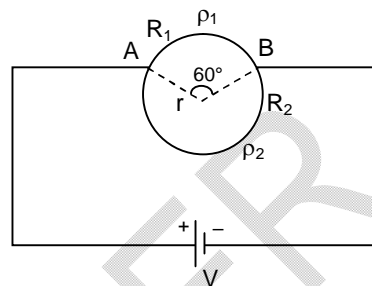




**SECTION – I**  
**(COMPREHENSION TYPE)**

**Passage - 1**  
**(For questions no. 1 - 3)**

Following is the given circuit. Which contains two resistance  $R_1$  and  $R_2$  in form of circle of radius  $r = 1$  m with a battery having e.m.f.  $V = 10\pi$  volt. Upper resistance is having resistivity  $\rho_1 = 4\Omega\text{m}$  & lower resistance having resistivity  $\rho_2 = 2\Omega\text{m}$ . Angle between two points A and B is  $60^\circ$ . (wires have same cross section  $A_1 = A_2 = 2\text{ cm}^2$ )



- What is value of  $R_1 : R_2$   
 (A) 1 : 1  
 (B) 2 : 5  
 (C) 6 : 7  
 (D) 7 : 6
- Find magnitude of magnetic field at centre.  
 (A) 0T  
 (B) 1T  
 (C) 2T  
 (D)  $\pi$ T
- Calculate the net current flowing through the circuit  
 (A)  $42 \times 10^{-2}$  A  
 (B)  $21 \times 10^{-2}$  A  
 (C)  $21 \times 10^{-4}$  A  
 (D)  $42 \times 10^{-4}$  A

**Passage - 2**  
**(For questions no. 4 - 6)**

Thermal decomposition reaction of oxygen containing salts produce acidic and basic oxides.

Salt (A) on heating produces a solid (B) and gas (C) which produces white precipitate with lime water. Reaction of (B) with water forms milk of magnesia  $\text{Mg}(\text{OH})_2$ . Neutralization reaction of  $\text{Mg}(\text{OH})_2$  with (D) produces compound (E) which is crystallized from the reaction mixture as  $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$

- Which of the following is compound (A)?  
 (A)  $\text{MgSO}_4$   
 (B)  $\text{MgCO}_3$   
 (C)  $\text{Mg}(\text{NO}_3)_2$   
 (D)  $\text{Mg}(\text{HCO}_3)_2$

**Space For Rough Work**

5. Which of the following is (D)?  
(A)  $\text{Cl}_2$  (B)  $\text{HCl}$   
(C)  $\text{NaCl}$  (D)  $\text{CaCl}_2$
6. Which of the following acid is formed if (C) reacts with  $\text{H}_2\text{O}$ ?  
(A)  $\text{H}_2\text{C}_2\text{O}_4$  (B)  $\text{H}_4\text{C}_2\text{O}_2$   
(C)  $\text{H}_2\text{CO}_3$  (D)  $\text{H}_2\text{CO}_2$

**Passage - 3**  
**(For questions no. 7 - 9)**

Let  $f(x)$  be a polynomial of degree greater than one. If  $f(x)$  is divided by  $x - a$  then  $f(a)$  is remainder.

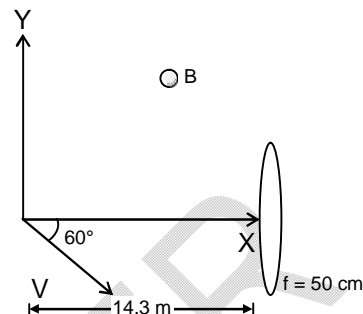
7. Let  $f(x) = x^{2013} + 1$  then the remainder when  $f(x)$  is divided by  $x^2 - 1$  is  
(A)  $x - 1$  (B)  $x + 1$   
(C) 0 (D) 1
8. If  $f(x) = x^3 + px + q$  is divisible by  $x^2 - x - 2$  then  $p \cdot q =$   
(A) 2 (B) 4  
(C) 6 (D) 8
9.  $f(x)$  be a polynomial such that  $f(a) = f(b) = f(c) = f(d) = 3$ . Where  $a, b, c, d$  are distinct integers. If  $f(e) = 5$ , where  $e$  is an integer then  $e =$   
(A) 1 (B) 3  
(C) 4 (D) no real value of  $e$  is possible

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**Space For Rough Work**

**Passage - 4**  
**(For questions no. 10 - 14)**

A negatively charged particle having magnitude of charge  $q = 0.1 \text{ C}$  and mass  $m = 200 \text{ gm}$  moves with speed  $v = 10 \text{ m/s}$  enters a region having magnetic field  $B = 4 \text{ T}$  making an angle  $60^\circ$  with X axis as shown in figure. The direction of magnetic field is out of the X–Y plane. A convex lens is placed at a distance  $14.3 \text{ m}$  from origin. Region of magnetic field starts from origin and extends till lens. Focal length of lens is  $50 \text{ cm}$ . Take X-axis as principle axis.



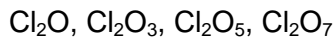
10. Calculate the radius of path of charge  
 (A) 4.25 m (B) 6 m  
 (C) 5 m (D) 7.1 m
11. Find the frequency of revolution  
 (A) 0.32 Hz (B) 0.64 Hz  
 (C) 2.16 Hz (D) 3.14 Hz
12. What is change in momentum from  $t = 0$  to  $t = \frac{\pi}{6} \text{ sec}$ ?  
 (A) 8 kg m/s (B) 2 kg m/s  
 (C) 10 kg m/s (D) 17.32 kg m/s
13. What is the image height at  $t = \frac{\pi}{6} \text{ sec}$  from principle axis  
 (A) 7.5 cm (B) 13 cm  
 (C) 4.5 cm (D) 9 cm
14. Find the minimum value of initial velocity of charge so that image formed is virtual.  
 (A) 7.2 m/s (B) 14.8 m/s  
 (C) 16.4 m/s (D) 20 m/s

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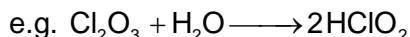
**Space For Rough Work**

**Passage – 5**  
**(For questions no. 15 - 19)**

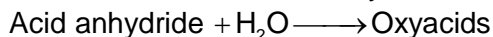
Chlorine forms a number of oxides by using different valencies like 1, 3, 5 and 7. The oxides are:



The oxides form very strong oxyacids when react with water. One molecule of each oxide reacts with water to form two molecules of corresponding acid.

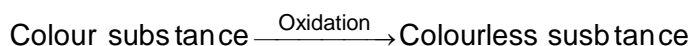


The oxides are also called acid anhydrides because they form acids when react with water.



The acidic strength of the oxides is directly proportional to the valency of chlorine.

Oxy-acid HClO behaves as a bleaching agent. It bleaches colouring matter to colourless matter by oxidation reaction.



Answer the following questions on the basis of above write-up

15. Which of the following oxy-acid is formed if  $\text{Cl}_2\text{O}_7$  reacts with water?  
 (A)  $\text{HClO}_3$  (B)  $\text{HClO}_4$   
 (C)  $\text{HClO}_2$  (D)  $\text{HClO}_7$
16. Which of the following acid is not formed by the reaction of any of the given oxides of chlorine with water?  
 (A)  $\text{HClO}$  (B)  $\text{HClO}_2$   
 (C)  $\text{HClO}_3$  (D)  $\text{HClO}_5$
17. Which reaction of  $\text{HClO}$  explains its bleaching action?  
 (A)  $\text{HClO} \xrightarrow{\text{H}_2\text{O}} \text{H}^+ + \text{ClO}^-$  (B)  $\text{HClO} \longrightarrow \text{Cl}^+ + \text{OH}^-$   
 (C)  $\text{HClO} \longrightarrow \text{HCl} + \text{O}$  (D) All are correct
18. Which is the anhydride of  $\text{HClO}_3$ ?  
 (A)  $\text{Cl}_2\text{O}$  (B)  $\text{Cl}_2\text{O}_3$   
 (C)  $\text{Cl}_2\text{O}_5$  (D)  $\text{Cl}_2\text{O}_7$

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**Space For Rough Work**

19. Which of the following change takes place if a litmus paper is dipped in HClO solution?  
(A) blue litmus turns red  
(B) red litmus turns blue  
(C) both type (blue and red) litmus undergo decolourization  
(D) None of these

**Passage - 6**  
**(For questions no. 20 - 24)**

$|x|$  is known as absolute value of  $x$  and defined as

$$\begin{aligned} |x| &= x, & x > 0 \\ &= 0, & x = 0 \\ &= -x, & x < 0 \end{aligned}$$

$|a| + |b| = |a + b|$  if  $a \cdot b \geq 0$  where  $a$  and  $b$  are two real numbers.

20. Sum of all values of  $x$  which satisfy  $||x + 3| - 3| = 2$   
(A) 16  
(B) -12  
(C) 12  
(D) -16
21. The number of real solutions of  $x^2 - 1 = |x|$  is  
(A) 0  
(B) 1  
(C) 2  
(D) 4
22.  $a$  and  $b$  are non - zero rational numbers, then the number of possible values of  $\frac{a}{|a|} + \frac{b}{|b|}$  is  
(A) 4  
(B) 2  
(C) 1  
(D) 3

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**Space For Rough Work**

23.  $\left| \frac{x}{x-1} \right| + |x| = \frac{x^2}{|x-1|}$  has  
 (I) exactly one solution (II) exactly two solutions  
 (A) only I is correct (B) exactly II is correct  
 (C) Both I and II are incorrect (D) Both I and II correct
24. Given a quadratic polynomial  $ax^2 + bx + c$ , where  $a, b, c$  are real numbers has two real roots  $\alpha$  and  $\beta$  such that  $\alpha < -1$  and  $\beta > 1$  then  
 (A)  $1 + \left| \frac{b}{a} \right| + \frac{c}{a} < 0$  (B)  $1 + \left| \frac{c}{a} \right| + \frac{b}{a} < 0$   
 (C)  $1 + \left| \frac{c}{a} \right| + \left| \frac{b}{a} \right| < 0$  (D) none of these

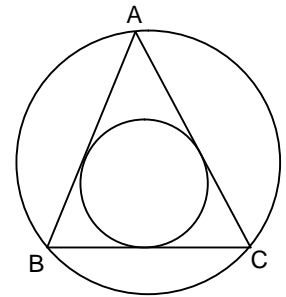
**PASSAGE – 7**  
**(For questions no. 25 - 29)**

Let ABC be a triangle,  $AB = c$ ,  $BC = a$ ,  $AC = b$  then

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} = 2R \text{ where, } R \text{ is circum radius of } \Delta ABC.$$

$$\text{In - radius (r) of } \Delta ABC = \frac{\text{Area of } \Delta ABC}{\text{Semiperimeter of } \Delta ABC}$$

$$\sin(180^\circ - A) = \sin A$$



25. In a right angled isosceles triangle, the ratio  $\frac{R}{r} =$   
 (A)  $2(\sqrt{2} + 1) : 1$  (B)  $(\sqrt{2} + 1) : 1$   
 (C)  $2 : 1$  (D)  $\sqrt{2} : 1$

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**Space For Rough Work**

26. If the angles of a triangle are in the ratio 4 : 1 : 1 and length of largest side is 6 cm then its circum – radius R =
- (A)  $4\sqrt{3}$  cm (B)  $2\sqrt{3}$  cm  
(C)  $\sqrt{3}$  cm (D) 2 cm
27. ABC is an acute angled  $\Delta$  whose circum – radius is 4 unit. H is the orthocenter of  $\Delta$  then circum radius of HBC is
- (A) 1 (B) 2  
(C) 3 (D) 4
28. In a  $\Delta ABC$ , if  $r = 1$ ,  $R = 3$  and  $S = 5$  then  $\frac{a^2 + b^2 + c^2}{12} =$
- (A) 1 (B) 2  
(C) 3 (D) 8
29. In a  $\Delta ABC$ ,  $a = 5$ ,  $b = 4$ ,  $c = 3$ . G is the centroid of the triangle. Circum radius of  $\Delta GAB$  is
- (A)  $2\sqrt{13}$  (B)  $\frac{5}{12}\sqrt{13}$   
(C)  $\frac{5}{3}\sqrt{13}$  (D)  $\frac{3}{2}\sqrt{13}$



# FIITJEE Talent Reward Exam

## Class 10 PAPER-1 ANSWERS

1.	<b>B</b>	2.	<b>A</b>	3.	<b>C</b>	4.	<b>B</b>
5.	<b>B</b>	6.	<b>C</b>	7.	<b>B</b>	8.	<b>C</b>
9.	<b>D</b>	10.	<b>C</b>	11.	<b>A</b>	12.	<b>B</b>
13.	<b>B</b>	14.	<b>B</b>	15.	<b>B</b>	16.	<b>D</b>
17.	<b>C</b>	18.	<b>C</b>	19.	<b>C</b>	20.	<b>B</b>
21.	<b>C</b>	22.	<b>D</b>	23.	<b>C</b>	24.	<b>A</b>
25.	<b>B</b>	26.	<b>B</b>	27.	<b>D</b>	28.	<b>B</b>
29.	<b>B</b>						