In reflex action, the stimulus received by the spinal cord that sends the response. The action is registered in cerebral brain just for memory.

Section B - Very short answers. (2m)

1. How does food yield energy?
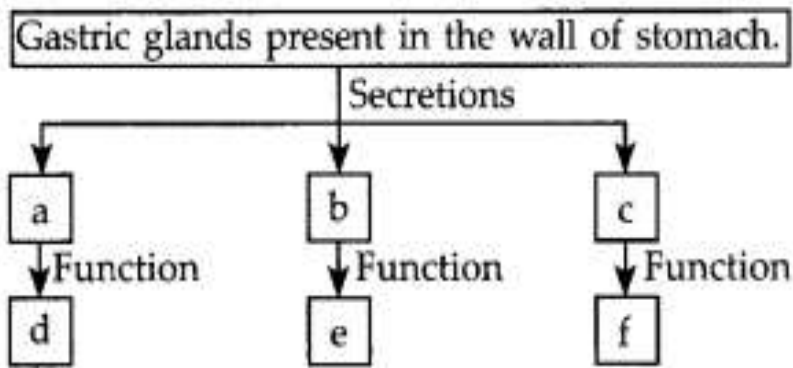2. In the given diagram of human brain label A and B and write their function.
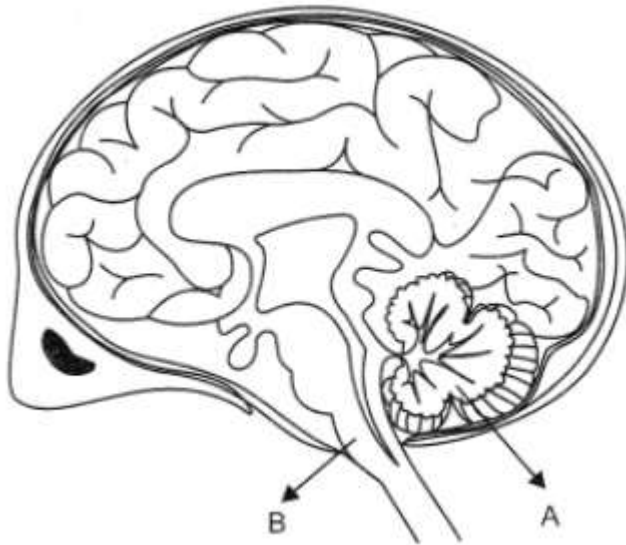
3. Give the general equation for respiration?
4. What is villi? What are its functions?
5. Where do you find anaerobic respiration in animals?
6. Draw the scheme of how nervous impulses travel in the body.

Section C - Short answers. (3m)

1. How does exchange of gases take place in the alveoli?

2. Complete the following flow chart as per the given instructions.

| Gastric glands present in the wall of stomach. |
Secretions

| a | | b | | c |
↓Function | ↓Function | ↓Function
| d | | e | | f |

3. What processes would you consider essential for maintaining life?
4. What are the final products after digestion of carbohydrates and proteins?
5. What are involuntary actions? Write three examples.
6. Though transport in xylem is mainly due to physical forces, translocation in phloem uses energy. Why?

Section D-Very long answers. (5m)

1. State reasons for the following:
   (i) Herbivores need a longer small intestine while carnivores have shorter small intestine.
   (ii) The lungs are designed in human beings to maximise the area for exchange of gases.
   (b) The rate of breathing in aquatic organisms is much faster than that seen in terrestrial organisms.
2. Write three types of blood vessels. Give one important feature of each.
3. What are nephrons ? How is a nephron involved in the filtration of blood and formation of urine?
4. Draw a well-labelled diagram of structural and functional unit of kidney.
5. Explain the process of breakdown of glucose in a cell
(i) in the presence of oxygen,
(ii) in the absence of oxygen.

A]   This section comprises Multiple Choice Questions (MCQs) of 1 mark each.

1. If a x b = 320 and LCM of a and b is 80, then the HCF of a and b is :
   (a) 5   (b) 4   (c) 80   (d) 16

2. The difference of the irrational numbers $(3 + 2\sqrt{3})$ and $(3 - 2\sqrt{3})$ is :
   (a) $4\sqrt{3}$ (b) $6 + 2\sqrt{3}$ (c) $7 + 4\sqrt{3}$ (d) 6

3. Which of the following is an irrational number ?
   (a) $\sqrt{20}/\sqrt{5}$ (b) $\sqrt{4/9}$ (c) $\sqrt{36}$ (d) $\sqrt{5}$

4. If a and b are two coprime numbers then , then a^3 and b^3 are
   (a) coprime   (b) not coprime   (c) even   (d) odd

5. The exponent of 5 in the prime factorization of 3750 is
   (a) 3   (b) 4   (c) 5   (d) 6

6. HCF of first five odd numbers is :
   (a) 3   (b) 7   (c) 1   (d) 9

7. LCM of first five even numbers is :
   (a) 80   (b) 60   (c) 160   (d) 120

8. The LCM of 2^5 x 3 x 5 and 2^2 x 7 x 5 is :
   (a) 140   (b) 3260   (c) 1360   (d) 3360

9. What is the greatest possible speed at which a girl can walk 95 m and 171 m in an exact number of minutes?
   (a) 17 m/min   (b) 19 m/min   (c) 23 m/min   (d) 13 m/min

10. In the figure , thr graph of a polynomial p(x) is shown. The number of zeroes pf p(x) = ?
    (a) 3   (b) 7   (c) 1   (d) 9
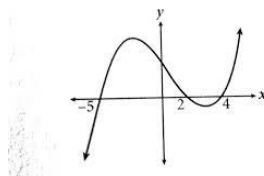
11. The LCM of two numbers is 2400 . Which of the following cannot be their HCF?
    (a) 300   (b) 400   (c) 500   (d) 600

12. A quadratic polynomial, the product and the sum of whose zeroes are 5 and 8 respectively is –
    (a) $k[x^2 – 8x + 5]$ (b) $k[x^2 – 5x + 8]$
    (c) $k[x^2 + 8x + 5]$ (d) $k[x^2 + 5x + 8]$

13. p and q are the zeroes of the polynomial $4y^2 – 4y + 1$. What is the value of $\frac{1}{p} + \frac{1}{q} + pq$?
    (a) $\frac{-15}{4}$ (b) $-\frac{3}{4}$ (c) $\frac{5}{4}$ (d) $\frac{17}{4}$

14. If one of the zeroes of the quadratic polynomial x2 + 3x +k is 2 , then the value of k is –
    (a) 10   (b) - 10   (c) -7   (d) –

15. The degree of polynomial having zeroes – 3 and 4 is ---
    (a) 3   (b) 1   (c) 0   (d) 2

16. If α & β are the zeroes of a polynomial $f(x) = px^2 – 2x + 3p$ **and** α + β = α.β, then p is
    (a) $\frac{-2}{3}$ (b) $\frac{2}{3}$ (c) $\frac{1}{3}$ (d) $\frac{-1}{3}$

17. The number of quadratic polynomials having zeroes -5 and -3 is---
    (a) 1   (b) 2   (c) 3   (d) more than 3

18. The zeroes of the polynomial $3x^2 + 11x – 4$ are :

(a) $\frac{1}{3}$, - 4   (b) $\frac{-1}{3}$, 4   (c) $\frac{1}{3}$, 4   (d) $\frac{-1}{3}$, - 4

19. The pair of linear equations $2x = 5y + 6$ and $15y = 6x - 18$ represents two lines which are
    (a) intersecting   (b) parallel   (c) coincident   (d) either intersecting or parallel

20. The point of intersection of $3x - y = 3$ and y axis is given by –
    (a) (0, -3)   (b) (0, 3)   (c) (2, 0)   (d) (-2, 0)

21. The lines representing the given pair of linear equations are non intersecting. Which of the following statements is true?
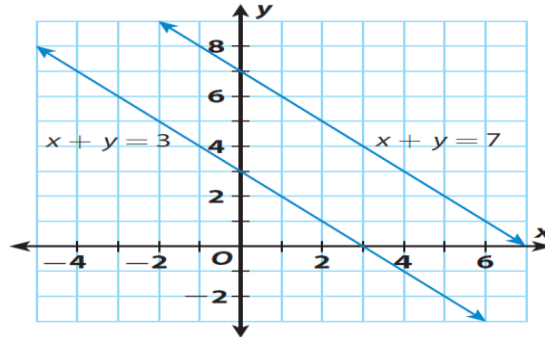
(a) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ (b) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ (c) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} = \frac{c_1}{c_2}$ (d) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

22. Graphically, the pair of linear equations, $6x - 3y + 10 = 0$ and $2x - y + 9 = 0$ represents two lines which
    Are :
    (a) intersecting exactly at one point   (b) intersecting exactly at two points
    (c) coincident   (d)   parallel

23. Find the value of k if the pair of linear equations , $x - 2y = 3$ and $-3x + ky = -9$ has infinitely many Solutions.
    (a) (-6)   (b) -3   (c) 3   (d) 6

24. If the system of equations $3x + y = 1$ and $(2k - 1)x + (k - 1)y = 2k + 1$, is inconsistent, then k = ?
    (a) $\frac{-5}{4}$ (b) $\frac{2}{5}$ (c) $\frac{15}{4}$ (d) $\frac{3}{2}$

25. In $\triangle ABC$, $\angle A = x°$, $\angle B = (3x - 2)°$, $\angle C = y°$. Also $\angle C - \angle B = 9°$. The sum of the greatest and the smallest angles of the triangle is ----
    (a) 107°   (b) 135°   (c) 155°   (d) 145°

26. The roots of the equation $x^2 + 4x - 21$ are----
    (a) -7, 3   (b) 7, -3   (c) 7,3   (d) -7, -3

27. If the quadratic equation $x2 - 8k + k = 0$ has real roots ,then
    (a) k < 16   (b) k ≤ 16   (c) k > 16   (d) k ≥ 16

28. What is/ are the roots of $3x^2 = 6x$
    (a) only 2   (b) only 3   (c) 0 and 6   (d) 0 and 2

29. Which of the following equations has the sum of its roots as 3?
    (a) x^2 - 4x + 5 = 0   (b) x^2 + 3x - 12 = 0
    (c) $2x^2$ - 7x + 6 = 0   (d) x^2 - 6x - 2 = 0

30. The value / values of k for which the quadratic equation $2x2 + kx + 2 = 0$ has equal roots is
    (a) 4   (b) ±4   (c) -4   (d) 0

B] This section comprises Very Short Answer (VSA) type questions of 2 marks each.

1. If $x^3 - 8x^2 - 8x + k$ is completely divisible by $x - 2$, then find the value of k .

2   If α and β are zeroes of the polynomial , $x^2 + 7x + 12$, find the value of i) $\frac{1}{\alpha} + \frac{1}{\beta}$
    ii) $\alpha^2 + \beta^2$

3. Prove that (2- $\sqrt{3}$) is an irrational number.

4. Solve the following equations by substitution method .

$x - y = 1$, $x + 2y = 22$

5. Find a quadratic polynomial with the given numbers as the sum of zeroes and Product of its zeroes respectively. $\frac{-1}{4}, \frac{1}{4}$

6. On comparing the ratios $\frac{a1}{a2}, \frac{b1}{b2}$ & $\frac{c1}{c2}$, find out whether the lines representing the following pairs of linear equations are consistent or inconsistent .

$2x - 2y - 2 = 0$, $4x - 4y - 5 = 0$

7. Write the quadratic polynomial whose zeroes are -3 and 4 .

8. Find the LCM of 8, 9 and 25.

9. Write 250 as a product of its prime .

10. Find the zeroes of $p(x) = 6x^2 - 7x - 3$.

11. A dining hall has a length of 8.25 m, breadth of 6075 m and height of 4.50 m. What is the length of the ruler that can exactly measure the three dimensions of the hall?

12. On a morning walk three persons step off together and their steps measure 40 cm , 42 cm and 45 cm respectively. What is the minimum distance each should walk so that each can cover the same distance in complete steps?

13. $\frac{x^2 - 3\sqrt{2}x + 4}{x - \sqrt{2}}$, $x \neq \sqrt{2}$. A t how many points does the graph of the above expression intersect the x- axis?

14. p and q are zeroes of the polynomial $2x2 + 5x - 4$. Without finding out the actual values of p and q, evaluate $(1 - p)(1 - q)$.

15. The break-even point of a new flavour ice cream is the number of the units sold at which the total cost price of the ice cream is the same as the total selling price . The parlour launches another new flavour whose fixed cost is Rs. 10,000, variable cost is Rs. 40 and the selling price of each unit is Rs. 60.Find the number of units at the break-even point of the other new flavour.

16. If a is a positive rational number and n is a positive integer greater than 1, prove that a^n is a rational number.

17. One of the solutions of the following equation is -7 where k is a constant. i) Find the value of k. ii) Find the other solution.

C] This section comprises Short Answer (SA) type questions of 3 marks each.

1. Find the roots of the following equations by using quadratic formula.

$\frac{1}{x+4} + \frac{1}{x-7} = \frac{11}{30}$, $x \neq (- 4)$,7

2. 3 chairs and 4 tables cost Rs. 2250 & 4 chairs and 3 tables cost Rs. 1950 . Find the   cost per chair and cost per table.

3. Find the zeroes of the quadratic polynomial $6x^2 + x - 2$ and verify the   relationship between the zeroes and the coefficients.

4. Check whether polynomial x – 1 is a factor of the given polynomial :

$X^3 - 4x^2 + 15x - 15$.

5. Solve the following pair of linear equations: $5x + 3y = 27$ and $3x + 5y = 29$

6. Prove that $\sqrt{5}$ is an irrational number.

7. Find the zeroes of the quadratic polynomial $3x^2$ - x – 4 and verify the relationship between the zeroes And the coefficients.

8. The sum of a two-digit number and the number obtained by reversing the digits is 66. If the digits of the number differ by 2, find the number. How many such numbers are there?

9. If one root of the quadratic equation $x2 + 12x - k = 0$ is thrice the other root, then find the value of k.

10. Sita Devi wants to make a rectangular pond on the roadside to provide drinking water to street animals. The Area of the pond will be decreased by 3 sq. feet if its length is decreased by 2ft. and breadth is increased by 1 ft. Area of the pond will be increased by 4 sq. ft. if the length is increased by 1 ft. and breadth remains Same. Find the dimensions of the pond

D] This section comprises Long Answer (LA) type questions of 5 marks each.

1. A part of monthly hostel charges in a college hostel are fixed and the remaining depends on the number of days one has taken food in the mess. When a student A takes food for 25 days , he has to pay Rs.4500 , whereas a student B who takes food for 30 days , has to pay Rs. 5200. Find the fixed charges per month and the cost of food per day.

2. The difference of squares of two numbers is 180. The square of the smaller number Is 8 times the larger number. Find the two numbers

3. Is the given pair of linear equations consistent ? If yes, find the solution Graphically. 3p + q - 6 = 0 and 4p – 2q – 4 = 0

4. Is it possible to design a rectangular mango grove whose length is twice its breadth and the area is 800 sq. metres? If so Find its length and breadth.

5. Students of a class are made to stand in rows. If one student is extra in a row, there would be 2 rows less. If one student is less in a row there would be 3 rows more. Find the number of students in the class.

E] This section comprises case study based questions of 5 marks.

1] A seminar is being conducted by an Educational Organisation, where the participants will be educators of different subjects. The number of participants in Hindi, English and Mathematics are 60, 84 and 108 respectively.

1. In each room the same number of participants are to be seated and all of them being in the same subject, hence maximum number participants that can accommodated in each room are

    a) 14   b) 12   c) 16   d) 18

2. What is the minimum number of rooms required during the event?

    a) 11   b) 31   c) 41   d) 21

3. The LCM of 60, 84 and 108 is

    a) 3780   b) 3680   c) 4780   d) 4680

4. The product of HCF and LCM of 60, 84 and 108 is

    a) 55360   b) 35360   c) 45500   d) 45360

5. 108 can be expressed as a product of its primes as

    a) $2^3 \times 3^2$ b) $2^3 \times 3^3$ c) $2^2 \times 3^2$ d) $2^2 \times 2^3$

2] A Mathematics Exhibition is being conducted in your School and one of your friends is making a model of a factor tree. He has some difficulty and asks for your help in completing a quiz for the audience.
Observe the following factor tree and answer the following:
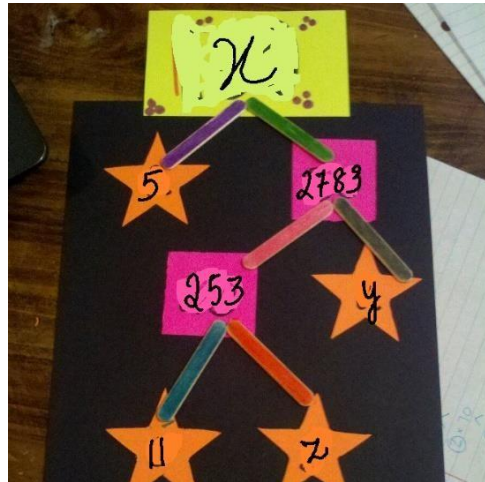
1. What will be the value of x ?

   a) 15005   b) 13915   c) 56920   d) 17429

2. What will be the value of y ?

   a) 23   b) 22   c) 11   d) 19

3. What will be the value of y ?

   a) 22   b) 23   c) 17   d) 19

4. The prime factorisation of 13915 is

   a) $5 \times 11^3 \times 13^2$ b) $5 \times 11^3 \times 23^2$ c) $5 \times 11^2 \times 23$ d) $5 \times 11^2 \times 13^2$

3] Amit is planning to buy a house and the layout is given below. The design and the measurement has been made such that areas of two bedrooms and kitchen together is 95 sq.m.
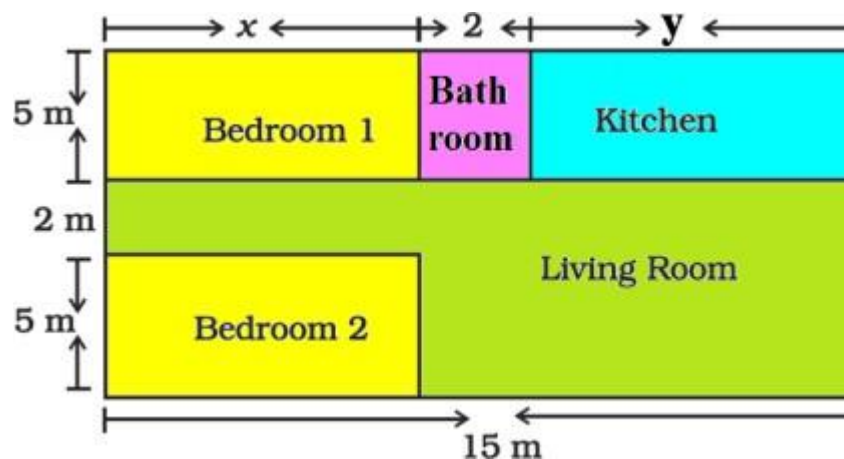
4] It is common that Governments revise travel fares from time to time based on various factors such as inflation (a general increase in prices and fall in the purchasing value of money) on different types of vehicles like auto, Rickshaws, taxis, Radio cab etc. The auto charges in a city comprise of a fixed charge together with the charge for the distance covered. Study the following situations

Name of the city	Distance travelled (Km)	Amount paid (Rs.)
City A	10	75
	15	110
City B	8	91
	14	145

Situation 1: In city A, for a journey of 10 km, the charge paid is Rs 75 and for a journey of 15 km, the charge paid is Rs 110.

Situation 2: In a city B, for a journey of 8km, the charge paid is Rs91 and for a journey of 14km, the charge paid is Rs 145.

Refer situation 1

1. If the fixed charges of auto rickshaw be Rs x and the running charges be Rs y km/hr, the pair of linear equations representing the situation is
   a) $x + 10y = 110$, $x + 15y = 75$

   b) $x + 10y = 75$, $x + 15y = 110$

   c) $10x + y = 110$, $15x + y = 75$

   d) $10x + y = 75$, $15x + y = 1$

2. A person travels a distance of 50km. The amount he has to pay is

   a) Rs.155

   b) Rs.255

   c) Rs.355

   d) Rs.455

2. What will a person have to pay for travelling a distance of 30km?

a) Rs.185

b) Rs.289

c) Rs.275

d) Rs.305

3. The graph of lines representing the conditions are: (situation 2)
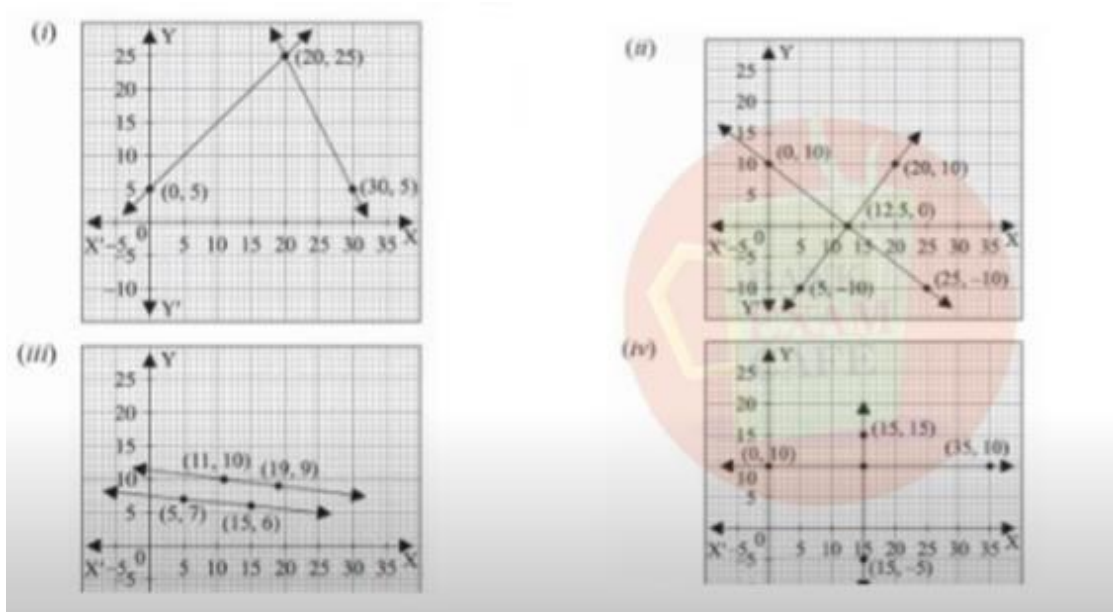
5] Raj and Ajay are very close friends. Both the families decide to go to Ranikhet by their own cars. Raj's car travels at a speed of x km/h while Ajay's car travels 5 km/h faster than Raj's car. Raj took 4 hours more than Ajay to complete the journey of 400 km.

1. What will be the distance covered by Ajay's car in two hours?

a) 2(x +5)km

b) (x – 5)km

c) 2(x + 10)km

d) (2x + 5)km

2. Which of the following quadratic equation describe the speed of Raj's car?

a) $x^2 - 5x - 500 = 0$

b) $x^2 + 4x - 400 = 0$

c) $x^2 + 5x - 500 = 0$

d) $x^2 - 4x + 400 = 0$

3. What is the speed of Raj's car?

a) 20 km/hour

b) 15 km/hour

c) 25 km/hour

d) 10 km/hour

4. How much time took Ajay to travel 400 km?

a) 20 hour

b) 40 hour

c) 25 hour

d) 16 hour