Grade 08
Unit 11

Maths

Course Outline

- Exponents and Patterns
- Introduction to Graph

MAT

(Monthly Achievement Tests)

Short Code: 447309

Test ID: NMM08U110

SOUVENIR INFOTECH

Guide Lines

1. Each set consists of:

   50 | Warm-up/Foundation Questions

   30 | Regular Questions

   20 | Thinking Ability Questions

   06 | Non-routine Questions

2. The time allocation and instructions regarding the questions are printed clearly in the beginning of each question types. The answers should be written or tick marked as per the instructions given. It is suggested to use pencil initially, so as to enable you to reuse the practice papers.

3. **According to the new pattern of CBSE these practice papers will be very useful especially for syllabus related Quiz, Debates, Visuals related checking and Orals etc.,**

4. After marking the answers, the scores of students can be checked and for marks obtained guidelines are given along with the question solving instructions. Follow those instructions and if, you are fully satisfied with your performance then check for your expected grades as per the CBSE guidelines as given on the back of each set.

5. Remember that this is only a guideline not the finally worked out result. You can further improve your performance by increase your practice.

6. For your convenience please follow following essential examiner's advices:

   a. Answer all the questions
   b. Read all the Options carefully
   c. Understand and use correct scientific language in your responses.

We from NMMM INFOTECH **wish skillful learning for your bright future.**

Before going for the test, look at least :

1. First of all go through the syllabus of the test according to the **Course Outline** provided at the front page of each MAT.
2. After going through the syllabus once or twice or even more time as per your satisfaction, first of all do the Warm-up questions. If you score A+ grade in those 50 questions go to the next level otherwise go through the chapter again.
3. The box for **Specific Information** is very useful as it adds to your concept building. Try to fill specific information in the proper way so that you will get the maximum benefit of it.
4. **Let's Chat** portion will help you to prepare for oral assessment. Through this you can increase your capacity to interact on a particular topic related to your syllabus.
5. The **Extra Diet** portion is also there to enhance you knowledge through visulization of concept. This portion provides you added knowledge on various related concepts.
6. The information related to time factor is there to enhance your time management skills.
7. From the examiners point of view it is always advised to use Pencil for initial efforts. The use of pen is fruitful only when the final effort comes.

Examiner's Tips:

- Read the question carefully. Make sure you understand exactly what is required.
- If you find that you are unable to do a part of a question, do not give up. The next part may be easier and may provide a clue to what you might have done in the part you found difficult.
- Note the number of marks per question as guide to the depth of response needed.
- Underline or note the key words that tell you what is required.
- Underline or note data as you read the question.
- Structure your answer carefully.
- Show all steps in calculations. Include equations you use and show the substitution of data. remember to work according to units given.
- Make sure that your answers contain suitable significant figures (wherever necessary) and must include units in numericals.
- Draw diagrams and graphs carefully.
- Read data from graphs carefully; note scales and prefixes on axes.
- Keep your eye on the clock but don't panic.
- If you have time at the end, use it. Check that your descriptions and explanations make sense. Consider whether there is anything you could add to an explanation or description. Repeat calculations to ensure that you have not made a mistake.

50

Opening Window

To enlighten your fundamental/basic topic knowledge.

A+. If you score 45 or above marks, move to the next section confidently.

A. If you score between 40 and 45 marks, it is satisfactory. Bit more knowledge will bring excellent result.

B. If you score below 40, kindly go through the topic more seriously.

Section A (50 marks) **Time given – 50 minutes + 5 minutes for revision**

Questions 1 to 50 carry 1 mark each.

For questions 1 to 20 four options are given one of them is the correct answer make your choice and write its name (a, b, c or d) in the answer box provided.

1. The value of $(216)^{-2/3}$ is

T – 1 min
S – Exponents

(a) 36 (b) 18

(c) $\frac{1}{8}$ (d) $\frac{1}{36}$

Ans.

2. $((12^2 - 4^2) \times 2)^{3/4} = ?$

T – 1 min
S – Exponents

(a) 16 (b) 8

(c) 64 (d) 32

Ans.

3. If $(6.25)^{3/2} = \left(\frac{25}{x}\right)^3$ then $x =$

T – 1 min
S – Exponents

(a) 5 (b) 10

(c) 25 (d) 20

Ans.

4. The value of $(1^3 + 2^3 + 3)^{-3/2}$ is

T – 1 min
S – Exponents

(a) 1 / 36 (b) $(6)^{-2}$

(c) $(6)^{-1}$ (d) $(6)^{-3}$

Ans.

5. $\left(\frac{2}{3}\right)^n =$

T – 1 min
S – Exponents

(a) $\frac{2^n}{3}$ (b) $\frac{2^n}{3^n}$

(c) $\frac{2}{3^n}$ (d) None of these.

Ans.

6. $2^0 =$

(a) 0 (b) 2

(c) 1 (d) None of these

T – 1 min
S – Exponents

Ans.

7. If $\left(\frac{4}{\sqrt{9}}\right)^x - 1 = \frac{7}{9}$ then $x =$

(a) 1 (b) 2

(c) 3 (d) 4

T – 1 min
S – Exponents

Ans.

8. The value of $\left(\frac{3}{5}\right)^3$ is :

(a) $\frac{17}{25}$ (b) $\frac{27}{125}$

(c) $\frac{19}{130}$ (d) none of these

T – 1 min
S – Powers

Ans.

9. The value of $(2^{-2} \times 3^{-2})^2$ is:

(a) $\frac{1}{1236}$ (b) $\frac{1}{1246}$

(c) $\frac{1}{1296}$ (d) $\frac{1}{1379}$

T – 1 min
S – Powers

Ans.

10. x cooridnate of a poing (6, 9)

(a) 9 (b) 6

(c) 0 (d) none of these

T – 1 min
S – Introduction of graph

Ans.

11. The value of $1 + 3 + 5 + 7 + \ldots + 39$.

(a) 441 (b) 499

(c) 361 (d) 400

T – 1 min
S – Natural number

Ans.

True or False

12. $\left(\frac{p}{q}\right)^m = \frac{p^m}{q^m}$

T – 1 min
S – Exponents

Ans.

13. $\left(\frac{p}{q}\right)^m \times \left(\frac{p}{q}\right)^n = \left(\frac{p}{q}\right)^{m/n}$

T – 1 min
S – Exponents

Ans.

14. $\left(\frac{p}{q}\right)^m \div \left(\frac{p}{q}\right)^n = \left(\frac{p}{q}\right)^{m+n}$

T – 1 min
S – Exponents

Ans.

15. $\left[\left(\frac{p}{q}\right)^m\right]^n = \left(\frac{p}{q}\right)^{mn}$

T – 1 min
S – Exponents

Ans.

16. $\left(\frac{p}{q}\right)^{nm} = \left(\frac{p}{q}\right)^m$

T – 1 min
S – Exponents

Ans.

17. Origin has (0, 0) coordinates.

T – 1 min
S – Exponents

Ans.

18. A pie graph is used to compare parts of a whole.

T – 1 min
S – Introduction of graph

Ans.

19. A bar graph is used to compare parts of a whole.

T – 1 min
S – Introduction of graph

Ans.

20. A Histogram is a bas graph trial shows data in internals.

T – 1 min
S – Introduction of graph

Ans.

Fill in the blanks.

21. If n be any positive integer greater than 1, and x and y be rational numbers.
such that $x^n = y$ then $x =$ _____

T – 1 min
S – Exponents

Ans.

22. A radical that contains no rational factor other than _____ is called a pure radical.

T – 1 min
S – Rational number

Ans.

23. $(4)^{-2} =$ _____.

T – 1 min
S – Exponents

Ans.

24. Obtained by joining the plotted points.

T – 1 min
S – Introduction of graph

Ans.

25. $9\sqrt{11} =$ _____

T – 1 min
S – Exponents

Ans.

26. $\left(\frac{144}{25}\right)^{1/2} =$ _____.

T – 1 min
S – Exponents

Ans.

27. $4\sqrt{625} =$ _____

T – 1 min
S – Exponents

Ans.

28. $x^{-p/q} =$ _____.

T – 1 min
S – Exponents

Ans.

29. $12^2 \times 12^8 =$ _____.

T – 1 min
S – Exponents

Ans.

30. $(\sqrt{7})^6 \times (\sqrt{7}) =$ _____.

T – 1 min
S – Exponents

Ans.

31. Evaluate the $\left(\frac{2}{3}\right)^2$

T – 1 min
S – Rational number

Ans.

32. Find x so that $\left(\frac{2}{5}\right)^3 \times \left(\frac{2}{5}\right)^4 = \left(\frac{2}{5}\right)^{2x+1}$

T – 1 min
S – Exponents

Ans.

33. $\frac{2}{5} \times \frac{2}{5} \times \frac{2}{5} \times \frac{2}{5}$

T – 1 min
S – Exponents

Ans.

34. $\frac{4}{3} \times \frac{4}{3} \times \frac{4}{3} \times \frac{4}{3} \times \frac{4}{3} \times \frac{4}{3}$

T – 1 min
S – Exponents

Ans.

For questions 35 to 46. Express the following in multiplication form

35. $\frac{8}{27}$

T – 1 min
S – Multiplication form

Ans.

36. $\frac{625}{256}$

Ans.

For questions 37 to 38. Express the following with positive exponents:

37. $\left(\frac{-2}{9}\right)^{-4}$

T – 2 min
S – Exponents

Ans.

38. $\left(\frac{3}{13}\right)^{-6}$

Ans.

For question 39-40, find the value of m if:

39. $\left(\frac{-6}{11}\right)^4 \times \left(\frac{-6}{11}\right)^m = \left(\frac{-6}{11}\right)^8$

T – 2 min
S – Exponents

Ans.

40. $\left(\frac{7}{9}\right)^{-3} \times \left(\frac{7}{9}\right)^{-4} = \left(\frac{7}{9}\right)^{2m+1}$

Ans.

Questions 41-43, Evaluate the following :

T – 3 min
S – Exponents

41. $\left(\frac{3}{8}\right)^{-2} \times \left(\frac{4}{5}\right)^{-2}$

Ans.

42. $\left[\left(\frac{2}{3}\right)^{-2}\right]^{-2}$

Ans.

43. $(2^{-1} \times 10^{-1})^{-1} \div 4^{-1}$

Ans.

44. Find the value of x if $5^{x-1} = 125$

T – 1 min
S – Exponents

Ans.

45. Find the value of m if $4^m = 64$

T – 1 min
S – Exponents

Ans.

46. Find the value of m if $5^m = 625$.

T – 1 min
S – Exponents

Ans.

Simplify the following components

47. $\left(-\frac{1}{9}\right)^8 \div \left(-\frac{1}{7}\right)^{10}$

T – 1 min
S – Exponents

Ans.

48. $(3)^{-2/3} \times \left(\frac{1}{5}\right)^{2/3}$

T – 1 min
S – Exponents

Ans.

Plot the following points on a graph paper

T – 2 min
S – Exponents

49. (5, 8)

Ans.

50. (3, 4)

Ans.

30

Opening Window

To enlighten your regular knowledge of topic. If you score more than 55 marks here, you have achieved this level brilliantly. Move to the next level of test papers.

Section B (60 marks) **Time given – 45 minutes + 5 minutes for revision**
Questions 51 to 80 carry 2 marks each.

51. Find the value of $(5^2 + 12^2)^{3/2}$.

T – 1 min
S – Exponents

Ans.

52. Find the value of x for which $(256)^{-\left(x-\frac{3}{2}\right)} = 2^{-20}$

T – 1 min
S – Exponents

Ans.

53. Find the value of x for which $(.00x)^{2/3} = 0.04$

T – 1 min
S – Exponents

Ans.

54. Express 49 as the sum of 7 odd numbers.

T – 1 min
S – Exponents

Ans.

55. Evaluate : $\left[\left(\frac{1}{3}\right)-\left(\frac{1}{4}\right)^{-1}\right]^{-1}$

T – 1 min
S – Exponents

Ans.

56. Find the value of m for which $3^{m}-5^{-3}=5^{5}$.

T – 1 min
S – Exponents

Ans.

57. Find m, so that $(-3)^{m+1}\times(-3)^{5}=(-3)^{7}$.

T – 1 min
S – Exponents

Ans.

58. Find the product of the cube of $\frac{-1}{2}$ to that the square of $\frac{-2}{3}$.

T	– 1 min
S	– Multiplication

Ans.

59. Simplify : $\left[\left(\frac{1}{2}\right)^2 - \left(\frac{1}{4}\right)^3\right] \times 5^3$

T	– 1 min
S	– Exponents

Ans.

60. By what number should $\left(\frac{3}{7}\right)^{-3}$ be multiplied so that the product is $\left(\frac{5}{7}\right)^{-5}$.

T	– 1 min
S	– Exponents

Ans.

61. Find the value of:
$(6^0 - 2^0) \times (6^0 + 2^0)$

T – 1 min
S – Exponents

Ans.

62. Using the laws of exponents, express each of the following as rational numbers with positive exponents.

(a) $(7)^{\frac{-5}{3}}$ (b) $(8)^{\frac{-3}{6}}$

T – 1 min
S – Exponents

Ans.

63. $625^{2x+1} \div 25 = 125$. Find x.

T – 1 min
S – Exponents

Ans.

64. Find x so that, $\left(\frac{5}{3}\right)^{-6} \times \left(\frac{5}{3}\right)^{-18} = \left(\frac{5}{3}\right)^{4x}$

T – 1 min
S – Exponents

Ans.

65. Express the 3049700000 in the form $k \times 10^n$, where k is the number and n is an integer.

T – 1 min
S – Exponents

Ans.

66. If $x = \left(\frac{3}{4}\right)^2 \times \left(\frac{4}{3}\right)^{-4}$, find the value of x^{-2}.

T – 2 min
S – Exponents

Ans.

67. Simplify: $\left(\frac{3}{5}\right)^2 \times \left(\frac{5}{7}\right)^2 \times \left(\frac{49}{5}\right) + \left(\frac{-3}{5}\right)^3 \times \frac{5}{3} \times \frac{4}{3}$

T – 2 min
S – Simple maths

Ans.

68. Find the value of $\left(\frac{32}{243}\right)^{4/5}$.

T – 2 min
S – Exponents

Ans.

69. Find the value of x for which $(.00x)^{2/3} = 0.04$

T – 2 min
S – Exponents

Ans.

70. Reduce $\frac{58}{510}$ to the simple form.

T – 2 min
S – Exponents

Ans.

Simplify the following

71. $\sqrt{24} + \sqrt{54} - \sqrt{28}$

T – 2 min
S – Exponents

Ans.

72. $\sqrt{40} - \sqrt{90} - \sqrt{160}$

T – 2 min
S – Exponents

Ans.

73. $3\sqrt{5} \times 6\sqrt{10}$

T – 2 min
S – Exponents

Ans.

74. $(\sqrt{25} \times 4\sqrt{5}) \div \sqrt{15}$

T – 2 min
S – Exponents

Ans.

75. $\frac{\sqrt{75} \times \sqrt{125} \times \sqrt{625}}{\sqrt{200} \times \sqrt{500} \times \sqrt{5}}$

T – 2 min
S – Exponents

Ans.

76. $\sqrt{75} \times \sqrt{50} \times \sqrt{135} \div \sqrt{125} \times \sqrt{162}$

T – 2 min
S – Exponents

Ans.

77. $\sqrt{8} \times \sqrt{64} \times \sqrt{32} \div \sqrt{16} \times \sqrt{30} \times \sqrt{40}$

T – 2 min
S – Exponents

Ans.

Side of a square in cm	1	2	3	4	4.5
Perimeter in cm	4	8	12	16	18

79. With the help of above graph find the perimeter of a square, side (2.5 cm).

T – 2 min
S – Introduction with graph

Ans.

80. Find the side of a square it perimeter is 6 cm. using above graph

T	– 2 min
S	– Introduction with graph

Ans.

Opening Window

To enlighten your regular knowledge of topic. If you score more than 50 marks here, you have achieved this level brilliantly. Move to the next level of test papers.

Section C (60 marks) **Time given – 45 minutes + 5 minutes for revision**

81. Multiply:
$\left(\frac{2}{3}xyz\right)\times\left(\frac{3}{4}x^2y^2z^2\right)\times\left(\frac{4}{5}x^3y^3z^3\right)$

T – 2 min
S – Exponents

Ans.

82. Verify that the following relations are true by expressing each side as a monomial:
$(5abc)\left(\frac{1}{-500}\right)a^5b^{50}c^{500} = \left(\frac{1}{-500}\right)a^5b^{50}c^{500}(5abc)$

T – 2 min
S – Exponents

Ans.

83. Express $\left(\frac{3}{4}\right)^{-3}$ as power of rational number with positive exponent.

T – 2 min
S – Exponents

Ans.

84. Express $\left(\frac{4}{3}\right)^{-3}$ as power of rational number with negative exponent.

T – 2 min
S – Exponents

Ans.

85. By what number should we multiply $(-8)^{-1}$, so that the product may be equal to 10^{-1}?

T – 2 min
S – Exponents

Ans.

86. In march 2001, the population of India was approximated to be 1,02,70,00,000 in which 531,20000 were males and 495,800000 females. Express the above statement in $K \times 10^n$ form.

T – 2 min
S – Exponents

Ans.

87. In a stock there are 5 books each of thickness 20 mm and 5 paper sheets each of thickness 0.016 mm. What is the total thickness of the stock.

T – 2 min
S – Simple maths

Ans.

88. By what number should we divide $(121)^{7/8}$ to obtain $(1331)^{3/4}$?

T – 2 min
S – Exponents

Ans.

89. By which number should we multiply $(81)^{3/16}$, so that the product becomes $(3)^{5/4}$?

T – 2 min
S – Exponent

Ans.

90. Mass of Earth is 5.97×10^{24} kg and mass of moon is 7.35×10^{22} kg. What is the total mass?

T – 2 min
S – Exponent

Ans.

91. The distance between Sun and Earth is 1.495×10^{11} m and the distance between Earth and Moon is 3.84×10^{3}m. During solar elipse moon comes in between Earth and sun. At that time what is the distance between Moon and Sun?

T – 2 min
S – Exponent

Ans.

Questions 92-93, express the following numbers in standard form:

92. 0.0000000000087

T – 4 min
S – Exponent

Ans.

93. 2080000000000000

Ans.

94. In a stack there are 5 books, each of thickness 20 mm and 5 paper sheets, each of thickness 0.016 mm. What is the total thickness of the stack?

T – 2 min
S – Exponent

Ans.

95. Ramonuj drive a car constantly at a speed of 40 km/hour. Draw a time distance graph

T – 2 min
S – Introduction to graph

Ans.

With the help of graph find the following questions.

T – 9 min
S – Introduction to graph

96. The distance covered by Ramanuj in 5 hrs.

Ans.

97. The time taken by Ramanuj to cover 160 km.

Ans.

98. If the distance of city A to city B is 120 km. How much time taken by Ramonju

Ans.

99. Express the following in standard form.
(a) 0.00000032 (b) 659842000

T – 3 min
S – Exponents

Ans.

100. Evaluate : $\left(\frac{-2}{9}\right)^2 \times \left(\frac{-3}{5}\right)^2 \times \left(\frac{-2}{9}\right)^{-2} \times \left(\frac{-3}{5}\right)^{-2}$

T – 3 min
S – Exponents

Ans.

06

Opening Window

These are not compulsory-type questions. But in favour of students, it is advised to solve these questions very carefully. No marks are allowed for this section.

Section D (10 questions) **Time given – 30 minutes + 5 minutes for revision**

101. Express the number appearing in the following statements in standard form:
(a) 1 micron is equal to 1/1000000 m.
(b) Change of an electorn is 0.000, 000, 000, 000, 000, 000, 16 coulomb.
(c) Size of bacteria is 0.0000005 m.
(d) Thickness of a thick paper is 0.07 mm.

Ans.

102. The diameter of the sun 1014.4×10^4 m and the diameter of the Earth is 1.2756×10^7n. Compare the diameter of the Earth with the diameter of the sun.

Ans.

103. On the particular day, the temperature of Delhi at 10 a.m. was 15°C but by the mid night, it fell down at 6°C. The temperature of Chennai at 10 a.m. the same day was 18°C but fell down to 10°C by the mid night. Which fall is greater ?

Ans.

104. By which should we multiply $(64)^{5/3}$, so that the product becomes $(4)^5$?

Ans.

105. $\left(\frac{-4}{5}\right)^2 \times \left(\frac{-4}{5}\right) \times \left(\frac{5}{4}\right) \times \left(\frac{5}{4}\right)^{-2}$ is:

Ans.

106. $x = \left(\frac{13}{15}\right)^{\frac{1}{2}} \div \left(\frac{13}{15}\right)^{\varnothing}$, find x.

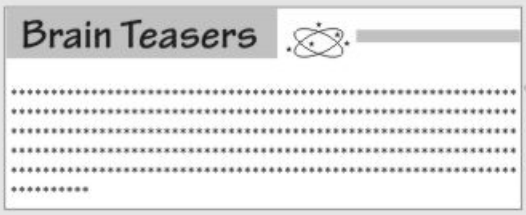
Ans.

Tools at a glance

Opening Window with instructions for your potential analysis and guideline to improve your performance.

Let's Chat, the feature with suggestive topics for discussion so as to improve your capacity to debate on various topics.

Box with time break-up of questions **(T)** and its concept (**S**, i.e., subject)



Brain Teasers i.e., Questions with difference to make the concepts of students crystal clear. These are the questions with higher difficulty levels to check the grip of the students over the concepts.

Extra Diet, the web link, the notation: www._____ to provide additional information regarding the concept for more clarity of thoughts.

CBSE GRADING PATTERN

As the new pattern includes **CCE** (Continuous and Comprehensive Evaluation) which will be run in two terms i.e., from April to September and October to March. Thus the school will conduct four **Formative** and two **Summative** Assessments.

However, the most generalised version of grades is given below:

MARKS PERCENTAGE	GRADE	GRADE POINT	CATEGORY
91 to 100	A1	10	Exceptional
81 to 90	A2	9	Excellent
71 to 80	B1	8	Very Good
61 to 70	B2	7	Good
51 to 60	C1	6	Ordinary
41 to 50	C2	5	Average
33 to 40	D	4	Below Average
21 to 32	E1	3	Improvement Needed
Below 20	E2	Below 2	Unsatisfactory