



MANAV RACHNA INTERNATIONAL SCHOOL

Scholarship Test Paper

For

Students Studying in Grade – X (Session 2022-23)

Moving to Grade XI - Session 2023-24

Date: 26.11.2022

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. If 'P' denotes '+', 'Q' denotes '×', 'R' denotes '÷', 'S' denotes '-' and '=' denotes 'greater than', then which of the following statements is true?

a) $4 P 8 R 2 S 1 Q 6 = 1$

b) $3 S 1 Q 8 P 6 R 2 = 0$

c) $8 R 2 S 3 Q 4 P 6 = 2$

d) $9 P 2 Q 6 S 4 R 2 = 21$

Q2. Choose the group which is different from the rest.

a) MEWGN

b) PBQTX

c) DRYSN

d) CGHKV

Q3. A large cube is painted on all six faces and then cut into a certain number of smaller but identical cubes. It was found that among the smaller cubes, there were eight cubes which had no face painted at all. How many smaller cubes was the original large cube cut into?

a) 27

b) 48

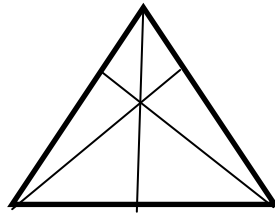
c) 64

d) 125

- Q4. The ratio of density of 3 kinds of petrol P1, P2 and P3 is 9 : 7 : 5. The density of P1 is 18 gm/ cc and P1, P2, P3 are mixed in the ratio of 6:5:4 by weight. If a litre of P3 cost ₹ 40 then find the cost of P3 in 450 kg of mixture of P1, P2 and P3.
- a) ₹ 380 b) ₹ 480 c) ₹ 355 d) ₹ 448

- Q5. In a certain code DELHI is written as 451289, then state the code for AMBALA
- a) 11321211 b) 11321112 c) 11312111 d) 11321121

- Q6. The total number of triangles in the following figure is



- a) 9 b) 10 c) 11 d) 12
- Q7. The age of a father is twice that of his elder son. Ten years hence, the age of the father will be three times that of the younger son. If the difference of ages of two sons is 15 years, the age of the father is
- a) 60 years b) 90 years c) 80 years d) 50 years
- Q8. The mother of E is F, and the mother of B is A. The spouse of D is A and the spouse of B is F. What is the relation of D with E?
- a) Mother's father b) Mother's mother c) Father's mother d) Father's father
- Q9. At a conference, 12 members shook hands with each other before & after the meeting. How many total number of handshakes occurred?
- a) 100 b) 122 c) 132 d) 145
- Q10. Seven piano students — T, U, V, W, X, Y, and Z — are to give a recital, and their instructor is deciding the order in which they will perform. Each student will play exactly one piece, a piano solo. In deciding the order of performance, the instructor must observe the following restrictions:
- X cannot play first or second.
W cannot play until X has played.
Neither T nor Y can play seventh.
Either Y or Z must play immediately after W plays.
V must play either immediately after or immediately before U plays.
- If U plays third, what is the latest position in which Y can play?
- a) First b) Second c) Fifth d) Sixth

SECTION B
ENGLISH

Q1. Read the passage given below carefully and answer the questions that follow. (10 Marks)

Follow the money and you will end up in space. That's the message from a first-of-its-kind forum on mining beyond Earth. Convened in Sydney by the Australian Centre for Space Engineering Research, the event brought together mining companies, robotics experts, lunar scientists, and government agencies that are all working to make space mining a reality. The forum comes hot on the heels of the 2012 unveiling of two private asteroid-mining firms.

Within a few decades, these firms may be meeting earthly demands for precious metals, such as platinum and gold, and the rare earth elements vital for personal electronics, such as yttrium and lanthanum. They also hope to build an off-planet economy free of any bonds with Earth, in which the materials extracted and processed from the moon and asteroids are delivered for space-based projects. In this scenario, water mined from other worlds could become the most desired commodity. "In the desert, what's worth more: a kilogram of gold or a kilogram of water?" asks Kris Zacny of Honey Bee Robotics in New York. "Gold is useless. Water will let you live." Water ice from the moon's poles could be sent to astronauts on the International Space Station for drinking or as a radiation shield. Splitting water into oxygen and hydrogen makes spacecraft fuel, so ice-rich asteroids could become interplanetary refuelling stations. Companies are eyeing the iron, silicon, and aluminium in lunar soil and asteroids, which could be used in 3D printers to make spare parts or machinery. Others want to turn space dirt into concrete for landing pads, shelters, and roads.

The motivation for deep-space travel is shifting from discovery to economics. The past year has seen a flurry of proposals aimed at bringing celestial riches down to Earth. But before the miners start firing up their rockets, we should pause for thought. At first glance, space mining seems to sidestep most environmental concerns: there is (probably) no life on asteroids, and thus no habitats to trash. But its consequences – both here on Earth and in space – merit careful consideration. Part of this is about principles.

Some will argue that space's "magnificent desolation" is not ours to despoil. Others will suggest that glutting ourselves on space's riches is not an acceptable alternative to developing more sustainable ways of earthly life. The resources that are valuable in orbit and beyond may be very different to those we prize on Earth.

1. The author mentions several companies primarily to (2)
 - a) note the technological advances that make space mining possible.
 - b) provide evidence of the growing interest in space mining.
 - c) emphasize the large profits to be made from space mining.
 - d) highlight the diverse ways to carry out space mining operations.

2. The author indicates that space mining could have which positive effect? (2)
 - a) It could yield materials important to Earth's economy.
 - b) It could raise the value of some precious metals on Earth.
 - c) It could create unanticipated technological innovations.
 - d) It could change scientists' understanding of space resources.

3. As used in the second paragraph, "demands" most nearly means (2)
 - a) offers
 - b) claims
 - c) inquiries
 - d) desires

4. What function does the discussion of water serve in the above passage? (2)
- It continues an extended comparison that begins in the previous paragraph.
 - It provides an unexpected answer to a question raised in the previous paragraph.
 - It offers hypothetical examples supporting a claim made in the previous paragraph.
 - It examines possible outcomes of a proposal put forth in the previous paragraph.
5. The central claim in the latter part of the passage is that space mining has positive potential but (2)
- it will end up encouraging humanity's reckless treatment of the environment.
 - its effects should be thoughtfully considered before it becomes a reality.
 - such potential may not include replenishing key resources that are disappearing on Earth.
 - experts disagree about the commercial viability of the discoveries it could yield.

Q2. Writing Task

(10 Marks)

Leisure activities can be a much-needed relief. They not only keep you fit and healthy but also contribute towards society's development. However, due to the introduction of alternative means of spending one's free time, the number of people engaging in hobbies has immensely declined. Demanding jobs and a tough education system make it harder for people to take time out and engage in recreational activities like gardening, dancing, yoga, etc. People often find themselves on the Internet in their spare time rather than stepping out for some simple hobbies.

Based on this excerpt from an article in 'Health Magazine', write a paragraph of about 150-200 words expressing your views on the topic.

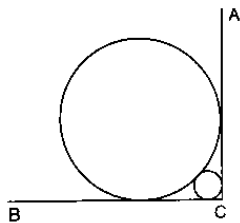
OR

You have read somewhere that positive self-concept is necessary for self-development and a smooth life. We should accept ourselves as we are. Write a paragraph of about 150-200 words on the topic 'Self-acceptance'.

**SECTION C
MATH**

- Q1. The largest term common to the sequences 1,11,21,31,... to 100 terms and 31,36,41,46,...to 100 terms is
- 381
 - 471
 - 281
 - 521
- Q2. A vertical pole of height 10 metres stands at one corner of a rectangular field. The angle of elevation of its top from the farthest corner is 30° , while that from another corner is 60° . What is the area of the field?
- $\frac{200\sqrt{3}}{3}$
 - $\frac{400}{\sqrt{3}}$
 - $\frac{200\sqrt{2}}{3}$
 - $\frac{400\sqrt{2}}{3}$
- Q3. An ant was running on a graph towards North from where she has returned. Then she returned on her right side through 135° and walked straight for 5 m. Again turned right through 135° and covered 2 metres. Again when she turned towards the initial point she was facing North-West direction. Find the total distance covered by the ant when the ant reaches initial point.
- 4 m
 - 8m
 - $8+4\sqrt{3}$ m
 - $4+8\sqrt{3}$ m

- Q4. A speaks truth in 60% cases and B speaks truth in 70% cases. What is the probability that they will say the same thing while describing a single event?
 a) 0.54 b) 0.27 c) 0.45 d) 0.63
- Q5. The probability of getting at least one tail in 4 toss of coin is:
 a) $\frac{3}{16}$ b) $\frac{11}{16}$ c) $\frac{13}{16}$ d) $\frac{15}{16}$
- Q6. Positive integers from 1 to 21 are arranged in 3 groups of 7 integers each, in some particular order. Then the highest possible mean of the medians of these 3 groups is
 a) 16 b) 12.5 c) 11 d) 14
- Q7. Interior angles of a polygon are in AP. If the smallest angle is 120° and common difference is 5° , find the number of sides of the polygon.
 a) 9 b) 15 c) 16 d) 9
- Q8. If $\cos(\alpha + \beta) = 0$, then $\sin(\alpha - \beta)$ can be reduced to
 a) $\cos \beta$ b) $\cos 2\beta$ c) $\sin \alpha$ d) $\sin 2\alpha$
- Q9. If $2 \cos \theta - \sin \theta = x$ and $\cos \theta - 3 \sin \theta = y$, then $2x^2 + y^2 - 2xy$ is:
 a) 1 b) 0 c) 4 d) 5
- Q10. A card is drawn from a well shuffled deck of 52 cards. What are the odds in favour of getting a face card?
 a) $\frac{1}{7}$ b) $\frac{3}{10}$ c) $\frac{13}{52}$ d) $\frac{13}{10}$
- Q11. If the equation $x^2 - ax + 1 = 0$ has two distinct roots then
 a) $|a| = 2$ b) $|a| < 2$ c) $|a| > 2$ d) none of these
- Q12. In the figure, $\angle ACB = 90^\circ$ and radius of big circle = 2cm, then the radius of small circle is (in cm)

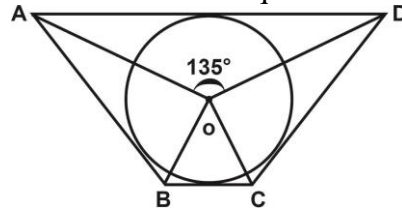


- a) $3-2\sqrt{2}$ b) $4-2\sqrt{2}$ c) $7-4\sqrt{2}$ d) $6-4\sqrt{2}$

Q13. The coordinates of a point on x axis which lies on the perpendicular bisector of the line segment joining the points (7,6) and (-3,4) are

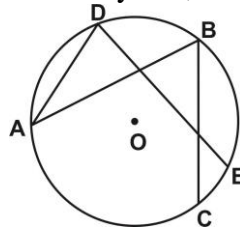
- a) (3,0) b) (0,3) c) (2,0) d) (0,2)

Q14. In the given figure, if $\angle AOD = 135^\circ$ then $\angle BOC$ is equal to



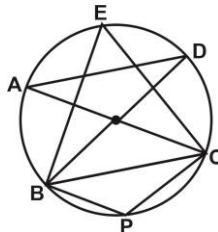
- a) 25° b) 45° c) 52.5° d) 62.5°

Q15. In the given figure $\angle ADE$ and $\angle ABC$ differ by 15° , then measure of $\angle CAE$ is:



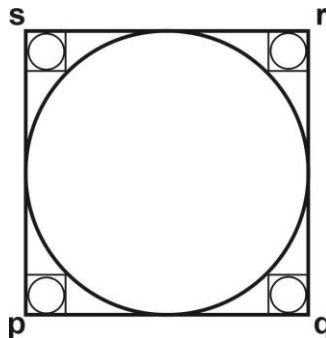
- a) 10° b) 30° c) $\left(7\frac{1}{2}\right)^\circ$ d) 15°

Q16. In the given figure AC is the diameter of the circle and $\angle ADB = 20^\circ$ then $\angle BPC$ is:



- a) 50° b) 70° c) 90° d) 110°

Q17. A circle inscribed in a square PQRS of side $\sqrt{2}$ units each. In the gap remaining at each corner a square of maximum possible area is drawn. The radius of the circle that can be inscribed in each at the smaller squares is:



- a) $\frac{\sqrt{2}+1}{4}$ b) $\frac{\sqrt{2}-1}{4}$ c) $\frac{\sqrt{2}+2}{4}$ d) $\frac{\sqrt{2}}{4}$

- Q18. If zeroes of the polynomial $f(x) = x^3 - 3px^2 + qx - r$ are in A.P, then
- | | |
|--------------------|--------------------|
| a) $2p^3 = pq - r$ | b) $2p^3 = pq + r$ |
| c) $p^3 = pq - r$ | d) $p^3 = pq + r$ |
- Q19. Number plate of a vehicle consists of 4 digits. The first digit is the square of second. The third digit is thrice the second and the fourth digit is twice the second. The sum of all 4 digits are thrice the first. The number is
- | | | | |
|---------|---------|---------|---------|
| a) 1132 | b) 4264 | c) 1642 | d) 9396 |
|---------|---------|---------|---------|
- Q20. If $f(1) = f(2) = f(3) = 0$ for the equation, $z^4 + az^3 + \beta z^2 + \gamma z + \delta = 0$, then the value of $f(4)$ is
- | | | | |
|-------|-------|-------|-------|
| a) 24 | b) 14 | c) 16 | d) 18 |
|-------|-------|-------|-------|
- Q21. If $a_1 + a_5 + a_{10} + a_{15} + a_{20} + a_{24}$ is 225, then the sum of 24 terms of AP is
- | | | | |
|--------|--------|--------|--------|
| a) 800 | b) 900 | c) 700 | d) 650 |
|--------|--------|--------|--------|
- Q22. ABC is a triangle whose vertices are A(8, 2), B(5, - 3) and C(0, 0). BD is perpendicular to AC. The length of altitude BD is:
- | | | | |
|-------------|--------------------------|-----------------|----------------|
| a) 17 units | b) $\sqrt{\frac{17}{2}}$ | c) $2\sqrt{17}$ | d) $\sqrt{17}$ |
|-------------|--------------------------|-----------------|----------------|
- Q23. If the value of $x^2 - x - 1 = 0$ find $x^3 - 2x + 1 = \underline{\hspace{2cm}}$?
- | | | | |
|------|------|-----------------------------|-----------------------------|
| a) 0 | b) 2 | c) $\frac{1 + \sqrt{5}}{2}$ | d) $\frac{1 - \sqrt{5}}{2}$ |
|------|------|-----------------------------|-----------------------------|
- Q24. Let $p(x) = x^2 - 5x + a$ and $q(x) = x^2 - 3x + b$, where a and b are the positive integers, suppose $\text{HCF}(p(x), q(x)) = x - 1$ and $k(x) = \text{LCM}(p(x), q(x))$. If the coefficient of the highest degree term of $k(x)$ is 1, the sum of roots of $(x - 1) + k(x)$ is:
- | | | | |
|------|------|------|------|
| a) 4 | b) 5 | c) 6 | d) 7 |
|------|------|------|------|
- Q25. The sum of first n terms of an AP is given by $S_n = (1 + T_n)(n + 2)$, where T_n is the n^{th} term of an AP. Then T_2 is:
- | | | | |
|--------------------|-------------------|------------------|------|
| a) $-\frac{11}{6}$ | b) $-\frac{5}{3}$ | c) $\frac{5}{3}$ | d) 2 |
|--------------------|-------------------|------------------|------|
- Q26. If $AA_1 A_2 A_3 A_4 A_5$ be the regular hexagon inscribed in a circle of unit radius. Then the product of the length (s) of the line segment $AA_1 AA_2$ and AA_4 is:
- | | | | |
|------------------|----------------|------|--------------------------|
| a) $\frac{3}{4}$ | b) $3\sqrt{3}$ | c) 3 | d) $\frac{3\sqrt{3}}{2}$ |
|------------------|----------------|------|--------------------------|

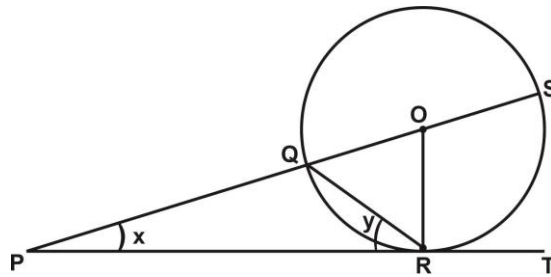
Q27. What will be the angle between the hour hand and the middle hand of the clock when the time is 3 : 27.

- a) $58\frac{1}{2}$ b) $47\frac{1}{2}$ c) 60° d) 57°

Q28. ABC is a right angled triangle with $\angle ABC = 90^\circ$, D is any point on AB and DE is perpendicular to AC if $\frac{AD}{AC} = \frac{1}{3}$, then, ratio of area of $\triangle ADE$ to area of quadrilateral BCED is:

- a) 1 : 6 b) 1 : 8 c) 3 : 8 d) 3 : 4

Q29. In given figure, PT touches the circle at R. Diameter SQ when produced meets PT at P. If $\angle SPR = x^\circ$ and $\angle QRP = y^\circ$, then which of the following relation is true?



- a) $2x - y = 45^\circ$ b) $2x + y = 90^\circ$ c) $x + 2y = 90^\circ$ d) $2x - 3y = 90^\circ$

Q30. Given that $x = \frac{\sqrt{a^2 + b^2} + \sqrt{a^2 - b^2}}{\sqrt{a^2 + b^2} - \sqrt{a^2 - b^2}}$, then $\frac{2a^2x}{x^2 + 1} = ?$

- a) 3 b) a^2 c) b^2 d) x^2

SECTION D SCIENCE

Q1. How does pruning help in making hedge dense?

- a) It releases wound hormones
 b) Apical shoot grows faster after pruning
 c) It frees axillary buds from apical dominance
 d) It induces differentiation of new shoots from rootstock.

Q2. Every sexually reproducing organism begins life as a/ an.....

- a) Gamete b) Zygote c) Spore d) Embryo

Q3. The ratio of number of chromosomes in a human zygote and a human sperm is.....

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

- Q4. In an experiment, showing Mendelian inheritance, a tall pea plant with purple flowers was crossed with short pea plant with white flowers. All the progeny in the next generation was seen to have purple flowers but half of them were short. What will be the genetic makeup of the tall parent?
- a) TTPP b) TtPP c) TTpp d) TtPp
- Q5. People who have migrated from planes to an area adjoining Rohtang pass about six months back _____.
- a) have more RBCs and their haemoglobin has a lower binding affinity to oxygen.
 b) are not physically fit to play games like football.
 c) suffer from altitude sickness with symptoms like nausea, fatigue etc.
 d) have the usual RBC count but their haemoglobin has very high binding affinity to oxygen.
- Q6. If the genotypes determining the blood groups of a couple are $I^A I^O$ and $I^A I^B$, then the probability of their first child having type O blood is:
- a) 0 b) 0.25 c) 0.50 d) 0.75
- Q7. The chief nitrogenous excretory compound in humans is synthesized _____.
- a) in kidneys but eliminated mostly through liver.
 b) in kidneys as well as eliminated in kidneys.
 c) in liver and also eliminated by the same through bile.
 d) in liver, but eliminated mostly through kidneys.
- Q8. In human males all the chromosomes are paired perfectly except one. These unpaired chromosomes are _____.
- a) large chromosomes b) small chromosomes
 c) Y chromosomes d) Z chromosomes
- Q9. George comes on a vacation to India from US. The long journey disturbs his biological system and he suffers from jet lag. This discomfort is due to the following hormone:
- a) Thyroid b) Melatonin c. Thymosin d. Adrenaline
- Q10. Which of the following is not a reflex action?
- a. Sweating b) Salivation
 c) Blinking d) Withdrawal of hand while touching a hot object
- Q11. In the double displacement reaction between aqueous potassium iodide and aqueous lead nitrate, a yellow precipitate of lead iodide is formed. While performing the activity if lead nitrate is not available, which of the following can be used in place of lead nitrate?
- a) Lead sulphate b) Ammonium nitrate
 c) Lead acetate d) Potassium sulphate

- Q12. While setting up an experimental set up to study the reaction of metals (Ca, Al, Fe, Pb) with acids based on their reactivities; it is observed that the rate of evolution of bubbles of hydrogen gas is not same in all the metals. Based on this observation, select the correct statements-
- The rate of evolution of H₂ gas bubbles must be the highest in case of Ca and lowest in Pb.
 - The order of reactivity of metals is Ca>Fe>Al>Pb
 - Hydrogen gas bubbles evolve faster in case of Pb than in Fe.
 - The rate of evolution of H₂ gas bubbles is higher in case of Al than with Fe.
- a) II & III only b) I & IV only c) I & II only d) III & IV only
- Q13. Which isomer of hexane has only two different sets of structurally equivalent hydrogen atoms?
- a) 2, 2-dimethylbutane b) 2-methylpentane
c) 3-methylpentane d) 2, 3-dimethylbutane
- Q14. To prevent table salt from absorbing moisture and to make it flow freely in rainy season, it is added with
- a) Calcium phosphate b) Bleaching powder
c) Sodium carbonate d) Calcium chloride
- Q15. Zinc can be coated on Iron to produce galvanised iron but the reverse is not possible because
- zinc is lighter than Iron
 - zinc has lower melting point than iron.
 - Zinc has lower negative electrode potential than iron.
 - Zinc has higher negative electrode potential than iron.
- Q16. Match the following with correct response.
- Evolution of gas
 - Mass of reactant is equal to mass of products
 - Increase in temperature
 - Pop sound
- A) conservation of mass B) Evolution of Hydrogen gas
C) Exothermic change D) Chemical change
- a) 1-a, 2-c, 3-b, 4-d b) 1-c, 2-b, 3-d, 4-a
c) 1-b, 2-d, 3-a, 4-c d) 1-d, 2-a, 3-c, 4-b
- Q17. What is the pH of a 0.010 M solution of Nitric acid?
- a) 1.0 b) 2.0 c) 3.0 d) 4.0
- Q18. Which of the following behaves both as a nucleophile and as an electrophile?
- a) CH₃C ≡ N b) CH₃OH c) CH₂ = CHCH₃ d) CH₃NH₂
- Q19. The structure of 4-Methylpent-2-en-1-ol is:
- a) CH₃CH₂CH=CHCH₂OH b) (CH₃)₂C=CHCH₂CH₂OH
c) (CH₃)₂CHCH=CHCH₂OH d) CH₃CH(OH)CH=CHC(CH₃)₂

Q20. The best and latest technique for isolation and separation of organic compounds is:

- a) Crystallization
- b) Sublimation
- c) Chromatography
- d) Fractional distillation

Q21. Match the items given in Column – I with Column – II

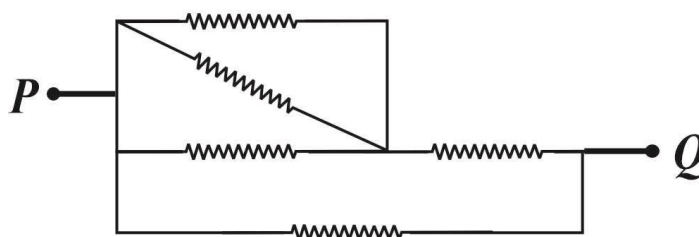
COLUMN I		COLUMN II	
(P)	A Plane Mirror	(1)	Used as shaving mirror
(Q)	A concave Mirror	(2)	Always form erect image of same size
(R)	A convex Mirror	(3)	Used to rectify farsightedness
(Q)	A convex Lens	(4)	Always form erect and diminished image

- a) P-2 Q-4 R-1 S-3
- b) P-1 Q-2 R-4 S-3
- c) P-2 Q-1 R-3 S-4
- d) P-2 Q-1 R-4 S-3

Q22. An electron enters a magnetic field whose direction is perpendicular to the velocity of the electron. Then

- a) The speed of the electron will increase
- b) The speed of the electron will decrease
- c) The speed of the electron will remain the same
- d) The velocity of the electron will remain the same

Q23. Five coils, each having the same resistance are joined according to the given circuit. The equivalent resistance between points P and Q is 1Ω . Then the resistance of each coil will be:



- a) 1Ω
- b) 4Ω
- c) $1/7 \Omega$
- d) $7/4 \Omega$

Q24. Two electric bulbs A and B have their resistance in the ratio of $1 : 3$ and both are connected in parallel to a source of constant potential. The ratio of the respective power loss in them will be:

- a) $3 : 1$
- b) $2 : 1$
- c) $1 : 2$
- d) $1 : 3$

Q25. The specific resistance of a wire is ρ , its volume is $3 m^3$ and its resistance is 3 ohms , then its length will be

- a) $\sqrt{\frac{1}{\rho}}$
- b) $\frac{3}{\sqrt{\rho}}$
- c) $\frac{1}{\rho} \sqrt{3}$
- d) $\rho \sqrt{\frac{1}{3}}$

Q26. A man with myopic eyes cannot see objects at a distance of more than 60 cm from his eyes. Find the power of the lens to be used.

- a) -1.66 D b) +60 D c) -60 D d) 1/1.66D

Q27. A current – carrying conductor is held in exactly vertical direction. In order to produce a clockwise magnetic field around the conductor when viewed from top, the current should be passed in the conductor:

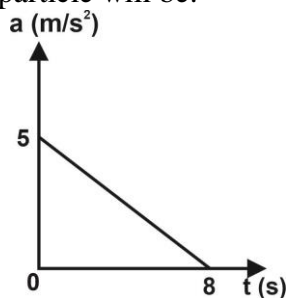
- a) From top towards bottom b) From left towards right
c) From bottom towards top d) From right towards left.

Q28. The defective eye of a person has near point 0.5 m and far point 3 m. The power for corrective lens required for:

(i) reading purpose and (ii) seeing distant objects, respectively are:

- a) 0.5 D and +3D b) +2D and $-\frac{1}{3}$ D c) -2 D and $+\frac{1}{3}$ D d) 0.5 D and -3.0 D

Q29. A particle starts from rest. Its acceleration at $t = 0$ is 5 m/s^2 which varies with time as shown in figure. The maximum speed of the particle will be:



- a) 13.5 m/s b) 20 m/s c) 24 m/s d) 40 m/s

Q30. Two vessels separately contain two liquids A and B. The density of liquid 'A' is 1.5 times the density of B. If the pressure at the bottom of both vessels is same, the ratio of height of liquid column is:

- a) 1 : 5 b) 3 : 5 c) 2: 3 d) 9 : 4

