BIG BANG
EDGE TEST

SAMPLE PAPER

For Students presently in Class VIII

Paper 1
(Paper-1a+1b)

NTSE – MENTAL ABILITY, SCIENCE & MATHEMATICS and JEE Main

Duration : 100 minutes

Paper Code: 89-1

Maximum Marks : 140

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 4 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. You are advised to spend 20 Minutes on Section-I, 30 Minutes on Section-II, 20 Minutes on Section-III and 30 Minutes on Section-IV. 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 devoting 20 minutes on Section-I, seal for Section-III is to be opened only after devoting 30 minutes on Section-II & seal for Section-IV to be opened only after devoting 20 minutes on Section-III.
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
PAPER – 1a (Section – I) (NTSE) Time Allotted: 20 Minutes	MENTAL ABILITY	1 to 10	+3	–1
PAPER – 1a (Section – II) (NTSE – SCIENCE) Time Allotted: 30 Minutes	PHYSICS (PART-A)	11 to 20	+1	0
	CHEMISTRY (PART-B)	21 to 30	+1	0
	BIOLOGY (PART-C)	31 to 40	+1	0
PAPER – 1a (Section – III) (NTSE – MATHEMATICS) Time Allotted: 20 Minutes	MATHEMATICS (PART-A)	41 to 60	+1	0
PAPER – 1b (Section – IV) (JEE Main) Time Allotted: 30 Minutes	PHYSICS (PART-A)	61 to 62	+4	–1
	CHEMISTRY (PART-B)	63 to 64	+4	–1
	MATHEMATICS (PART-C)	65 to 66	+4	–1
	PHYSICS (PART-D)	67 to 69	+4	–1
	CHEMISTRY (PART-E)	70 to 72	+4	–1
	MATHEMATICS (PART-F)	73 to 75	+4	–1

Paper-1a (Section – I)

Time: 20 Minutes

MENTAL ABILITY

*This section 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.*

1. In the following questions given below is a sequence in which some letters are missing. From the choices, select the choice that gives the letters that can fill the blanks in the given sequence.
a_b_ _ _aa_bc_
(A) abcabc (B) abccba
(C) abccbc (D) ababcc

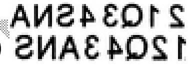
2. In a row of girls facing to the North, A is sixteenth from the left end and C is sixteenth from the right end. B who is fourth to the right of A, is fifth to the left of C in the row. How many girls are there in the row?
(A) 39 (B) 40
(C) 41 (D) 36

3. Vegetable : Chop : : Body : ?
(A) Cut (B) Amputate
(C) Peel (D) Bungalow

4. In a certain code MONKEY is XDJMNL. How is 'TIGER' written as?
(A) QDFHS (B) SDFHS
(C) SHFDQ (D) UJHFS

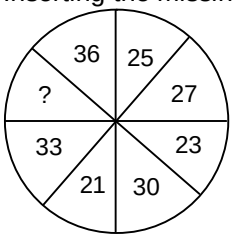
5. If + means –, × means ÷, ÷ means + and – means ×, then which of the following will be the value of the expression 252 × 9 – 5 + 32 ÷ 92 = ?
(A) 95 (B) 168
(C) 192 (D) 200

6. In a garden, there are 10 rows and each row contains 12 mangoes trees. The distance between the two trees is 2 metres and a distance of one metre is left from all sides of the boundary of the garden. The length of the garden is
(A) 20 m (B) 22 m
(C) 24 m (D) 26 m

7. Choose the alternative which is closely resembles the mirror image of the given combination.
ANS43Q12
(A)  (B) 
(C)  (D)

8. Find the wrong number in the given series.
2, 3, 4, 6, 12, 12, 48, 24, 250
(A) 4 (B) 6
(C) 48 (D) 250

9. Inserting the missing character.



(A) 19
(B) 22
(C) 32
(D) 35

10. A man wears socks of two colours – Black and brown. He has altogether 20 black socks and 20 brown socks in a drawer. Supposing he has to take out the socks in the dark, how many must he take out to be sure that he has a matching pair?
(A) 3
(B) 20
(C) 39
(D) None of these

Paper-1a (Section – II)

Time: 30 Minutes

PHYSICS (PART – A)

*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. Car comes to rest once its engine is switched off due to :–
(A) Frictional force of road (B) Gravitational force of earth
(C) Force of atmospheric pressure (D) None of these

12. The vibrations of a tuning fork are _____ in nature:–
(A) Oscillatory (B) Periodic
(C) Both (A) & (B) (D) None of these

13. Force between two charged body is called :–
(A) Gravitational force (B) Frictional force
(C) Electrostatic force (D) None of these

14. A push or a pull on an object is called :–
(A) Pressure (B) Work
(C) Force (D) Momentum

15. Force on a balloon can change its :–
(A) State (B) Shape
(C) Both (A) and (B) (D) None of these

16. Force is a :–
(A) Vector quantity (B) Scalar quantity
(C) Non-directional quantity (D) None of these

17. Unpleasant sounds are called :–
(A) Vibration (B) Oscillation
(C) Noise (D) Signal

18. Through which organ, we speak.
(A) Vocal cords (B) Lungs
(C) Lips (D) Teeth

19. Unit of pressure is :–
(A) Newton (B) ms^{-1}
(C) ATM (D) ms^{-2}

20. Relationship between rolling friction & sliding friction is :–
(A) Rolling friction force = sliding friction force (B) Rolling friction force > sliding friction force
(C) Rolling friction force < sliding friction force (D) Can not say

CHEMISTRY (PART – B)

*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. Which of the following is an ore of aluminium?
(A) Cryolite (B) feldspar
(C) Bauxite (D) All of these

22. In thermite process, the reducing agent is
(A) Al (B) Zn
(C) C (D) Na

23. Which of the following gas is known as illuminating gas?
(A) Ethane (B) Ethene
(C) Ethyne (D) Propane

24. The undesired impurities present in ores are
(A) Matrix (B) Flux
(C) Alloy (D) Slag

25. Sulphide ores are generally concentrated by
(A) Froth floatation (B) Electro magnetic separation
(C) Gravity separation (D) Leaching

26. Which metal is generally found in native state?
(A) Cu (B) Au
(C) Al (D) Fe

27. Bituminous is a :
(A) Soft coal (B) Household coal
(C) Hard coal (D) Pure coke

28. Which of the following compound is used for detection of leakage of LPG gas?
(A) C_2H_5OH (B) C_2H_5SH
(C) $C_2H_5 – S – C_2H_5$ (D) $C_2H_5 – O – C_2H_5$

29. Lignite is a
(A) Soft coal (B) Household coal
(C) Hard coal (D) Pure coke

30. Roasting is used for
(A) Carbonate ore (B) Halide ore
(C) Sulphide ore (D) Nitrate ore

BIOLOGY (PART – C)

*This part contains **10 Multiple Choice Questions** number **31 to 40.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

31. Match the column – A with column – B and choose the correct answer using the code given below the column.

Column – A		Column – B	
(a)	Beans and Peas	(p)	Ploughing
(b)	Tractor	(q)	Plantation crop
(c)	Chillies	(r)	Leguminous plants
(d)	Combine	(s)	Harvesting

(A) (a → s), (b → p), (c → r), (d → q) (B) (a → r), (b → p), (c → q), (d → s)
(C) (a → p), (b → q), (c → r), (d → s) (D) (a → r), (b → s), (c → p), (d → q)

32. Read the following sentences and give your answer as per the instructions given below:
In the following question, a statement of assertion is given and a corresponding statement of reason is given just below it.
Assertion (A): The last step in the preparation of soil is leveling.
Reason (R): Manure is not nutrient specific.
(A) Both A and R are false (B) A is true but R is false
(C) R is true but A is false (D) Both A and R are true

33. Which of the following is correctly matched?
(A) Harvesting – removal of weeds
(B) Emasculation – sowing of seeds
(C) Lodging – loosens the soil
(D) Fallowing – leaving land uncultivated

34. Which is the class of organism, living in the body of termites that digests wood cellulose converting it to soluble carbohydrates?
(A) Bacteria (B) Algae
(C) Nematoda (D) Protozoa

35. You have observed this, that in rainy season if bread is kept for sometime, blackish rust is deposited on it, what is this?
(A) Bacteria (B) Fungi
(C) Algae (D) None of these

36. Match the column – A with list column – B and choose the correct answer using the code given below the column:

Column – A		Column – B	
(a)	Leeuwenhoek	(p)	Fermentation
(b)	Kitasato	(q)	Tiny animalcules
(c)	Alexander Fleming	(r)	Tetanus
(d)	Louis Pasteur	(s)	Antibiotic

(A) (a → p), (b → q), (c → r), (d → s) (B) (a → q), (b → r), (c → s), (d → p)
(C) (a → r), (b → p), (c → s), (d → q) (D) (a → s), (b → q), (c → p), (d → r)

37. Find disadvantage of using manure, from the followings.
(A) It enhances the water holding capacity of the soil.
(B) Improve the texture of the soil.
(C) Increases the number of friendly microbes.
(D) Inconvenient to handle, store and transport

38. Malaria is a mosquito-borne infectious disease caused by.
(A) Prokaryotic Parasite (B) Eukaryotic parasite
(C) Fungi (D) Virus

39. In nitrogen cycle, conversion of atmospheric nitrogen into ammonia is done by.
(A) Nitrosomonas (B) Rhizobium
(C) Pseudomonas (D) Azatobactor

40. Certain vaccines function by introducing a weakened variant of a pathogen into the human body. Which of the following statements is incorrect?
(A) Vaccines can be made from a particular segment of a pathogen
(B) The immune response to the vaccine will be 'remembered' if the active pathogen is ever encountered
(C) The vaccine lacks virulence factors that cause disease
(D) Protection similar to vaccination cannot be attained from previous infection

Paper-1a (Section – III)

Time: 20 Minutes

MATHEMATICS (PART – A)

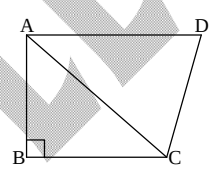
*This part contains **20 Multiple Choice Questions** number **41 to 60.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

41. If $x = \frac{1}{4-\sqrt{15}}, y = \frac{1}{4+\sqrt{15}}$, then value of x^3+y^3 is
(A) 486 (B) 439
(C) 488 (D) 476

42. The value of the expression $\sqrt{6+\sqrt{6+\sqrt{6+.....\text{upto}\ \infty}}}$ is
(A) 2 (B) 3
(C) 30 (D) 5

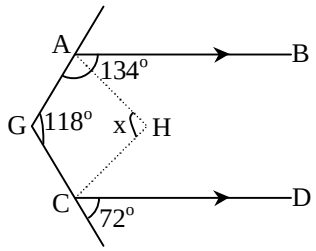
43. Solve: $3(5x-7)-2(9x-11)=4(8x-13)-17$
(A) x = 12 (B) x = 4
(C) x = 2 (D) x = –1

44. In the quadrilateral ABCD $\angle B = 90^o$ and $AD^2 = AB^2 + BC^2 + CD^2$. Then $\angle ACD$ is



(A) 80^o (B) 100^o
(C) 90^o (D) 120^o

45. In the adjoining figure AB || CD, AH and CH are the bisectors of $\angle A$ and $\angle C$ respectively. Find the measure of $\angle x$.



(A) 90^o (B) 121^o
(C) 100^o (D) 75^o

46. If $x = 3+2\sqrt{2}$, then find the value of $x^{\frac{1}{2}} - x^{-\frac{1}{2}}$
(A) $2\sqrt{2}$ (B) $\sqrt{2}$
(C) 2 (D) 1

47. If $y = 5 - \sqrt[3]{25} - \sqrt[3]{5}$, then find the value of $y^3 - 15y^2 + 60y + 40$

(A) 60 (B) 50
(C) 40 (D) 10

48. If $3^{2x^2-9x} = (81)^{-1}$, then x is

(A) $4, \frac{1}{2}$ (B) $2, \frac{1}{4}$
(C) 2, 1 (D) Both (A) and (B)

49. If $A = \sqrt{7} - \sqrt{6}$ and $B = \sqrt{6} - \sqrt{5}$, then

(A) A > B (B) A = B
(C) A < B (D) $A \geq B$

50. If $y + \frac{1}{y} = 12$, then $y^3 + \frac{1}{y^3}$ is equal to

(A) 1680 (B) 1686
(C) 1692 (D) None of these

51. Other name for reciprocal is

(A) identity element (B) multiplicative inverse
(C) additive inverse (D) Both (A) and (B)

52. Find $\sqrt{156.25} + \sqrt{1.5625} = ?$

(A) 125.2 (B) 12.5
(C) 13.75 (D) 1.375

53. Evaluate $\left[\sqrt{15^2 + 8^2}\right]^3$

(A) 15625 (B) 4903
(C) 4913 (D) 49004

54. A number is multiplied by $2\frac{1}{3}$ times itself and then 61 is subtracted from the product obtained. If the final result is 9200, then the number is:

(A) 36 (B) 63
(C) 76 (D) 67

55. Which order shows the following rational numbers in ascending order?

$A = \frac{26}{3}, B = \frac{35}{4}, C = \frac{46}{5}, D = \frac{17}{2}$

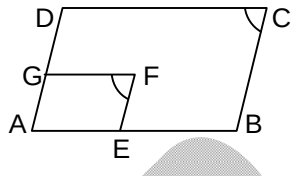
(A) A, B, C, D (B) B, D, A, C
(C) D, A, B, C (D) D, C, B, A

56. $\sqrt{289} \div \sqrt{x} = \frac{1}{5}$, then value of x is

(A) $\frac{17}{25}$ (B) $\frac{34}{35}$
(C) 7225 (D) 235

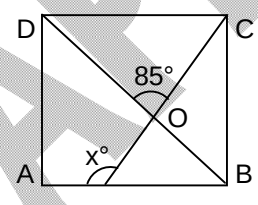
57. In a three digit numbers, the hundreds digit is twice the tens digit while the units digit is thrice the tens digit. Also, the sum of its digits is 18. The number is
(A) 693 (B) 396
(C) 639 (D) None of these

58. In the given figure, ABCD and AEFG are parallelograms. If $\angle DCB = 55°$, then what is the measure of $\angle F$?
(A) 50° (B) 45°
(C) 55° (D) 85°



59. The class marks of any interval are given by:
(A) $\frac{\text{Upper limit + Lower limit}}{2}$ (B) $\frac{\text{Upper limit – Lower limit}}{2}$
(C) $\frac{\text{Lower limit – Upper limit}}{2}$ (D) Upper limit + Lower limit

60. ABCD is a square in the given figure, find x.
(A) 150°
(B) 130°
(C) 120°
(D) None of these



Paper-1b (Section – IV)

Time: 30 Minutes

PHYSICS (PART – A)

*This part contains **2 Multiple Choice Questions** number **61 to 62.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

61. One dyne force can produce an acceleration of _____ cm s^{-2} on an object of mass 100 g.
(A) 1 (B) 0.1
(C) 10 (D) 0.01

62. Compressions and rarefactions are formed in _____
(A) Stationary transverse wave (B) Sound wave
(C) Light wave (D) Water wave

CHEMISTRY (PART – B)

*This part contains **2 Multiple Choice Questions** number **63 to 64.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

63. Which of the following is also known as the 'black gold'?
(A) CNG (B) Natural gas
(C) Coal (D) Petroleum

64. When zinc reacts with dilute sulphuric acid, a salt is formed with the release of a gas. The gas produced during this puts off a burning candle with a pop sound. The gas evolved during this reaction is:
(A) Sulphur dioxide (B) Oxygen
(C) Hydrogen (D) Hydrogen sulphide

MATHEMATICS (PART – C)

*This part contains **2 Multiple Choice Questions** number **65 to 66.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

65. What is the value of $\frac{0.\overline{679}-0.\overline{072}}{0.4\overline{32}+0.3\overline{5}}$?
(A) $\frac{6672}{8659}$ (B) $\frac{6677}{8658}$
(C) $\frac{6675}{8629}$ (D) $\frac{6692}{8658}$

66. The sides of a rectangle are in the ratio 4 : 5. If the perimeter of the rectangle is 90 cm, then its sides are
(A) 28, 35 (B) 20, 24
(C) 20, 25 (D) None of these

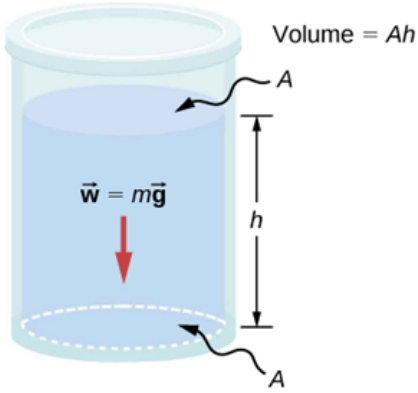
PHYSICS (PART – D)

*This part contains **ONE (01)** comprehension. Based on comprehension, there are **THREE (03)** questions of **Multiple Choice Questions**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

Comprehension for Q. No. 67 to 69

You have already studied that Pressure is calculated by dividing perpendicular force acting on a surface by the area of the surface. In case of fluids the pressure at a point can act from all directions. A fluid can exert pressure on the base as well as walls of the container.

The pressure at a point inside a fluid can be calculated by dividing weight of the fluid above that point by the area. For example, if we wish to calculate the pressure (P) due to a liquid at the base of the vessel shown below we can divide weight (mg) by base are (A).



So, P = mg ÷ A = (Vd)g ÷ A (Here V= Volume of liquid) = Ahdg ÷ A = dgh Or,
Pressure (P) = d × g × h
Where d= density of the fluid (Its mass divided by volume)
g = acceleration due to gravity
h = height of the fluid column above the point.

67. The pressure (measured in its SI unit 'pascal') exerted by water of density 1000 kg/m^3 at a point of depth 0.5 km below the surface of a lake where acceleration due to gravity is 10 m/s^2 is (without including atmospheric pressure) :
(A) 5 × 10^3 pascal
(B) 5 × 10^6 pascal
(C) 5 kilopascal
(D) 5 × 10^6 kilopascal

68. Pressure increases with
(A) Depth
(B) Density
(C) Both (A) and (B)
(D) None of these

69. The weight of atmosphere is very large, still we are not crushed, because :–
(A) Pressure inside our body is equal to atmospheric pressure
(B) Pressure inside our body < Atmospheric pressure
(C) Pressure inside our body > Atmoshperic pressure
(D) None of these

CHEMISTRY (PART – E)

*This part contains **ONE (01)** comprehension. Based on comprehension, there are **THREE (03)** questions of **Multiple Choice Questions**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

Comprehension for Q. No. 70 to 72

Natural resources are materials from the Earth that are used to support life and meet people's needs. Any natural substance that humans use can be considered a natural resource. Exhaustible natural resources are those resources which are present in limited quantities and can be completely used up by human activities. Inexhaustible natural resource is a natural resource that will never run out. It will not be depleted and will continue to exist forever. Some of the examples of natural resource are: air, coal, natural gas, sunlight, petroleum, minerals, forests, oxygen.

70. Which of the following natural resources is inexhaustible?
(A) petroleum (B) minerals
(C) sunlight (D) natural gas

71. The percentage of carbon content in Peat is
(A) 60 – 80% (B) 90 – 95%
(C) < 60% (D) 100%

72. Identify the gas that is generally produced when coal is burnt in the presence of a lot of air.
(A) Carbon monoxide (B) Sulphur dioxide
(C) Nitrogen dioxide (D) Carbon dioxide

MATHEMATICS (PART – F)

*This part contains **ONE (01)** comprehension. Based on comprehension, there are **THREE (03)** questions of **Multiple Choice Questions**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

Comprehension for Q. No. 73 to 75

For two numbers a and b

$(a+b)^3 = a^3 + b^3 + 3ab(a+b)$

$(a-b)^3 = a^3 - b^3 - 3ab(a-b)$

73. If $\frac{x}{y} + \frac{y}{x} = -1$, $(x, y \neq 0)$, then value of $x^3 - y^3$ is
(A) 1 (B) –1
(C) 0 (D) 1/2

74. Which of the following is a factor of $(x+y)^3 - (x^3 + y^3)$?
(A) $x^2 + y^2 + 2xy$ (B) $x^2 + y^2 - xy$
(C) xy^2 (D) 3xy

75. If $\frac{x}{y} + \frac{y}{x} = 2$, $(x, y \neq 0)$, then value of $(x + y)^3$ is
(A) 1 (B) 2
(C) 4 (D) 8

BIG BANG EDGE TEST

SAMPLE PAPER

For Students presently in Class VIII

Paper 1 (Paper-1a+1b) NTSE – MENTAL ABILITY, SCIENCE & MATHEMATICS and JEE Main

Paper Code: 89-1

ANSWER KEYS

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