FIITJEE

Diagnostic cum Scholarship Tests

SAMPLE PAPER

For Students of Class VII

Paper 3 - NSEJS & Mathematical Olympiad

Duration : 120 minutes | **Paper Code: 67-3** | *Maximum Marks : 204*

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 60 minutes. Dedicating the full 60 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 60 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 (NSEJS) Time Allotted: 60 Minutes	PHYSICS	(PART-A)	1 to 8	**+3**	**–1**
	CHEMISTRY	(PART-B)	9 to 16	**+3**	**–1**
	BIOLOGY	(PART-C)	17 to 24	**+3**	**–1**
	PHYSICS	(PART-D)	25 to 26	**+6** (if all the correct alternatives are marked)	**0**
	CHEMISTRY	(PART-E)	27 to 28	**+6** (if all the correct alternatives are marked)	**0**
	BIOLOGY	(PART-F)	29 to 30	**+6** (if all the correct alternatives are marked)	**0**
SECTION – II (Mathematical Olympiad) Time Allotted: 60 Minutes	MATHEMATICS	(PART-A)	31 to 46	**+3**	**–1**
	MATHEMATICS	(PART-B)	47 to 54	**+6** * Partial Making	**0**

*** Partial Marking: (Q. No. 47 to 54):**

Full Marks	**: +6** If only (all) the correct option(s) is(are) chosen;
Partial Marks	**: +4.5** If all the four options are correct but ONLY three options are chosen;
Partial Marks	**: +3** If three or more options are correct but ONLY two options are chosen, both of which are correct;
Partial Marks	**: +1.5** If two or more options are correct but ONLY one option is chosen and it is a correct option;
Zero Marks	**: 0** If unanswered/incorrect option(s) chosen;

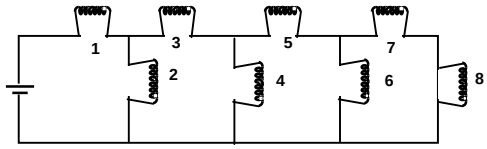
Section – I

Time: 60 Minutes

PHYSICS (PART-A)

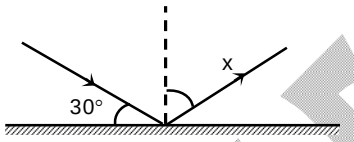
*This part contains **8 Multiple Choice Questions** number **1 to 8.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

1. In the given figure, if a fuse in one of the bulbs causes all the other bulbs to go off. Which bulb has to be fused?



(A) 5 (B) 3
(C) 2 (D) 1

2. Find x.



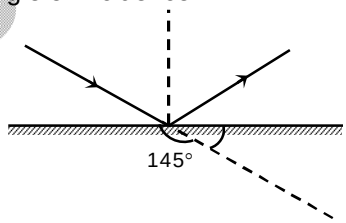
(A) 30° (B) 90°
(C) 60° (D) 45°

3. Ramu is seeing his image in a plane mirror. Initially the distance between the mirror and his image is 5 m. If he moves 2 m towards the mirror then the distance between Ramu and his image will be
(A) 3 m (B) 6 m
(C) 7 m (D) 10 m

4. Images formed by plane mirror are always:
(A) Real (B) Virtual
(C) Diminished (D) Magnified

5. If 10^{19} electrons cross a surface perpendicularly in 16 sec. What is current?
(A) 0.1 A (B) 1 A
(C) 16 A (D) 10^{19} A

6. Final angle of incidence



(A) 55° (B) 45°
(C) 35° (D) 40°

7. Slope of distance-time graph gives _____ and SI unit of obtained physical quantity is _____.
(A) velocity, km/h (B) speed, m/s
(C) acceleration, m/s^2 (D) displacement, metre

8. Which of the following is a natural magnet?
(A) Quartz (B) Mica
(C) Wood (D) Lodestone

CHEMISTRY (PART-B)

*This part contains **8 Multiple Choice Questions** number **9 to 16.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

9. Muddy can be purified through coagulation by using
(A) Sodium chloride (B) Potash alum
(C) Glucose (D) Rice

10. During filtration, what do we obtain on the filter paper?
(A) Residue (B) Decant
(C) Filtrate (D) none of these

11. Which of these in the smallest particle
(A) A speck of dust (B) A water drop
(C) A molecule (D) an atom

12. Silk cotton is obtained from
(A) Coconut (B) Cotton
(C) Kapok tree (D) Banyan tree

13. In physical changes
(A) Release of light energy takes place (B) Evolution of heat energy takes place
(C) No new substance is formed (D) New substance is formed

14. The pure substance have fixed
(A) Melting point only (B) Boiling point only
(C) Both melting and boiling point (D) Neither melting nor boiling point

15. White coir fibre can be obtained from
(A) Mature coconut (B) Immature coconut
(C) Jute (D) Banana

16. Hard water contains salts of
(i) Calcium (ii) Potassium (iii) Sodium (iv) Magnesium

(A) (i) and (iv) (B) (ii) and (iv)
(C) (i), (ii) and (iv) (D) Only (i)

BIOLOGY (PART-C)

*This part contains **8 Multiple Choice Questions** number **17 to 24.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

17. Which is not a part of a leaf?
(A) Petiole (B) Lamina
(C) Veins (D) Nodes

18. The process of loss of water by a plant through leaves is called
(A) evaporation (B) condensation
(C) photosynthesis (D) transpiration

19. Which is a correct set of parts of a pistil?
(A) Ovary, style and filament (B) Ovary style and stigma
(C) Ovary, anther and filament (D) Filament and anther

20. Which of the skull bones are movable?
(A) Upper jaw (B) Teeth
(C) Eye socket (D) Lower jaw

21. The tissue which helps in the movement is called
(A) epithelial tissue (B) muscular tissue
(C) protective tissue (D) nervous tissue

22. The nerves that run down our backbone is
(A) spinal cord (B) joints
(C) skeleton (D) tendon

23. Male reproductive part of flower is
(A) sepals (B) petals
(C) stamens (D) pistil

24. Which of the following is categorised as bio degradable?
(A) Batteries (B) Paper
(C) Glass (D) Plastic

PHYSICS (PART-D)

*This part contains **2 Multiple Choice Multi Correct Type Questions** number **25 to 26.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONE OR MORE THAN ONE** is/are correct.*

25. Which of these conduct electricity?
(A) Copper wire (B) Silver jewellery
(C) Steel tumbler (D) Plastic jug

26. Which instruments are not used by navigators to detect the direction?
(A) Ammeter (B) Voltmeter
(C) Magnetic compass (D) Electric motor

CHEMISTRY (PART-E)

*This part contains **2 Multiple Choice Multi Correct Type Questions** number **27 to 28.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONE OR MORE THAN ONE** is/are correct.*

27. Which of the following is correct representation?
(A) $O_2(\uparrow)$ (B) $O_2(g)$
(C) $O_2(\downarrow)$ (D) None of these

28. The use of any material depends on
(A) Its properties (B) The purpose for which it is to be used
(C) Durability of materials (D) None of these

BIOLOGY (PART-F)

*This part contains **2 Multiple Choice Multi Correct Type Questions** number **29 to 30.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONE OR MORE THAN ONE** is/are correct.*

29. Floating ribs include
(A) 10^{th} pair (B) 11^{th} pair
(C) 12^{th} pair (D) 8^{th} pair

30. Which of the following are parts of Plant are aerial?
(A) Leaves (B) Stem
(C) Flower (D) Roots

Section – II

Time: 60 Minutes

MATHEMATICS (PART-A)

*This part contains **16 Multiple Choice Questions** number **31 to 46.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

31. Which of the following pairs is coprime ?
(A) 345, 2431 (B) 2717, 13585
(C) 6965, 7215 (D) 2034, 3692

32. When 24 is subtracted from a number, it reduces to its four-seventh. What is the sum of digits of that number ?
(A) 1 (B) 9
(C) 11 (D) None of these

33. The total surface area of a cube is $726m^2$. Find its edge.
(A) 8 m (B) 9 m
(C) 11 m (D) 12 m

34. If 2A = 3B and 4B = 5C then A : C is
(A) 4 : 3 (B) 8 : 15
(C) 15 : 8 (D) 3 : 4

35. If the mean of 2, 3, x, 7, 8 is x, then find the value of x.
(A) 5 (B) 1
(C) 0 (D) 4

36. The area of a rectangular park is 527 m^2. If its length is 31 m, then its perimeter is
(A) 17 m (B) 48 m
(C) 96 m (D) 56 m

37. A box has 25 balls of which 9 are red and rest are yellow. Aniket picks one-third of red balls and half of the yellow balls. What fraction of the balls are left in the box ?
(A) $\frac{11}{16}$ (B) $\frac{11}{25}$
(C) $\frac{14}{25}$ (D) $\frac{16}{25}$

38. If $\frac{144}{0.144} = \frac{14.4}{x}$, then the value of x is
(A) 0.0144 (B) 1.44
(C) 14.4 (D) 144

39. If x : y = 5 : 2, find the value of 2x + 5y : 8x + 2y
(A) $\frac{5}{11}$ (B) $\frac{4}{11}$
(C) $\frac{11}{5}$ (D) None of these

40. If 25% of a number is subtracted from a second number, the second number reduces to its five-sixth. What is the ratio of the first number to the second number ?
(A) 1 : 3 (B) 2 : 3
(C) 3 : 2 (D) Data inadequate

41. The cost of flooring a room 20 m long at Rs. 7 per sq. m is Rs. 2520 then the breadth of the room is
(A) 20 m (B) 18 m
(C) 24 m (D) 28 m

42. The temperature in Fahrenheit (F) can be converted to Celsius using the formula $C = \frac{5}{9}(F - 32)$.
If it is 77^oF currently, what is the sum of the digits of the number for that temperature in Celsius?
(A) 9 (B) 5
(C) 7 (D) 6

43. If a regular polygon has 8 sides, what is the value of each of its interior angle?
(A) 135^o (B) 120^o
(C) 112.5^o (D) 155^o

44. The length and breadth of a rectangle are in the ratio 3 : 1. If the area of the rectangle is 108 m^2, what is the semi-perimeter of the rectangle?
(A) 48 m (B) 24 m
(C) 6 m (D) 36 m

45. What type of triangle will be formed if the sides of the triangle are 15 cm, 20 cm and 25 cm?
(A) Acute angled triangle (B) Obtuse angled triangle
(C) Right angled triangle (D) No triangle possible

46. The sum of the digits of a two-digit number is 9. If the digits are interchanged, the new number is 27 more than the original number. What is the product of the digits of the original number?
(A) 20 (B) 18
(C) 14 (D) 8

MATHEMATICS (PART-B)

*This part contains **8 Multiple Choice Multi Correct Type Questions** number **47 to 54.** Each question has 4 choices (A), (B), (C) and (D), out of which **MORE THAN ONE** are correct.*

47. The diagonals of a rhombus intersect each other. What is the sum of a pair of the vertically opposite angles thus formed?
(A) 90^o (B) 1 right angle
(C) 180^o (D) 2 right angles

48. How many positive integers are divisible by 6 and 9 both between –300 and 903?
(A) 200 (B) 250
(C) 555 (D) Product of digits of the answer is 0

49. If my sister is 10 years younger to me, what will be the total number of prime factors of my sister's age after 40 years if I am 15 years old currently?
(A) 2 (B) 3
(C) Least even prime number (D) Least odd prime number

50. If a rectangle with dimensions 60 cm $\times$ 68 cm is converted into a square, what is the HCF of the area of that square and the area of the rectangle?
(A) 4^2 (B) 256
(C) 16 (D) 16^2

51. If you have 3 types of candies in a ratio of 4 : 3 : 5 and there are 120 candies in total, what is the product of the digits of the number obtained on finding the HCF of the number of the three types of candies?
(A) 0
(B) 10
(C) $10^0 - 1$
(D) Number of right angles in an equilateral triangle

52. The product of the seven fractions
$\left(1-\frac{1}{2}\right)\left(1-\frac{1}{3}\right)\left(1-\frac{1}{4}\right)\left(1-\frac{1}{5}\right)\left(1-\frac{1}{6}\right)\left(1-\frac{1}{7}\right)\left(1-\frac{1}{8}\right)$ is
(A) $\frac{1}{8}$ (B) $\frac{1}{4}$
(C) 0.25 (D) 0.125

53. A square paper sheet has $10\frac{2}{5}$ cm long side. Find perimeter (in cm).

(A) $41\frac{3}{5}$ (B) $108\frac{4}{25}$

(C) 41.6 (D) 108.16

54. Which of the following expression is correct one for calculating the circumference of a circle ?

(A) $2\pi r$ (B) πd

(C) Both (A) and (B) (D) Only (A)

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SAMPLE PAPER

For Students of Class VII

Paper 3 - NSEJS & Mathematical Olympiad

Paper Code: 67-3

ANSWER KEY

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