

# FIITJEE

## Maharashtra Science Talent Search Examination - 2023 (only for Maharashtra State Students) for students presently in Class X

### SAMPLE PAPER

Time: 180 minute (10:00 am - 01:00 pm)

Maximum Marks: 270

Please read the instructions carefully. Additional 30 minutes (09:30 am - 10:00 am) will be provided for Reading the Examination Instructions and filling up the information on the ORS Sheet.

#### INSTRUCTIONS

##### A: General :

1. Please immediately fill in the particulars on this page of the Test Booklet with Blue/Black Ball point pen.
2. Blank papers, clipboards, log tables, slide rules, calculators, cellular phones, pagers and electronic gadgets in any form are not allowed.
3. The answer sheet, a machine-gradable Objective Response Sheet (ORS) is provided separately.
4. Do not Tamper/mutilate the **ORS** or this booklet.
5. No additional sheets will be provided for rough work.
6. On completion of this test, the candidate must hand over the Answer Sheet to the Invigilator on duty in the Room/Hall. **However, the candidates are allowed to take away this Test Booklet with them.**

##### B: Questions paper format & Marking Schema:

1. The question paper consists of **FOUR Parts: PART I (IQ), II (Physic), III (Chemistry) & IV (Mathematics).**
2. **PART-I** contains **30** multiple choice single correct type questions. Each question has four choices (A), (B), (C) and (D) out of which one and only one is correct.
3. **PART-II, III & IV** each part contains **20** multiple choice single correct type question. Each question has four choices (A), (B), (C) and (D) out of which one and only one is correct.
4. **You are advised to devote 1 hour on PART-I and 2 hours on PART-II, III & IV.**
5. For each question, in all three **PARTs**, you will be awarded **3 marks** if you darken the bubble corresponding to the correct answer **ONLY** and **zero (0) marks** if no bubbles are darkened. In all other cases, **minus one (-1) mark** will be awarded.

Registration No. :

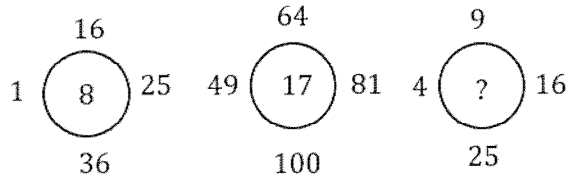
Name of Candidate : \_\_\_\_\_

Test Centre: \_\_\_\_\_

**PART - I****I.Q.**

This section contains **30 Multiple Choice Questions** number **1 to 30**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

1.



- (A) 6  
(C) 7

- (B) 8  
(D) 9

2. What will come at the place of '?'

B	E	H
D	G	J
G	J	?

- (A) N  
(C) K

- (B) M  
(D) L

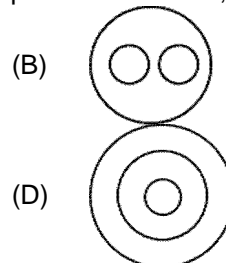
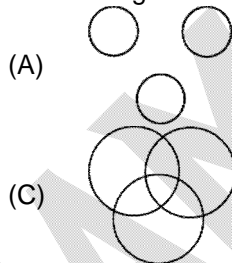
3. Complete the series

1, 9, 13, 21, 25, ?

- (A) 33  
(C) 29

- (B) 27  
(D) 30

4. Which diagram will represent the best relationship between Mobile, Laptop, Electronic device.

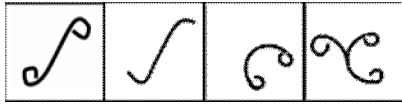
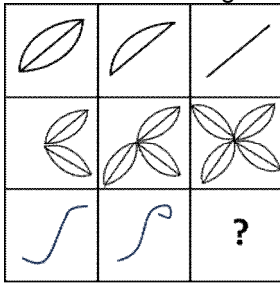



---

Space for Rough Work



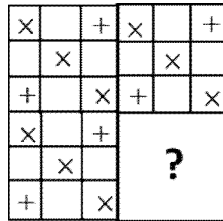
12. Select a suitable figure from the four alternatives that would complete the figure matrix.



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

Directions (Question 13 to 15): Which option figure will complete the figure (X).

13.

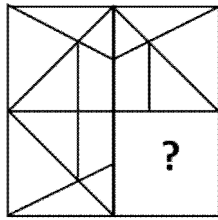


(X)

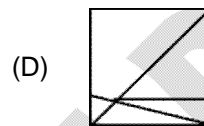
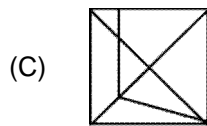
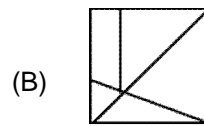
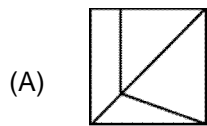
- |     |   |   |  |   |  |   |  |   |  |   |     |   |   |  |   |  |   |  |   |  |   |
|-----|---|---|--|---|--|---|--|---|--|---|-----|---|---|--|---|--|---|--|---|--|---|
| (A) | <table border="1"> <tr> <td>+</td> <td></td> <td>x</td> </tr> <tr> <td></td> <td>+</td> <td></td> </tr> <tr> <td>x</td> <td></td> <td>+</td> </tr> </table> | + |  | x |  | + |  | x |  | + | (B) | <table border="1"> <tr> <td>x</td> <td></td> <td>+</td> </tr> <tr> <td></td> <td>x</td> <td></td> </tr> <tr> <td>+</td> <td></td> <td>x</td> </tr> </table> | x |  | + |  | x |  | + |  | x |
| +   |   | x |  |   |  |   |  |   |  |   |     |   |   |  |   |  |   |  |   |  |   |
|     | +   |   |  |   |  |   |  |   |  |   |     |   |   |  |   |  |   |  |   |  |   |
| x   |   | + |  |   |  |   |  |   |  |   |     |   |   |  |   |  |   |  |   |  |   |
| x   |   | + |  |   |  |   |  |   |  |   |     |   |   |  |   |  |   |  |   |  |   |
|     | x   |   |  |   |  |   |  |   |  |   |     |   |   |  |   |  |   |  |   |  |   |
| +   |   | x |  |   |  |   |  |   |  |   |     |   |   |  |   |  |   |  |   |  |   |
| (C) | <table border="1"> <tr> <td>+</td> <td></td> <td>x</td> </tr> <tr> <td></td> <td>x</td> <td></td> </tr> <tr> <td>x</td> <td></td> <td>+</td> </tr> </table> | + |  | x |  | x |  | x |  | + | (D) | <table border="1"> <tr> <td>x</td> <td></td> <td>+</td> </tr> <tr> <td></td> <td>+</td> <td></td> </tr> <tr> <td>+</td> <td></td> <td>x</td> </tr> </table> | x |  | + |  | + |  | + |  | x |
| +   |   | x |  |   |  |   |  |   |  |   |     |   |   |  |   |  |   |  |   |  |   |
|     | x   |   |  |   |  |   |  |   |  |   |     |   |   |  |   |  |   |  |   |  |   |
| x   |   | + |  |   |  |   |  |   |  |   |     |   |   |  |   |  |   |  |   |  |   |
| x   |   | + |  |   |  |   |  |   |  |   |     |   |   |  |   |  |   |  |   |  |   |
|     | +   |   |  |   |  |   |  |   |  |   |     |   |   |  |   |  |   |  |   |  |   |
| +   |   | x |  |   |  |   |  |   |  |   |     |   |   |  |   |  |   |  |   |  |   |

Space for Rough Work

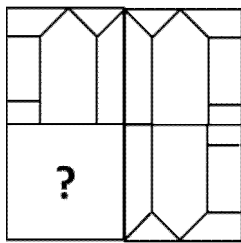
14.



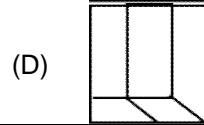
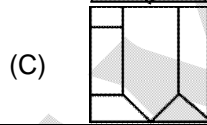
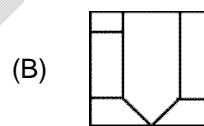
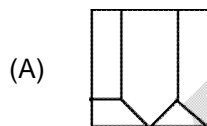
(X)



15.



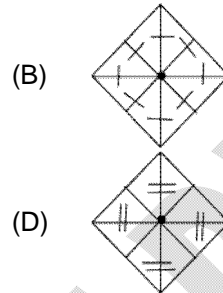
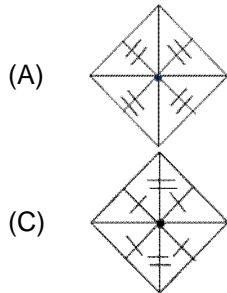
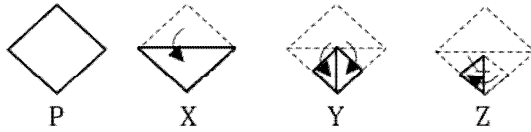
(X)



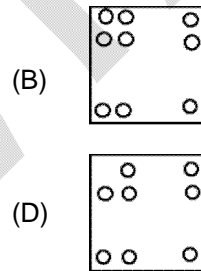
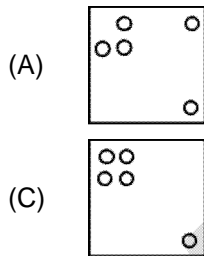
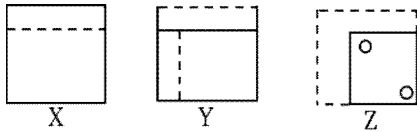
Space for Rough Work

**Directions (Question No. 16 & 17):** Choose the figure which would most closely resemble the unfolded form of figure (Z).

16.



17.



**Direction (Q. No. 18)** In the following questions, you are given a combination of alphabets followed by four alternatives **A**, **B**, **C** and **D**. Choose the alternative which most closely resembles the mirror image of the given combination.

18.

R I S E

(A) R I E S  
(C) E S I R

(B) E S I R  
(D) R I S E

Space for Rough Work

**Directions (Question No. 19 to 23):** Study the following information carefully and answer the question given below:

**A B C D E F G** are sitting around circular table facing centre. **B** is second to the right of **C**, who is third to the right of **D**. **F** is third to the right of **G**, who is not an immediate neighbour of **B**. **A** is third to the left of **E**.

19. Who is second to the right of **F**?
- (A) **A** (B) **C**  
(C) **B** (D) **E**
20. In which of the following pairs is the second person sitting to the immediate right of the first person?
- (A) **CE** (B) **GB**  
(C) **BA** (D) **AC**
21. Who is on the immediate right of **E**?
- (A) **D** (B) **F**  
(C) **E** (D) **C**
22. Who is third to the left of the person who is 2<sup>nd</sup> to the right of **B**?
- (A) **C** (B) **F**  
(C) **E** (D) **A**
23. Who is sitting between **D** and **E**?
- (A) **C** (B) **F**  
(C) **B** (D) **G**

**Directions (Question No. 24 to 27):** **P, Q, R, S, T, U, W** are seven friends studying seven different branches of Engineering namely Mechanical, Electrical, Chemical, Civil, Electronics, Aeronautical and Computer, not necessary in the same order. Each of them studies in three different **IIT's**, Mumbai, Delhi, Madras. Not less than two study in any IIT's **S** studies Electrical in IIT Mumbai. The one who studies Chemical does not study in IIT Madras. **U** studies Aeronautical in IIT Delhi with only **Q**. **P** does not study in IIT Mumbai and does not study Civil. **T** studies computer and is not opted IIT Mumbai. **W** studies Electronics but not from IIT Mumbai. None in IIT Mumbai studies Mechanical or Civil.

24. Who studies in IIT Madras?
- (A) **P, R and W** (B) **P, Q**  
(C) **P, T and W** (D) **S, R & T**

---

**Space for Rough Work**

25. In which of the following IIT does **R** study?  
(A) Mumbai (B) Delhi  
(C) Madras (D) Mumbai or Madras
26. Who studies mechanical?  
(A) **Q** (B) **R**  
(C) **P** (D) **S**
27. Which combination is correct from the following option?  
(A) **P** – IIT Mumbai – Chemical (B) **R** – IIT Madras – Mechanical  
(C) **S** – IIT Delhi – Computer (D) **Q** – IIT Delhi – Civil

**Directions (Question No. 28 to 30)** Vedant, Vihaan, Ved, Vinod, Vimla, Varad. **6** person plans to go to a trip, they have Goa, Kerala, Chandigarh, Udaipur, Shimla, Ladakh, as their options. **1** person chooses only **1** place. Vedant only wants to go places from north India. Vinod is going to Chandigarh, Ved prefer beaches for his holiday. Vihaan likes lakes so he goes to Udaipur. Ved does not go to south India. Vimal does not go to Shimla or Ladakh. Varad do not go to Ladakh.

28. Who prefer Goa?  
(A) Vihaan (B) Varad  
(C) Vimal (D) Ved
29. Where does Vimal go?  
(A) Kerala (B) Shimla  
(C) Chandigarh (D) Goa
30. Which of the following is correct combination?  
(A) Vimal – Goa (B) Vedant – Ladakh  
(C) Vinod – Kerala (D) Varad – Udaipur

---

*Space for Rough Work*



# PART - II

## PHYSICS

This section contains **20 Multiple Choice Questions** number **31 to 50**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

31. What is **CGS** unit of force?  
(A) Joule (B) Newton  
(C) Watt (D) Dyne
32. Which of the following is an example of contact force?  
(A) Electric force (B) Gravitational force  
(C) Frictional force (D) Magnetic force
33. What type of friction occurs when an object is not moving?  
(A) Static friction (B) Kinetic friction  
(C) Rolling friction (D) Fluid friction
34. Which force is responsible for holding the planets in their orbits around the sun?  
(A) Electromagnetic force (B) Centrifugal force  
(C) Magnetic force (D) Gravitational force
35. Which of the following is not a good conductor?  
(A) Graphite carbon (B) Silicone  
(C) Lead (D) Tin
36. Which law describes the relation between current, voltage and resistance?  
(A) Ohm's law (B) Faraday's law  
(C) Coulomb's law (D) Gauss's law
37. Every particle is charged particle in the combination of  
(A) Electron, proton, neutron (B) Electron, proton, photon  
(C) Proton, photon, neutrino (D) Proton, alpha particle, beta particle

---

**Space for Rough Work**

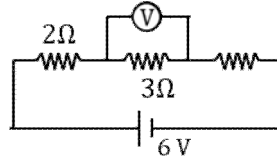
38. Two bulb  $A$  and  $B$  having rating as:

$$A \rightarrow 6V, 2W$$

$$B \rightarrow 6V, 1W$$

If they are connected in series with a cell of  $6V$  then,

- (A)  $A$  is brighter than  $B$  (B)  $B$  is brighter than  $A$   
 (C) Both are of same brightness (D) Resistance of  $A$  is higher than  $B$
39. If  $1A$  current is passing through  $2\Omega$  resistance, then reading of ideal voltmeter is

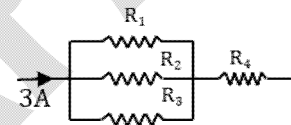


- (A)  $2V$  (B)  $3V$   
 (C)  $1V$  (D)  $6V$

40. In the circuit, current through  $R_4$  will be, if

$$R_1 = R_2 = 2R_3 = R_4 = 2\Omega.$$

- (A)  $1A$   
 (B)  $2A$   
 (C)  $3A$   
 (D) insufficient data

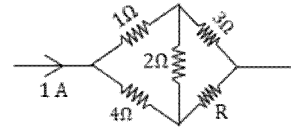


41. Two electrons, kept at separation of  $r$ , pushing each other with force  $F$ . If the separation is changed to new separation of  $3r$ . The new force will be
- (A)  $3F$  repulsive (B)  $3F$  attractive  
 (C)  $\frac{F}{9}$  attractive (D)  $\frac{F}{9}$  repulsive

---

*Space for Rough Work*

42. If no current is observed from  $2\Omega$  resistance, then  $R =$
- (A)  $6\ \Omega$   
 (B)  $12\ \Omega$   
 (C)  $18\ \Omega$   
 (D) Any value of  $R$



43. Possible acceleration for uniform motion is
- (A)  $1\ \text{ms}^{-2}$  (B)  $2\ \text{ms}^{-2}$   
 (C) Both  $1\ \text{ms}^{-2}$  and  $2\ \text{ms}^{-2}$  (D) None of these
44. A stone is thrown vertically upward and it came back to same level after 6 second. The distance travelled during first second of projection is
- (A) 5 m (B) 15 m  
 (C) 25 m (D) 35 m
45. An object moved two round in 4 second around a circular track, of perimeter 4 m, under uniform circular motion. Its average velocity is
- (A)  $0\ \text{ms}^{-1}$  (B)  $2\ \text{ms}^{-1}$   
 (C)  $1\ \text{ms}^{-1}$  (D)  $4\ \text{ms}^{-1}$
46. An object momentum is observed to be conserved, then
- (A) It has constant non-zero acceleration  
 (B) It is in uniform motion possibly  
 (C) It is in uniform circular motion  
 (D) It may be in uniform circular motion

---

*Space for Rough Work*

47. It is system is accelerated rightward on a frictionless ground then  $T$  will be

(A)  $\frac{F}{2}$   
(C)  $\frac{F}{4}$

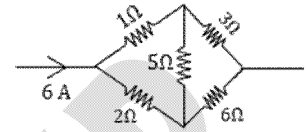
(B)  $F$   
(D)  $\frac{F}{3}$



48. The current from  $1\ \Omega$  resistance will be

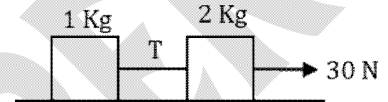
(A)  $1\ A$   
(C)  $3\ A$

(B)  $2\ A$   
(D)  $4\ A$



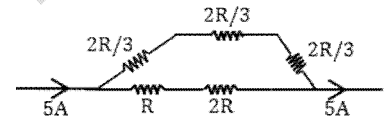
49. If one kg block experience a friction of  $5\ N$  and  $2\ Kg$  block get a friction from ground of  $4\ N$ . Then, tension  $T$  in the string will be, pulling force =  $30\ N$ .

(A)  $7\ N$   
(B)  $11\ N$   
(C)  $12\ N$   
(D)  $14\ N$



50. If  $R = 2\ \Omega$ , then potential difference across  $2R$  resistance will be

(A)  $4\ V$   
(B)  $5\ V$   
(C)  $8\ V$   
(D)  $10\ V$



Space for Rough Work

# PART - III

## CHEMISTRY

This section contains **20 Multiple Choice Questions** number **51 to 70**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

51. Find out the products of **C** and **D** respectively in the following reaction
- $$\text{CaCO}_3 \xrightarrow{\Delta} \text{(A)}_{(s)} + \text{B}_{(g)} \xrightarrow{+\text{Ca(OH)}_2} \text{C}_{(s)} \xrightarrow{+\text{CO}_2 + \text{H}_2\text{O}} \text{D (solution)}$$
- (A)  $\text{CaO}$ ,  $\text{CaCO}_3$  (B)  $\text{Ca(HCO}_3)_2$ ,  $\text{CaCO}_3$   
 (C)  $\text{CaCO}_3$ ,  $\text{Ca(HCO}_3)_2$  (D)  $\text{CaCO}_3$ ,  $\text{CaO}$
52. What are the major components present in **LPG**?
- (A)  $\text{CH}_4$  ,  $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-CH}_3$   
 (B)  $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-CH}_3$  ,  $\text{CH}_3\text{-CH(CH}_3\text{)-CH}_3$   
 (C)  $\text{CH}_3\text{-CH=CH}_2$  ,  $\text{CH}_3\text{-CH=CH-CH}_2\text{-CH}_2\text{-CH}_3$   
 (D)  $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-CH}_3$  ,  $\text{CH}_3\text{-CH(CH}_3\text{)-CH}_2\text{-CH}_2\text{-CH}_3$
53. Coal burns in presence of oxygen and product '**X**' form.  
**Product(X) + moist Blue Litmus Paper** → **Colour Paper + Product**. Final product & colour of litmus paper?
- (A)  $\text{CO}_2$ , Blue (B)  $\text{H}_2\text{CO}_3$ , Red  
 (C)  $\text{CO}_2$ , Red (D)  $\text{H}_2\text{CO}_3$ , blue
54. Which of the following is correct?
- (A) **Cu** present in Myoglobin (B) **Fe** present in Hemocyanin  
 (C) **Mg** present in Heamoglobin (D) **Co** present in Vitamin **B<sub>12</sub>**
55. The boiling points of **3** substances **P**, **Q**, **R** are **300°C**, **110°C** and **150°C**. If this mixture is fractionally distilled in which order would you get these substances.
- (A)  $P > Q > R$  (B)  $Q > R > P$   
 (C)  $R > P > Q$  (D)  $P > R > P$

Space for Rough Work

56.  $Fe_2O_3 + 2Al \rightarrow Al_2O_3 + 2Fe$  reaction is an example of a  
(A) Combination reaction (B) double displacement reaction  
(C) Decomposition reaction (D) displacement reaction
57. A shiny brown coloured element  $X$  on heating in air becomes black in colour, name the element ' $X$ ' and compound formed.  
(A)  $Na$  ,  $Na_3N$  (B)  $Cu$  ,  $CuO$   
(C)  $Fe$  ,  $Fe_2O_3$  (D) All of these
58. A solution reacts with crushed egg shell to give a gas that turns lime-water milky. The solution contains  
(A)  $NaCl$  (B)  $HCl$   
(C)  $LiCl$  (D)  $KCl$
59. Which of the following methods is suitable for preventing an iron frying pan from rusting?  
(A) Applying grease (B) Applying paint  
(C) Applying a coating of zinc (D) All of these
60. Which among the following is weak acid and weak base respectively?  
(A)  $HCOOH$  and  $NH_4OH$  (B)  $HCl$  and  $NaOH$   
(C)  $CH_3COOH$  and  $KOH$  (D)  $HClO_4$  and  $CaOH$
61. A solution turns methyl orange red. It can turn the universal indicator to  
(A) Violet (B) Blue  
(C) Red (D) Green
62. Which of the following is not a micronutrient?  
(A) Potassium (B) Phosphorous  
(C) Nitrogen (D) Boron

---

Space for Rough Work

63. In the reaction  $H_2PO_4^- + H_2O(l) \rightarrow H_3O^+ + HPO_4^{2-}$  the monohydrogen phosphate ion is a  
(A) Lewis Base (B) Arrhenius Base  
(C) Conjugate Acid (D) Conjugate Base
64. When substance changes state then its temperature?  
(A) Increases (B) Decreases  
(C) Remain constant (D) Increases then Decreases
65. When water is solidifies to Ice then heat is \_\_\_\_\_  
(A) Evolved (B) Absorbed  
(C) No change (D) Both (A) & (B)
66. The chemical which can be used to separate a mixture of carbon powder and Sulphur powder successfully is \_\_\_\_\_  
(A) Carbon dioxide (B) Hydrochloric Acid  
(C) Hydrogen sulphide (D) Carbon disulphide
67. Aqua regia is a mixture of concentrated  
(A)  $HCl$  and  $H_2SO_4$  (B)  $HNO_3$  and  $H_2SO_4$   
(C)  $HCl$  and  $HNO_3$  (D)  $HNO_3$  and  $CH_3COOOH$
68. Which of the following components is present in major proportions in *LPG* and why?  
(A) Methane because it is easily liquefiable.  
(B) n-Butane because it is easily liquefiable.  
(C) Iso octane because it reduces knocking property  
(D) n-hexane because it has high calorific value
69. The formula of compound formed by element  $X [Z = 5]$  & sulphur ( $Z = 16$ ) is:  
 $Z$  : Atomic number  
(A)  $XS$  (B)  $X_2S_3$   
(C)  $X_3S$  (D)  $XS_2$
70. Two metals which are found in nature in free state \_\_\_\_\_.  
(A)  $Fe, Cu$  (B)  $Na, Mg$   
(C)  $Au, Pt$  (D) All of these

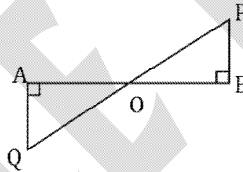
---

Space for Rough Work

**PART - IV****MATHEMATICS**

This section contains **20 Multiple Choice Questions** number **71 to 90**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

71. Irrational number lying between **0.0112345** ..... and **0.011642076** ..... is  
 (A) **0.0115364**..... (B) **0.0153216**.....  
 (C) **0.121438**..... (D) **0.119846**.....
72. Which of the following is a surd?  
 (A)  $\sqrt[3]{\pi}$  (B)  $\sqrt[3]{625}$   
 (C)  $\sqrt[3]{-512}$  (D)  $\sqrt[3]{7}$
73. If  $x + \frac{1}{x} = 3$ , then find the value of  $x^2 + \frac{1}{x^2}$ .  
 (A) **6** (B) **7**  
 (C) **9** (D) **11**
74. In the figure, **QA** and **PB** are perpendicular to **AB**. If **AO = 10 cm**, **BO = 6 cm** and **PB = 9 cm**, then **AQ** is



- (A) **15** (B)  $\frac{20}{3}$   
 (C) **30** (D) None of these
75. Find the simplest rationalizing factor of  $\sqrt{48}$ ?  
 (A)  $\sqrt{24}$  (B)  $\sqrt{12}$   
 (C)  $\sqrt{3}$  (D) None of these

---

Space for Rough Work



76. If  $\triangle ABC$  is similar to  $\triangle PQR$  and also  $ar(\triangle ABC)$  is  $32 \text{ cm}^2$ , area of  $(\triangle PQR)$  is  $50 \text{ cm}^2$ . If length of  $AB$  is  $6 \text{ cm}$ , then find length of  $PQ$ .

- (A)  $\frac{15}{2}$  cm (B)  $\frac{15}{3}$  cm  
(C)  $\frac{15}{4}$  cm (D)  $\frac{15}{5}$  cm

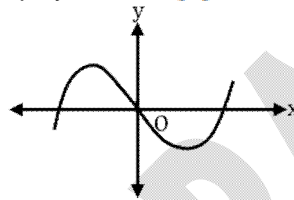
77. Find the remainder when  $f(x) = x^3 - 6x^2 + 2x - 4$  is divided by  $x - 1$ .

- (A) 6 (B) 7  
(C) -6 (D) -7

78. If  $(x - 2)$  is a factor of  $(x - 1)^5 - (2x + 3k)^2$ , then the value of  $k$  is

- (A) 1 (B) -1  
(C) 2 (D) -2

79. Find the number of zeroes of the polynomial  $P(x)$ , whose graph is given below.



- (A) 2 (B) 3  
(C) 4 (D) Cannot be determined.

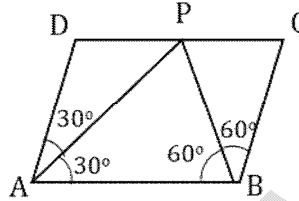
80. The HCF of two numbers is 145 and their LCM is 2175. If one number is 725, then the other number is

- (A) 415 (B) 425  
(C) 435 (D) 445

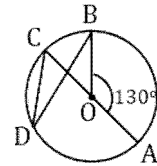
---

*Space for Rough Work*

81. What is the square root of  $9 + 2\sqrt{14}$ ?  
 (A)  $1 + 2\sqrt{2}$  (B)  $\sqrt{3} + \sqrt{6}$   
 (C)  $\sqrt{2} + \sqrt{7}$  (D)  $\sqrt{2} + \sqrt{5}$
82. Which of the following is a quadratic polynomial in one variable?  
 (A)  $\sqrt{2}x^3 + 5$  (B)  $2x^2 + 2x^{-2}$   
 (C)  $x^2$  (D)  $2x^2 + y^2$
83. In figure  $ABCD$  is a parallelogram and  $\angle DAB = 60^\circ$ . If the bisectors  $AP$  and  $BP$  of angles  $A$  &  $B$  respectively, meet at  $P$  on  $CD$ , then



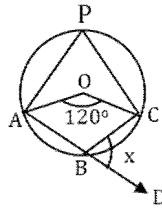
- (A)  $DP = \frac{1}{3}PC$  (B)  $PC = \frac{1}{3}DC$   
 (C)  $DP = \frac{1}{3}AB$  (D)  $DP = \frac{1}{2}AB$
84. Find the length of a chord which is at a distance of  $5\text{ cm}$  from the centre of a circle of radius  $13\text{ cm}$ .  
 (A)  $20\text{ cm}$  (B)  $22\text{ cm}$   
 (C)  $24\text{ cm}$  (D) None of these
85. In figure,  $AC$  is a diameter of the circle with centre  $O$ . If  $\angle AOB = 130^\circ$ , then  $\angle BDC =$   
 (A)  $25^\circ$  (B)  $65^\circ$   
 (C)  $260^\circ$  (D) None of these




---

Space for Rough Work

86. From the figure, the value of  $x$  is



- (A)  $60^\circ$  (B)  $70^\circ$   
 (C)  $90^\circ$  (D)  $120^\circ$
87. The number of solution of the equation  $\sqrt{6-4x-x^2} = x+4$  is:  
 (A) 0 (B) 1  
 (C) 2 (D) 4
88. If the difference of two numbers is 5 and difference of their squares is 300, then sum of the numbers is  
 (A) 1500 (B) 6  
 (C) 12 (D) 60
89.  $\sqrt{m^4n^4} \times \sqrt[3]{m^2 \cdot n^2} \times \sqrt[5]{m^2n^2} = (mn)^k$ , then find the value of  $k$ .  
 (A) 6 (B) 3  
 (C) 2 (D) 1
90. A bus takes 5 hours more than a train to cover the distance of 900 km from Vardha to Pune. If speed of the train is  $15 \text{ km hr}^{-1}$  more than that of the bus, then what is the speed of bus per hour?  
 (A) 60 km (B) 75 km  
 (C) 55 km (D) 45 km

---

*Space for Rough Work*

# FIITJEE

**Maharashtra Science Talent Search Examination - 2023**  
 (only for Maharashtra State Students)  
 for students presently in **Class X**

## SAMPLE PAPER

### ANSWER KEYS (SAMPLE PAPER)

1	C	2	B	3	A	4	B
5	C	6	B	7	B	8	D
9	A	10	C	11	A	12	A
13	B	14	B	15	B	16	B
17	C	18	D	19	A	20	C
21	D	22	B	23	D	24	C
25	A	26	C	27	D	28	D
29	A	30	B	31	D	32	C
33	A	34	D	35	B	36	A
37	D	38	B	39	B	40	C
41	D	42	B	43	D	44	C
45	A	46	B	47	D	48	D
49	C	50	C	51	C	52	B
53	B	54	D	55	B	56	D
57	B	58	B	59	C	60	A
61	C	62	D	63	D	64	C
65	A	66	D	67	C	68	B
69	B	70	C	71	A	72	D
73	B	74	A	75	C	76	B
77	D	78	B	79	B	80	C
81	C	82	C	83	D	84	C
85	A	86	A	87	B	88	D
89	B	90	D				