



# Pinnacle

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### P-SAT 2025

Pinnacle Scholastic Aptitude Test

For Classes 6<sup>th</sup> to 11<sup>th</sup> (Appearing)

## Pinnacle Scholastic Aptitude Test

# SAMPLE TEST PAPER

## Class 10<sup>th</sup>

Pinnacle EduCare  
[www.pinnacleeducare.com](http://www.pinnacleeducare.com)



Call

98153-55955 | 90413-54955  
Gurunank Colony, Sangrur, Punjab.

# INSTRUCTIONS

**Duration: 1 Hour**

**Maximum Marks: 240**

Please read the instructions carefully. You are allotted 5 minutes specifically for this purpose.

Things NOT ALLOWED in EXAM HALL: Blank Paper, clipboard, log table, slide rule, calculator, camera, mobile and any electronic or electrical gadget. If you are carrying any of these, then keep them at a place specified by invigilator at your own responsibility.

## I. General Instructions

1. This Booklet is your question paper. Don't break the seal of booklet until the invigilator instructs to do so.
2. The answer sheet (ORS) is provided to you separately which is a machine readable optical response sheet. You have to mark your answers in the ORS by darkening bubbles as per your answer choice, by using black or blue ball point pen.
3. This question paper contains three sections as follows:
  - a) **Section - A** contains total 20 questions (Q. No. 1 to 20) of Mental Ability.
  - b) You have the option of attempting any subject out of Biology & Mathematics.  
Students opting for Non-Medical stream must attempt Mathematics and  
Students opting for Medical stream must attempt Biology.  
**Section - B** contains total 20 questions (Q. No. 21 to 40) of Mathematics.

**Or**

  - Section - B** contains total 20 questions (Q. No. 21 to 40) of Biology.
  - c) **Section - C** contains total 20 questions (Q. No. 41 to 60) under 2 parts, which are Physics, Chemistry.
4. Rough spaces are provided for rough work inside the question paper. No additional sheets will be provided for rough work.
5. If you are found involved in cheating or disturbing others, then your ORS will be cancelled.

## II. Filling of OMR Sheet

1. Ensure matching of OMR sheet with the Question paper before you start marking your answers on OMR sheet.
2. On OMR sheet, darken the appropriate bubble with black/blue pen for each character of your Enrollment No. and your Name, Test Code and other details at the designated places.
3. Think wisely before darkening bubble as there is negative marking for wrong answer. Answer once marked by pen can't be cancelled.
4. Don't put any stain on ORS and hand it over back properly to the invigilator.

Please follow the instructions

## III. Marking Scheme

1. All the questions of **each Part** have only one correct answer.
2. If darken bubble is RIGHT answer: 4 Marks.
3. If darken bubble is WRONG answer: -1 Marks (Minus One Mark).
4. If no bubble is darkened in any question: No Marks.







JEE MAIN 2024 **99.98** %ile  
 JEE ADV 2024 **958** AIR  
**IIT DELHI**  
 BHARTI GARG



JEE MAIN 2024 **99.91** %ile  
 JEE ADV 2024 **4217** AIR  
**IIT ROPAR**  
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## JEE MAINS & ADVANCE RESULT 2023

JEE ADV AIR \* **147**    JEE ADV AIR \* **172**    JEE ADV AIR \* **230**

**99.84** Percentile  
**IIT DELHI**  
 Mayank Jindal

**99.86** Percentile  
**IIT BOMBAY**  
 Dikshit Singla

**99.90** Percentile  
**IIT ROORKEE**  
 Krish Jindal

JEE ADV AIR <b>1946</b> IIT ROORKEE Chetanya Jindal <b>99.88</b> %ile	JEE ADV AIR <b>3834</b> IIT MANDI Sukhwinder Singh <b>99.51</b> %ile	JEE ADV AIR <b>4079</b> IIT HYDERABAD Harshil Goyal <b>99.46</b> %ile	JEE ADV AIR <b>6008</b> IIT DELHI Disha <b>99.44</b> %ile	JEE ADV AIR <b>7845</b> IIT DDU Prityanka <b>99.85</b> %ile	JEE ADV AIR <b>3353</b> NIT DELHI Paawan Khurana <b>99.75</b> %ile	<b>99.59</b> %ile IIT ALLAHABAD Garima	<b>99.66</b> %ile DTU DELHI Dugindar Kaur
<b>99.61</b> %ile DTU DELHI Jaan Khandel	<b>99.34</b> %ile DTU DELHI Hardeep Singh Jindal	<b>98.81</b> %ile PEC CHD Chakraborty	<b>99.45</b> %ile NIT JALANDHAR Yog Garg	<b>97.96</b> %ile PEC CHD Lakshita Gupta	<b>97.11</b> %ile NIT JALANDHAR Himanshu Gupta	<b>IIT ROPAR</b> Krish Anand	<b>IIT BHU</b> Krish Kumar



## NEET RESULT



<b>670   720</b> Prachi	<b>705   720</b> MAULANA AZAD DELHI Saransh Garg	<b>651   720</b> GMC PATIALA Riya	<b>648   720</b> GMC PATIALA Priyanka
<b>636   720</b> GMCH CHD Bhawna	<b>604   720</b> GMC PATIALA Balwinder Singh	<b>599   720</b> GMCH CHD Aurya Arrarwal	<b>598   720</b> GMCH CHD Chhaavi
<b>665   720</b> AIIMS-BILASPUR Nitish Singla	<b>636   720</b> DMC-LUDHIANA Arshita Aggarwal	<b>661   720</b> AIIMS-BATHINDA Anmoldeep Kaur	

Opp. Kidzee School. Dr. DP Singla Road, Guru Nanak Colony, Sangrur, Punjab.

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# What Makes Pinnacle Unique?

- 1 Best Faculty Team
- 2 Hi-Tech Classrooms
- 3 Customized Study material
- 4 Personal Attention
- 5 Unlimited Doubt Sessions
- 6 Best Testing Methodology



Lecture Recording Lab



Revision Classes & Self Study Zones



Online Testing Lab (CBT)



Smart & AC Classrooms



Objective + Subjective



Student Performance and Analysis Report



Rich Library & Researched Study Modules



Extra Support to weaker students



CCTV Campus



Biometric Attendance

## Classroom Program

### 1 Comprehensive Classroom Lectures

All classes at Pinnacle are conducted by highly qualified and experienced faculty members, mostly IITians. Each chapter is started at the grass root level and is dealt to an extent which is the requirement of competitive examinations, with an aim of enabling the students to develop a comprehensive view of the whole chapter with a thorough understanding.



### Doubt Clearance 2

"If you ask a question, you may appear fool for some time, but if you don't, you'll remain a fool for whole life." System at Pinnacle encourages all students to ask their doubts and questions.

### 3 Regular Tests Online and Offline

As JEE Mains and Advanced have gone completely online and NEET is in the pipeline, we have launched a dedicated online testing platform where students can practise over CBT (Computer Based Tests). The combination of online and offline testing modes based on latest JEE/NEET patterns ensure that students are at par with the recent changes. Students can check their test reports and performance analysis via a unique online login ID. Their results are also communicated to parents via SMS.

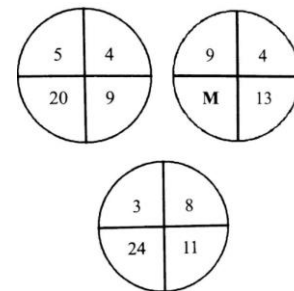


### Addressing the Board Exam 4

Pinnacle has a very distinct methodology for preparing the students for competitive examinations while in full synchronization with Board Exams as well. Board level tests are conducted alongside the regular JEE/NEET tests and the copies are graded at very meticulous level by teachers. Students receive methodological tips so as to perform excellent in the board Exams as well.

## Section - A Mental Ability

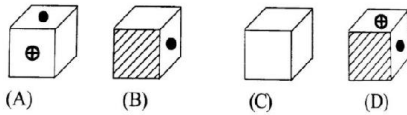
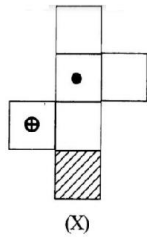
1. Complete the series  
7,13,27, 53,?,213  
(a) 106  
(b) 107  
(c) 105  
(d) 108
2. If the English letters A to Z are written in a reverse order then what is the fourth letter to the right of 12<sup>th</sup> letter from the left?  
(a) K  
(b) J  
(c) R  
(d) L
3. Direction: In a certain code language; '782' means Flowers are beautiful; '692' means 'Roses are red', '628' means 'Roses are beautiful'  
What does number '9' denote?  
(a) Roses  
(b) Flowers  
(c) Red  
(d) are
4. Pointing out to a lady, a girl said "She is the daughter-in-law of the grandmother of my father's only son." How is the lady related to the girl?  
(a) Sister-in-law  
(b) Mother  
(c) Aunt  
(d) Can't be determined
5. If + means  $\div$ , - means  $\times$ ,  $\div$  means + and  $\times$  mean -, then  $36 \times 8 + 4 \div 6 + 2 - 3 = ?$   
(a) 2  
(b) 18  
(c) 43  
(d)  $6\frac{1}{2}$
6. Raj travelled from a point X straight to Y at a distance of 80 metres. He turned right and walked 50 metres, then again turned right and walked 70 metres. Finally, he turned right and walked 50 metres. How far is he from the starting point  
(a) 10 metres  
(b) 20 metres  
(c) 50 metres  
(d) 70 metres
7. Find the missing number at the place of 'M'?



- (a) 36
- (b) 52
- (c) 81
- (d) 117

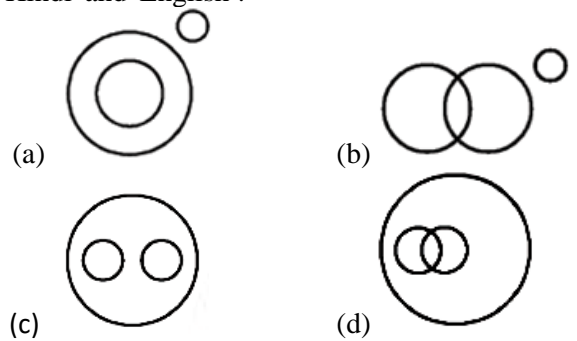
*Space for Rough Work*

8. Select from the alternative, the box that can be formed by folding the sheet shown in figure (X)



- (a) A only
  - (b) A and C only
  - (c) A, C and D only
  - (d) A, B, C and D
9. Raman remembers that the examination is after 15<sup>th</sup> May but before 18<sup>th</sup> May, while Deep remembers that the examination is before 21<sup>st</sup> May but after 16<sup>th</sup> May. On which date of May is the examination?
- (a) 17
  - (b) 18
  - (c) 19
  - (d) 20
10. A monkey climb 30 feet at the beginning of each hour and rests for a while when he slips back 20 feet before he again starts climbing in the beginning of the next hour. If he begins his ascent at 8.00 am, at what time will he first touch flag at 120 feet from the ground?
- (a) 4pm
  - (b) 5pm
  - (c) 6pm
  - (d) None of these

11. There are five players A B, C, D and E in a group. One plays football, one plays tennis and one plays chess. A and D are maidens and play no game. No woman plays either chess or football. There is a married couple in the group of which E is husband. C's brother is B who is neither a chess player nor a tennis player. Who plays chess?
- (a) E
  - (b) B
  - (c) C
  - (d) F
12. A family has a man, his wife, their four sons and their wives, The family of every son also has 3 sons and one daughter. Find out the total number of male members in the whole family.
- (a) 5
  - (b) 10
  - (c) 15
  - (d) 17
13. A man walks 30 km towards East, then turning to right he walks 30 km further. Then turning to his left he again walks 20 km. Again turning to his left he walks 30 km. How far is he from his starting point?
- (a) 50 km
  - (b) 60 km
  - (c) 70 km
  - (d) 100 km
14. If  $-$  means  $\div$ ,  $+$  means  $\times$ ,  $\div$  means  $-$ ,  $\times$  means  $+$ , then which of the following equations is correct?
- (a)  $52 \div 4 + 5 \times 8 - 2 = 36$
  - (b)  $43 \times 7 \div 5 + 4 - 8 = 25$
  - (c)  $36 \times 4 - 12 + 5 \div 3 = 420$
  - (d)  $36 - 12 \times 6 \div 3 + 4 = 60$
15. Which one of the following coded diagrams illustrates the relationship among 'Languages', 'Hindi' and 'English'?



Space for Rough Work

16. A man started walking towards South. After walking 20 m he turned right and walked 30 m. He then turned right and walked 20 m. He again turned right and walked 40 m. How far was he from his original position?

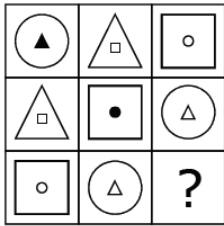
- (a) 50 m
- (b) 20 m
- (c) 10 m
- (d) 15 m

17. Which is the minimum number of colours required to fill the spaces in the following diagram without the adjacent cells having the same colour?

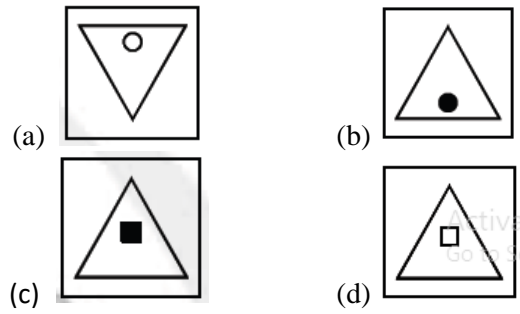


- (a) 3
- (b) 4
- (c) 5
- (d) 6

18. Consider the following figure matrix:



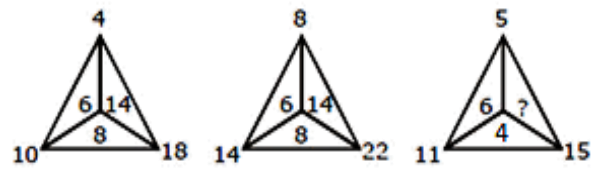
Which one of the following will complete the figure given above?



19. If in a certain language NEOMAN is coded as OGRQFT then ZKCLUP is the code of:

- (a) YJBKTO
- (b) YIZHPJ
- (c) YIAQKJ
- (d) None of these

20. Find the missing term in the given figures



- (a) 6
- (b) 8
- (c) 10
- (d) 14

*Space for Rough Work*

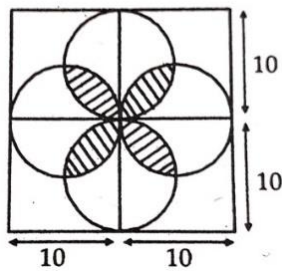


## Section - B Mathematics

21. The top of a hill observed from the top and bottom of a building of height  $h$  is at angles of elevation  $p$  and  $q$  respectively. The height of hill is:-
- $\frac{h \cot p}{\cot q - \cot p}$
  - $\frac{h \cot p}{\cot p - \cot q}$
  - $\frac{h \tan p}{\tan p - \tan q}$
  - $\frac{h \tan p}{\tan q - \tan p}$
22. The mean and median of 100 items are 50 and 52 respectively. The value of the largest item is 100. It was later found that it is 110 not 100. The true mean and median are
- 50, 10, 52
  - 50, 52
  - 50, 20, 52
  - None of these
23. For positive  $x$  and  $y$ , the LCM is 225 and HCF is 15. There:
- Is exactly one such pair
  - Are exactly two such pairs
  - Are exactly three such pairs
  - Are exactly four such pairs
24. If  $a + 1 = b + 2 = c + 3 = d + 4 = a + b + c + d + 5$ , then  $(a + b + c + d)$  is equal to:
- 5
  - 10/3
  - 7/3
  - 5/3
25. If both roots of quadratic equation  $ax^2 + bx + c = 0$  are zero then:
- $a = 0, b = 0$
  - $b = 0, c = 0$
  - only  $c = 0$
  - $a = 0, b = 0, c = 0$
26. The height of a cone is 30 cm. A small cone is cut off at the top parallel to the base. If its cut off at the top parallel to the base. If its volume is  $\frac{1}{27}$  th the volume of the cone, the height at which the section is made is
- 10 cm
  - 15 cm
  - 20 cm
  - None of these
27. When a polynomial  $p(x)$  is divided by  $x - 1$ , the remainder is 3. When  $p(x)$  is divided by  $x - 3$ , the remainder is 5. If  $r(x)$  is the remainder when  $p(x)$  is divided by  $(x - 1)(x - 3)$ , then the value of  $r(-2)$  is :
- 2
  - 1
  - 0
  - 4
28. A person can row a boat at 10 km/h in still water. He takes two and half hours to row from A to B and back. If the distance between A and B is 12 km, then the speed of the stream is:
- 3 km/h
  - $2\frac{1}{2}$  km/h
  - 2 km/h
  - $1\frac{1}{2}$  km/h
29. Find the area of the shaded region. [All the circles shown in the figure are congruent]

*Space for Rough Work*





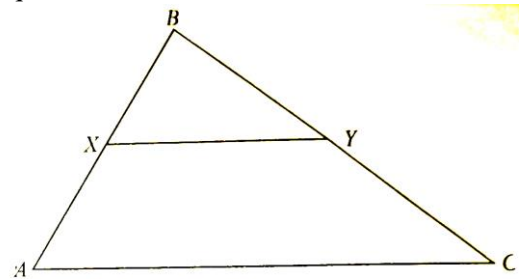
- (a)  $25\left(\frac{\pi}{2} - 1\right)$   
 (b)  $50\pi$   
 (c)  $100\left(\frac{\pi}{2} - 1\right)$   
 (d)  $200(\pi - 1)$
30. If  $\operatorname{cosec}\theta + \cot\theta = m$ , then what is the value of  $\sec\theta$ ?  
 (a)  $m^2 + 1$   
 (b)  $m^2 - 1$   
 (c)  $\frac{m^2 - 1}{m^2 + 1}$   
 (d)  $\frac{m^2 + 1}{m^2 - 1}$
31. A peacock sitting on the top of a tree observes a serpent on the ground making an angle of depression  $30^\circ$ . If the peacock with a speed of 300 m per minute catches the serpent in 12 seconds, then the height of the tree is:  
 (a) 30 m  
 (b)  $30\sqrt{3}$  m  
 (c)  $\frac{30}{\sqrt{3}}$  m  
 (d) 15 m
32. If a, b, c are in AP, then  $\frac{(a-c)^2}{(b^2 - ac)}$  is equal to  
 (a) 1  
 (b) 2  
 (c) 3  
 (d) 4

33. ABC is a right angle triangle, right angled at C. If p is the length of the perpendicular from C to AB,  $AB = c$  and  $BC = a$  and  $AC = b$ , then:

- (a)  $\frac{1}{a^2} = \frac{1}{b^2} - \frac{1}{p^2}$   
 (b)  $\frac{1}{p^2} = \frac{1}{a^2} - \frac{1}{b^2}$   
 (c)  $\frac{1}{b^2} = \frac{1}{p^2} - \frac{1}{a^2}$   
 (d)  $\frac{1}{p^2} = \frac{1}{a^2} + \frac{1}{b^2}$

34. The interior angles of a polygon are in AP. If the smallest angle is  $120^\circ$  and the common difference is  $5^\circ$ . Then, the number of sides of the polygon are  
 (a) 8  
 (b) 9  
 (c) 10  
 (d) 11

35. In  $\triangle ABC$ ,  $\overline{XY}$  is parallel to  $\overline{AC}$  and divides the triangle into the parts of equal area. Then the  $\frac{AX}{AB}$  equals:



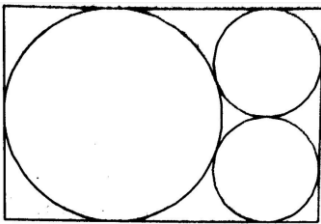
- (a)  $\frac{\sqrt{2} + 1}{2}$

Space for Rough Work

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

36. Let  $l$  be the length of each equal side of an isosceles triangle. If the length of each equal side is doubled, keeping its heights unchanged, then the difference of the squares of bases of the new triangle and the given triangle is:
- (a) 0
  - (b)  $4l^2$
  - (c)  $9l^2$
  - (d)  $12l^2$

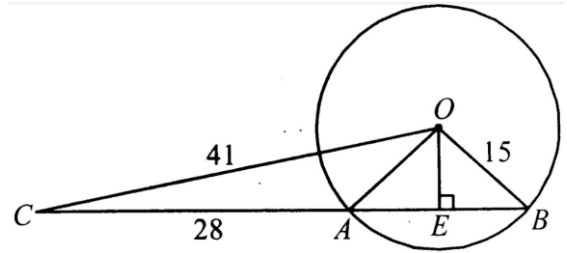
37. A rectangle contains three circles, as in the diagram, all tangent to the rectangle and to each other. The height of the rectangle is 4. Determine the width of the rectangle.



- (a)  $2 + 2\sqrt{2}$
- (b)  $3 + 2\sqrt{2}$
- (c)  $3 - \sqrt{2}$

- (d)  $8 - 2\sqrt{2}$

38. In the figure  $O$  is the center of the circle,  $CAB$  is a secant,  $CO = 41$  cm,  $CA = 28$  cm and  $OB = 15$ .  $OE \perp AB$ , then  $AE = \dots$



- (a) 8 cm
- (b) 10 cm
- (c) 12 cm
- (d) 15 cm

39. If  $(a, 0)$ ,  $(0, b)$  and  $(1, 1)$  are collinear then  $\frac{1}{a} + \frac{1}{b}$

- =
- (a) 2
  - (b) 1
  - (c) 3
  - (d) 4

40. One integer is chosen out of 1, 2, 3, .....100. What is the probability that it is neither divisible by 4 nor by 6:
- (a) 0.59
  - (b) 0.67
  - (c) 0.41
  - (d) 0.33

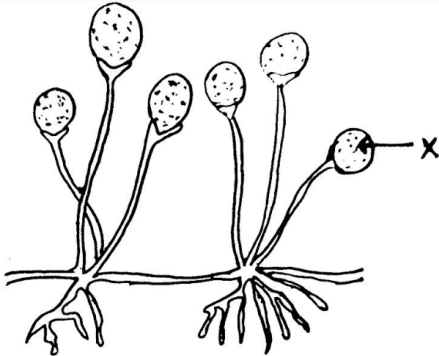
Space for Rough Work

## Section – B Biology

21. Multiple fission occurs in –

- (a) Hydra
- (b) Plasmodium
- (c) Planaria
- (d) All of these

22. Identify the correct function of x?



- (a) Mechanical
- (b) Reproduction
- (c) Preparation of food
- (d) Conduction of water

23. Xylem is associated with translocation of -

- (a) Water and mineral salts
- (b) Organic nitrogen
- (c) Hormones
- (d) All of the above

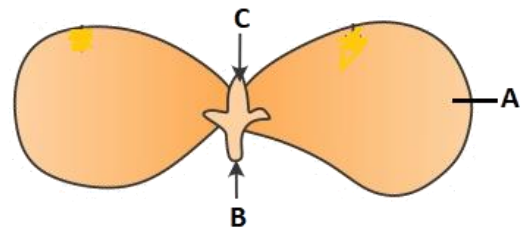
24. Glucose gets converted into pyruvate in –

- (a) Mitochondria
- (b) Muscle cells
- (c) Cytoplasm
- (d) Yeast

25. Endosperm is formed during the doubled fertilisation by –

- (a) Two polar nuclei and one male gamete
- (b) One polar nuclei and one male gamete
- (c) Ovum and male gamete
- (d) Two polar nuclei and two male gamete

26. Which is responsible for providing nutrition to the growing seed?



- (a) B
- (b) A
- (c) All
- (d) C

27. If the epiglottis does not function correctly, what might happen?

- (a) Peristalsis will stop
- (b) Acid reflex disease will damage the esophagus
- (c) One might choke
- (d) Swallowing will be difficult or impossible

28. Parthenogenesis occurs when

- (a) When embryo is formed without the fusion of egg and sperm.
- (b) When embryo is formed by the fusion of egg and sperm.
- (c) When embryo is formed from another cell.
- (d) When sperms produce the embryo directly

*Space for Rough Work*



29. What is work of copper T?

- (a) To inhibit ovulation
- (b) To inhibit fertilisation
- (c) To inhibit gametogenesis
- (d) None

30. Ovulation occurs under the influence of

- (a) LH
- (b) FSH
- (c) Estrogen
- (d) Progesterone

31. Match column I with column II and choose the right answer from the options given below: -

Column I	Column II
A. Carbondioxide	1. 1 – 2L per day
B. Glomerular	2. Respiration
C. Urine	3. Bowman's capsule
D. Pepsin	4. Stomach

- (a) A – 2, B – 1, C – 3, D – 4
- (b) A – 4, B – 3, C – 1, D – 2
- (c) A – 1, B – 2, C – 4, D – 3
- (d) A – 2, B – 3, C – 1, D – 4

32. In the dihybrid cross of mendel, out of 16 progenies in  $F_2$  generation, how many were hon parental traits?

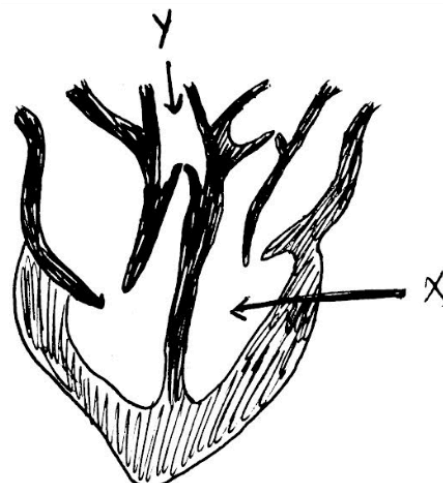
- (a) 9
- (b) 3
- (c) 6
- (d) 1

33. Mother is homozygous B, father is A. What will be the possible blood gp in their progeny?

- (a) AB and B
- (b) AB and A
- (c) A and B

(d) O

34. Identify x and y in the diagram of the heart shown.



- (a) X – left ventricle, y – valve
- (b) X – left atrium, y – pulmonary artery
- (c) X – right atrium, y – pulmonary artery
- (d) X – left ventricle, y – pulmonary artery

35. Blue eyes in an organisms is a dominant character over black eyes. What would be the percentage of blue eyes in  $F_2$  generation as per monohybrid cross?

- (a) 75%
- (b) 25%
- (c) 100%
- (d) 50%

36. Give a term for the action of bile from the below options.

- (a) Esterification
- (b) Hydrogenation
- (c) Oxidation
- (d) Emulsification

37. Deficiency of vasopressin causes –

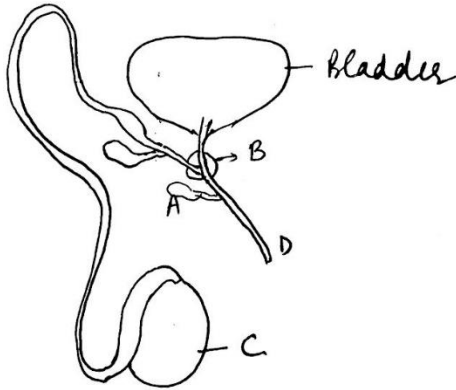
- (a) Diabetes mellitus
- (b) Goitre
- (c) Diabetes insipidus
- (d) Myxedema

*Space for Rough Work*

38. The phenomenon of exchange of segments between paternal and maternal chromosomes is called -

- (a) Linkage
- (b) Crossing over
- (c) Recombination
- (d) Segregation

39. Identify the correct option.



- (a) B is called bulbourethral gland
- (b) A is responsible for transporting the sperms
- (c) C produces sperms.
- (d) D is called vas deferens.

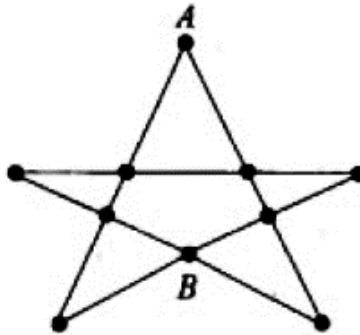
40. Medulla oblongata of hindbrain controls -

- (a) Rate of heart beat
- (b) Equilibrium
- (c) Thinking
- (d) Vision

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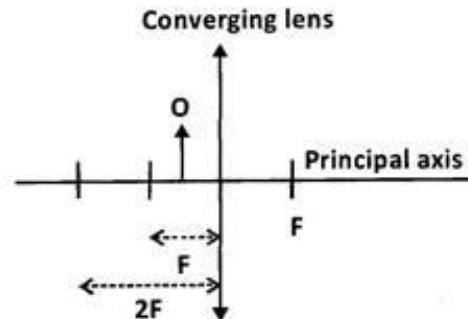
## Section – C Science

41. The resistance of all the wires between any two adjacent dots is  $R$ . Then equivalent resistance between A and B as shown in figure is:



- (a)  $\frac{7}{3} R$   
 (b)  $\frac{7}{6} R$   
 (c)  $\frac{14}{8} R$   
 (d) None of these
42. Doctor recommended Ram to use a lens of focal length  $-50$  cm to see the objects clearly. Find the maximum distance upto which Ram can see without the lens.
- (a) 2 m  
 (b) 0.5 m  
 (c) Infinite  
 (d) 4 m
43. A person cannot see distinctly objects kept beyond 2 m. This defect be corrected by using a lens of power.
- (a)  $-0.2$  D  
 (b)  $-0.5$  D  
 (c)  $+0.2$  D  
 (d)  $+0.5$  D

44. An object O is placed at the position shown in the given figure.



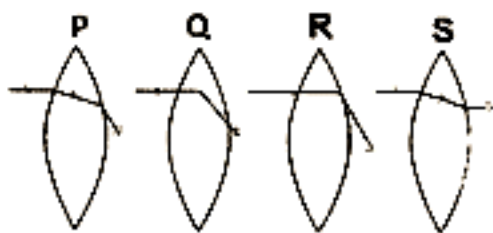
What are the characteristics of the image formed?

- (a) Real, inverted and diminished  
 (b) Real, inverted and enlarged  
 (c) Virtual, inverted and diminished  
 (d) Virtual, upright and enlarged
45. The north pole of earth's fictitious magnet is in the
- (a) Geographical South  
 (b) Geographical East  
 (c) Geographical West  
 (d) Geographical North
46. A converging lens magnifies a real image to four times its original size. Given that the focal length of the converging lens is 20 cm. What is the object distance?
- (a) 5 cm  
 (b) 25 cm  
 (c) 40 cm  
 (d) 100 cm
47. Which law states that the direction of the induced current is such that it always opposes the cause (motion of conductor) which produced it?

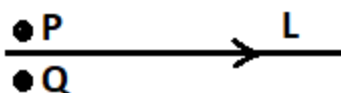
*Space for Rough Work*



- (a) Ampere's law  
 (b) Ohm's law  
 (c) Lenz's law  
 (d) Faraday's law
48. In a circular coil, the current is found to be flowing in anticlockwise direction. In which direction is the magnetic field produced at a point on the axis of the coil?
- (a) It is parallel to the plane of the coil.  
 (b) It is perpendicular to the plane of the coil.  
 (c) It is above the plane of the coil.  
 (d) It is below the plane of the coil.
49. Which of the following correctly shows how a light ray travels through a thick converging lens?



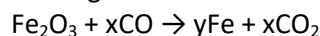
- (a) P  
 (b) S  
 (c) Q  
 (d) R
50. What happens when two compass needles are placed near a current carrying wire at points P and Q as shown below?



- (a) Both the needles will not deflect.  
 (b) Only needle P will deflect.  
 (c) Both the needles will deflect in the same direction.

(d) Both the needles will deflect in the opposite direction.

51. For the given reaction, match column I with column II and mark the correct option from the codes given below



**Column I**

**Column II**

- |                     |                               |
|---------------------|-------------------------------|
| (1) Oxidizing agent | (i) 2                         |
| (2) Reducing agent  | (ii) 3                        |
| (3) x               | (iii) $\text{Fe}_2\text{O}_3$ |
| (4) y               | (iv) CO                       |
- (a) 1 – (iv); 2 – (iii); 3 – (ii); 4 – (i)  
 (b) 1 – (iv); 2 – (iii); 3 – (i); 4 – (ii)  
 (c) 1 – (iii); 2 – (iv); 3 – (ii); 4 – (i)  
 (d) 1 – (iii); 2 – (iv); 3 – (i); 4 – (ii)

52. Match column I with Column II and mark the correct option from the given codes.

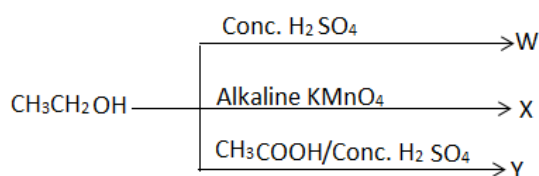
**Column I**

**Column II**

- |   |   |
|---|---|
| (1) $\text{NaHCO}_3$                                    | (i) used for disinfecting water                     |
| (2) $\text{Na}_2\text{CO}_3$                            | (ii) used in soda –acid fire extinguishers          |
| (3) $\text{CaOCl}_2$                                    | (iii) used for removing permanent hardness of water |
| (4) $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$ | (iv) Used for making toys, materials for decoration |
- (a) 1 – (iii); 2 – (i), 3 – (iv); 4 – (ii)  
 (b) 1 – (ii); 2 – (iii), 3 – (i); 4 – (iv)  
 (c) 1 – (iii); 2 – (ii), 3 – (i); 4 – (iv)  
 (d) 1 – (i); 2 – (ii), 3 – (iv); 4 – (iii)

53. Study the given flow chart carefully and identify W, X and Y.

*Space for Rough Work*



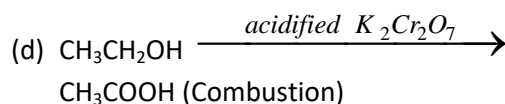
- (a) W – CH<sub>3</sub>COOH; X – CH<sub>3</sub>COOH; Y – CH<sub>3</sub>COOCH<sub>3</sub>  
 (b) W – H<sub>2</sub>C = CH<sub>2</sub>; X – CH<sub>3</sub>COOCH<sub>3</sub>; Y – CH<sub>3</sub>COCH<sub>3</sub>  
 (c) W – HC ≡ CH; X – CH<sub>3</sub>COOH; Y – CH<sub>3</sub>CH<sub>2</sub>CH<sub>2</sub>OH  
 (d) W – H<sub>2</sub>C = CH<sub>2</sub>; X – CH<sub>3</sub>COOH; Y – CH<sub>3</sub>COOCH<sub>2</sub>CH<sub>3</sub>

54. A water insoluble substance 'X' on reacting with dilute H<sub>2</sub>SO<sub>4</sub> released a colorless and odourless gas 'Y'. When this gas was passed through lime water, it initially became milky due to the formation of 'Z' and the milkiness disappeared when the gas pass in excess & form 'R'. X, Y, Z & R are respectively

- (a) Limestone, Carbonic acid, Carbon dioxide, Calcium bicarbonate  
 (b) Quick lime, Limestone, Carbon dioxide, Calcium bicarbonate  
 (c) Limestone, Carbon dioxide, Calcium bicarbonate, Calcium hydroxide  
 (d) Limestone, Carbon dioxide, Limestone, Calcium bicarbonate

55. Few organic reactions are given below. Which of the reactions is not named correctly?

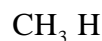
- (a) CH<sub>3</sub>COOH + C<sub>2</sub>H<sub>5</sub>OH  $\xrightarrow{H^+}$  CH<sub>3</sub>COOC<sub>2</sub>H<sub>5</sub> + H<sub>2</sub>O (Esterification)  
 (b) CH<sub>3</sub>COONa + NaOH → CH<sub>4</sub> + Na<sub>2</sub>CO<sub>3</sub> (Decarboxylation)  
 (c) CH<sub>3</sub>COOC<sub>2</sub>H<sub>5</sub>  $\xrightarrow{NaOH}$  CH<sub>3</sub>COONa + C<sub>2</sub>H<sub>5</sub>OH (Saponification)



56. Considering the elements B, Al, Mg and K, the correct order of their metallic character is

- (a) B > Al > Mg > K  
 (b) Al > Mg > B > K  
 (c) Mg > Al > K > B  
 (d) K > Mg > Al > B

57. The correct IUPAC name of the compound



- (a) 2-Methylbut -2-enoic acid  
 (b) 3-Methylbut -3-enoic acid  
 (c) 3-Methylbut -2-enoic acid  
 (d) 2-Methylbut -3-enoic acid

58. In the reaction,  $\text{CO}_3^{2-} + \text{H}_2\text{O} \rightarrow \text{HCO}_3^- + \text{OH}^-$  water is a

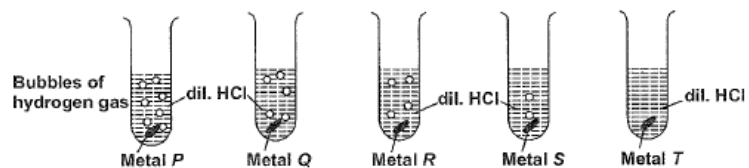
- (a) Bronsted acid  
 (b) Bronsted base  
 (c) Conjugate acid  
 (d) Conjugate base

59. Which of the following is not an example of decomposition reaction?

- (a) CaCO<sub>3(s)</sub> → CaO<sub>(s)</sub> + CO<sub>2(g)</sub>  
 (b) Ca(OH)<sub>2(s)</sub> → CaO<sub>(s)</sub> + H<sub>2</sub>O<sub>(l)</sub>  
 (c) CuSO<sub>4</sub> · 5H<sub>2</sub>O<sub>(s)</sub> → CuSO<sub>4(s)</sub> + 5H<sub>2</sub>O<sub>(g)</sub>  
 (d) 2KClO<sub>3(s)</sub> → 2KCl<sub>(s)</sub> + 3O<sub>2(g)</sub>

*Space for Rough Work*

60. Observe the rate of evolution of hydrogen gas with five metals P, Q, R, S and T at room temperature. What could be the metals P, Q, R, S and T?



- |     | P  | Q  | R  | S  | T  |
|-----|----|----|----|----|----|
| (a) | Zn | Al | Mg | Cu | Fe |
| (b) | Mg | Al | Zn | Fe | Cu |
| (c) | Al | Zn | Mg | Fe | Cu |
| (d) | Fe | Zn | Mg | Al | Cu |

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**ANSWER KEY**

1	b	21	b	21	b	41	b
2	a	22	a	22	b	42	a
3	c	23	b	23	a	43	d
4	d	24	b	24	c	44	d
5	c	25	b	25	a	45	a
6	a	26	c	26	b	46	b
7	a	27	c	27	c	47	c
8	a	28	c	28	a	48	b
9	a	29	c	29	b	49	a
10	c	30	d	30	a	50	d
11	a	11	a	31	a	51	c
12	d	12	d	32	d	52	b
13	a	13	a	33	d	53	d
14	a	14	a	34	b	54	d
15	c	15	c	35	b	55	d
16	c	16	c	36	d	56	d
17	b	17	b	37	b	57	c
18	c	18	c	38	c	58	a
19	b	19	b	39	b	59	c
20	c	20	c	40	b	60	b

*Space for Rough Work*