# MAT

## Mohammad Ali Jinnah University Admission Test

### Sample Test Paper for Graduate Programs

**MAT is a computer-based test. This sample test is only to show example questions in each of the FOUR sections of the test.**

A. Essay Writing (20 minutes – 20 marks)
   (100 minutes – 100 marks)
B. Verbal Reasoning (40 MCQs)
C. Quantitative Reasoning (40 MCQs)
D. Analytical Reasoning (20 MCQs)

These questions in paper-based format are to help applicants prepare for MAT.

# A. <u>ESSAY WRITING</u>

**INSTRUCTIONS:**
The essay gives you an opportunity to show how effectively you can develop and express ideas. You should therefore take care to develop your point of view, present your ideas logically and clearly, and use language precisely.

You will be given 20 minutes to plan and compose a response. An off-topic response will receive a ZERO.

Think carefully about the issue presented in the following excerpt and the assignment below.

"Role of social media in shaping ideas"

**Assignment:** Write a response in which you discuss the extent to which you agree or disagree with the recommendation and explain your reasoning for the position you take. In developing and supporting your position, describe specific circumstances in which adopting the recommendation would or would not be advantageous and explain how these examples shape your position.

# B. VERBAL REASONING

## B1: Analogy

1.    Anhydrous : Saturated :

(A)    Sweet      :    Wet
(B)    Dry        :    Wet
(C)    Solid      :    Liquid
(D)    Cloying    :    Full

2.    Falcon : Bird :: Toad : _____

(A)    Pond
(B)    Snake
(C)    Water
(D)    Frog

3.    Mad : Insane :: _____ : _____

(A)    Slim       :    Thin
(B)    Red        :    Green
(C)    Brave      :    Timid
(D)    Healthy    :    Fat

4.    Exemption: Rule: _____ : _____

(A)    Debarment    :    prevention
(B)    Immunity     :    Disease
(C)    Exile        :    Nation
(D)    Forgiveness  :    Crime

5.    Bread : Wheat :: _____ : _____

(A)    Fruit      :    Tree
(B)    Butter     :    Cow
(C)    Oil        :    Corn
(D)    Wine       :    Grape

## **B2: Synonym**

6. Acumen

    (A)    Abundance
    (B)    Bitterness
    (C)    Deficit
    (D)    Quickness of insight

7. Nascent

    (A)    Initial
    (B)    Unpleasant
    (C)    Latest
    (D)    Crude

8. Interim

    (A)    Temporary
    (B)    Internal
    (C)    Timely
    (D)    Interval

9. Perspicacious

    (A)    Bad
    (B)    Clear
    (C)    Hazy
    (D)    Shrewd

10. Incensed

    (A)    Affected
    (B)    Incited
    (C)    Encouraged
    (D)    Inspired

## **B3: Antonym**

11. Transmit

    (A)      Televise
    (B)      Withhold
    (C)      Reply
    (D)      Show

12. False

    (A)      Defective
    (B)      True
    (C)      Incorrect
    (D)      Inaccurate

13. Jocose

    (A)      Diseased
    (B)      Playful
    (C)      Dull
    (D)      Humorous

14.  Feral

    (A)      Tame
    (B)      Unyielding
    (C)      Natural
    (D)      Grim

15. Dilettante

    (A)      Professional
    (B)      Tidy
    (C)      Rapid
    (D)      Stupid

## B4: Sentence Completion

16. The girl ..................... sits next to Sam is his niece.

    (A) whom
    (B) where
    (C) which
    (D) who

17. You ................................. do something to improve the situation.

    (A) ought
    (B) should be
    (C) ought to
    (D) is able to

18. She is the ................................ girl in the class.

    (A) chirpy
    (B) most chirpy
    (C) chirpiest
    (D) chirper

19. Hoping to escape detection, Minnie _____ placed an ace in her sleeve while Rance shuffled the cards.

    (A) brazenly
    (B) overtly
    (C) furtively
    (D) hopefully

20. Over thousands of years, organisms have _____ many strategies to conserve water.

    (A) organized
    (B) considered
    (C) questioned
    (D) evolved

21. My cat is a creature of contradictions: _____ yet affectionate, _____ yet alert.

    (A)    cruel . . . shrewd
    (B)    quiet . . . lively
    (C)    selfish . . . nimble
    (D)    aloof . . . dreamy


22. The high-profile company CEO was given an _____ for speaking at the monthly meeting of the area business leaders' society.

    (A)    expiation
    (B)    honorarium
    (C)    inquisition
    (D)    interpretation

23. Because he was so _____, the athlete was able to complete the obstacle course in record time.

    (A)    speculative
    (B)    nimble
    (C)    belligerent
    (D)    volatile

24. Professionals ………………… nurses and teachers are often underpaid.

    (A)    such as
    (B)    as
    (C)    likewise
    (D)    further


25. I worked ……………………… the best of my ability.

    (A)    to
    (B)    by
    (C)    for
    (D)    in

26.    _____ for talking too much, the teacher _____ his reputation by keeping the class 30 minutes longer than the scheduled class time.

   (A)     Notorious . . . verified
   (B)     Famous . . . evinced
   (C)     Renowned . . . overturned
   (D)     Eminent . . . established

27.    Because the issue is so insignificant, it was surprising that the disagreement among city council members was so ____.

   (A)     tepid
   (B)     acrimonious
   (C)     slovenly
   (D)     genial

28.    When he reached home,

   (A)     he sees a strange event
   (B)     he will see a strange event
   (C)     he see a strange event
   (D)     he saw a strange event

29.    Dowry is no longer permitted by law even in ____ marriage.

   (A)     love
   (B)     conventional
   (C)     natural
   (D)     polygamous

30.    My ancestor who lost his life in the Revolutionary War was a _____ for American independence.

   (A)     compatriot
   (B)     reactionary
   (C)     martyr
   (D)     knave

## B5: Comprehension

**Passage 1:**

Many great inventions are initially greeted with ridicule and disbelief. The invention of the airplane was no exception. Although many people who heard about the first powered flight on December 17, 1903 were excited and impressed, others reacted with peals of laughter. The idea of flying an aircraft was repulsive to some people. Such people called Wilbur and Orville Wright, the inventors of the first flying machine, impulsive fools. Negative reactions, however, did not stop the Wrights. Impelled by their desire to succeed, they continued their experiments in aviation.

Orville and Wilbur Wright had always had a compelling interest in aeronautics and mechanics. As young boys they earned money by making and selling kites and mechanical toys. Later, they designed a newspaper-folding machine, built a printing press, and operated a bicycle-repair shop. In 1896, when they read about the death of Otto Lilienthal, the brothers' interest in flight grew into a compulsion.

Lilienthal, a pioneer in hang-gliding, had controlled his gliders by shifting his body in the desired direction. This idea was repellent to the Wright brothers, however, and they searched for more efficient methods to control the balance of airborne vehicles. In 1900 and 1901, the Wrights tested numerous gliders and developed control techniques. The brothers' inability to obtain enough lift power for the gliders almost led them to abandon their efforts.

After further study, the Wright brothers concluded that the published tables of air pressure on curved surfaces must be wrong. They set up a wind tunnel and began a series of experiments with model wings. Because of their efforts, the old tables were repealed in time and replaced by the first reliable figures for air pressure on curved surfaces. This work, in turn, made it possible for the brothers to design a machine that would fly. In 1903 the Wrights built their first airplane, which cost less than $1,000. They even designed and built their own source of propulsion-a lightweight gasoline engine. When they started the engine on December 17, the airplane pulsated wildly before taking off. The plane managed to stay aloft for 12 seconds, however, and it flew 120 feet.

By 1905, the Wrights had perfected the first airplane that could turn, circle, and remain airborne for half an hour at a time. Others had flown in balloons and hang gliders, but the Wright brothers were the first to build a full-size machine that could fly under its own power. As the contributors of one of the most outstanding engineering achievements in history, the Wright brothers are accurately called the fathers of aviation.

31. The idea of flying an aircraft was _____ to some people.

    (A) boring
    (B) distasteful
    (C) exciting
    (D) needless
    (E) Answer not available

32. People thought that the Wright brothers had _____.

    (A) acted without thinking
    (B) been negatively influenced
    (C) been too cautious
    (D) been mistaken
    (E) acted in a negative way

33. The Wrights' interest in flight grew into a _____.

    (A) financial empire
    (B) plan
    (C) need to act
    (D) foolish thought
    (E) Answer not available

34. Lilienthal's idea about controlling airborne vehicles was _____ the Wrights.

    (A) proven wrong by
    (B) opposite to the ideas of
    (C) disliked by
    (D) accepted by
    (E) improved by

35. The old tables were _____ and replaced by the first reliable figures for air pressure on curved surfaces.

    (A) destroyed
    (B) invalidated
    (C) multiplied
    (D) approved
    (E) not used

**Passage 2:**

Marie Curie was one of the most accomplished scientists in history. Together with her husband, Pierre, she discovered radium, an element widely used for treating cancer, and studied uranium and other radioactive substances. Pierre and Marie's amicable collaboration later helped to unlock the secrets of the atom.

Marie was born in 1867 in Warsaw, Poland, where her father was a professor of physics. At an early age, she displayed a brilliant mind and a blithe personality. Her great exuberance for learning prompted her to continue with her studies after high school. She became disgruntled, however, when she learned that the university in Warsaw was closed to women. Determined to receive a higher education, she defiantly left Poland and in 1891 entered the Sorbonne, a French university, where she earned her master's degree and doctorate in physics.

Marie was fortunate to have studied at the Sorbonne with some of the greatest scientists of her day, one of whom was Pierre Curie. Marie and Pierre were married in 1895 and spent many productive years working together in the physics laboratory. A short time after they discovered radium, Pierre was killed by a horse-drawn wagon in 1906. Marie was stunned by this horrible misfortune and endured heartbreaking anguish. Despondently she recalled their close relationship and the joy that they had shared in scientific research. The fact that she had two young daughters to raise by herself greatly increased her distress.

Curie's feeling of desolation finally began to fade when she was asked to succeed her husband as a physics professor at the Sorbonne. She was the first woman to be given a professorship at the world-famous university. In 1911 she received the Nobel Prize in chemistry for isolating radium. Although Marie Curie eventually suffered a fatal illness from her long exposure to radium, she never became disillusioned about her work. Regardless of the consequences, she had dedicated herself to science and to revealing the mysteries of the physical world.

36. The Curies' _____ collaboration helped to unlock the secrets of the atom.

   (A) friendly
   (B) competitive
   (C) courteous
   (D) industrious
   (E) chemistry


37. Marie had a bright mind and a _____ personality.

   (A) strong
   (B) lighthearted
   (C) humorous
   (D) strange
   (E) envious

38. When she learned that she could not attend the university in Warsaw, she felt _____.

   (A) hopeless
   (B) annoyed
   (C) depressed
   (D) worried
   (E) None of the above

39. Marie _____ by leaving Poland and traveling to France to enter the Sorbonne.

   (A) challenged authority
   (B) showed intelligence
   (C) behaved
   (D) was distressed
   (E) Answer not available

40. _____ she remembered their joy together.

   (A) Dejectedly
   (B) Worried
   (C) Tearfully
   (D) Happily
   (E) Irefully

# C. QUATITATIVE REASONING

## C1: Arithmetic

41. $(2^2)^3 \times (2^3)^2 = ?$

    (A) 4096    (B) 4046    (C) 3096    (D) 3046

42. If A completes a particular work in 4 days and B completes the same work in 12 days. How many days will it take if they work together?

    (A) 1    (B) 2    (C) 3    (D) 4    (E) 5

43. In the total investment of $500,000, B's share is 20%. While A's share is 40% of the B's. What is the share of A?

    (A) $32,000    (B) $34,000    (C) $36,000    (D) $38,000    (E) $40,000

44. If the cost of 12 eggs is $40. What will be the cost of 3 eggs?

    (A) $9    (B) $10    (C) $11    (D) $12    (E) $13

45. If the sum of two numbers is 16, and their product is 63. Then the larger number is

    (A) 9    (B) 10    (C) 11    (D) 12    (E) 13

46. The sum of three consecutive even numbers is 78. What is the largest number?

    (A) 22    (B) 24    (C) 26    (D) 28    (E) 30

47. What is the number, if 40% of the number is 380?

    (A) 930    (B) 935    (C) 940    (D) 945    (E) 950

48. A boy sold his bicycle for $2400 and earned 20% profit. What was the original price (the price without the profit) of the bicycle?

    (A) $1940    (B) $1960    (C) $1980    (D) $2000    (E) $2020

49. What comes next in the sequence: 1, 1, 2, 6, 24, ___?

    (A) 110    (B) 120    (C) 130    (D) 140    (E) 150

50. What is the 81st number in the sequence: 1, 4, 7, 10, ........., $a_{81}$ = ?

(A) 237     (B) 241     (C) 245     (D) 249     (E) 253

51. Suppose Rs.1,000 is deposited into a savings account that earns Compounded interest at an a rate of 5%. How much will be in the account after 2 years if the interest is compounded annually?

(A) Rs.1102.5     (B) Rs.1110.5     (C) Rs.1112.5   (D) Rs.1120.5     (E) Rs.1122.5

52. 1, 2, 5, 14, _____?

(A) 38     (B) 39     (C) 40     (D) 41

53. $-4^2 + (-4)^2 =?$

(A) 0     (B) 1     (C) 32     (D) –32

54. What is the sum of the first 12 numbers of the series: 2 , 6, 10, 14, .... ?

(A) 260     (B) 268     (C) 280     (D) 288

55. $|2| - |-2| - 2^2 - (-2)^2 =?$

(A) –8
(B) –6
(C) –4
(D) –2

## C2: Algebra and Functions

56. On solving the algebraic expression 2(x - 2y) +4(2y + 3z) -3(x + 4y - 5z), the answer will be

(A) −x - 8y - 27z
(B) −x - 8y + 27z
(C) x + 8y - 27z
(D) x - 8y - 27z

57. On the Cartesian plane, the y-axis is also known as

(A) horizontal axis
(B) vertical axis
(C) point coordinate
(D) function coordinate

58. The plane which consists of two number lines that intersect each other at right angle is called

(A) functional plane
(B) Cartesian plane
(C) ordinate plane
(D) dimensional plane

59. On the Cartesian plane, the point 'O' is known as

(A) function
(B) ordinate
(C) origin
(D) coordinate

60. In the ordered pair (-2, -3), the abscissa is

(A) 3
(B) −2
(C) 2
(D) −3

61. In the ordered pair (-3, -4), the ordinate or y-ordinate is

(A) −4
(B) −7
(C) −3
(D) 3

62. In an ordered pair of Cartesian plane (a, b), the 'b' is known as

(A) x-coordinate
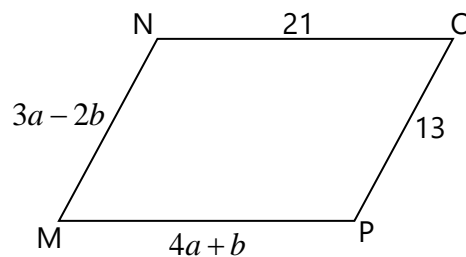(B) y-coordinate
(C) abscissa
(D) none of the above

63. Consider the function y = 12 + 3x, if value of x = -2 then the value of 'y' is

    (A) −18
    (B) 6
    (C) −6
    (D) 18

64. For two non-empty sets A and B, the Cartesian product A×B is called

    (A) Binary operation
    (B) Binary relation
    (C) Function
    (D) None of these

65. The set of the first elements of the ordered pairs forming a relation is called its

    (A) Subset
    (B) Domain
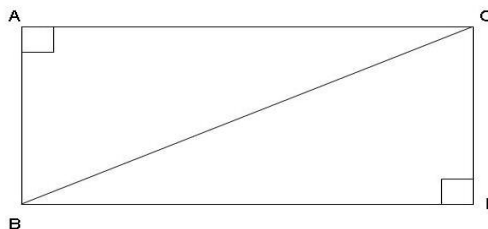    (C) Range
    (D) None of these

## C3: Geometry

66. The circumference of two circles is 83 m and 220 m respectively. What is the difference between the area of the larger circle and the smaller circle?

    A.    3234 sq m

    B.    3134 sq m

    C.    844 sq m

    D.    664 sq m

    E.    564 sq m

67. What values of $a$ and $b$ make quadrilateral $MNOP$ a parallelogram?

    A.    $a = 1,\ b = 5$

    B.    $a = 5,\ b = 1$

    C.    $a = \dfrac{11}{7},\ b = \dfrac{34}{7}$

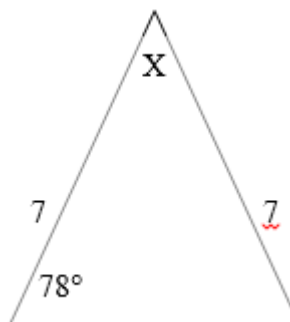    D.    $a = \dfrac{34}{7},\ b = \dfrac{11}{7}$

    E.    None of the above

68. Based on the figure, if L is the length and W is the width, what is the length of the diagonal line?

A. L + W

B. $L^2$ + W

C. $L^2$ + $W^2$

D. $\dfrac{L^2 + W^2}{2}$

E. $\sqrt{L^2 + W^2}$

69. This diagram shows an isosceles triangle.  What is the measure of <X?

A. 24°

B. 62°

C. 52°

D. 78°

E. 12°

70. Evaluate cos 165° using a sum or difference identity.

A. $\dfrac{-\sqrt{2} + \sqrt{6}}{4}$

B. $\dfrac{-\sqrt{3} + \sqrt{6}}{4}$

C. $\dfrac{\sqrt{2} - \sqrt{6}}{4}$

D. $\dfrac{-\sqrt{2} - \sqrt{6}}{4}$

E. None of the above

## C4: Equations

71. The solution of 2x-3=7 is:

    (A) 5

    (B) 7

    (C) 12

    (D) 11

72. The solution of 2y + 9 = 4 is:

    (A) 9/2

    (B) 4/9

    (C) $-\frac{2}{5}$

    (D) -5/2

73. What is the value of x if x + 9 = 12?

    (A) 2

    (B) 3

    (C) 8

    (D) 6

74. Find the value of x if 2x + 10 = 76.

    (A) 33

    (B) 7.6

    (C) 66

    (D) 32

75. The perimeter of a rectangle is 40 cm. If its width is 10 cm, then find the length.

    (A) 10

    (B) 20

    (C) 30

    (D) 40

## C5: Statistics

76. The Mean of a constant 'x' is

   (A) 0

   (B) x/2

   (C) x

   (D) 1

77. Find the mean, mode and median of the given sets of data: 5,8,12,17,12,14,6,8, 12, and 10

   (A) 11,12,10

   (B) 10,12,13

   (C) 11,12,13

   (D) 10,12,11

78. Find the mean mode and median of the messages received on 7 consecutive days 7,13,5,9,6,5,10.

   (A) 7,8,9

   (B) 8,9,9

   (C) 8,8,9

   (D) 6,8,9

79. Calculate the range of the given sets of data 7,47,8,42,47,95,42,96,2

   (A) 6

   (B) 94

   (C) 71

   (D) 84

80. Find the variance of the given data sets 7,47,8,42,47,95,42,96,3

   (A)1028.78

   (B)1018.78

   (C)1029.78

   (D) 1019.78

# D. ANALYTICAL REASONING

## D1: Scenario Based / Mental Mathematics

81. The ratio 5:20 expressed as percent equals to

   (A) 50 %
   (B) 125 %
   (C)  25 %
   (D) None of above

82. What will be the fraction of 20%

   (A)  1/4
   (B) 1/5
   (C) 1/10
   (D) None of above

83.  Half percent, written as a decimal, is

   (A) 0.2
   (B)  0.005
   (C) 0.02
   (D) 0.05

84. The length and breadth of a rectangle are in the ratio 3 : 1. If the breadth is 7 cm, then the length of the rectangle is:

   (A) 14 cm;
   (B) 16 cm;
   (C) 18 cm;
   (D) 21 cm;

85.Two numbers are in the ratio 7:9. If the sum of the numbers is 112, then the larger number is:

   (A) 49;
   (B) 72;
   (C) 63;
   (D) 42

86: 0.75  Is the same as?

(A) 7.5%
(B) 75%
(C) 750%
(D) 0.075%

87: Which unit is used to measure angles or temperatures?

(A) Inch.
(B) Decimeter.
(C) Degree.
(D) Point.

88: What is the next prime number after 5?

(A) 6
(B) 7
(C) 9
(D) 11

89: The product of 121 x 0 x 200 x 25 is

(A) 1500
(B)  0
(C) 4000
(D) None of these

90: Solve 24÷8+2.

(A) 5
(B) 6
(C) 8
(D) 12

91. In a class there are 20 boys and 15 girls. The ratio of boys to girls is:

(A) 4 : 3;
(B) 3 : 4;
(C) 4 : 5;
(D) none of these

92. The ratio 35 : 84 in simplest form is:

   (A) 5 : 7;
   (B) 7 : 12;
   (C) 5 : 12;
   (D) none of these


93. A ratio equivalent to 3 : 7 is:

   (A) 3 : 9;
   (B) 6 : 10;
   (C) 9 : 21;
   (D) 18 : 49

94: What is 20% of 200?

   (A) 20
   (B) 5
   (C) 40
   (D) None of the these

95: The population of a town increased from 1,75,000 to 2,62,500 in a decade. The average percent increase of population per year is:

   (A) 6%
   (B) 5%
   (C) 4.37%
   (D) 8.75%

96: Find the missing terms in multiple of 3: 3, 6, 9, __, 15

   (A) 10
   (B) 11
   (C) 12
   (D) 13

97: The product of 82 and 5 is:

   (A) 400
   (B) 410
   (C) 420
   (D) None of these

98: 20+(90÷2) is equal to:

    (A) 50
    (B) 55
    (C) 65
    (D) 60

99: 50 times of 8 is equal to:

    (A) 80
    (B) 400
    (C) 800
    (D) 4000

100: If we minus 712 from 1500, how much do we get?

    (A) 788
    (B) 778
    (C) 768
    (D) 758

## --------END OF PAPER--------

# Answers

| | | | |
|---|---|---|---|
| 1 | B | 51 | A |
| 2 | D | 52 | D |
| 3 | A | 53 | A |
| 4 | B | 54 | D |
| 5 | C | 55 | A |
| 6 | D | 56 | B |
| 7 | A | 57 | B |
| 8 | A | 58 | B |
| 9 | D | 59 | C |
| 10 | B | 60 | B |
| 11 | B | 61 | A |
| 12 | B | 62 | B |
| 13 | C | 63 | B |
| 14 | A | 64 | B |
| 15 | D | 65 | B |
| 16 | D | 66 | A |
| 17 | C | 67 | A |
| 18 | C | 68 | E |
| 19 | C | 69 | A |
| 20 | D | 70 | D |
| 21 | D | 71 | A |
| 22 | B | 72 | D |
| 23 | B | 73 | B |
| 24 | A | 74 | A |
| 25 | A | 75 | A |
| 26 | A | 76 | C |
| 27 | B | 77 | D |
| 28 | D | 78 | B |
| 29 | A | 79 | B |
| 30 | C | 80 | C |

| 31 | B | 81 | C |
|---|---|---|---|
| 32 | A | 82 | B |
| 33 | C | 83 | D |
| 34 | C | 84 | D |
| 35 | B | 85 | C |
| 36 | A | 86 | B |
| 37 | B | 87 | C |
| 38 | B | 88 | B |
| 39 | A | 89 | B |
| 40 | A | 90 | A |
| 41 | A | 91 | A |
| 42 | C | 92 | C |
| 43 | E | 93 | C |
| 44 | B | 94 | C |
| 45 | A | 95 | B |
| 46 | D | 96 | C |
| 47 | E | 97 | B |
| 48 | D | 98 | C |
| 49 | B | 99 | B |
| 50 | B | 100 | A |