

# STaRT-2012

## SAMPLE TEST PAPER

### CLASS-X

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Time : 90 min.

Maximum Marks : 200

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#### GENERAL INSTRUCTIONS

1. The question paper contains 50 questions, 15 Questions from Mathematics (1-15), 10 questions from Physics (16-25), 5 questions from Chemistry (26-30), 5 questions from Biology (31-35), and 15 questions from Mental Ability (36-50).
2. The OMR sheet given in the examination hall is the Answer Sheet.
3. Blank papers, clip boards, log tables, slide rule, calculators, mobile or any other electronic gadgets in any form is not allowed.
4. Do not forget to mention your roll number neatly and clearly in the blank space provided in the answer sheet.
5. Each Question carries 4 marks. '1' mark will be deduct for each wrong answer. So attempt each question carefully.
6. No rough sheets will be provided by the invigilators. All the rough work is to be done in the blank space provided in the question paper.
7. In case of any dispute, the answer filled in the OMR sheet available with the institute shall be final.

Name : \_\_\_\_\_ Roll No. : \_\_\_\_\_

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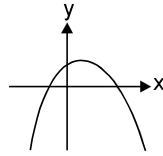
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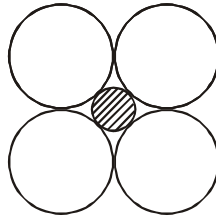
1. If  $\sin(A-B) = \frac{1}{2}$  and  $\cos(A+B) = \frac{1}{2}$  then  $\angle A =$   
(A)  $15^\circ$  (B)  $30^\circ$  (C)  $45^\circ$  (D)  $60^\circ$
2. The perimeter of certain sector of a circle is equal to the length of the arc of semicircle having the same radius. The angle of sector is -  
(A)  $\frac{360}{21}$  Degree (B)  $\frac{281}{11}$  Degree (C)  $\frac{720}{11}$  Degree (D) None of these
3. The mean of 5 numbers is 21. If one of the numbers is excluded then the mean of the remaining numbers is 22.5. The excluded number is :  
(A) 5 (B) 10 (C) 20 (D) 15
4. The interior angles of a polygon are in A.P. If the smallest angle be  $120^\circ$  and the common difference be 5, then the number of sides is :  
(A) 8 (B) 10 (C) 9 (D) 6
5. If the first, second and last terms of an A.P. be a, b, 2a respectively, then its sum will be  
(A)  $\frac{ab}{-a+b}$  (B)  $\frac{3ab}{2(b-a)}$  (C)  $\frac{ab}{2(b-a)}$  (D)  $\frac{3ab}{4(b-a)}$
6. If  $x = a \cos \theta + b \sin \theta$ ,  $y = a \sin \theta - b \cos \theta$ , which one of the following is true ?  
(A)  $x + y = a + b$  (B)  $x - y = a - b$  (C)  $x^2 + y^2 = a^2 + b^2$  (D)  $x^2 - y^2 = a^2 - b^2$
7. Water runs into a cylindrical tank, of diameter 4 m and height 5 m, through a pipe of radius 2 cm, at the rate of  $\frac{1}{10}$  m per second. Find the time taken by the tank to fill up.  
(A) 150 hr  
(B) 150 hr 50 min 50 sec  
(C) 138 hr 53 min 20 sec  
(D) 100 hr 50 min
8. The ratio of the ages of A and B ten years before was 3 : 5. The ratio of their present ages is 2 : 3. Their present ages are respectively :  
(A) 25, 35 (B) 40, 60 (C) 20, 30 (D) 16, 24

9. The graph of the quadratic polynomial ;  $y = ax^2 + bx + c$  is as shown in the figure. Then

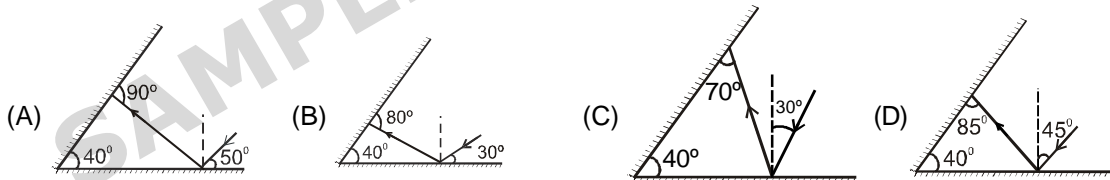


- (A)  $b^2 - 4ac < 0$       (B)  $c < 0$       (C)  $a < 0$       (D)  $b < 0$
10. If the three vertices of a parallelogram are  $(a + b, a - b)$ ,  $(2a + b, 2a - b)$  and  $(a - b, a + b)$ , then the fourth vertex is :
- (A)  $(-a, a)$       (B)  $(-a, -a)$       (C)  $(-b, -b)$       (D) None of these
11. If  $A(4, -8)$ ,  $B(3, 6)$  and  $C(5, -4)$  are the vertices of a  $\triangle ABC$ ,  $D$  is the mid-point of  $BC$  and  $P$  is point on  $AD$  joined such that  $\frac{AP}{PD} = 2$ , find the coordinates of  $P$ .
- (A)  $(6, -3)$       (B)  $(-4, -2)$       (C)  $(-6, -3)$       (D)  $(4, -2)$
12. The values of  $a$  &  $b$  so that the polynomial  $x^3 - ax^2 - 13x + b$  is divisible by  $(x - 1)$  &  $(x + 3)$  are :
- (A)  $a = 15, b = 3$       (B)  $a = 3, b = 15$       (C)  $a = -3, b = 15$       (D)  $a = 3, b = -15$
13.  $P$  and  $Q$  are the mid points of the sides  $AB$  and  $BC$  respectively of the triangle  $ABC$ , right-angled at  $B$ , then:
- (A)  $AQ^2 + CP^2 = AC^2$
- (B)  $AQ^2 + CP^2 = \frac{4}{5} AC^2$
- (C)  $AQ^2 + CP^2 = \frac{5}{4} AC^2$
- (D)  $AQ^2 + CP^2 = \frac{3}{5} AC^2$

14. In the adjoining figure, the radius of the inner circle, if other circles are of radii 1 m, is :



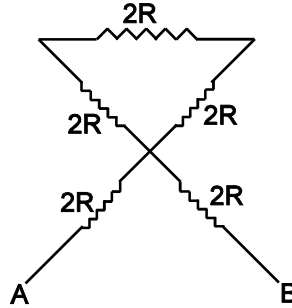
- (A)  $(\sqrt{2}-1)m$       (B)  $\sqrt{2} m$       (C)  $\frac{1}{\sqrt{2}} m$       (D)  $\frac{2}{\sqrt{2}} m$
15. A hemispherical bowl of internal diameter 36 cm is full of some liquid. This liquid is to be filled in cylindrical bottles of radius 3 cm and height 6 cm, then no. of bottles needed to empty the bowl.  
(A) 36      (B) 72      (C) 18      (D) 144
16. Monochromatic light is refracted from air into a medium of refractive index  $n$ . The ratio of wavelengths of the incident and refracted waves is :  
(A) 1 : 1      (B) 1 :  $n$       (C)  $n$  : 1      (D)  $n^2$  : 1
17. Which of the following correctly depicts reflections in case of plane mirrors inclined at  $40^\circ$  ?



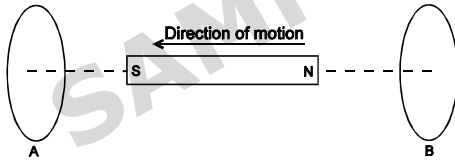
18. Near point of an eye, suffering from long-sightedness is :  
(A) 25 cm  
(B) Less than 25 cm  
(C) Greater than 25 cm  
(D) At infinity

Space For Rough Work

19. In the given circuit, the equivalent resistance between points A and B will be.



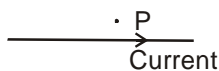
- (A)  $\frac{8}{3}R$                       (B)  $4R$                       (C)  $6R$                       (D)  $10R$
20. The specific resistance of wire 1.1 m long, 0.4 mm in diameter and having a total resistance of  $4.2\Omega$  will be:  
(A)  $4.97 \times 10^5 \Omega\text{m}$                       (B)  $48 \times 10^{-8} \Omega\text{m}$                       (C)  $48 \times 10^4 \Omega\text{m}$                       (D) none of these
21. If two bulbs, whose resistance are in the ratio of 1 : 2, are connected in series. The power dissipated in them has the ratio of :  
(A) 1 : 1                      (B) 1 : 2                      (C) 2 : 1                      (D) 1 : 4
22. A bar magnet is moved between two coaxial coils A and B, as shown in figure. The end planes of two coils facing the magnet due to induction will behave :



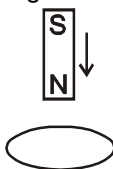
- (A) North pole in both the coils A and B  
(B) South pole in both the coils A and B  
(C) North pole in coil A and South pole in coil B  
(D) South pole in coil A and North pole in coil B
23. A wire of  $\ell$  length is placed in a magnetic field B, If the current in the wire is I, then maximum magnetic force on the wire is :  
(A)  $BI\ell$                       (B)  $\frac{B}{I\ell}$                       (C)  $\frac{I\ell}{B}$                       (D)  $\frac{I}{B\ell}$

Space For Rough Work

24. The direction of the magnetic field at a point P above the wire carrying current ( as shown in figure is) will be :



- (A) down the page      (B) up the page      (C) into the page      (D) out of the page
25. A magnet is dropped freely towards a loop of copper wire as shown in figure. The acceleration of magnet will be :



- (A) Equal to g      (B) Greater than g      (C) Less than g      (D) Zero
26. An element E has valency 4, the formula for its sulphide is  
(A)  $ES_4$       (B)  $E_2S_4$       (C)  $ES_3$       (D)  $E_2S$
27. Inert gases are  
(A) mono atomic      (B) diatomic      (C) triatomic      (D) polyatomic
28. In Newland's Octaves, properties of the first element is similar to those of the -  
(A) seventh element      (B) third element.  
(C) eighth element.      (D) one hundredth element.
29. Three elements that have completely filled outermost shells are -  
(A) Li, Na, K      (B) Cu, Ag, Au.      (C) He, Ne, Ar      (D) F, Cl, Br
30. The element having largest atomic size in second period is -  
(A) Lithium      (B) Nitrogen      (C) Oxygen      (D) Carbon
31. In which part of chloroplast light reaction of photosynthesis occurs ?  
(A) Grana      (B) Stroma      (C) Matrix      (D) all of the above
32. Which of the following statement is correct about bile ?  
(A) It is secreted by liver through bile duct  
(B) It is stored temporarily in gall bladder  
(C) It do not possess any digestive enzyme but emusifies the fat  
(D) All are correct



33. Which of the following enzyme is used for digestion of milk ?  
 (A) Rennin (B) Ptyalin (C) Trypsin (D) Pancreatin
34. Which statement is correct ?  
 (A) Arteries supply blood to tissues (B) Veins supply blood to tissues  
 (C) Arteries collect blood from tissues (D) None of the above
35. What are parthenocarpic fruits?  
 (A) Fruits enclosed in pods  
 (B) Fruits formed without fertilization  
 (C) Very hard fruits  
 (D) Fruits with more than one seed at their centre

**Direction : (36 to 41) Find the missing term(s) —**

36. 77, 78, 77, 81, 73, ?, 55  
 (A) 80 (B) 71 (C) 82 (D) 89

7	11	49
12	8	54
15	4	?

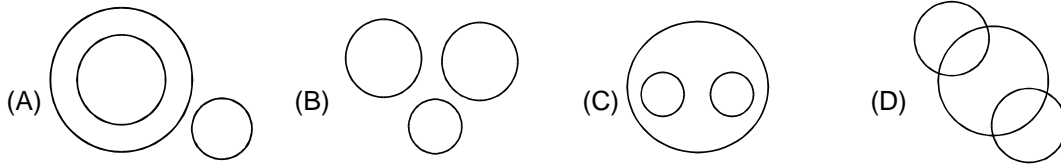
37. (A) 36 (B) 7 (C) 25 (D) 0
38. If **BARS = 10** and **BEERT = 10**, **DEEZ** will be ?  
 (A) 15 (B) 12 (C) 14 (D) 10
39. If  $4 * 2 @ 3 = 6$ ,  $18 * 6 @ 4 = 12$ , then what will be the value to  $24 * 3 @ 7$  ?  
 (A) 21 (B) 27 (C) 72 (D) 56
40. T is the son of P. S is the son of Q. T is married to R. R is Q's daughter. How is S related to T ?  
 (A) Brother (B) Uncle (C) Father-in-law (D) Brother-in-law
41. A man is facing South. He turns  $135^\circ$  in the anticlockwise direction and then  $180^\circ$  in the clockwise direction. which direction is he facing now ?  
 (A) North-East (B) North-West (C) South-East (D) South-West

**Directions : (42) Choose the odd one from the given four choices .:**

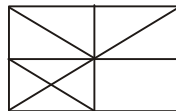
42. (A) 385 (B) 572 (C) 671 (D) 427

Space For Rough Work

43. Select the diagram that best represents the given relationship  
Snakes, Poisonous, Drugs



44. Kanta was born on Saturday 22nd March 1982. On what day of the week she was the 14 years 7 months and 8 days of age ?  
(A) Sunday (B) Tuesday (C) Wednesday (D) Monday
45. In a group of children, each child gives a gift to every other. If the number of gifts is 90, how many children are there ?  
(A) 10 (B) 11 (C) 8 (D) 9
46. If  $a = 10 \text{ (110) } 12$  and  $b = 15 \text{ (185) } 13$  then what will come in place of '?'.  
 $c = ? \text{ (158) } 14$   
(A) 15 (B) 20 (C) 12 (D) 8
47. Bittoo who is a male member is 11th in a queue which has 45 people. The number of gents in the queue is double the number of ladies. If 5 men are in front of Bittoo, how many ladies are behind him ?  
(A) 10 (B) 9 (C) 8 (D) 7
48. Find the 4 digit number ABCD such that  $ABCD \times 9 = DCBA$ .  
(A) 1089 (B) 9801 (C) Both A and B (D) None of these
49. In the following figure, the number of triangles are -  
(A) 8  
(B) 12  
(C) 15  
(D) 16



50. On the basis of two figures of dice, you have to tell what number will be on the opposite face of number 5?



(i)

(A) 6



(ii)

(B) 2

(C) 4

(D) None of these

## ANSWER

Ques.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	C	C	D	C	B	C	C	B	C	D	D	B	C	A	B
Ques.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	C	A	C	B	B	B	B	A	D	C	B	A	C	C	A
Ques.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	A	D	A	A	B	C	D	D	D	D	D	D	D	A	A
Ques.	46	47	48	49	50										
Ans.	C	A	A	D	C										