FIITJEE

Diagnostic cum Scholarship Tests

SAMPLE PAPER
For Students of Class VI

Paper 3 - NSEJS & Mathematical Olympiad

Duration : 120 minutes   **Paper Code: 56-3**   *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. 100 A° is equal to
    (A) 10^{-10} m   (B) 10^{-9} m
    (C) 10^{-8} m   (D) 10^{-2} m

2. Viewing from the windows of your moving car the persons outside the car seems to be
    (A) moving forward   (B) at rest
    (C) moving backward   (D) none of these

3. A force of 7500 N can produce a pressure of 150 Pa. Then the area in_____ m^2 on which the force acts.
    (A) 50 m^2 (B) 10 m^2
    (C) 20 m^2 (D) 25 m^2

4. Mass is the measure of
    (A) inertia   (B) charging
    (C) pressure   (D) all are correct

5. When a ball is thrown in the air upward it comes down after some time, because of
    (A) gravitational force
    (B) magnetic force
    (C) frictional force
    (D) gravitational and magnetic force both are correct

6. Work is measured in the same units as :
    (A) Power   (B) Force
    (C) Energy   (D) None of these

7. Find net force in given situation
    150 N ⟵───○───⟶ 200 N
    (A) 50 N   (B) 100 N
    (C) 200 N   (D) 150 N

8. Which of the following describes how to convert 630 centimeters into millimeters?
    (A) Multiply by 10   (B) Divide by 10
    (C) Multiply by 100   (D) Divide by 100

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. Which of the following is one of the causes of drought?
(A) Excess rainfall (B) Humid weathers
(C) Severe hot days (D) Cold weather

10. Which of the following is an aeroplane fuel?
(A) Kerosene (B) Petrol
(C) Oxygen (D) Hydrogen

11. Water_____flows from a higher to a lower level.
(A) Always (B) Sometimes
(C) Never (D) None of these

12. Petroleum and natural gas are found between which type of rock.
(A) Igneous (B) Sedimentary
(C) Metamorphic (D) Both (A) and (C)

13. Which is not a property of air?
(A) Air has weight (B) Air exerts pressure
(C) Air occupies space (D) Air is a biotic component of environment

14. Humidity means the amount of_____in air.
(A) Snow (B) Soil
(C) Sunlight (D) Water vapours

15. Global warming is caused due to
(A) Carbon dioxide (B) Methane
(C) Chlorofluoro carbons (D) All of these

16. Heterogeneous mixture among the following is
(A) Smoke (B) Jewellery
(C) Sugar (D) Air

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. From which part of the plant can sugarcane be grown?
(A) Roots (B) Stems
(C) Leaves (D) None of these

18. _____ is the longest bone in the body.
(A) Humerus (B) Fibula
(C) Radius (D) Femur

19. Which among the following is not a source of roughage?
(A) Fresh fruits (B) Cereals
(C) Butter (D) Vegetables

20. Which is called as a body building food?
    (A) Proteins   (B) Fats
    (C) Carbohydrates   (D) all of these

21. Canning, dehydration and pickling are methods of _____ food.
    (A) preservation   (B) none of these
    (C) garnishing   (D) cooking

22. Sprouting consists of germinating
    (A) fruit   (B) Root
    (C) seeds   (D) all of these

23. Obesity, Diabetes and high blood pressure are _____ diseases.
    (A) lifestyle   (B) deficiency
    (C) both (A) and (B)   (D) all of these

24. The Process by which green plants prepare their?
    (A) Respiration   (B) Digestion
    (C) Photosynthesis   (D) Excretion

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 among the following are correct?
    (A) Force can change the shape of an object
    (B) Force can change the colour of an object
    (C) Force can stop a moving object
    (D) Force can start motion in a body at rest

26. Eclipse occurs because of
    (A) Light travels in straight line
    (B) The earth revolves around the sun and the moon revolves around the earth
    (C) The earth rotates on its axis
    (D) The moon is spherical in shape

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 is an exothermic process?
    (A) Evaporation   (B) Condensation
    (C) Burning of fuel   (D) Digestion

28. Which of the following has organic origin?
    (A) Nylon   (B) Rayon
    (C) Polyester   (D) Cotton

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. Which of the following are animal products?
    (A) Honey
    (B) Wool
    (C) Milk
    (D) Wood

30. Which of the following statement is true about potato?
    (A) It is rich in carbohydrate.
    (B) It is underground stem.
    (C) It is underground root.
    (D) It is rich in fats.

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. An exterior angle of a triangle is 120° and one of the interior opposite angles is 50°. Then the other two angles of the triangle are
    (A) 80°, 70°
    (B) 70°, 90°
    (C) 70°, 60°
    (D) 80°, 80°

32. What is the smallest positive integer completely divisible by all the integers from 1 to 10 including both of them?
    (A) 2140
    (B) 2320
    (C) 2540
    (D) 2520

33. The sides of a triangle are in the ratio 1 : 3 : 6 and its perimeter is 120 cm. The length of its shortest side is
    (A) 18 cm
    (B) 22 cm
    (C) 16 cm
    (D) 12 cm

34. Find the value of $|-6| - |-3| + |-5| + |3|$
    (A) 9
    (B) 11
    (C) 13
    (D) 17

35. What least number should be replaced for * so that the number 6 8 2 0 3 * 3 is exactly divisible by 9 ?
    (A) 6
    (B) 7
    (C) 5
    (D) 8

36. The value of the given expression $\dfrac{3}{5}$ of $\dfrac{4}{9}$ of $\dfrac{27}{8}$ of $\dfrac{25}{6}$ of 308 is
    (A) 1235   (B) 1195
    (C) 1155   (D) 1305

37. What is the sum of the digits of the smallest positive integer which has exactly 8 factors?
    (A) 3   (B) 6
    (C) 8   (D) 10

38. The sum of two numbers is 36 and their HCF and LCM are 3 and 105 respectively. The sum of the reciprocals of the two numbers will be
    (A) 13   (B) $\dfrac{9}{11}$

    (C) $\dfrac{7}{35}$ (D) $\dfrac{4}{35}$

39. The largest of the fractions $\dfrac{2}{5}, \dfrac{6}{11}, \dfrac{3}{4}, \dfrac{5}{7}$ is

    (A) $\dfrac{2}{5}$ (B) $\dfrac{3}{4}$

    (C) $\dfrac{6}{11}$ (D) $\dfrac{5}{7}$

40. In four consecutive prime numbers that are in ascending order, then product of the first three is 385 and that of last three is 1001. The largest given prime number is
    (A) 11   (B) 19
    (C) 13   (D) 17

41. The unit digit in $(139)^{54}$ is
    (A) 3   (B) 1
    (C) 7   (D) 9

42. The least number divisible by each of the number 15, 20, 24, 32 and 36 is
    (A) 1460   (B) 1440
    (C) 1480   (D) 1420

43. The value of given expression $\dfrac{\dfrac{a^2+b^2}{a^2-b^2}-\dfrac{a^2-b^2}{a^2+b^2}}{\dfrac{a+b}{a-b}-\dfrac{a-b}{a+b}}$ is

    (A) $\dfrac{-ab}{a^2+b^2}$ (B) $\dfrac{a^2}{a^2+b^2}$

    (C) $\dfrac{b^2}{a^2+b^2}$ (D) $\dfrac{ab}{a^2+b^2}$

44. 15 litres of a mixture contain 20% alcohol and the rest is water. If 3 litres of water is to be mixed with it, the percentage of alcohol in the new mixture would be
    (A) 15%   (B) $16\dfrac{2}{3}\%$

    (C) 17%   (D) $12\dfrac{1}{2}\%$

45. The HCF of the fraction of $\dfrac{36}{25}, \dfrac{48}{25}, \dfrac{72}{75}$

    (A) $\dfrac{12}{75}$ (B) $\dfrac{4}{25}$

    (C) $\dfrac{36}{25}$ (D) 36

46. The sum of the first 35 terms of the series $\dfrac{1}{2}+\dfrac{1}{3}-\dfrac{1}{4}-\dfrac{1}{2}-\dfrac{1}{3}+\dfrac{1}{4}+\dfrac{1}{2}+\dfrac{1}{3}-\dfrac{1}{4}$

    (A) $-\dfrac{1}{2}$ (B) $\dfrac{1}{4}$

    (C) $-\dfrac{1}{4}$ (D) 0
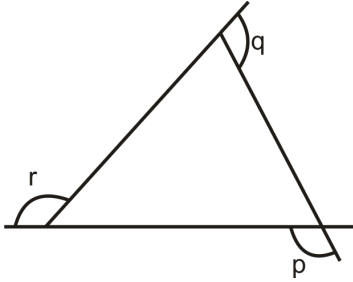
MATHEMATICS (PART-B)

*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. Which of the following numbers are divisible by 8?
    (A) 87653234   (B) 78956840
    (C) 64298608   (D) 98741032

48. Which statements are false?
    (A) $4.69 > 4.6$ (B) $1061 < 10.601$
    (C) $1.09 < 1.089$ (D) $921.06 < 921.0600$

49. The value(s) of given expression $\dfrac{(0.55)+(0.07)+(0.027)}{(0.055)+(0.007)+(0.0027)}$?

    (A) one-tenth of a hundred   (B) 10
    (C) 1   (D) 1000

50. Two equal sides of a triangle are each 8 m less than twice the third side. If perimeter of triangle is 59 m. Find third side.
    (A) 22   (B) 15
    (C) 8 more than the equal sides   (D) 7 less than the equal sides

51. The value of $4 - \dfrac{5}{1 + \dfrac{1}{3 + \dfrac{1}{2 + \dfrac{1}{4}}}}$

    (A) 0.125   (B) $\dfrac{1}{8}$

    (C) $\dfrac{1}{5}$ (D) 0.02

52. What can be the values of A if $24A789A$ is a multiple of 6?
    (A) 0   (B) 4
    (C) 6   (D) 8

53. In figure the value of $p + q + r$ is/are

    (A) 360º   (B) 180º
    (C) Two right angles   (D) Four right angles

54. The remainder when 7^7 is divided by 4 is
    (A) 3   (B) Least odd prime number
    (C) 9   (D) 5

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Paper 3 - NSEJS & Mathematical Olympiad

Paper Code: 56-3

ANSWER KEY

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