



SAMPLE PAPER

for student presently in Class 10 going to 11

Time: 3 Hours

Maximum Marks: 320

Instructions:

1. This Question paper consists of **Four** sections. All questions will be multiple choice single correct out of four choice with marking scheme in table below:

Section		Question No.	Marking Scheme for each question	
			Correct answers	Wrong answers
Section - I	IQ	1 - 20	+ 4	- 1
Section - II	Physics	21 - 35	+ 4	- 1
Section - III	Chemistry	36 - 50	+ 4	- 1
Section - IV	Mathematics	51 - 65	+ 4	- 1

- Answer have to be marked on the OMR sheet.
- The Question Paper contains blank spaces for your rough work. No additional sheets will be provided for rough work
- Blank papers, clip boards, log tables, slide rule, calculator, cellular phones and electronic devices, in any form, are not allowed.
- Before attempting paper write your Name, Registration number and Test Centre in the space provided at the bottom of this sheet.

Registration Number : _____

Name of the Candidate : _____

Test Centre : _____

SECTION – I (IQ)

1. How many even numbers are there in the following sequence of numbers which are immediately followed by an odd number as well as immediately preceded by an even number ?
8 6 7 6 8 9 3 2 7 5 3 4 2 2 3 5 5 2 2 8 1 1 9
(A) One (B) Three (C) Five (D) None of these
2. In the following series, how many times the sum of two consecutive numbers results an even number ?
1 2 3 4 6 3 4 2 5 9 3 6 7 4 1 2 3 6 7 6 5 4 3
(A) 3 (B) 4 (C) 5 (D) None of these
3. In the following series how many C's are there which are immediately followed by 'Y' but not immediately preceded by 'J' ?
J C D Y J C Y O J H C Y Y Y C I J W C Y A C Y
(A) One (B) Two (C) Three (D) Four
4. How many A's are there in the following series which are immediately followed by B as well as immediately preceded by Z ?
A M B Z A N A A B Z A B A Z B A P Z A B A Z A B
(A) Nil (B) One (C) Two (D) Three
5. I am facing South . I turn right and walk 20 m . Then I turn right again and walk 10 m. Then I turn left and walk 10 m and then turning right walk 20 m . Then I turn right again and walk 60 m. In which direction am I from the starting point ?
(A) North (B) North – East (C) East (D) North – East
6. A watch reads 4 : 30 . If the minute – hand points to East, in which direction does the hour – hand point ?
(A) North – East (B) south – East (C) North – West (D) North

Directions : (7 to 10) read the following information carefully and answer the questions given below :

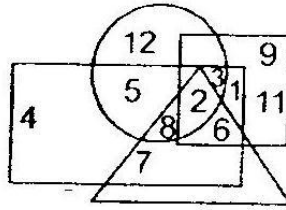
There are six children playing football namely A, B, C, D, E and F. A and E are brothers. F is the sister of E. C is the only son of A's uncle. B and D are the daughter's of C's father.

7. How is C related to F ?
(A) Cousin (B) Brother (C) Son (D) Uncle
8. How many male players are there ?
(A) One (B) Three (C) Five (D) six
9. How many female players are there ?
(A) Two (B) Three (C) Five (D) One
10. How is D related to A ?
(A) Uncle (B) Sister (C) Niece (D) Cousin

Space for Rough Work

Directions : (11 to 12) Read the following information carefully and answer the questions based on them.

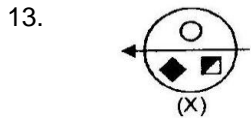
The circle represents poor boys, the square educated boys, the triangle represents the boys who are employed somewhere and the rectangle represents those who help in the family business. Each section of the diagram is numbered.



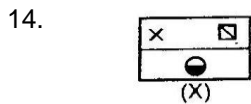
11. Which number represents those poor boys who help in family business but are not educated or employed elsewhere ?
 (A) 2 (B) 3 (C) 4 (D) 5

12. Which number represents the group of educated poor boys who are employed somewhere but do not help in family business ?
 (A) 3 (B) 11 (C) 2 (D) none of these

Directions : (13 to 15) In each of the following questions, choose the correct mirror image from alternatives A, B, C and D of the word / figure (X)



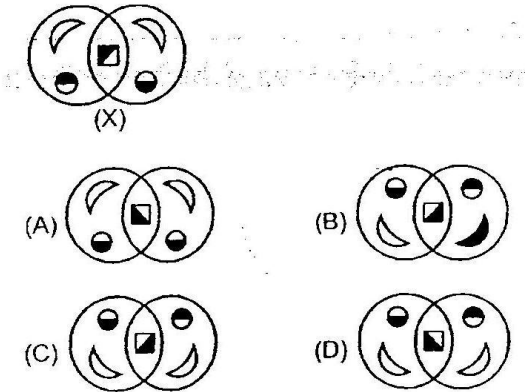
- (A) (B)
- (C) (D)



- (A) (B)
- (C) (D)

Space for Rough Work

15.



Directions : (16 to 17) In each of the following questions , a group of letters is given which are numbered 1, 2, 3, 4, 5 and 6. Below are given four alternatives containing combinations of these numbers. Select that combination of numbers so that letters arranged accordingly, form a meaningful word.

16. R A C E T
1 2 3 4 5

- (A) 1, 2, 3, 4, 5 (B) 3, 2, 1, 4, 5 (C) 5, 2, 3, 4, 1 (D) 5, 1, 2, 3, 4

17. R U S G A
1 2 3 4 5

- (A) 1, 5, 4, 2, 3 (B) 5, 3, 4, 1, 2 (C) 3, 2, 4, 5, 1 (D) 4, 5, 3, 2, 1

18. The value of $\frac{(6+6+6+6) \div 6}{4+4+4+4 \div 4}$ is equal to :

- (A) 1 (B) $\frac{3}{2}$ (C) $\frac{4}{13}$ (D) $3\frac{6}{13}$

19. What mathematical operation should come at the place of ? in the equation :

$$2 ? 6 - 12 \div 4 + 2 = 11$$

- (A) + (B) - (C) × (D) ÷

20. If a means 'plus', b means 'minus', c means 'multiplied' by' and d means 'divided by' then

$$16 c 12 b 6 d 2 a 17 = ?$$

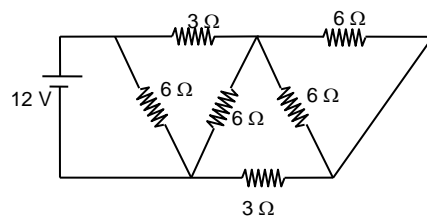
- (A) 65 (B) 55 (C) 216 (D) 206

Space for Rough Work

SECTION – III (PHYSICS)

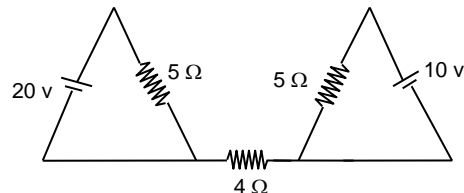
1. A 12V battery negligible internal resistance is connected in a circuit shown in figure. The Current I, in the circuit will be

- (A) 3 A (B) 4 A
(C) 2 A (D) 6 A



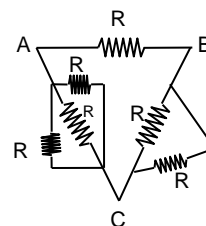
2. Find out the value of current through 4 Ω resistance for the given circuit

- (A) 2A (B) 4A
(C) 5 A (D) zero

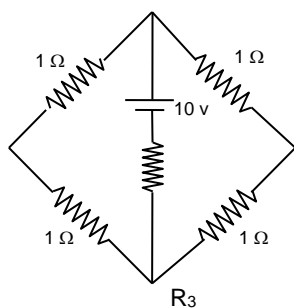
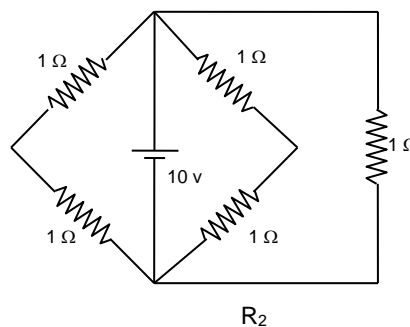
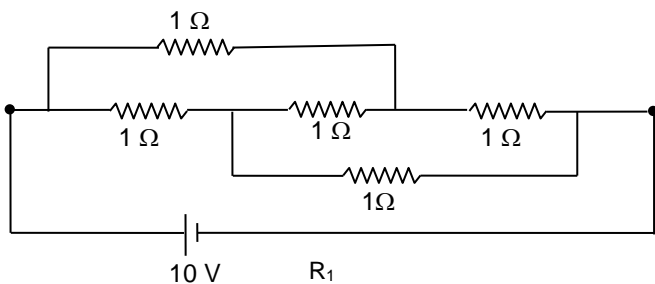


3. Six identical resistance are connected as shown in the figure

- (A) Maximum between A and C
(B) Maximum between B and C
(C) Maximum between A and B
(D) All are equal



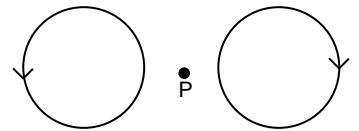
4. Figure shows three resistor configurations R₁, R₂ & R₃ connected to 10 v battery. If the power dissipated by the configuration R₁ R₂ and R₃ is P₁ , P₂ and P₃ , respectively then



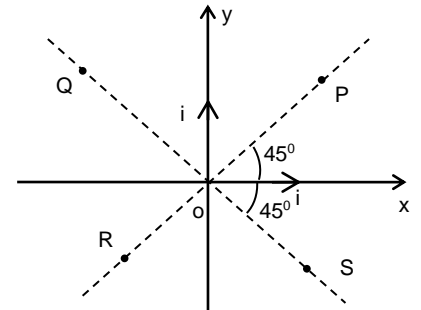
- (A) P₁ > P₂ > P₃ (B) P₁ > P₃ > P₂ (C) P₂ > P₁ > P₃ (D) P₃ > P₂ > P₃

Space for Rough Work

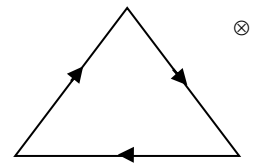
12. Point P is situated at the mid-point of the line joining the centers the circular wires, which have same radii. The net magnetic field at P is
 (A) Inward and perpendicular to plane
 (B) outward and perpendicular to plane
 (C) zero
 (D) Can't be predicted



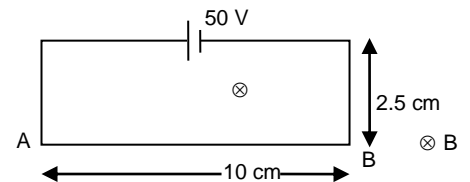
13. Two infinite straight wire carrying current I are placed along x and y direction respectively. The magnetic field is zero on the line.
 (A) Q S
 (B) PR
 (C) Segment OQ only
 (D) Segment OR only



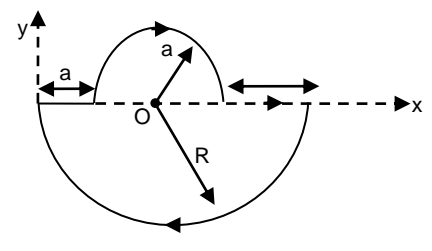
14. Find the magnetic force on the closed equilateral frame of side length 2 cm placed in uniform magnetic field $B = 5T$ present normal to the plane of the frame. (current in the loop is of 10 A)
 (A) 1 N
 (B) 2 N
 (C) 3 N
 (D) zero



15. Find magnetic force acting on segment AB of the frame placed perpendicular to uniform magnetic field $B = 10 T$. Resistance per unit length of the wire of frame is $2\Omega/cm$.
 (A) 1 N
 (B) 2 N
 (C) 3 N
 (D) 4 N



16. Find net magnetic field produced by the current carrying wire frame at shown in figure.
 (A) $\frac{3\mu_0 i}{8a}$
 (B) $\frac{3\mu_0 i}{4a}$
 (C) $\frac{5\mu_0 i}{8a}$
 (D) $\frac{3\mu_0 i}{2a}$



Space for Rough Work

17. A charged particle of mass m and charge q travels on a circular path of radius r that is perpendicular to a magnetic field B . The time taken by the particle to complete one revolution is
- (A) $\frac{2\pi q^2 B}{m}$ (B) $\frac{2\pi m q}{B}$ (C) $\frac{2\pi m}{qB}$ (D) $\frac{2\pi q B}{m}$
18. A proton, deuteron and alpha particle of same kinetic energy are moving in circular trajectories in a constant magnetic field. The radii of proton, deuteron and alpha particle are respectively r_p , r_d and r_α . Which of the following relation is correct?
- (A) $r_\alpha = r_p = r_d$ (B) $r_\alpha = r_p < r_d$ (C) $r_\alpha > r_d > r_p$ (D) $r_\alpha = r_d > r_p$
19. A long wire carries a steady current. It is bent into a circle of one turn and the magnetic field at the centre of the coil is B . It is then bent into a circular loop of n turns, the magnetic field at the centre of the coil will be
- (A) $2nB$ (B) n^2B (C) nB (D) $2n^2B$
20. Two long conductors, separated by a distance d carry current i_1 and i_2 in the same direction. They exert a force F on each other. Now the current in one of them is increased to two times and its direction is reversed. The distance is also increased to $3d$. The new value of one force between the is
- (A) $\frac{2F}{3}$ (B) $F/3$ (C) $2F$ (D) $4F/3$

Space for Rough Work

SECTION – III (CHEMISTRY)

1. What will be the pH of a 10^{-3} M $\text{Ca}(\text{OH})_2$ solution?
(A) 10.3 (B) 2.699 (C) 3 (D) 11.3
2. Which of the following is not an oxide ore.
(A) bauxite (B) cuprite (C) galena (D) haematite
3. For the reaction, $\text{Cu} + x\text{HNO}_3 \longrightarrow \text{Cu}(\text{NO}_3)_2 + y\text{NO}_2 + 2\text{H}_2\text{O}$ the value of x and y in balance equation are:
(A) 3 and 5 (B) 8 and 6 (C) 4 and 2 (D) 7 and 1
4. The conjugate acid of HPO_4^{2-} is
(A) H_2PO_4^- (B) $\text{H}_2\text{PO}_4^{2-}$ (C) H_3PO_4 (D) PO_4^{3-}
5. The concentration Ba^{2+} and OH^- ions in aqueous solution (after dissociation) & of 1.0×10^{-2} M $\text{Ba}(\text{OH})_2$ respectively are
(A) 10^{-2} M, 10^{-2} M (B) 10^{-2} M, 2×10^{-2} M
(C) 2×10^{-2} M, 2×10^{-2} M (D) 0, 10^{-2} M
6. Graphite is a/an
(A) alloy (B) metal (C) metalloid (D) non-metal
7. The acid used in making of vinegar is
(A) formic acid (B) acetic acid (C) sulphuric acid (D) nitric acid
8. If pH of equimolar solution of acid A, B, C and D are 2.5, 3.5, 5.3 and 4.0 respectively, then the order of their acidic strength is
(A) $C < B < D < A$ (B) $B < C < D < A$ (C) $C < D < B < A$ (D) $D < C < B < A$
9. Removal of impurities from ore is known as:
(A) crushing and grinding (B) concentration of ore
(C) Calcination (D) Roasting
10. The reaction,
$$\text{Fe}_2\text{O}_3 + 2\text{Al} \longrightarrow \text{Al}_2\text{O}_3 + 2\text{Fe}$$
 is an example of
(A) combination reaction (B) decomposition reaction
(C) displacement reaction (D) double displacement reaction

Space for Rough Work

11. A solution turns red litmus blue, its pH is likely to be
(A) 12 (B) 4 (C) 8 (D) both A and C
12. Chemical method used in concentration of ore is known as:
(A) bleaching (B) leaching (C) froth floatation (D) roasting
13. Which of the following is quicklime
(A) CaO (B) Ca(OH)₂ (C) CaCO₃ (D) CaCl₂.6H₂O
14. Bases:
(A) form the hydronium ion (H₃O⁺) in aqueous solution
(B) turns red litmus paper blue
(C) can be proton donor
(D) have pH < 7
15. When the gases sulphur dioxide and hydrogen sulphide mix, the reaction involved is
$$\text{SO}_2 + \text{H}_2\text{S} \longrightarrow 2\text{H}_2\text{O} + 3\text{S}$$

Here hydrogen sulphide (H₂S) is acting as:
(A) an oxidising agent (B) a reducing agent
(C) both oxidising as well as reducing (D) a base
16. Which of the following is not an ore of magnesium?
(A) carnalite (B) Magnesite (C) Dolomite (D) Siderite
17. The alkaline earth metal present in chlorophyll is
(A) Be (B) Mg (C) Ca (D) Sr
18. Which of the following elements show different non-zero oxidation states?
(A) Sodium (B) Fluorine (C) Calcium (D) Chlorine
19. H₃BO₄ is:
(A) Monobasic and weak bronsted acid
(B) Monobasic and weak lewis acid
(C) Tribasic and weak bronsted acid
(D) Monobasic and strong lewis acid
20. A solution with pH = 2 has how many times more hydrogen ion concentration than one with pH = 4?
(A) 2 (B) $\frac{1}{100}$ (C) 20 (D) 100

Space for Rough Work

SECTION – IV (MATHEMATICS)

1. Let a, b, c be distinct real number and roots of the equation $(b - c)x^2 + (c - a)x + (a - b) = 0$ are equal, then
- (A) $2b = a + c$ (B) $b^2 = ac$
(C) $b = \frac{2ac}{a + c}$ (D) none of these
2. Let α, β are root of $x^2 + ax - b = 0$ and γ, δ are roots of $x^2 + ax + b = 0$, then value of $(\alpha - \gamma)(\beta - \delta)(\alpha - \delta)(\beta - \gamma)$ is
- (A) $2b^2$ (B) $3b^2$ (C) $4b^2$ (D) $5b^2$
3. The remainder when 5^{99} is divide by 13, is
- (A) 5 (B) 3 (C) 8 (D) None of these
4. The least number when divided by 5, 6, 8, 9 and 12 leaves a remainder 1 in each case, but when divided by 13 leaves no reminder, is
- (A) 3250 (B) 3601 (C) 3588 (D) none of these
5. Let $N = 5^{2019} - 1$, then N is
- (A) divisible by 4 and 6 but not divisible by 31
(B) divisible by 4 and 31 but not divisible by 6
(C) divisible by 6 and 31 but not divisible by 4
(D) divisible by all 4, 6 and 31
6. Sum of a positive real number and its reciprocal is $\frac{3}{2}$, then
- (A) number is less than one (B) number is greater than one
(C) number is $\frac{4}{5}$ (D) no such number exist
7. Two isosceles triangles whose sides are a, a, n and a, a, m respectively have the same area ($m \neq n$), then a is equal to
- (A) $\left(\frac{m+n}{2}\right)$ (B) $\frac{\sqrt{m^2+n^2}}{2}$ (C) \sqrt{mn} (D) None of these

Space for Rough Work

8. Which of the following statement is true?
(A) $\sin \theta = \frac{6}{\pi}$ (B) $\cos \theta = \frac{4}{\pi}$ (C) $\operatorname{cosec} \theta = \frac{4}{\pi}$ (D) $\sec \theta = \frac{\pi}{5}$
9. Given the following system of equation $\frac{1}{x} + \frac{1}{y} = \frac{1}{2}$; $\frac{1}{y} + \frac{1}{z} = \frac{1}{3}$; $\frac{1}{z} + \frac{1}{x} = \frac{1}{5}$ then $\frac{z}{y}$ is equal to
(A) 29 (B) 19 (C) 23 (D) None of these
10. Points A and B are 90 km apart from each other on a highway. A car starts from A and another from B at the same time. If they go in the same direction, they meet in 9 hrs. and if they go in opposite directions, they meet in $\frac{9}{7}$ hrs. then there speeds are
(A) 40 km/hr, 20 km/hr (B) 60 km/hr, 20 km/hr
(C) 40 km/hr, 30 km/hr (D) 50 km/hr, 40 km/hr
11. If the system of equations $2x + my = 6$ and $4x + 3y = 12$ has no solution, then real value of m
(A) is equal to $\frac{3}{2}$ (B) is equal to $\frac{2}{3}$
(C) is equal to 2 (D) does not exist
12. In $\triangle ABC$, if $\sec^2 A + \sec^2 B = \sec^2 A \cdot \sec^2 B$, then $\triangle ABC$ is
(A) acute angled (B) obtuse angled
(C) right angled (D) None of these
13. Suppose ABCD is a quadrilateral inscribed on a circle, then among the following identities how many are always true?
(i) $\sin A = \sin C$ (II) $\sin A + \sin C = 0$ (III) $\cos B + \cos D = 0$ (D) $\cos B = \cos D$
(A) 0 (B) 1 (C) 2 (D) 3
14. If $T_n = \sin^n \theta + \cos^n \theta$, then value of $2T_6 - 3T_4 + 2$ is equal to
(A) 0 (B) 1 (C) 7 (D) None of these
15. The numbers 3, 5, 7 and 9 have their respective frequencies $x - 2$, $x + 2$, $x - 3$ and $x + 3$. If the arithmetic mean is 6.5 then the value of x is
(A) 3 (B) 4 (C) 5 (D) 6

Space for Rough Work

16. If the arithmetic mean of n numbers of a series is \bar{x} and the sum of the $(n - 1)$ numbers is k , then the n^{th} number is
(A) $n + k$ (B) $n\bar{x} + k$ (C) $n\bar{x} - k$ (D) $n - k$
17. Let $f(x)$ be a cubic polynomial with leading coefficient 2, such that $f(1) = 1$, $f(2) = 4$, $f(3) = 9$, then value of $f(4)$ is
(A) 28 (B) 16 (C) 12 (D) 8
18. The total number of 4 letter code words using the first 10 letters of English alphabet if no letter is repeated
(A) 5042 (B) 5040 (C) 7200 (D) none of these
19. In order that the number $1x3x6$ be divisible by 11, the digit x should be
(A) 1 (B) 2 (C) 7 (D) 5
20. The angle of elevation of the top of a tower at the top and the foot of a pole of height 10 m are 30° and 60° respectively, then the height of the tower is
(A) 15 m (B) 20 m (C) 25 m (D) 30 m

Space for Rough Work