

## Diagnostic cum Scholarship Tests

### SAMPLE PAPER

### For Students of Class VIII

## Paper 2 - NTSE Science & Mathematics

Duration : 80 minutes

Paper Code: 78-2

Maximum Marks : 60

Please read the instructions and guidelines carefully :

**Important Note** : Please ensure to accurately input the details for the Question Paper Code as indicated at the top of this sheet (Side 2) into the corresponding columns / fields on the OMR sheet before proceeding with the paper. Incorrectly filled information regarding the class or paper may result in inaccurate outcomes or results.

*"This paper has been scientifically designed to evaluate your potential – manifested and hidden for the target examinations mentioned in various sections of the paper. Thus, your adherence to the instructions is critical in the evaluation of the same"*

1. This Question paper consists of 2 sections.
2. Student should devote allotted time for each section. If a section is easy, then it is easy for everyone & was meant to be like that with a goal in mind. Do not switch over to another section if you find the section to be easy. If a section is tough, then it is tough for everyone. Please note that each section has been allocated a time limit of 40 minutes. Dedicating the full 40 minutes to finish each section successfully is essential. Opening the next section before completing the allotted time for the preceding section is not permitted. This adherence is crucial for assessing your true potential, as each section is meticulously crafted to evaluate your potential for the corresponding competitive examinations.
3. Candidate should open the seal of Section-II only after completing 40 minutes of Section-I.
4. Sheets will be given to each candidate for rough work. Candidate must fill all details on the rough sheet and submit the same to invigilator along with OMR sheet. Candidate must mention the Question No. while doing the rough work in the sheet.
5. Please note candidates are not allowed to bring any prohibited items into the exam hall such as electronic devices, mobile phones, smart watch, earphones, calculators, books, notes, formula sheets, and bags.
6. Marking scheme is given in table below:

Section	Subject	Question no.	Marking Scheme for each question	
			Correct answer	Wrong answer
SECTION – I (NTSE-Science) Time Allotted: 40 Minutes	PHYSICS (Part-A)	1 to 10	+1	0
	CHEMISTRY (Part-B)	11 to 20	+1	0
	BIOLOGY (Part-C)	21 to 30	+1	0
SECTION – II (NTSE-Mathematics) Time Allotted: 40 Minutes	MATHEMATICS (Part-A)	31 to 60	+1	0

# Section - I

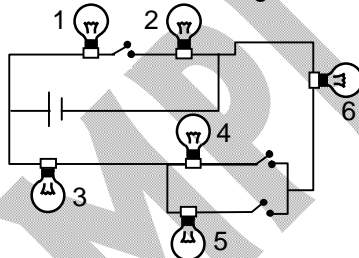
Time: 40 Minutes

## PHYSICS (PART-A)

This part contains 10 Multiple Choice Questions number 1 to 10. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

- In liquids, heat transfer takes place mainly due to  
(A) radiation (B) conduction  
(C) convection (D) all of these
- SI unit of electric current is  
(A) Watt (B) Joule  
(C) Volt (D) Ampere
- The winds from oceans carry water and bring rain. These winds are called  
(A) typhoon (B) monsoon  
(C) cyclone (D) none of these
- A bar magnet when suspended freely always points in the  
(A) East-West direction (B) North-South direction  
(C) Vertically upwards (D) Vertically downwards

5. In the electric circuit shown figure.



- (A) all the bulbs will glow (B) only bulbs 4, 5 and 6 will glow  
(C) only bulbs 3 will glow (D) none of the bulbs will glow
- $90^{\circ}\text{C}$  is equivalent to \_\_\_\_\_  $^{\circ}\text{F}$ .  
(A)  $80^{\circ}\text{F}$  (B)  $40^{\circ}\text{F}$   
(C)  $164^{\circ}\text{F}$  (D)  $194^{\circ}\text{F}$
  - Following are precautions one must take in case a storm is accompanied by lightning.  
(i) Do not take shelter under a tree.  
(ii) Do not take shelter under an umbrella with a metallic end.  
(iii) Do not take shelter in open garages, storage sheds, etc.  
(iv) Do not take shelter in a bus in the open.  
Which one of these is not correct?  
(A) (i) (B) (ii)  
(C) (iii) (D) (iv)

8. 200° C is equivalent to \_\_\_\_\_ ° F.  
 (A) 80° F (B) 40° F  
 (C) 164° F (D) 392° F
9. If an incident ray passes through the centre of curvature of a spherical mirror, the reflected ray will  
 (A) Pass through the pole (B) Pass through the focus  
 (C) Retrace its path (D) Be parallel to the principal axis
10. The focal length of a spherical mirror is equal to  
 (A)  $\frac{u+v}{uv}$  (B)  $\frac{1}{v} + \frac{1}{u}$   
 (C)  $\frac{uv}{u+v}$  (D)  $u+v$

## CHEMISTRY (PART-B)

*This part contains 10 Multiple Choice Questions number 11 to 20. Each question has 4 choices (A), (B), (C) and (D), out of which ONLY ONE is correct.*

11. Physical changes are generally:  
 (A) permanent (B) periodic  
 (C) temporary (D) irreversible
12. Which of the following involves the cultivation of mulberry leaves and rearing of silkworms for the production of silk?  
 (A) Apiculture (B) Silviculture  
 (C) Floriculture (D) Sericulture
13. Reeva took a little amount of soil from her garden and mixed it with water. When she dipped blue litmus paper in it, the litmus paper turned red. On addition of which of the following to her garden will she get better plant growth?  
 (A) Sulphuric acid (B) Slaked lime  
 (C) Water (D) Sugar
14. China rose is which type of indicator?  
 (A) Olfactory indicator (B) Synthetic indicator  
 (C) Natural indicator (D) None of these
15. What is the process of washing sheared skin along with hair, to remove dust, called?  
 (A) Sorting (B) Rearing  
 (C) Scouring (D) Knitting
16. The chemical formula of rust is?  
 (A)  $\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$  (B)  $\text{Fe} \cdot x\text{H}_2\text{O}$   
 (C)  $\text{FeO} \cdot x\text{H}_2\text{O}$  (D)  $\text{FeSO}_4 \cdot x\text{H}_2\text{O}$
17. Availability of water and minerals in the soil for maximum absorption by roots is in the  
 (A) B-horizon (B) C-horizon  
 (C) A-horizon (D) Surface of soil

18. In which of the following ways are the layers of soil arranged in the soil profile?  
(A) Horizontally (B) Vertically  
(C) Diagonally (D) Conically
19. Maximum density of water is at the temperature  
(A) 4°C (B) 0°C  
(C) 10°C (D) 100°C
20. Arrange the following terms in sequence from source to supply:  
(p) Chlorination (q) Sedimentation (r) Filtration  
(s) Storage water tank (t) Lakes  
(A) tqrps (B) trqps  
(C) trqsp (D) tspqr

## **BIOLOGY (PART-C)**

*This part contains 10 Multiple Choice Questions number 21 to 30. Each question has 4 choices (A), (B), (C) and (D), out of which ONLY ONE is correct.*

21. Parasites obtain their food from  
(A) Insects (B) Plants  
(C) Animals (D) All of these
22. The false feet of Amoeba are used for:  
(A) Movement only (B) Engulfing food only  
(C) Engulfing food and movement (D) Exchange of gases only
23. The green pigment that is present in the leaves is called  
(A) Haemoglobin (B) Globulin  
(C) Albumin (D) Chlorophyll
24. Gastric digestion takes place efficiently in  
(A) acidic medium (B) alkaline medium  
(C) neutral medium (D) highly alkaline medium
25. Which is not digested by human?  
(A) Protein (B) Fats  
(C) Glucose (D) Cellulose
26. Read carefully the terms given below. Which of the following set is the correct combination of organs that do not carry out any digestive functions?  
(A) Oesophagus, Large Intestine, Rectum (B) Buccal Cavity, Oesophagus, Rectum  
(C) Buccal Cavity, Oesophagus, Large Intestine (D) Small Intestine, Large Intestine, Rectum
27. Which gas is given out during exhalation?  
(A) Oxygen (B) Nitrogen  
(C) Carbon dioxide (D) All of these
28. Name the term which means 'taking in of air rich in oxygen into the body'.  
(A) Exhalation (B) Inhalation  
(C) Breathing (D) Respiration

29. Red coloured respiratory pigment present on surface of RBCs is called?  
 (A) leghaemoglobin (B) Myoglobin  
 (C) Haemoglobin (D) None of these
30. Secondary treatment in waste water treatment plant is.  
 (A) Physical (B) Chemical  
 (C) Biological (D) UV treatment

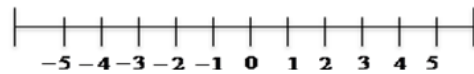
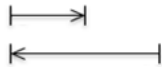
## Section – II

Time: 40 Minutes

## MATHEMATICS – (PART – A)

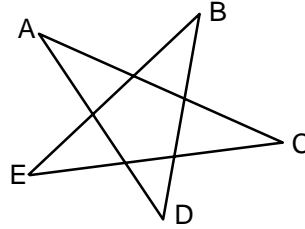
This part contains 30 Multiple Choice Questions number 31 to 60. Each question has 4 choices (A), (B), (C) and (D), out of which ONLY ONE is correct.

31. Which number sentence below models the problem shown on the number line?



- (A)  $-2 + (-4)$  (B)  $-5 + 3$   
 (C)  $5 + (-3)$  (D)  $-4 + 2$
32. Find  $P - Q$ ,  $P = 26 \div (13 \div 4)$ ,  $Q = (26 \div 13) \div 4$   
 (A) 0 (B) 6  
 (C) 7.5 (D) 8
33. If an angle is  $30^\circ$  more than one half of its complement, then the angle is  
 (A)  $40^\circ$  (B)  $50^\circ$   
 (C)  $60^\circ$  (D)  $70^\circ$
34. Mean of  $x$  and  $\frac{1}{x}$  is  $k$ , then find the mean of  $x^2$  and  $\frac{1}{x^2}$ .  
 (A)  $k^2 - 1$  (B)  $2k^2 - 2$   
 (C)  $k^2 - 2$  (D)  $2k^2 - 1$
35. If all the altitudes of a triangle are equal, then the triangle is  
 (A) Scalene (B) Isosceles  
 (C) Right angled (D) Equilateral
36. The approximate value of  $\angle A$  in  $\triangle ABC$ , if  $8\angle A = 9\angle B = 4\angle C$  is  
 (A)  $46^\circ$  (B)  $47^\circ$   
 (C)  $48^\circ$  (D)  $49^\circ$

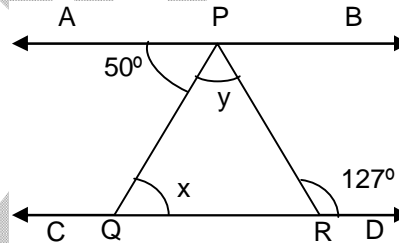
37. Calculate  $\angle A + \angle B + \angle C + \angle D + \angle E$   
 (A)  $180^\circ$   
 (B)  $360^\circ$   
 (C)  $90^\circ$   
 (D)  $45^\circ$



38. In a solution of 45 litres of milk and water, 40% is water. How many litres of milk must be added to make the ratio of milk and water 5 : 3 ?  
 (A) 8 (B) 3  
 (C) 7 (D) 6
39. Given that a varies directly with the cube of b when a is 3, b is also 3. Find b when a is 24.  
 (A) 4 (B) 3  
 (C) 6 (D) 8

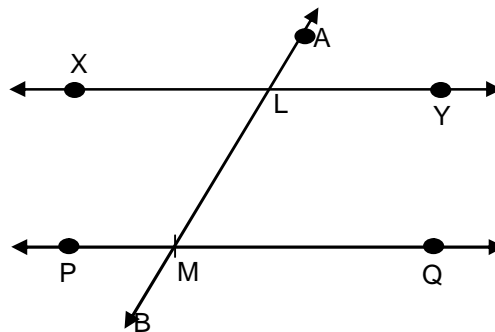
40. Absolute value of  $\left| -\frac{5}{9} \right| = ?$   
 (A)  $\frac{5}{9}$   
 (C)  $-\frac{5}{9}$   
 (B)  $-\frac{5}{9}$   
 (D) none of these

41. If  $AB \parallel CD$ ,  $\angle APQ = 50^\circ$  and  $\angle PRD = 127^\circ$ . Then the value of x and y is  
 (A)  $x = 55^\circ$  and  $y = 72^\circ$   
 (B)  $x = 50^\circ$  and  $y = 77^\circ$   
 (C)  $x = 60^\circ$  and  $y = 67^\circ$   
 (D)  $x = 30^\circ$  and  $y = 54^\circ$

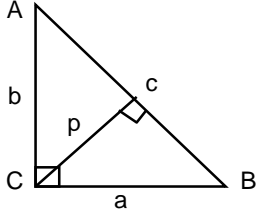


42. The value of  $3 - \frac{1}{2} - \frac{1}{6} - \frac{1}{12} - \frac{1}{20} - \frac{1}{30} - \frac{1}{42} - \frac{1}{56}$  is  
 (A)  $\frac{15}{8}$  (B)  $\frac{19}{8}$   
 (C)  $\frac{17}{8}$  (D) None of these

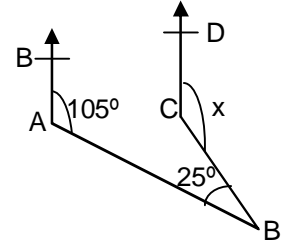
43. In the given figure,  $\angle MLY = 2 \angle LMQ$ . Then the value of  $\angle LMQ$  will be



- (A)  $48^\circ$  (B)  $45^\circ$   
 (C)  $60^\circ$  (D)  $90^\circ$

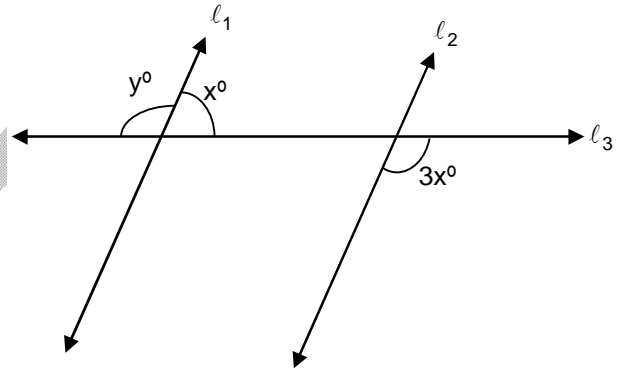
44. The simplified value of  $\frac{\frac{1}{3} \div \frac{1}{3} \times \frac{1}{3}}{\frac{1}{3} \div \frac{1}{3} \text{ of } \frac{1}{3}} - \frac{1}{9}$  is
- (A) 0 (B)  $\frac{1}{9}$   
 (C)  $\frac{1}{3}$  (D) 1
45. In a frequency distribution, the mid value of a class is 15 and the class interval is 4. The lower limit of the class is :
- (A) 10 (B) 12  
 (C) 13 (D) 14
46. Mean of 9 observations was found to be 35. Later on, it was detected that an observation 81 was misread as 18, then the correct mean of the observations is
- (A) 40 (B) 41  
 (C) 42 (D) 43
47. ABC is a right angled triangle, right angled at C and p is the length of perpendicular from C on AB. If a, b and c are the length of the sides BC, CA and AB respectively, what is the relation between a, b and p?
- (A)  $\frac{1}{p} = \frac{1}{a} + \frac{1}{b}$  (B)  $\frac{1}{p} = \frac{1}{a} - \frac{1}{b}$   
 (C)  $\frac{1}{p^2} = \frac{1}{a^2} + \frac{1}{b^2}$  (D)  $\frac{1}{p^2} = \frac{1}{a^2} - \frac{1}{b^2}$
- 
48. One fourth of a certain number added to one-third of it, gives 49, then the number is
- (A) 12 (B) 64  
 (C) 84 (D) 96
49. Sum of three consecutive even numbers is 66. Find the greatest of them.
- (A) 24 (B) 22  
 (C) 20 (D) 26
50. Two angles are supplementary and the greater one is  $30^\circ$  less than two times the smaller. Then the value of the greater angle will be
- (A)  $100^\circ$  (B)  $110^\circ$   
 (C)  $80^\circ$  (D)  $120^\circ$
51. If  $\frac{a}{b} = \frac{x}{y} = \frac{p}{q}$ , then  $\frac{6a + 9x + 2p}{6b + 9y + 2q}$
- (A)  $\frac{a}{b}$  (B)  $\frac{x}{y}$   
 (C)  $\frac{p}{q}$  (D) all of these

52. In the given figure, if  $AB \parallel CD$ , then the value of  $x$  is  
 (A)  $120^\circ$   
 (B)  $130^\circ$   
 (C)  $140^\circ$   
 (D)  $100^\circ$



53. The integer which should be multiplied with  $(-25)$  to give 200, is equal to  
 (A) 4 (B)  $-4$   
 (C) 8 (D)  $-8$
54. If  $a : b = 5 : 7$ , then  $(3a + 5b) : (5a - 2b)$  is equal to:  
 (A)  $40 : 7$  (B)  $50 : 11$   
 (C)  $35 : 9$  (D)  $17 : 5$
55. Find discount in percent when M.P. = Rs 625 and S.P = Rs 562.50.  
 (A) 20% (B) 15%  
 (C) 10% (D) 5%
56. Given that  $x$  varies directly with  $y$  when  $x$  is 3,  $y$  is 15. Find  $y$  when  $x$  is 1.  
 (A)  $y = 5$  (B)  $y = 4$   
 (C)  $y = 6$  (D)  $y = 7$

57. In the given figure,  $l_1 \parallel l_2$ . Find the value of  $y - x$ .  
 (A)  $80^\circ$   
 (B)  $95^\circ$   
 (C)  $85^\circ$   
 (D)  $90^\circ$



58. If mean of the observations 2, 8, 1, 6, 5,  $x + 1$ , 3,  $x + 3$  is 4 then find the value of  $x$ .  
 (A) 2.5 (B) 1.5  
 (C) 1.7 (D) 3.5
59. If  $\frac{547.527}{0.0082} = x$ , then the value of  $\frac{547527}{82}$  is  
 (A)  $\frac{x}{10}$  (B)  $10x$   
 (C)  $100x$  (D) None
60. Consider the equation  $2^x \times 2^y = 2^8$ , where  $x$  and  $y$  are positive integers. If  $x = 3$ , what is the value of  $\frac{7}{5}$  times of  $y$ ?  
 (A) 8 (B) 3  
 (C) 7 (D) 1



# FIITJEE

## Diagnostic cum Scholarship Tests

### SAMPLE PAPER

### For Students of Class VIII

## Paper 2 - NTSE Science & Mathematics

Paper Code: 78-2

## ANSWER KEY

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