# MANAV RACHNA INTERNATIONAL SCHOOL
## Scholarship Test Paper
## For Grade – IX (Session 2022-23)
## Current Grade of the Student - VIII (Session 2021-22)

**Date: 19.02.2022**
**Duration: 2 Hours** **M.M.: 100**

**KINDLY FILL IN THE DETAILS**

Name: _____

Father's Name: _____

Mother's Name: _____

Examination Centre: Manav Rachna International School _____

Name and Signature of the Invigilator: _____

**GENERAL INSTRUCTIONS:**
This paper is divided into 4 sections
**SECTION – A: Logic and Reasoning**: **20 marks** (Each question carries 2 marks)
**SECTION – B: English:** **20 marks** (Marks have been mentioned against the questions)
**SECTION – C: Math:** **30 marks** (Each question carries 1 mark)
**SECTION – D: Science:** **30 marks** (Each question carries 1 mark)

- All sections are compulsory.
- Read each question carefully before answering.
- **Objective Questions need to be tick marked in the question paper itself and submitted.**
- **Subjective Questions need to be attempted in the answer sheets provided and submitted.**

## SECTION A
## LOGIC AND REASONING

Q1. A wall clock which gains uniformly is 2 minutes slow at noon on Monday and is 4 min. 48 sec fast at 2 p.m. on the following Monday. When was it correct?

a) 2 pm on Tuesday
b) 2 pm on Wednesday
c) 3 pm on Thursday
d) 1 pm on Friday

Q2. Madhvika and Sonam are good in Dramatics and Computer Science.Ashima and Madhvika are good in Computer Science and Physics. Ashima ,Priya and Neha are good in Physics and History. Neha and Ashima are good in Physics and Mathematics. Priya and Sonam are good in History and Dramatics.

Who is good in Physics, History and Mathematics but not in Computer Science?
a) Priya b) Ashima c) Sonam d) Neha

Q3. In questions below, each passage consist of six sentences. The first and sixth sentences are given in the beginning. The middle four sentences in each have been removed and jumbled up. These are labelled as P, Q, R and S. Find out the proper order for the four sentences.

| | |
|---|---|
| S1 | Politeness is not a quality possessed by only one nation or race. |
| P | One may observe that a man of one nation will remove his hat or fold his hands by way of greetings when he meets someone he knows. |
| Q | A man of another country may not do so. |
| R | It is a quality to be found among all peoples and nations in every corner of the earth. |
| S | Obviously, each person follows the custom of his particular country. |
| S6 | In any case, we should not mock at others' habits. |

The correct sequence is

a) SQPR b) RSQP c) QRPS d) RPQS

Q4. Directions: In the following question a related pair of words is followed by four pairs of words. Select the pair that best expresses a relationship similar to that expressed in the original pair.

APHORISM: SENTENTIOUS::

a) criticism : redundant b) eulogy : laudatory

c) adage : symbolic d) maxim : allegorical

Q5. A family consists of husband-wife, two sons and two daughters. All the females were invited to a dinner. Both sons went out to play. Husband did not return from the office. Who was at home?

a) Only wife was at home b) Only sons were at home

c) All ladies were at home d) Nobody was at home

Q6. How many times in a day, are the hands of a clock in straight line but opposite in direction?

a) 20 b) 22 c) 24 d) 48

Q7. There are five books of different thickness. A is thicker than C and B is thicker than D. E is not as thick as B, but is thicker than C. D is not as thick as C. Which is the thinnest book?

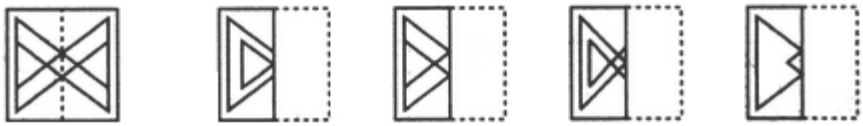
a) B b) C c) D d) E

Q8. Select a figure from the given four alternatives which fits exactly into Figure-X to form a complete square.

X 1 2 3 4

a) 1 b) 2 c) 3 d) 4

Q9. Find out from amongst the four alternatives as to how the pattern would appear when the transparent sheet X is folded at the dotted line



X 1 2 3 4

a) 1 b) 2 c) 3 d) 4

Q10. Find out how the given figure will look like after rotation.

1. 2. 3. 4.

a) 1 b) 2 c) 3 d) 4

## SECTION B
## ENGLISH

Q1. **Read the passage carefully and answer the questions that follow.**

It's not "cool" to be fat, but that has not prevented an obesity epidemic from occurring among America's youth. Childhood obesity increased from 5 percent in 1964 to about 13 percent in 1994. Today, it is about 20 percent – and rising. Excessive time spent watching television, using the computer, and playing video games is partly to blame for this escalating rate. Children, on an average, spend up to five to six hours a day involved in these sedentary activities. Perhaps it wouldn't matter if they were sufficiently active at other times, but most of them aren't.

To make matters worse, children are bombarded with well – crafted TV ads from fast – food chains and other purveyors of high – fat, high – sugar meals and snacks. A recent study reported that two-to-six-year-olds who watch television are more likely to choose food products advertised on TV than children who do not watch such commercials. These highly effective advertising campaigns, combined with a physically inactive lifestyle, have produced a generation of kids who are at high risk for obesity-associated medical conditions.

The major health threat is the early development of Type 2 diabetes (adult onset), particularly in children with a family history of the disease. Doctors are reporting a surge in young adolescents developing Type 2 diabetes – which can lead to heart disease, high blood pressure, kidney disease, stroke, limb amputations, and blindness. People who develop diabetes in adolescence face a diminished quality of life and shortened life span, particularly if the disease progresses untreated. It's a scary prospect for our children but, in many cases, obesity and diabetes are preventable.

When children are spending most of their free time sitting in front of televisions and computers, they are not outside running, jumping or engaging in team sports that would keep their weight down.

Parents need to set limits on the time their children are engaged in passive activities. Paediatricians recommend restricting children to one to two hours per day on TV and computers combined – though older children may need additional time for learning activities.

Parental involvement remains the most important key to our children's healthy diets. Programs to educate parents about nutrition are essential. Fast foods should be consumed only in moderation. Caregivers, who are often busy and harried, must avoid the temptation to whisk their kids into fast-food restaurants or to pick up fast food for dinner at home. Changing eating habits and lifestyles is not easy, but the health benefit for our children is a wonderful payoff for parents willing to take on the task.

**Answer the following questions briefly.**

(i) What is the main cause of obesity? 1
(ii) Who does Type 2 diabetes normally affect and what does it lead to? 2
(iii) What should the parents do to check obesity? 2
(iv) What do pediatricians suggest? 1
(v) How are advertisements responsible for an obesity-associated medical problem? 1
(vi) How does diabetes affect adolescents? 1
(vii) Find the word from the passage which means as a) inactive (para 1) b) declined (para 3) 2

Q2. The rapid proliferation of multinational fast food companies and the influence of western culture have replaced traditional home cook food with processed meals. Hence, in this light, write a paragraph (150-200 words) on how fad diets have changed food preferences in India. 10

## SECTION C
## MATH

Q1. In a rhombus ABCD, $\angle A = 60°$ and AB = 6cm ,then the length of diagonal BD (in cm) is:

a) 12 b) 9 c) 6 d) 3

Q2. In a triangle $\Delta ABC$, AB + BC = 10cm, BC + CA = 12 cm and CA + AB = 16cm. Find the perimeter of $\Delta$ ABC in cm.

a) 19cm b) 24cm c) 32cm d) 38cm

Q3. One third of a number is greater than one fourth of its successor by 1, find the number:

a) 5 b) 15 c) 20 d) 25

Q4. The value of 'x' if $\frac{a^x}{a^y} = a^{10}$ and $\left(a^y\right)^3 = a^x$ for a > 1 ?

a) 25 b) 5 c) 20 d) 15

Q5. If x and y are positive integers with x > y and x + xy = 391, what is the value of x+y ?

a) 392 b) 39 c) 31 d) 40

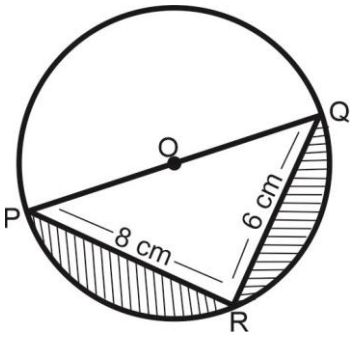
Q6. A square and a triangle has equal areas. If the ratio of side of square and the height of triangle is 2:3, find the ratio of the base to height.

a) 2/3 b) 4/3 c) 4/5 d) 8/9

Q7. Simplify $\frac{9.675}{2.5}+\frac{8.755}{0.05}+\frac{43.125}{0.15}$

a) 465.37 b) 466.47 c) 466.37 d) 465.47

Q8. In the figure given below, O is the centre of the circle. PR and RQ are chords of the circle.
PR = 8cm, QR = 6, and ∠PRQ = 90°




a) $\left(\frac{25\pi}{4}-24\right)cm^2$ b) $\left(\frac{25\pi}{2}-24\right)cm^2$

c) $\left(\frac{25\pi}{4}\right)cm^2$ d) $\left(\frac{25\pi}{2}\right)cm^2$

Q9. The square root of the expression:

$$\frac{(12.1)^2-(8.1)^2}{(0.25)^2+(0.25)(19.95)}$$ is

a) 1 b) 2 c) 3 d) 4

Q10. X has pens and pencil which together are 40 in number. If he had 5 more pencils and 5 less pens, the number of pencils would have become 4 times the number of pens. Find the original number of pens.

a) 10 b) 11 c) 12 d) 13

Q11. The volume of cube is numerically equal to sum of its edges. What is the total surface area in square units?

a) 12 b) 36 c) 72 d) 144

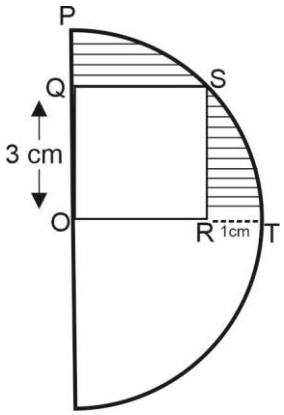
Q12. A positive integer ‘n’ when divided by 9, gives 7 as reminder. What will be the remainder when (3n- 1) is divided by 9?

a) 1 b) 2 c) 3 d) 4

Q13. Two successive discount of 20% and 25% equivalent to what amount of single discount?

a) 25% b) 40% c) 15% d) 5%

Q14. In the figure below RT = 1cm and OQ = 3cm and radius is 4 cm.




What is the area of the shaded region?

a) $(12.5\pi - 12)$ cm$^2$ b) $(6.25\ \pi - 12)$ cm$^2$

c) $(12.5\ \pi - 15)$ cm$^2$ d) $(6.25\ \pi - 15)$ cm$^2$

Q15. The curved surface of a cylinder is developed into a square whose diagonal is $2\sqrt{2}$ cm. The area of the base of the cylinder (in cm$^2$) is

a) $3\ \pi$ b) $\frac{1}{\pi}$ c) $\pi$ d) $6\pi$

Q16. For what value of K will be the given equations in two variables represent coincident lines:
$2x + 32y + 3 = 0$ and $3x + 48y + k = 0$

a) $\frac{2}{3}$ b) $\frac{3}{2}$ c) $\frac{9}{2}$ d) 1

Q17. If three cubes of copper, each with an edge 6cm, 8cm and 10 cm respectively are melted to form a single cube, then what is the diagonal of the new cube?

a) 18.8 cm b) 22.8cm c) 20.8cm d) 24.8 cm

Q18. The difference between the squares of two consecutive odd integers is always divisible by

a) 8 b) 7 c) 6 d) 3

Q19. The value of $\frac{1}{1+x^{-a}}+\frac{1}{1+x^{a}}$ is

a) 0 b) $x^a$ c) $x^{-a}$ d) 1

Q20. x, y and z are three sums of money such that y is simple interest on x. z is the simple interest on y for the same value of time and the same rate of interest. The relation among three sums are:

a) $x^2 = y\,z$ b) $y^2 = z\,x$ c) $z^2 = x\,y$ d) $x\,y\,z = 1$

Q21. The angles of a triangle are in the ratio 1:1:2. If the smaller side is 8cm, then the longest side is:

a) $8\sqrt{2}$ cm b) $4\sqrt{3}$ cm c) 16 cm d) 8 cm

Q22. The decimal expansion of $\frac{46}{2^4 5^3}$ will terminate after how many decimal places?

a) 2 b) 3 c) 4 d) 5

Q23. Two cans have the same height equal to 21 cm. One can is cylinder, the diameter of whose base is 10cm. The other can has a square base of side 10 cm. What is the difference in their capacities?

a) 350 $cm^3$ b) 250 $cm^3$ c) 450 $cm^3$ d) 300 $cm^3$

Q24. The area of the curved surface and the area of base of right circular cylinder are 'a' square cm and 'b' square cm respectively. The height of the cylinder is:

a) $\frac{2a}{\sqrt{\pi b}}cm$ b) $\frac{a\sqrt{b}}{2\sqrt{\pi}}cm$ c) $\frac{a}{2\sqrt{\pi b}}cm$ d) $\frac{a\sqrt{\pi}}{2\sqrt{b}}$

Q25. Two men and 7 children complete a certain piece of work in 4 days while 4 men and 4 children complete the same work in only 3 days. The number of days required by 1 man to complete the work is:

a) 60 days b) 15 days c) 6 days d) 51 days

Q26. The number $3^{13} - 3^{10}$ is divisible by

a) 3,13,5 b) 3,10 c) 2,3,13 d) 2,3,10

Q27. Greater number out of $5^{879}$, $3^{1172}$, $2^{1465}$, $8^{586}$ is:

a) $5^{879}$ b) $3^{1172}$ c) $2^{1465}$ d) $8^{586}$

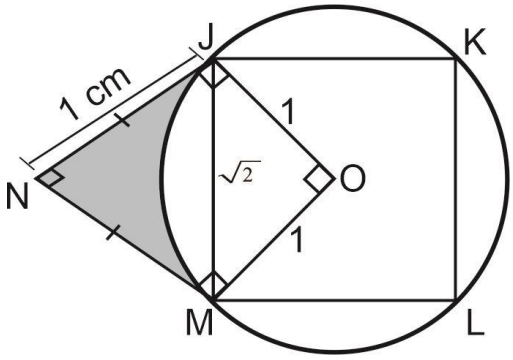
Q28. If a = $8+3\sqrt{7}$ and $b=\frac{1}{a}$, what will be the value of $a^2+b^2$

a) 364 b) 354 c) 264 d) 254

Q29. If x = a(b – c); y = b(c – a) : z = c (a – b), then $\left(\frac{x}{a}\right)^3+\left(\frac{y}{b}\right)^3+\left(\frac{z}{c}\right)^3$ is equal to

a) $\frac{xyz}{abc}$ b) $\frac{1}{3}\frac{xyz}{abc}$ c) $3\frac{xyz}{abc}$ d) $\frac{3(x+y+z)}{(abc)}$

Q30. In the figure below, the square JKLM is inscribed within a circle and Δ JMN is a right angled isosceles triangle. The point marked O is the centre of the circle.




What is the area of the shaded part of the figure?

a) $\left(\frac{\pi}{4}-\frac{1}{2}\right)cm^2$ b) $\left(\pi-\frac{1}{2}\right)cm^2$ c) $\left(1-\frac{\pi}{4}\right)cm^2$ d) $(1-\pi)cm^2$

## SECTION D
## SCIENCE

Q1. Ramya has 4 whistles with her, the whistles can emit pure notes of different frequencies namely, 0.002 kHz, 0.02 kHz, 0.2 kHz, 2 kHz. How many amongst these do not belong to audible range for humans?

a) 1 b) 2 c) 3 d) 4

Q2. How many alphabets in the word ‘PROSPERITY’ remain unchanged when seen through a plane mirror?

a) 2 b) 3 c) 4 d) 5

Q3. Two teams ‘A’ and ‘B’ were competing in Tug of war. The rope broke at a point nearer to team A. what can be said about the situation?

a) Team A applied smaller force than team B
b) Team A applied larger force than Team B
c) Team A and B applied equal amount of force
d) No force was applied by any off the team

Q4. Identify the incorrect option:

| Option name | Source of sound | Range in decibel | Effect produced on human ear |
|---|---|---|---|
| (i) | Aeroplane | 130 | Can cause hearing damage |
| (ii) | Loud thunder | 110 | Irritating |
| (iii) | Ordinary conversation | 60 | Noisy |
| (iv) | Soft whisper | 30 | Easy |
| (v) | City traffic | 90 | Comfortable |

a) (i) and (iii) b) (ii) and (iii) c) (iii) and (v) d) (iii) and (i)

Q5. A girl was practising playing musical note on a piano. Next she plays another note of lower pitch to make it less loud. Which of the following is true of the second sound when compared with the first?

| | **Frequency** | **Amplitude** |
|---|---|---|
| a) | Smaller | Larger |
| b) | Smaller | Smaller |
| c) | Larger | Smaller |
| d) | Larger | Larger |

Q6. Surya lives in a flat in a tall building. He notices a tall metal pole installed on the terrace. He is asked by his parents to avoid touching it especially during thunder storm. What do you think it is installed for?

a) To tie ropes to dry clothes
b) To provide easy route for transfer the electric charges to the ground
c) To avoid the transfer if electric charges to the ground
d) To set up lighting system and security system

Q7. A body of mass ‘M’ is moving with a velocity ‘u’. On its way, it explodes in two equal parts each of masses ‘m’. One of the parts moves with a velocity ‘v’. The expression that correctly depicts the velocity of the second part is:

a) $\frac{(Mu - mv)}{m}$ b) $\frac{(M - m)}{mv}$ c) $\frac{(v - u)}{m}$ d) $\frac{(Mu - mv)}{v}$

Q8. A solid of density D is floating in a liquid of density d. If $V_1$ is the volume of solid submerged in the liquid and V is the total volume of the solid, then $V/V_1$ is equal to :

a) $\frac{d}{D}$ b) $\frac{D}{d}$ c) $\frac{D+d}{D}$ d) $\frac{d}{D+d}$

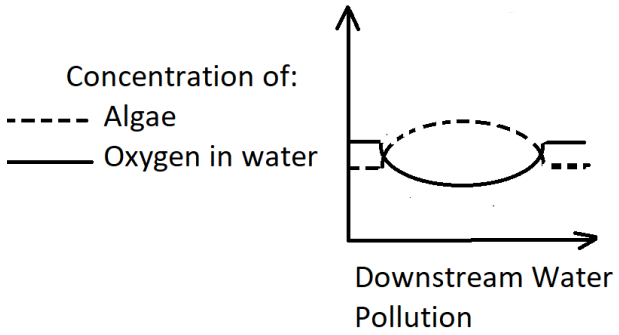
Q9. A cube of side 'a' rests on the ground floor. It was found that it exerts pressure P on the ground. What would be the side of another cube of same mass but different size , if it exerts pressure equal to 9 times the pressure exerted by the first one on the ground?

a) 3a b) 9a c) a/3 d) a/9

Q10. A water tank filled upto 2/3 of its height is moving with a uniform speed. On sudden application of the brake, the water in the tank would

a) Move backward
b) Move forward
c) Come to the rest
d) Be unaffected

Q11. Study the graphs given below showing concentration of algal bloom and oxygen dissolved in the stream of water flowing near a cropland and choose the correct option.




a) There is judicious use of artificial fertilisers in the nearby cropland.
b) Only organic fertilisers are used in the nearby cropland.
c) Excess of artificial fertilisers are used in the nearby cropland.
d) Any type of fertilisers are not used in the nearby cropland.

Q12. Study the table and select the correct option:

| Disease | Causative Agent | Mode of Transmission |
|---|---|---|
| Tuberculosis | Bacteria | **R** |
| Malaria | **Q** | Mosquito |
| Cholera | Bacteria | **S** |
| **P** | Virus | Air/Water |

a) P-Measles, Q-Protozoa, R-Water, S-Air
b) P-Polio, Q-Bacteria, R-Water, S-Air
c) P-Measles, Q-Virus, R-Air, S-Water
d) P-Polio, Q-Protozoa, R-Air, S-Water

Q13. Choose the statements that correctly describe a virus.

I. It has a cellular structure like bacteria.
II. It doesn't perform metabolic processes.
III. It is made up of RNA inside a protein coat.
IV. It can be killed using specific types of antibiotics.
V. It's dead forms can be used to prevent viral diseases.

a) I, II and IV b) II, III and IV c) II, III and V d) I, III and IV

Q14. Rectify the given statements by replacing the underlined words and select the correct option.

I. Golgi bodies help in synthesis of proteins within a cell.
II. Mitochondria found in paramecium performs osmoregulation.
III. Centrosomes are called 'house keeper' of a cell as it contains digestive enzymes.
IV. Chloroplast contains chlorophyll in the stroma where photosynthesis happens.

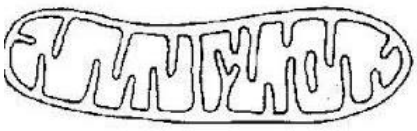
a) I-breaking, II-Vacuole, III-Mitochondria, IV-cytoplasm
b) I-transport, II-Vacuole, III-Lysosomes, IV-thylakoid
c) I-breaking, II-Ribosomes, III-Lysosomes, IV-thylakoid
d) I-transport, II-Chloroplast, III-Lysosomes, IV-cytoplasm

Q15. Consider the following statements and select the option which correctly identifies the True and False statements.

I. Gas vacuoles are found in the cells of xerophytic plants that performs osmoregulation.
II. Centrioles are made up microtubules that help in equal division of genetic material during cell division.
III. Golgi complex breaks down the complex substances present in food into its simplest form.
IV. Flexibility of cell membrane allows unicellular organisms to take in food and give out the waste products from the cell.

a) I and III b) II and IV c) I and II d) III and IV

Q16. Identify the name and the role of the deeply folded inner membrane of the cell organelle shown in the diagram.



a) Cisternae: increases surface area of the organelle
b) Cristae: increases surface area to accommodate more oxysomes
c) Granum: increases surface area to accommodate more ATP
d) Thylakoid: preparing food in the form of glucose

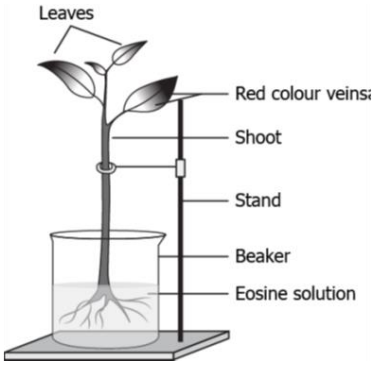
Q17. Which of the following statement describe bacteriophage correctly?

a) It is a bacterium which causes disease in plants.
b) It is a virus which attacks bacteria.
c) It is a bacterium which kills viruses.
d) It can multiply inside both living and non-living organisms.

Q18. Select the statements that correctly describe the plants that belong to the division Pteridophyta.
I. They complete their life cycle in both land and water.
II. They have specialized tissues for conduction of water and food.
III. They have leaves that can prepare food by photosynthesis.
IV. They can produce flowers and bear fruits that contain covered seeds.

a) I, II and III b) II, III and IV c) I and III d) II and III

Q19. The image shows a setup of an experiment.




A student takes a leafy green plant and places it in a red coloured dye solution. After 4 hours, the student observes that the colour appears on the parts of the plant body. Which type of tissue is responsible for these changes?

a) xylem as it helps in the movement of water from roots to stem and leaves
b) phloem as it helps in the movement of water from roots to stem and leaves
c) xylem as it helps in the movement of water from leaves to roots and stem
d) phloem as it helps in movement of water from leaves to roots and stem

Q20. Four students were asked to state what they knew about detrivores. Their answers are shown below:
Ajay: They help to return nutrients to the soil.
Isha: They require sunlight, air and water to grow.
Jane: They break down dead organisms into simpler substances.
Rockey: They remove dead organisms from the environment.

Who are correct?
a) Only Isha and Jane
b) Only Ajay and Isha
c) Only Isha and Rockey
d) Only Ajay, Jane and Rockey

Q21. Study the given table carefully and select the appropriate option.

| Sample | Conductor of electricity | Malleability |
|---|---|---|
| I | ✓ | × |
| II | × | × |
| III | × | ✓ |
| IV | ✓ | ✓ |

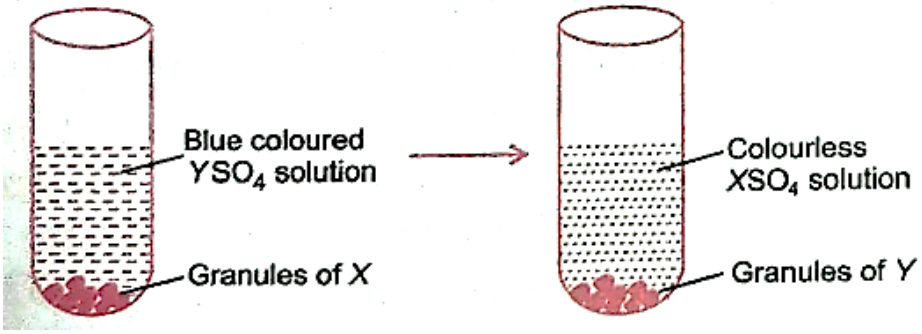
a) I is copper; II is sulphur
b) II is sulphur; III is coal
c) III is iron; IV is copper
d) II is coal; IV is copper

Q22. Mark the correct statement (s) among the following.

I. Water is a very good fire extinguisher as it cools down the fuels such as wood below its ignition temperature.
II. Water is a very good fire extinguisher for burning oils and electrical equipments.
III. Sand and soil may act as good fire extinguishers for burning oils.

a) I only b) II only c) III only d) I and III only

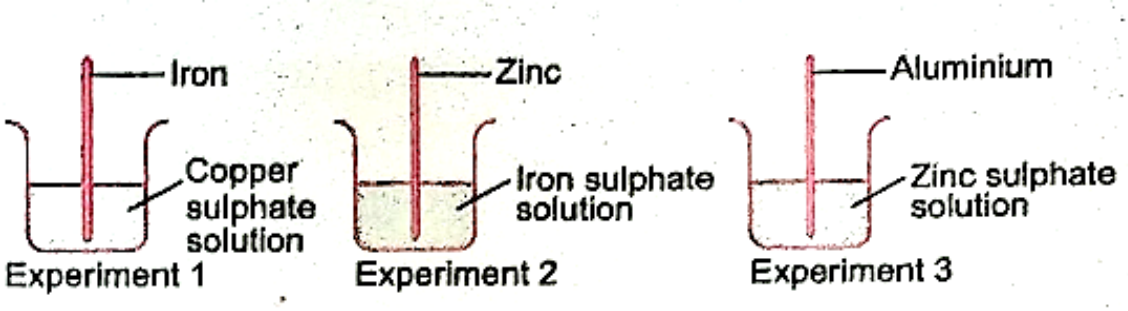
Q23. Observe the given figure carefully




X and Y respectively are

a) Zn and Ag b) Au and Cu c) Fe and Cu d) Zn and Cu

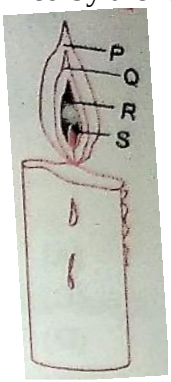
Q24. Aditya, a class 8 student investigated the reactivity of four metals, iron, copper, zinc and aluminum. He arranged three experimental set-ups as shown in the diagram.




Which of the following statements is incorrect regarding these experiments?

a) Reaction occurs in all the three breakers.
b) Colour of solution changes from blue to green in beaker 1.
c) Colour of solution changes from green to colourless in beaker 2.
d) Colour of Copper in experiment-1 does not change.

Q25. Different zones of a candle flame are marked by the letters P, Q, R and S.




Which of the following statement are correct?
(i) P is the luminous zone and is the hottest part of candle flame.
(ii) In zone Q, there is inadequate supply of oxygen.
(iii) Zone R contains unburnt wax vapour produced by melting of wax.
(iv) In S zone, carbon monoxide burns with a blue flame.

a) (i) and (ii) only
b) (ii), (iii) and (iv) only
c) (ii) and (iv) only
d) (i), (ii) and (iii) only

Q26. If an iron object has to be electroplated with silver, then the positive electrode and electrolyte would be:

a) Iron and Ferrous sulphate
b) Silver and Silver nitrate
c) Silver and Ferrous sulphate
d) Iron and Silver nitrate

Q27. Name the alloy of copper and zinc used in musical instruments:

a) Brass
b) Bronze
c) Solder
d) Magnelium

Q28. Most metals have high specific gravities. Identify the exceptions:

a) Tin, Zinc
b) Sodium, Aluminium
c) Sodium, Potassium
d) Mercury, Silver

Q29. A weak electrolyte is one which:

a) Dissolves completely
b) is feebly ionised in the solution
c) Ionised completely
d) Is having high electrical conductivity

Q30. Aqua regia is the freshly prepared mixture of conc. $HNO_3$ and conc. HCl in the ratio of :

a) 2:3 respectively
b) 3:1 respectively
c) 1:3 respectively
d) 1:4 respectively