M. Prakash Academy Entrance Examination 2014

Standard VIII 13^{th} April 2014

Science

Note:

1. Questions 1 to 9 are multiple choice questions. Mark the **number** corresponding to correct option in your bubble-sheet.

2. In questions 10 to 15, you are required to calculate the final answer. All these questions are set in such a way that answers are two digit numbers. Mark the answer in your bubble-sheet.

3. Be careful about units. Express your answers in the units mentioned in respective problems.

Q1. In which of the following changes heat is NOT given out?

(33) Making water from ice. (55) Friction between ground and wheel.
(77) Germination of seeds. (99) Making dough from wheat flour.

Q2. Common Salt is sprinkled on a hot kitchen-pan. From the following, choose the CORRECT option.

(33) Salt will melt. (55) Salt will evaporate.
(77) Salt will crackle. (99) Salt will turn into ash.

Q3. There are four identical rectangular bars of iron which are marked as 33, 55, 77 and 99. These bars are identical in shape, size, colour, texture, mass, etc. Some of these may be magnets and some may be merely iron bars. Their ends are marked as $33A$ and $33B$, $55A$ and $55B$, $77A$ and $77B$, $99A$ and $99B$.

A girl was playing with these bars and made the following observations.

Write the number of the bar which is DEFINITELY a magnet. If you think that the given **information is incomplete**, write 11 as your answer. If **exactly two** bars are definitely magnets, write 44 as your answer.

Observation 1. Ends 33B and 99B attract each other.

Observation 2. Ends 77A and 55A attract each other.

Observation 3. Ends 99A and 77A attract each other.

Observation 4. Ends 55A and 33B attract each other.

Q4. A pot containing sweet, hot tea is covered with a plate. We know that water droplets get collected at the lower surface of the plate. What would be the taste of this water?

(33) Taste of water will be sweet like sugar.

(55) Water will taste bitter like tea leaves.

(77) Water will taste like tea containing sugar.

(99) It will be normal, tasteless water.

Q5. C_1 and C_2 are two pieces of the same cloth and S_1 and S_2 are two straws of the same material. Both, clothes and straws, are dry. C_1 is rubbed with S_2 and C_2 is rubbed with S_1. Choose the WRONG statement from the following.

(33) S_1 will be attracted by C_1. (55) S_1 will be attracted by C_2.

(77) C_1 will be repelled by C_2. (99) S_1 will be attracted by S_2.

Q6. People prefer to drink carbonated soft drinks in chilled form because

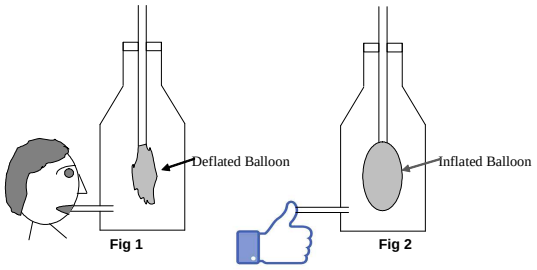
(33) Soft drinks are easily digestible at low temperature.

(55) Carbon dioxide is less soluble at low temperature.

(77) Carbon dioxide is more soluble at low temperature.

(99) More sugar dissolves at low temperature.

Q7. Observe both the following figures carefully. As shown in figure 1, a balloon was attached to one end of a straw. The straw was inserted in a bottle through its cap and the cap was sealed properly. Another horizontal straw was inserted in the bottle by making a hole in it. The man decided to inflate the balloon inside the bottle. Using the horizontal straw, he did something and the balloon actually got inflated (as shown in the figure 2). Following are the statements regarding it. Find the CORRECT statement.



(33) The man blew air in the horizontal straw and hence the balloon got inflated as shown. The open end of the horizontal straw is closed to keep the balloon inflated.

(55) The man sucked air from the horizontal straw and hence the balloon got inflated as shown. The open end of the horizontal straw is closed to keep the balloon inflated.

(77) The man just closed the open end of the horizontal straw but neither sucked nor blew air.

(99) No matter what the man does, the balloon is bound to inflate as shown.

Q8. What happens to the image produced by a pin hole camera when you move the screen away from the pin hole?

(33) The image becomes larger and fainter.

(55) The image becomes smaller and fainter.

(77) The image becomes larger and brighter.

(99) The image becomes smaller and brighter.

Q9. When an acid and a base are mixed in certain proportions, they form some salt and water. This process is called neutralisation.

In a laboratory, there are four bottles marked as P, Q, R and S. When we take 20 drops of liquid from bottle Q, it requires 18 drops of liquid R to get neutralised. 40 drops of liquid S require 32 drops of liquid R to neutralise it. 30 drops of liquid P require 21 drops of liquid R to neutralise it. It is observed that blue litmus paper turns red and red litmus paper remains as it is in liquid R. Considering that each drop carries same amount of liquid, which among the given liquids is the STRONGEST base?

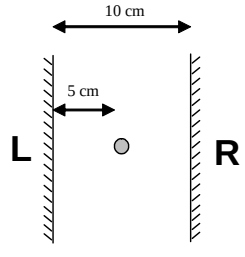
(33) Liquid R. (55) Liquid S. (77) Liquid P. (99) Liquid Q.

Q10. A rectangular box has base dimensions 20 $cm \times 16$ cm. Water is poured in it to fill it to certain level. 6 pebbles of almost same size are dropped in the box. It is observed that the water level rises by 1.2 cm. Then the average volume of each pebble is $\cdots$ cubic cm.

Q11. A compound is formed by the combination of sulphate ion ($SO_4{}^{2-}$) and ammonium ion ($NH_4{}^{+}$). Total number of atoms present in one molecule of ammonium sulphate is $\cdots$.

Q12. A karate chop delivers a 98 kg force to a board. Due to this force, the board breaks. The force that the board exerts on hand during this event is

Q13. As shown in the adjoining figure, there are two parallel mirrors L and R at a distance of 10 cm. from each other. Their reflecting surfaces face each other. A point-object is placed at the centre i.e. at 5 cm from each mirror. Infinitely many images are formed. Find the distance between 3^{rd} image in the mirror L and 2^{nd} image in the mirror R. Express your answer in centimeter.



Q14. Energy efficiency of a machine is known to be 78%. In a factory, 250 unit energy is supplied to this machine. The amount of energy wasted is $\cdots$ unit.

Q15. Read the following passage carefully.

Levers are simple machines used in our daily life. You may have noticed a person placing a metal rod below a heavy load like a boulder to lift it. The rod is made to move freely by placing a small stone (fulcrum) below it while the effort is applied on the other side of the rod. The part of rod from the load to the fulcrum is called the **load arm**. The other part, where the person applies force, is called the **effort arm**. This arrangement is called a lever and heavy load gets lifted easily due to lever.

Beam balance (*i.e. tarazoo*) used by *raddiwalas* or vegetable vendors operates on the above principle.

The law of lever is given by

Load (in Kg force) $\times$ length of load arm =

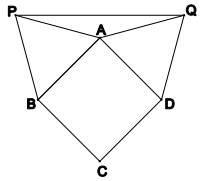
Effort (in Kg force) $\times$ length effort arm.

Use this information to solve the following problem.

A girl is making a balance using a meter-scale. She ties a thread at the center of the meter scale, *i.e.* at 50 cm mark so that the scale remains horizontal. Two objects tied on either sides of the 50 cm mark are said to balance each other when the scale remains exactly horizontal. The girl is using a pack of washing powder weighing 800 gm as standard weight. She ties this pack at 10 cm mark. Now she takes an object K of unknown mass. She observes that the scale remains exactly horizontal when the object K is tied at 66 cm mark. Then the mass of K is $\cdots$ kilogram. Do not consider the mass of thread or wire used.

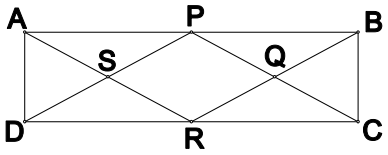
Mathematics

Q16. As shown in the figure $\square ABCD$ is a square. $\triangle PAB$ and $\triangle QAD$ are equilateral triangles. Find the measure of $\angle AQP$.



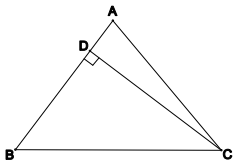
Q17. $\square ABCD$ is a rectangle. P and R are the midpoints of segment AB and segment CD respectively. Segments DP and AR intersect at S.

Segments CP and BR intersect at Q. If $AB = 30$ and $AD = 8$ then find the perimeter of $\square PQRS$.

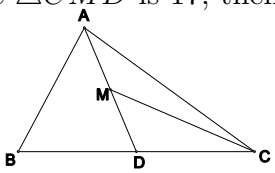


Q18. A polygon $A_1A_2A_3 \cdots A_{15}$ of 15 sides is inscribed in a circle, that is all its vertices lie on circumference of the same circle. All the 15 sides are equal in length. If M is the center of the circle then find the measure of $\angle MA_1A_2$.

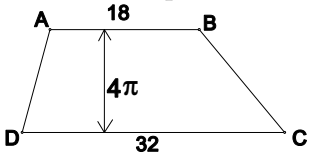
Q19. In $\triangle ABC$, segment CD is altitude, that is perpendicular drawn from vertex C. If $AB = 39, AC = 41$ and altitude $CD = 40$ then find the length of segment BC.



Q20. In $\triangle ABC$, D is the midpoint of segment BC. M is the midpoint of segment AD. If area of the $\triangle CMD$ is 17, then find the area of $\triangle ABC$.



Q21. Find radius of a circle having the same area as that of trapezium as shown in the figure. Height of the trapezium is 4 times π.



Q22. A can do a job in 45 days. B can do the same job in 90 days. How many days will be required to complete the same job if they both work together?

Q23. There are two brothers. The age of the elder brother is x years and that of the younger one is 42 years. x is 15 times the difference in the ages of the two brothers. How old is the elder brother?

Q24. Find the measure of the angle between the hour hand and the minute hand of a clock at 6 hours 50 minute.

Q25. $\dfrac{2x}{3} - \dfrac{3x}{4} = \dfrac{15 - x}{3}$. Find the value of x.

Q26. Division A has 15 students and division B has 20 students. Average score of students in division A is greater by 2 as compared to the average score of students in division B. The total marks of all the students in division B is 160 more than total marks of all the students in division A. Find the average marks of students in division A.

Q27. In a cricket match, Sachin scores 30 runs more than Virat. Suppose Sachin's runs are decreased by 20% and Virat's runs are increased by 28%. Then these two scores become equal. Find the runs scored by Sachin.

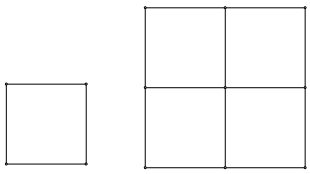
Q28. Like addition, subtraction, etc., we define a new operation Δ. For example, if we write $4\Delta5$ then its value will be $4 \times 2 + 5 = 13$, if we write $5\Delta4$ then its value will be $5 \times 2 + 4 = 14$, and so on. In general, if a and b are two numbers then the value of $a\Delta b$ can be given by $a\Delta b = 2a + b$. Now solve the following problem.

If $a\Delta b = 18$ and $b\Delta a = 21$, then find the value of $(3a)\Delta(5b)$.

Q29. Let $K = (2\sqrt{3} - \sqrt{6})(2\sqrt{6} + \sqrt{12})$. Find the value of K^2.

Q30. Find the value of $\dfrac{2\sqrt{3}}{(2-\sqrt{3})^2} - \dfrac{2\sqrt{3}}{(2+\sqrt{3})^2}$.

Q31. As shown in the following figures, a 1×1 square is made using 4 match sticks. To form a 2×2 square with all the unit squares inside it, we require 12 match sticks. Find the number of match sticks needed to construct a 6×6 square with all the unit squares inside it.



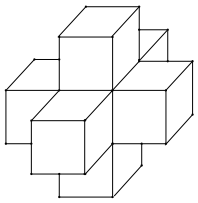
Q32. Let $n = (413315)^2 + (413315) + (413316)$. If we factorise n into prime factors, number 2 occurs t times. Find $(t + 25)$.

Q33. Let $K = (6544)^2 - (3456)^2$. K has three distinct prime numbers P, Q, R in its factorisation. If K is represented as $K = P^aQ^bR^c$, then find the value of $(a + b + c)$.

Q34. Let $n = 68k46215$ where k is a digit between 0 to 9. For some values of k, the number will be divisible by 15 and for some other values of k it will not be divisible by 15. Find the sum of all possible values of k such that n is divisible by 15.

Q35. A distance of 100 km was covered at an average speed of 60 km/hr. How much extra time will be required to cover the same distance at an average speed of 40 km/hr? Express your answer in minute.

Q36. Seven cubes are glued together as shown in the following figure. Let the volume of the resulting solid be 448 cubic centimeter. Let S be the surface area of the solid in square centimeter. Find the value of $(S - 392)$.



Q37. If a and b are real numbers such that $0 < b < a$ and $a^2 + b^2 = \frac{34}{15}ab$. Find the value of $7 \times \left(\frac{a+b}{a-b}\right)$.

Q38. Let $a = 1k05$ be a four digit number. Let $b = 139m$ be another four digit number. If the greatest common divisor (that is highest common factor) of a, b is 45 then find $(k + m)^2$.

Q39. In my class there are only two types of students, Normal and Brilliant. 10% of Normal students feel that they are Brilliant and 10% of Brilliant students feel that they are Normal. When I asked each student what he/she feels it turned out that 30% students feel that they are Brilliant. Find the actual % of Brilliant students in the class.

Q40. I have an 11 digit interesting number. The sum of its any three consecutive digits is 13. If the first digit is 4 and the last digit is 2, then find the sum of all the digits of this 11 digited number.

M. Prakash Academy Entrance Examination 2013

Standard VIII 14^{th} April 2013.

Mathematics

Q1 $ABCD$ is a square. Point E is inside the square such that $\triangle EDC$ is equilateral. m$\angle EAD$ equals

(A) 60^0 (B) 65^0 (C) 70^0 (D) 75^0.

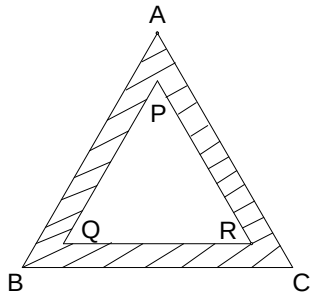
Q2 In trapezium $ABCD$, segment AB is parallel to segment CD. m$\angle B$ = 2m$\angle C$. m$\angle C$−m$\angle D = 50^0$. Then m$\angle A$ equals

(A) 170^0 (B) 110^0 (C) 120^0 (D) 125^0.

Q3 In rectangle $ABCD$, $AB = 12$ and $AD = 14$. Point E is on segment BC such that $BE = 5$. Then perimeter of $\triangle AED$ equals

(A) 41 (B) 42 (C) 43 (D) 44.

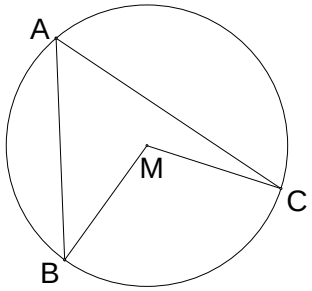
Q4 $\triangle ABC$ and $\triangle PQR$ are equilateral triangles centrally placed as shown in the figure. Area of the shaded region is $11\sqrt{3}$ square units. $BC = QR+2$.



Then BC equals

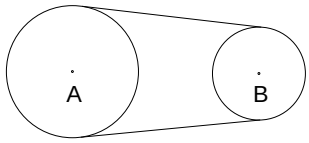
(A) 11 (B) $7\sqrt{3}$ (C) 12 (D) $8\sqrt{3}$.

Q5 M is center of the circle as shown in the figure.
$\text{m}\angle ABM = 38^0$ and $\text{m}\angle ACM = 16^0$. Then $\text{m}\angle BMC$ equals



(A) 107^0 (B) 108^0 (C) 109^0 (D) 110^0.

Q6 Two pullys are connected by a tight belt as shown in the figure. Radius of pully A is 5 units. Radius of pully B is 3 units. Pully A completes 210 rotations in a given time T.Then how many rotations will be completed by pully B in the same time T?



(A) 126 (B) 360 (C) 128 (D) 350.

Q7 $\square ABCD$ is a square. $AB = 18$ cm. Point E is on BC such that $\frac{BE}{EC} = \frac{2}{1}$. Then area of $\triangle AED$ equals

(A) 162 cm^2 (B) 166 cm^2 (C) 180 cm^2 (D) None of These

Q8 $(11.73)^2 + (8.54)(11.73) + (4.27)^2$=

(A) 250.48 (B) 251.36 (C) 254 (D) N.O.T.

Q9 $\dfrac{(0.7)^3 \times (0.07)^2 \times (0.007)^1}{(7)^2 \times (0.0007)^2} =$

(A) 49 (B) 4.9 (C) 0.49 (D) 0.049.

Q10 Consider a cubical box with sides 8x8x8. It is filled completely with cubical boxes with sides 2x2x2. The total surface area of all 2x2x2 cubical boxes is

(A) 648 (B) 1536 (C) 512 (D) 1024.

Q11 Let $n = (58738)^2 - (41262)^2$. The sum of the digits of n equals

(A) 25 (B) 26 (C) 27 (D) 28.

Q12 If $a = 41, b = \frac{a+1}{a-1}, c = \frac{b+1}{b-1}, d = \frac{c+1}{c-1}, e = \frac{d+1}{d-1}, f = \frac{e+1}{e-1}$ then f equals

(A) $\frac{20}{21}$ (B) $\frac{81}{80}$ (C) $\frac{41}{40}$ (D) $\frac{21}{20}$.

Q13 We define a new operation denoted by Ω. If a and b are two numbers then $a\Omega b$ means $\frac{a+b}{2}$. Now consider the following problem. If $x\Omega(x\Omega 14) = x$ then x equals

(A) 7 (B) 21 (C) 14 (D) 28

Q14 A car travels from point A to point B. Car travels first half the distance at a constant speed of 30 km/hr. What should be the speed of the car in second half of the journey so that total distance AB is travelled at an average speed of 40 km/hr.

(A) 50 (B) 60 (C) 55 (D) None of These

Q15 Group A has 30 members each having Rs.200. Group B has 20 members each having Rs.120. How much money should each member of A give to each member of B so that after the transaction all 50 members have exactly same amount with each of them. Note that each member of group A gives same money to each and every member of the group B.

(A) Rs 1.3 (B) Rs 1.4 (C) Rs 1.5 (D) Rs 1.6

Q16 $n = 438K463876589112$. Note that n has 16 digits. One of its digits is K. Find the sum of all those values of K for which n is divisible by 24.

(A) 18 (B) 12 (C) 15 (D) None of These

Q17 Find the number of integers between 1 and 201 which are either divisible by 6 or divisible by 10 but not divisible by both.

(A) 47 (B) 49 (C) 41 (D) 39

Q18 Find the number of ways in which a student can select 2 toys from 10 distinct toys.

(A) 55 (B) 5 (C) 90 (D) 45.

Q19 When $x^2+10x+k$ is divided by $x+2$ remainder is 25. Find remainder when $x^2 + 10x + k$ is divided by $x + 3$.

(A) 20 (B) 21 (C) 22 (D) 23.

Q20 A keeps Rs. 4000 in bank at interest rate 8 pcpa (simple interest)

for period of 5 years. How much principal should B keep in the same bank such that after 5 years B receives the simple interest which equals the total amount A receives.

(A) 5600 (B) 18000 (C) 16000 (D) 14000.

Q21 LCM of three numbers $36, a, 48$ is b. GCD (i.e. HCF) of b and 36 is c. GCD(i.e. HCF) of b and 48 is d. Then LCM of c and d equals

(A) 140 (B) 144 (C) 112 (D) 96.

Q22 In $\triangle PQR$, S is mid point of segment QR.
Given $SP = SQ = SR$. $\frac{m\angle Q}{m\angle R} = \frac{3}{2}$, then $m\angle R$ equals

(A) 54 (B) 30 (C) 36 (D) 60.

Q23 Car designer wants to fix capacity of petrol tank. He finds the volume with following assumptions.
(i) Car will run 36 kilometers every day.
(ii) 18 kilometers per liter is consumption of petrol.
(iii) The gap between two consecutive petrol filling should be atleast 6 days.
Then the minimum capacity of petrol tank should be

(A) 12 Ltrs (B) 11 Ltrs (C) 10 Ltrs (D) 14 Ltrs.

Q24 Which among the following is true.

(A) $6 < \sqrt{35} < \sqrt[3]{217}$ (B) $\sqrt[3]{217} < 6 < \sqrt{35}$
(C) $\sqrt{35} < 6 < \sqrt[3]{217}$ (D) $\sqrt{35} < \sqrt[3]{217} < 6$.

Q25 $\dfrac{\sqrt{10800} + \sqrt{16200} + \sqrt{27000}}{\sqrt{2} + \sqrt{3} + \sqrt{5}} =$

(A) $40\sqrt{3}$ (B) $30\sqrt{6}$ (C) $45\sqrt{2}$ (D)None of These

General Science

Q26. Motion of a child on a see-saw is

(A) linear motion. (B) circular motion. (C) random motion. (D) oscillatory motion.

Q27. Gravitational force of attraction exists between any two objects. It is known that this force of attraction is proportional to the inverse of square of distance between the objects and directly proportional to the product of masses of the objects. In other words, we can state $F = G \times \frac{m_1 m_2}{r^2}$ where G is some constant, m_1 and m_2 are masses of the objects and r is the distance between them. Now answer the following question.
Two objects when kept at a fixed distance, the force of attraction between them was 783 Newton. What will be the force of attraction if the distance between same two objects is tripled?

(A) 29 Newton (B) 87 Newton (C) 261 Newton (D) 2349 Newton

Q28. State whether each of the statements is TRUE or FALSE. Choose the correct option. In case statement I is FALSE, statement II is TRUE and statement III is FALSE, the correct option is FTF.

I) In hydrochloric acid, turmeric powder turns red.

II) In caustic soda, turmeric powder turns red.

III) Density of water is more at 4^0C than that of water in solid state.

(A) FFT (B) FTT (C)TFF (D) TTF

Q29. A dark room contains 25 black and 25 brown socks. A pair of socks means two pieces of the same colour. Since it is a perfect dark room, the colour cannot be made out inside the room. One has to bring a piece out and check the colour of it. You are allowed to bring only one piece at a time and a piece brought out cannot be kept back. What will be the maximum number of trials required to make one pair of socks of any colour?

(A) 27 (B) 2 (C) 3 (D) 26

Q30. A coin would weigh ——— at sea level than at the top of Mount Everest.

(A) more (B) less (C) equal (D) half

Q31. We are advised to avoid the use of baking soda frequently while cooking since it is known that baking soda destroys vitamin C in the food. What is the reason?

(A) Baking soda is insoluble in water.
(B) Vitamin C present in the food gets evaporated with carbon dioxide gas that gets liberated in the process.
(C) Vitamin C is an acidic compound and baking soda is a basic compound so neutralization takes place.
(D) Vitamin C gets converted to a solid material which is insoluble in water.

Q32. We are adding sodium hydroxide solution drop-wise to hydrochloric acid containing phenolphthalein. How do we conclude that the reaction has reached its end point (neutralisation point)?

(A) When yellow colour is observed. (B) When green colour is observed.
(C) When pink colour is observed. (D) No colour change is observed.

Q33. In which of the following case a penumbra will not be formed on the screen?

(A) When we have a point source and object is a tennis ball.

(B) When we have light coming from a torch and object is a tennis ball.

(C) When we have light coming from a torch and object is a pebble.

(D) When we have light coming from a source which has the same diameter as that of the object.

Q34. An element K reacts with air to form a gaseous product Y. When this gas Y is passed through lime water, it turns lime water milky. This gas is also used for manufacturing cold-drinks (i.e. soda water, etc.). Identify the effect of gas Y on moist litmus paper.

(A) It converts red litmus to blue. (B) It converts blue litmus to red.
(C) It does not change colour of red litmus. (D) Blue litmus turns colorless.

Q35. Arrange the following bodies in ascending order of their temperatures.Choose the correct option.

Normal human body (H), Red-hot iron bar (I), 100-Watt glowing Tungsten-filament bulb (B), Hot tea (T).

(A) HBTI (B) HTBI (C) BITH (D) HTIB

Q36. From the following list of compounds, select those compounds that react to show neutralization reaction?

1.$NaCl$ 2.HCl 3.H_2O 4.Na_2CO_3 5.Na_2SO_4

(A) Compounds 2 and 4. (B) Compounds 1 and 2. (C) Compounds 1 and 4. (D) Compounds 3 and 5.

Q37. An object/body is moving with a speed of $30m/s$. Which among the following list could be that object/body?

(A) An athlete running in an Olympics 100m race.
(B) Bullet shot from a revolver.
(C) A car moving on Pune-Mumbai Express Highway.
(D) A bicycle on a race track.

Q38. An element X exists in nature as gaseous molecule X_2. When it reacts with a gas which is the second largest components of air, it forms a neutral compound say, W. This compound W is known as universal solvent and it violently reacts with sodium to form compound say, S. This reaction liberates $X_2 2$ gas. What is the name of gas X_2?

(A) Hydrogen (B) Nitrogen (C) Oxygen (D) Chlorine

Q39. Which of the following is the example of kinetic energy predominantly getting converted to heat energy?

(A) A moving car comes to a stop by applying breaks.
(B) Water falling on blades of a turbine blades of and electricity generator.
(C) A ball thrown upwards reaches a certain height before it begins to fall.
(D) Electric motor used to lift water to an overhead storage-tank.

M. Prakash Academy Entrance Examination 2012

Standard VIII 3^{rd} June 2012.

Mathematics

Q1. At certain rate of interest, it takes 8 years for the amount to become twice the principal when computed by simple interest. If calculated at the same rate, how many years will be required for the amount to become thrice the principal?

(A) 10 (B) 12 (C) 16 (D) 24.

Q2. The value of $(3^3 + 4^3 + 5^3)^{\left(\frac{4}{3}\right)}$ is $\cdots$

(A) 1296 (B) 1396 (C) 1286 (D) 1306.

Q3. Same test was given to class A and class B. There are 60 students in class A. Average marks of class A is 90% and average of class A and class B together is 80%. If number of students in class B is 40 then average of class B is $\cdots$

(A) 60% (B) 63% (C) 65% (D) 68%.

Q4. 10% of 20% of 30% of 40% of 25000 is

(A) 50 (B) 55 (C) 60 (D) 70.

Q5. In an examination, the percentage of marks for passing is 40%. A student gets 37 marks and claims that he has scored 5 marks more than minimum required marks for passing. The maximum marks (out of out) one can get in that examination is $\cdots$

(A) 75 (B) 90 (C) 120 (D) None of A,B,C.

Q6. $\dfrac{\sqrt{48} - \sqrt{27} + \sqrt{75}}{\sqrt{98} - \sqrt{8} + \sqrt{2}} =$

(A) $\dfrac{\sqrt{3}}{\sqrt{2}}$ (B) $\dfrac{\sqrt{3}}{2}$ (C) $\dfrac{3}{\sqrt{2}}$ (D) $\dfrac{3}{2}$.

Q7. In $\triangle ABC$, $AB = 5, BC = 12, CA = 13$. D is the mid point of segment BC. The length of segment AD is $\cdots$

(A) 7.8 (B) 7.9 (C) $\sqrt{61}$ (D) $\sqrt{63}$.

Q8. In $\triangle ABC$, if $BC = 16$, altitude $BE = 8$ (point E is on side AC) and altitude $AD = 10$ (point D is on side BC) then the length of side AC is $\cdots$

(A) 20 (B) 25 (C) 27 (D) None of A,B,C.

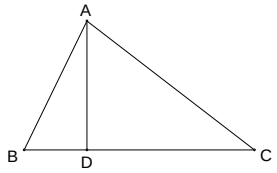
Q9. In $\square ABCD$, $AB = 12$, $AD = 5$, $m\angle A = 90^0$. Area of $\square ABCD$ is 69. Then distance of C from diagonal BD is

(A) 5 (B) 6 (C) 7 (D) 8.

Q10. In $\square ABCD$, $m\angle A : m\angle B : m\angle C : m\angle D$ is $1 : 2 : 3 : 4$. Measure of smallest angle is

(A) 30 (B) 32 (C) 34 (D) 36.

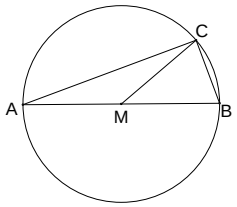
Q11. $\triangle ABC$ is acute angled triangle. AD is an altitude (perpendicular) from vertex A on side BC.



Point D is on side BC. $BD = 5,\ DC = 9,\ AC = 15$. The value of AB is

(A) 11 (B) 12 (C) 13 (D) 14

Q12. AB is a diameter of a circle with center M. C is a point on the circle.



If $\text{m}\angle CMB = 48^0$, then $\text{m}\angle ACM$ is

(A) 22 (B) 23 (C) 24 (D) 25.

Q13. If $x^2 - 7x + k$ is divided by $x - 2$ then the quotient is $x - 5$ and remainder is zero. Then the value of k is $\cdots$

(A) 7 (B) 10 (C) -10 (D) None of A,B,C.

Q14. If $\frac{x}{2} + \frac{x}{3} + \frac{x}{4} = 3 - \frac{x}{6}$ then x equals $\cdots$

(A) $\frac{12}{5}$ (B) $\frac{13}{6}$ (C) $\frac{18}{7}$ (D) None of A,B,C.

Q15. $\frac{x+3}{x+1} = \frac{2x+1}{2x+5}$, then the value of $8x + 19$ is $\cdots$

(A) 5 (B) 6 (C) 7 (D) 8.

Q16. A person was hired with a salary of Rs. 430000/- per year and a laptop. He worked for 10 months. As a part of his salary for those 10 months he received the laptop and Rs. 350000/-. Then the price of the laptop in rupees is $\cdots$

(A) 20000 (B) 30000 (C) 40000 (D) 50000.

Q17. Milk is available in the bags of two sizes a liters and b liters. Sachin wants to buy 40 liters of milk. He can pick 1 bag of a liters and 3 bags of b liters. Else he can pick 7 bags of a liters and 1 bag of b liters. Then b is

(A) 8 (B) 12 (C) 14 (D) 16.

Q18. $3^{(5x-4)} \cdot 5^{(18-7x)} = 455625$. In this equation value of x is

(A) 1 (B) 2 (C) 3 (D)4.

Q19. Each face of a brick has rectangular shape. If volume of the brick is 60 cm^3, length of the brick is $5cm$ and bredth of the brick is $4cm$. then total surface area of brick is

(A) $94cm^2$ (B) $48cm^2$ (C) $47cm^2$ (D) $96cm^2$.

Q20. The perfect square among the following numbers is

(A) 76179 (B) 76165 (C) 76166 (D) 76176.

Q21. $7425k4$ is six digited number divisible by 3 and is not divisible by 4 then digit k is

(A) 1 (B) 3 (C) 5 (D) 7.

Q22. The greatest number among 2^{270}, 3^{162}, 6^{108}, 20^{54} is

(A) 2^{270} (B) 3^{162} (C) 6^{108} (D) 20^{54}.

Q23. The sum of the first 102 terms in the following expression is $\cdots$

$1 - 3 + 5 - 7 + 9 - 11 + 13 - 15 + \cdots$

(A) -100 (B) -100 (C) 102 (D) -102.

Q24. The garden has a shape of regular pentagon. 125 trees are planted along perimeter of garden such that distance between any two consecutive trees is same. Then number of trees planted on one side of garden is

(A) 24 (B) 25 (C) 26 (D) None of A,B,C.

Q25. a, b are natural numbers.
If a is divided by 17 the remainder is 8.
If b is divided by 17 the remainder is 6.
If $a \times b$ is divided by 17 then the remainder is

(A) 14 (B) 13 (C) 16 (D) 15.

M. Prakash Academy Entrance Examination 2012

Standard VIII 15^{th} April 2012.

Mathematics

Q1. The number of years required for the amount to become twice the principal when computed by simple interest at the rate of 10 p.c.p.a. is

(A) 20 (B) 5 (C) 10 (D) None of A,B,C.

Q2. The value of $(1^1 + 2^2 + 3^3)^{\left(\frac{7}{5}\right)}$ is

(A) 128 (B) 218 (C) 821 (D) 281.

Q3. Same test was given to class A and class B. Average marks of class A of 40 students is 70% and class B of 60 students is 80%. Average of class A and class B together is

(A) 72% (B) 74% (C) 76% (D) 78%.

Q4. If $a = 75\%$ of 60% of 20 and $b = 40\%$ of 120% of 50, then $a + b$ equals

(A) 30 (B) 33 (C) 9 (D) 36.

Q5. In an examination, the percentage of marks for passing is 36%. A student gets 17 marks and fails by 10 marks. The maximum marks one can get in that examination is

(A) 75 (B) 100 (C) 125 (D) None of A,B,C.

Q6. $\dfrac{\sqrt{2}+\sqrt{8}+\sqrt{32}}{\sqrt{6}\times\sqrt{12}} =$

(A) $7\sqrt{2}$ (B) $\sqrt{6}$ (C) $\dfrac{7}{6}$ (D) $\dfrac{\sqrt{6}}{2}$.

Q7. Write True/False.

In $\triangle ABC$ and $\triangle PQR$

(i) if $\angle A \cong \angle P, \angle B \cong \angle Q, \angle C \cong \angle R$ then two triangles are congruent.

(ii) if Side $AB \cong$ Side $PQ, \angle B \cong \angle Q$, Side $BC \cong$ Side QR then two triangles are congruent.

(iii) if Side $AB \cong$ Side PQ, Side $BC \cong$ Side QR, $\angle C \cong \angle R$ then two triangles are congruent.

(A) TTT (B) TTF (C) FTT (D) FTF.

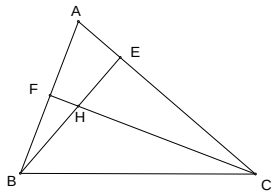
Q8. In $\triangle ABC$, if $BC = 10, AC = 12$ and altitude $AD = 6$ then the length of altitude BE is

(A) 4 (B) 5 (C) 7 (D) 8.

Q9. In $\square ABCD$, $AB = 6, AD = 8, m\angle A = 90$. Distance of C from diagonal BD is 4. Then area of $\square ABCD$ is

(A) 40 (B) 42 (C) 44 (D) 48.

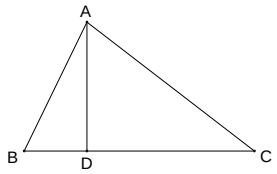
Q10. In $\triangle ABC$, BE and CF are altitudes and intersect at H.



If m$\angle BAC = 70$ then m$\angle BHC$ equals

(A) 105 (B) 110 (C) 115 (D) 120.

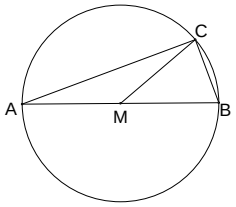
Q11. $\triangle ABC$ is acute angled triangle. AD is an altitude (perpendicular) from vertex A on side BC.



Point D is on side BC. $AB = 6, BC = 8, BD = 3$. The value of AC^2 is

(A) 49 (B) 52 (C) 64 (D) 81

Q12. AB is a diameter of a circle with center M. C is a point on the circle.



If m$\angle ACM = 20$ then m$\angle ABC$ is

(A) 60 (B) 50 (C) 70 (D) 80.

Q13. If $6 + x^2 - 7x$ is divided by $x - 1$ then the quotient is

(A) $x - 5$ (B) $x - 6$ (C) $x - 4$ (D) None of A,B,C.

Q14. If $\frac{x}{4} + \frac{x}{6} + \frac{x}{3} = \frac{5}{6} - \frac{x}{2}$ then x equals

(A) $\frac{2}{3}$ (B) $\frac{4}{3}$ (C) $\frac{2}{5}$ (D) $\frac{3}{2}$.

Q15. $\frac{x+2}{x-1} = \frac{x-1}{x+2}$, then the value of $4x^2 + 7$ is

(A) 5 (B) 6 (C) 7 (D) 8.

Q16. A person was hired with salary Rs. 160000/- per year and a golden ring. He worked for 8 months. As a part of his salary for those 8 months he received the golden ring and Rs. 100000/-. Then the price of the golden ring in rupees is

(A) 10000 (B) 20000 (C) 30000 (D) 40000.

Q17. Temperature in Centigrade (C) and Fahrenheit (F) are related to each other by formula $C = \frac{5}{9}(F - 32)$. If the temperature is recorded in both Centigrade and Fahrenheit shows the same number then the number is

(A) -30 (B) -40 (C) 0 (D) 30.

Q18. $7^{(5x-8)} \cdot 5^{(x+2)} = 30625$. In this equation value of x is

(A) 1 (B) 2 (C) 3 (D)4.

Q19. If the total surface area of a cube is $150cm^2$, then the volume of the cube is

(A) $64cm^3$ (B) $81cm^3$ (C) $125cm^3$ (D) $216cm^3$.

Q20. The perfect square among the following numbers is

(A) 534014 (B) 536030 (C) 535824 (D) 536088.

Q21. $5793k4$ is six digited number divisible by 4 and $89732k58$ is eight digited number divisible by 11 then digit k is

(A) 0 (B) 2 (C) 4 (D) 6.

Q22. The greatest number among 2^{192}, 3^{144}, 5^{96}, 19^{48} is

(A) 2^{192} (B) 3^{144} (C) 5^{96} (D) 19^{48}.

Q23. The sum of the first 767 terms in the following expression

$1-2+3-4+5-6+7-8\cdots$ is

(A) 384 (B) -384 (C) 768 (D) 767.

Q24. The number of poles that can be erected on all sides of rectangular garden having length 50 meter and breadth 30 meter, if the distance between 2 consecutive poles is 2 meter is

(A) 80 (B) 84 (C) 78 (D) 82.

Q25. a, b, c are natural numbers. If a is divided by 17 the remainder is 8. If b is divided by 17 the remainder is 11. If c is divided by 17 theremainder is 12. If $a+b+c$ is divided by 17 then the remainder is

(A) 13 (B) 14 (C) 15 (D) 16.

Mathematics Practice Problems

Q1. The value of $\frac{a+b}{a-b}$, if $\frac{a}{b}=4$, is

(a) 0 (b) -1 (c) $\frac{5}{3}$ (d) $\frac{4}{3}$

Q2. Consider the expression, $(1)^1-(-1)^2+(1)^3-(-1)^4+(1)^5-(-1)^6+\cdots$. The sum of first 873 terms in the above equation is

(a) 873 (b) 0 (c) -1 (d) 1

Q3. The population of a city is X in 1991. It becomes 3 times every 10 years.
The population of this city in the year 2021 will be,

(a) $3X$ (b) X (c) $9X$ (d) $27X$

Q4. The measures of exterior angles of a quadrilateral are $(2x-15)^o, (x+45)^o, (3x)^o$ and $(2x+10)^o$. What is the measure of the largest angle of the quadrilateral?

(a) 115^o (b) 135^o (c) 90^o (d) 100^o

Q5. If $\frac{2}{5}^{th}$ of a is equal to $\frac{3}{4}^{th}$ of b, find the ratio of a to b.

(a) 6 : 20 (b) 20 : 6 (c) 8 : 15 (d) 15 : 8

Q6. The sum of the ages of Sachin and Rahul is 25 years, that of Rahul and Sunil is 35 years and that of Sachin and Sunil is 30 years. The ratio of Sachin's age to Sunil's age is,

(a) 2 : 1 (b) 1 : 2 (c) 2 : 3 (d) 3 : 2

Q7. The fee charged in Rupees from each student of a class is equal to 1/4 of the total number of students in the class. The total monthly fee collected is Rs. 324. Then the total number of students in that class is,

(a) 81 (b) 36 (c) 16 (d) 18

Q8. The LCM of 2 consecutive even numbers is 364. The sum of these numbers is,

(a) 50 (b) 54 (c) 58 (d) 46

Q9. The average of 3 consecutive even numbers is 18. If these 3 numbers are arranged in ascending order, then the odd number just before the middle number and the even number just after the largest number are,

(a) $15, 20$ (b) $17, 20$ (c) $17, 22$ (d) $15, 22$

Q10. $\frac{19.2}{0.0016} =$

(a) 12.00 (b) 0.0012 (c) 0.012 (d) 12000

Q11. $\frac{0.9\times0.09\times0.009}{0.0009\times9} =$

(a) 0.9 (b) 0.09 (c) 0.009 (d) 9

Q12. What will happen to the area of a square if the length of its side is halved?

(a) Area of the square will be halved (b) Area of the square will remain same (c) Area of the square will be $\frac{1}{4}$of its original area (d) Area of the square will be doubled

Q13. Write True/False.

(i) Sum of 5 different integers can never be 0.

(ii) Every chord other than diameter of a circle is parallel to one of its diameters.

(iii) If 'a' and 'b' are any two integers, then, 'a - b' is always less than both 'a' and 'b'.

(a) TTT (b) TTF (c) FTT (d) FTF

Q14. If $\frac{5}{K} = \frac{1}{\sqrt{0.0025}}$ then $K =$

(a) 0.5 (b) 0.25 (c) 0.01 (d) 5

Q15. If $\frac{x-1}{3} + \frac{x+2}{5} = 2$ then $x =$

(a) $\frac{7}{15}$ (b) $\frac{8}{29}$ (c) $\frac{29}{8}$ (d) $\frac{13}{15}$

Q16. Side of a square is 10. Its perimeter is reduced by 30%, hence area is decreased by

(a) 30% (b) 48% (c) 51% (d) 55%

Q17. Ratio of the present ages of two brothers is 4 : 5. After 10 years the ratio of their ages would be 6 : 7. Find the age of elder brother after 15 year.

(a) 35 (b) 40 (c) 50 (d) 25

Q18. If $81 = 27^x$, then $x =$.

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

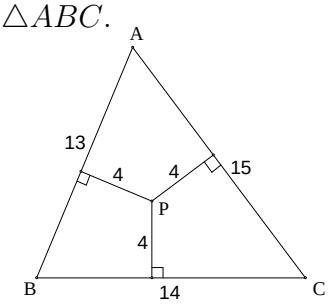
Q19. How many times should $\frac{5}{7}$ be added to $\frac{5}{7}$, so that the sum is 5.

(a) 4 (b) 5 (c) 6 (d) 8

Q20. $\square ABCD$ is square with side 10. P is point inside square such that $\triangle PBC$ is equilateral. Area of $\triangle PBC$ is

(a) $50\sqrt{3}$ (b) $25\sqrt{3}$ (c) $40\sqrt{3}$ (d) $100\sqrt{3}$

Q21. With reference to the figure find the area of $\triangle ABC$.



(a) 84 (b) 80 (c) 100 (d) 70

Q22. Greatest common divisor of lcm of 18 and 12
and lcm of 15 and 200 is

(a) 12 (b) 6 (c) 8 (d) 10

Q23. $\frac{a^2+3a}{a^2+4a+3} \times \frac{a^2-2a-3}{a^2-9} =$

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

Q24. Value of x if $\frac{x-1}{x-2} - \frac{x-2}{x-3} = \frac{x-3}{x-4} - \frac{x-4}{x-5}$

(a) $\frac{2}{7}$ (b) $\frac{3}{4}$ (c) $\frac{7}{2}$ (d) $\frac{4}{5}$

Q25. The average of marks in the class of 50 students is 75. But particular student's marks were recorded 67 instead of 77. If this correction is taken into account what will be new avarage of marks?

(a) 76 (b) 75.2 (c) 75.5 (d) 76.2

Q26. Age of father today is 6 times age of son. After 20 years age of father will be 2 times age of son. How old was father when son was born?

(a) 30 (b) 35 (c) 20 (d) 25

Q27. A number consists of two digits. The digit at unit's place is 4 times that in ten's place. If digits are interchanged the new number when increased by 2 equals 3 times the old number. Then the number is

(a) 19 (b) 14 (c) 28 (d) 12

Q28. Which of the following is the greatest?

2^{500}, 3^{300}, 5^{200}, 4^{100}

(a) 2^{500} (b) 3^{300} (c) 5^{200} (d) 4^{100}

Q29. $\frac{(64)^2+(36)^2+(128\times 36)}{(64\times 64)-(36\times 36)} =$

(a) $\frac{7}{25}$ (b) 1 (c) $\frac{25}{7}$ (d) $\frac{625}{49}$

Q30. The digit in the unit's place of number $(61^{91} + 345^{201} - 176^{46})$ is

(a) 2 (b) 0 (c) 3 (d) N.O.T.

Q31. The value of the expression $\frac{(243^{\frac{n}{5}})\times(3^{2n+1})}{9^n\times 3^{n-2}} =$

(a) 27 (b) $\frac{1}{27}$ (c) 9 (d) N.O.T.

Q32. In $\triangle ABC, m\angle BAC = 80$. The bisectors of $\angle ABC$ and $\angle ACB$ intersect each other at point I, then $m\angle BIC$ is

(a) 170 (b) 130 (c) 85 (d) N.O.T.

Q33. Circular garden has area 616 sq. meters. The cost of fencing this garden at the rate of Rs. 200/meter is Rs.

(a) 17600 (b) 4400 (c) 8800 (d) N.O.T.

Q34. A freight train 1 KM long is travelling at a speed of 20 KMPH. It enters a tunnel one KM long at 1 pm. In how many minutes does the rear of the train emerge from the tunnel.

(a) 3 (b) 6 (c) 12 (d) 1

Q35. Ajay earns 25% more than Bhaskar. By how much percent is Bhaskar's income less than that of Ajay?

(a) 2 (b) 0 (c) 3 (d) N.O.T.

Q36. $\frac{\sqrt{3}+\sqrt{12}+\sqrt{75}}{\sqrt{2}+\sqrt{18}} =$

(a) $2\sqrt{3}$ (b) $\sqrt{6}$ (c) $\sqrt{\frac{1}{2}}$ (d) $\frac{\sqrt{3}}{2}$

Q37. $\frac{(\sqrt{3}-\sqrt{2})(\sqrt{3}+\sqrt{2})}{(\sqrt{7}-\sqrt{5})(\sqrt{7}+\sqrt{5})} =$

(a) $\frac{1}{2}$ (b) 2 (c) $\frac{2}{3}$ (d) 1

Q38. $\frac{\frac{2\sqrt{3}}{\sqrt{2}}+5\sqrt{6}}{(\sqrt{2})(\sqrt{3})} =$

(a) $\frac{6\sqrt{3}}{\sqrt{2}}$ (b) 9 (c) 6 (d) $\frac{\sqrt{5}}{2}$

Q39. What should be the digit in place of k if $6732k36$ is divisible by 8.

(a) $1, 3, 5, 7, 9$ (b) $0, 2, 4, 6, 8$ (c) Any of the 10 digits (d) N.O.T.

Q40. Surface area of a circle having radius $\sqrt{\frac{6}{\pi}}$ equals surface area of a cube with side x. Then x equals

(a) 2 (b) 1 (c) 3 (d) N.O.T.

General Science Practice Problems

Q1. The rate of a chemical reaction depends on

A) concentration of the reactants B) temperature of reactants

C) both A and B D) neither A nor B

Q2. Relation between time periods of ultrasonic sound and audible sound is given by:

A) Time period of ultrasonic sound is more than that of audible sound.

B) Time period of audible sound is more than that of ultrasonic sound.

C) Both have same time period.

D) None of the above.

Q3. A thermometer used for measuring temperatures of furnaces (more than 1000^0C) is

A) Calorimeter B) Pyrometer C) Ultrathermal thermometer D) None of the above

Q4. Materials that take the shape of container are liquids - a student read this in his textbook. At home he saw sugar poured from jar into a bowl. While in the jar, sugar took the shape of jar and while in bowl, it took the shape of bowl. He concluded that sugar is a liquid. His sister told him that sugar was a solid. She gave him some explanation that convinced him that sugar was a solid. What explanation his sister might have given? Choose from the statements given below.

A) If you burn sugar, it melts and gets converted to a black powder.

B) If you take a single crystal of sugar and put it in any container, it doesn't change its shape while a single drop of water will spread i.e. changes its shape.

C) Sugar is made from sugarcane juice which is a liquid so sugar must be solid.

D) Sugar dissolves in water which is liquid. How can liquid dissolve in liquid?

Q5. In a magic show a magician claimed that he could hold a piece of cloth upon a flame without burning it. He kept a circular disk inside a piece of cloth and tied it tightly. He then held the disk covered by cloth over the candle-flame and indeed the cloth did not burn. Class VII students among the spectators thought that it was an obvious trick since the disk inside the cloth was made up of

A) Wood B) Copper C) Either A or B D) None of A or B

Q6. We are allowed to observe only the shadow of an object, but neither the object nor the source of light. In this case we can:

A) Determine the exact colour of the object.

B) Determine the exact size of the object.

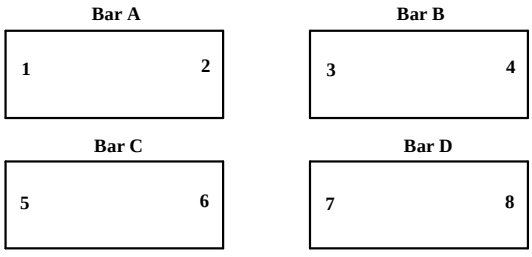
C) Determine the exact shape of the object.

D) None of the above.

Q7. Sometimes we get stomach-ache due to excessive acid production in our stomach. In such cases doctors prescribe medicine containing so that extra acid is ..

A) lemon juice, digested B) base, vomited out C) orange juice, neutralized D) base, neutralized.

Q8. Four identical bars (same in shape, size, colour, mass, etc.) of iron are marked as 1-2, 3-4, 5-6 and 7-8 at their ends as shown below. Some of them are magnets and some are just iron bars.



It is observed that

i) Ends 1 and 7 repel each other. ii) Ends 2 and 3 attract each other.

iii) Ends 4 and 5 attract each other. iv) Ends 6 and 8 attract each other.

v) Ends 4 and 7 attract each other. vi) Ends 1 and 6 attract each other.

From the above information, which one of the following statements is definitely TRUE?

A) Bars A and C are magnets. B) Bar C is definitely not a magnet.

C) Only Bar A is a magnet. D) Bar B is definitely not a magnet.

Q9. Common salt, iron filings and wheat are mixed together. What would be the most efficient way (involving least effort) of separating all the three substances?

A) Use a magnet to separate iron filings then use a sieve to separate wheat and salt.

B) Use a sieve to separate wheat and then use a magnet to separate the remaining two.

C) Use a magnet to separate iron filings, put water into the remaining mixture. Use a strainer to get wheat and dry it. Heat salty water until it evaporates and we get salt back.

D) Pour water in the mixture. Strain salty water containing iron filings in a separate container and dry wheat. Sieve water again with a finer sieve to get iron filings and dry those. Heat the salty water until it evaporates and we get salt back.

Q10. Some students were measuring the length of the blackboard in their classroom. Group A consisting of 15 students measured it with hand-span of each member. Group B consisting of 15 students measured it with the scale from compass-box of each of the members. Thus each group had 12 readings of measurement of the same length. Which group will get all the measurements same?

A) Group B B) Group A C) Both of them D) None of them

Q11. On a cool night when we touch a wooden stick and an iron bar lying in the open, iron bar feels much colder. The property responsible for this is that .

A) density of iron is more than that of wood.

B) specific heat capacity of iron is less than that of wood.

C) iron is a good conductor of heat while wood is not.

D) None of these.

Q12. Acids are sour to taste and the bases taste .

A) bitter B) sweet C)sour D) hot

Q13. In which of the following cases, static electricity is produced?

A) A steel rod is rubbed on a wooden table.

B) Two glass rods are rubbed against each other.

C) Metal key is rubbed on a steel cabinet.

D) A balloon is rubbed on dry hair.

Q14. Sunlight is passed through prism and the resulting spectrum showing different colours is obtained on a screen. Which of the following statements is TRUE?

A) Red bends more than yellow. B) Violet bends more than green.

C) Orange bends more than blue. D) Yellow bends more than violet.

Q15. Which among the following is used as a preservative in food items?

A) Hydrochloric acid B) Sulphuric acid C) Benzoic acid D) Nitric acid

Q16. A set of three statements is given below. State whether each of the statements is TRUE of FALSE. Choose the correct option. In case statement I is FALSE, statement II is TRUE and statement III is FALSE, the correct option is FTF.

I) In lemon juice, blue litmus turns red.

II) In shampoo, red litmus turns blue.

III) In salt water, red litmus turns blue.

A)TTF B)TTT C)FTF D)TFT

Q17. Two friends made a 'phone' using paper cups and a 15 meter long cotton string. When they tried to use it, they could not hear what the person at the other end said. What may have gone wrong with their 'phone'?

A) The cups were not having the same colour.

B) The thread was wet.

C) The string was not tightly stretched.

D) The size of the cups was different.

Q18. It was observed that a piece of wood floats on water in a glass while a coin sinks in it. The reason behind this observation is

A) coin is heavier than the piece of wood.

B) coin is smaller than the piece of wood.

C) coin is not painted while piece of wood is painted.

D) coin has more density than that of wooden piece.

Q19. Few ice cubes were taken into a beaker and were heated. It was observed that ice got converted to water (change I) and on further heating water got converted to vapour (change II). In this context, choose the correct option.

A) Change I is a physical change while change II is a chemical change.

B) Change I is a chemical change while change II is a physical change.

C) I and II are physical changes. D) I and II are chemical changes.

Q20. Following is a list of some changes. Which among these are examples of periodic change?

I) motion of pendulum II) sunrise and sunset III) cutting wood to saw dust IV) melting of butter V) growth of human body VI) phases of moon

A) I, II and VI B) I, II and V C) I, II, III D) I, IV, V

Q21. A burning candle is placed in front of a pin-hole camera. A set of three statements related to this situation is given below. State whether each of the statements is TRUE or FALSE. Choose the correct option. In case statement I is FALSE, statement II is TRUE and statement III is FALSE, the correct option is FTF.

I) The image of the flame is inverted i.e. upside down.

II) If the candle is brought closer to the hole, size of the image increases.

III) Image of the flame is orange/yellowish in colour.

A) TFT B)TTT C)FFT D)FFF

Q22. There is a total lunar eclipse as observed from earth. An astronaut is on the moon, on the side facing earth. Then

A) She will certainly see a total solar eclipse.

B) She will be able to see both, the earth and the sun.

C) She will see a partial solar eclipse.

D) She will certainly see a total earth eclipse.

Q23. State whether each of the statements is TRUE or FALSE. Choose the correct option. In case statement I is FALSE, statement II is TRUE and statement III is FALSE, the correct option is FTF.

I) Litmus paper turns blue when dipped in acetic acid.

II) When drops of Phenolphthalein are added to sulphuric acid, the solution turns pink.

III) When drops of Phenolphthalein are added to calcium hydroxide, there is no change in the colour of the solution.

A) TFT B)TTT C)FFT D)FFF

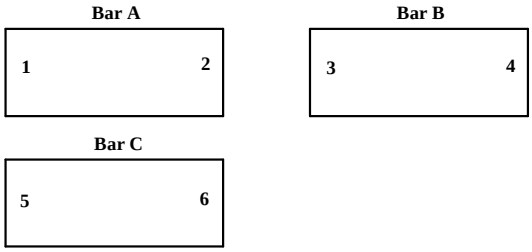
Q24. A boy is looking at image of his face in a shining stainless steel spoon with a straight handle. The image is seen to be inverted (upside down). He must be seeing his image in .

A) concave side of the spoon (inner side of the spoon).

B) convex side of the spoon (outer side of the spoon).

C) handle of the spoon. D) Either of A or B.

Q25. Three identical bars (same in shape, size, colour, mass, etc.) of iron are marked as 1-2, 3-4 and 5-6. Two of them are magnets and one is just an iron bar.



It is observed that i) Ends 2 and 3 attract each other.

ii) Ends 4 and 5 attract each other. iii) Ends 5 and 2 repel each other.

From the above information, which one of the following statements is definitely TRUE?

A) Bars B and C are magnets. B) Bar B is definitely not a magnet.

C) Only Bar B is a magnet. D) Cannot be determined.

Q26. Arrange the following objects in decreasing order of their thickness.

News paper, plant cell, cover of textbook, glass of spectacle

A) news paper, plant cell, cover of textbook, glass of spectacle

B) plant cell, cover of textbook, glass of spectacle, news paper

C) glass of spectacle, cover of textbook, news paper, plant cell

D) plant cell, glass of spectacle, cover of textbook, news paper

Q27. Four identical boxes are filled with water (W), saw dust (S), iron filings (I) and cooking oil (O). Arrange the boxes in increasing order of their weights.

A) SOWI B) SWIO C) IWSO D) IOWS

Q28. A pipe can fill an empty water tank in 10 minutes. Another pipe alone can fill in the same empty tank in 6 minutes. If the tank is empty and both the taps are opened simultaneously, how long will it take to fill the tank completely?

A) 8 minute B) more than 6 minute but less than 10 minute

C) less than 6 minute D) 16 minute

Q29. A car goes from Pune to Satara at an average speed of 40 km/hr. While returning from Satara to Pune, it travels at average speed of 60 km/hr. What is average speed of the total journey (Pune to Satara to Pune)?

A) 100 km/hr B) 48 km/hr C) 50 km/hr D) 20 km/hr

Q30. We use dusting powder on a carom board to

A) reduce the gravitational force. B) reduce the electrostatic force.

C) reduce the frictional force. D) it is a rule of the game.

Q31. We are able to walk on the ground due to

A) gravitational force B) muscular force C) frictional force D) all of A, B and C

Q32. Choose the correct option to match the pairs. Choose an option in which all answers are correct.

Column I	Column II
i) Car moving on road	P) Random motion
with increasing speed	
ii) Motion of second hand of a clock	Q) periodic motion
iii) Giant wheel	R) Linear uniform motion
iv) Motion of a leaf falling from tree	S) Linear non-uniform motion
	T) Oscillatory motion
	U) Circular motion

A) i - S, ii - Q, iii - U, iv - P B) i - R, ii - U, iii - Q, iv - P

C) i - S, ii - T, iii - U, iv - S D) i - U, ii - R, iii - T, iv - S

Q33. Classify the following changes as physical and chemical changes. If a change is physical change, indicate it with Ph and if it is a chemical change, indicate it with Ch.

i) Dispersion of white light into different colours ii) Fermentation of idli-dough iii) Neutralization of acid due to base iv) Formation of chalk dust while writing

A) i - Ph, ii-Ch, iii-Ph, iv-Ph B) i - Ph, ii-Ch, iii-Ch, iv-Ph

C) i - Ch, ii-Ch, iii-Ph, iv-Ph D) i - Ch, ii-Ph, iii-Ph, iv-Ch

Q34. A farmer wanted to move a boulder using a rigid steel rod. He inserted the rod underneath the boulder and applied force on the other end of the rod. He used a fixed, hard support (fulcrum) to reduce his efforts. To make the task easier (requiring least efforts) what would be the correct position of the fulcrum?

A) Towards the end of the rod held by the farmer

B) Towards the end of the rod inserted underneath the boulder.

C) Exactly in the middle of the rod.

D) No matter where you put the fulcrum, you need to apply the same force.

Q35. We experience that it is difficult to open a tightly closed lid of a tin box with mere fingers. We generally use a long, hard spoon to open it. We insert the end of spoon in the gap between lid and the box and apply force with our hand. To open the lid easily, the position of our hand is ..

A) near the lid. B) exactly at the centre of the spoon.

C) towards the other end of the spoon. D) none of the above.

Q36. A group of objects - glass, cotton, wool and silk - was given and the students were asked to choose the odd object out. Ritesh said that cotton was odd object while Neeta insisted that glass was the odd object in the group. After listening to their arguments the teacher said that both of them were correct but they had used a different criterion of deciding the group members. What criterion they might have used?

A) Ritesh looked at the shine of the objects while Neeta looked at the size.

B) Ritesh considered density of the objects and Neeta considered their weights.

C) Ritesh thought of objects used in producing static electricity and Neeta thought of objects used in making clothes.

D) There was no criterion; they gave answers just like that.

Q37. Four objects were moving at the following speeds. Object P at 10m/s, object Q at 18 km/hr, object R at 50cm/s and object S at 7200m/hr. Which object is moving at the highest speed?

A) Object P B) Object Q C) Object R D) Object S

Q38. A car is moving from place J to place K. The first one third of the journey was covered at an average speed of 30 km/hr. Find the average speed of the rest two thirds of the journey if the total journey was covered at an average speed of 45 km/hr.

A) 15 km/hr B) 25 km/hr C) 60 km/hr D) 37.5 km/hr

Q39. Generally oxides of .. are basic in nature.

A) Plastic B) Non-metals C) wood D) metals

Q40. Bimetallic strip works on the principle that .

A) Different metals expand differently on heating.

B) Different metals have different heat capacity.

C) Different metals have different weights.

D) Different metals have different densities.

VIII Std- Answer Key

April 2014

Que	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans	33	77	11	99	99	77	55	33	99	64	15	98	50	55	02
Que	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans	15	34	78	50	68	10	30	45	95	20	40	80	70	72	48
Que	31	32	33	34	35	36	37	38	39	40					
Ans	84	29	13	12	50	88	28	64	25	45					

April 2013

Que	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans	D	A	B	C	B	D	A	D	C	B	A	D	C	B	D
Que	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans	A	C	D	A	D	B	C	A	C	B	D	B	B	C	A
Que	31	32	33	34	35	36	37	38	39						
Ans	C	C	A	B	D	A	C	A	A						

June 2012

Que	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans	C	A	C	C	D	A	C	A	B	D	C	C	B	A	A
Que	16	17	18	19	20	21	22	23	25						
Ans	D	B	B	A	D	C	C	D	A						

April 2012

Que	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans	C	A	C	B	A	C	D	B	C	B	B	C	B	A	D
Que	16	17	18	19	20	21	22	23	24	25					
Ans	B	B	B	C	C	B	B	A	A	B					

Mathematics Practice Problems

Que	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans	C	D	D	A	D	B	B	B	C	D	B	C	D	B	C
Que	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans	C	B	D	C	B	A	A	B	C	B	D	C	A	C	B
Que	31	32	33	34	35	36	37	38	39	40					
Ans	A	B	A	B	D	B	A	C	A	B					

General Science- Practice Problems

Que	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans	C	B	B	B	B	D	D	C	B	D	C	A	D	B	C
Que	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans	A	C	D	C	A	B	A	D	A	B	C	A	C	B	C
Que	31	32	33	34	35	36	37	38	39	40					
Ans	D	A	B	B	C	C	A	C	D	A					