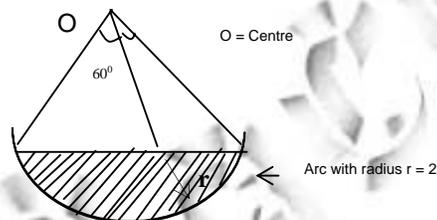# NMIMS (NMAT) PAPER

SECTION – B
QUANTITATIVE ABILITY + DI + DS

41. A pineapple costs Rs. 7 each. A watermelon costs Rs. 5 each. Z spends Rs. 38 on these fruits. The number of pieapples purchased is

    (A) 2 (B) 3 (C) 4 (D) Can't say

42. The area of the shaded portion of the figure given below is

    O = Centre

    60^0

    Arc with radius r = 2

    (A) $\dfrac{4\pi}{3} - \dfrac{\sqrt{3}}{6}$ (B) $\dfrac{2\pi}{3} - \dfrac{\sqrt{3}}{6}$ (C) $\dfrac{\pi}{3} - \sqrt{3}$ (D) None of these

43. For a college debating team, 5 gents and 3 lady students were available. It is desired to select 2 gents and 2 ladies to form the team. In how many ways, the team can be selected?

    (A) 30 (B) 60 (C) 15 (D) 12

44. In the figure given below, what is the ratio of a to b?

    A

    $2(a + b)$

    5b

    60°

    B   C
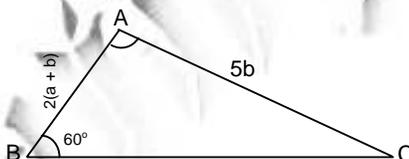
    (A) 2/1 (B) 4/1 (C) 1/4 (D) None of the above

45. Three friends had dinner at a restaurant. When the bill was received, Roopa paid 2/3 as much as Shilpa paid and Silpa paid ½ as much as Deepa paid. What fraction of the bill did Shilpa pay?

    (A) 15/24 (B) 12/31 (C) 3/11 (D) 1/3

46. A rectangle has width a and length b. If the width is decreased by 20% and the length is increased by 10%, what is the new area of the rectangle?

   (A) 0.9 ab (B) 0.92 ab (C) 1.1 ab (D) None of the above

47. Shyam was to appear in four papers - English, Tamil, History and Science – each carrying a maximum of 100 marks. His father offered him a Shakespeare book as a present if he got 60% or more in both English and History, provided he got and aggregate of at least 200. He also offered him a Bharathi book as a present if he got 60% or more in both Tamil and History provided he got an aggregate of at least 200 (Shyam was eligible for both the presents). As it turned out, Shyam got the Shakespeare book but not the Bharathi book. If he scored 64 in both English and History, the minimum that he got in Science was.

(A) 36   (B) 56   (C) 22   (D) 13

48. Solve the system of equations

$$a + b = 2\frac{1}{2}(a - b);$$

ab = 21 given that b > a.

(A) (− 7, − 3)   (B) (3, 7)   (C) (− 7, 3)   (D) (− 3, − 7)

49. Two boys A and B start as office attenders in two different establishments. A starts on a salary of Rs. 450 with an annual increment of Rs. 25, and B on a starting of Rs. 60 with an annual increment of Rs. 20. After how many years will A begin to draw a salary more than what B will draw?

(A) 30   (B) 31   (C) 32   (D) 29

50. 47 pens costs Rs. 1_8._7. Then what does each pen cost, where numbers at "_" are not visible or are written in illeg ble hand?

(A) Rs.3.23   (B) Rs. 2.44   (C) Rs. 2.31   (D) Rs. 3.21

51. A alone can finish a work in 15 days and B alone can do it in 25 days. If they work together and finish it, then out of a total wages of Rs.64, A will get:

(A) Rs.34   (B) Rs.30   (C) Rs.24   (D) Rs.40

52. The sale recorded by a dealer in a week from Monday to Saturday are as follows:

Rs. 210000 per day for the first three days
Rs. 81000 on Thursday
Rs. 45000on Friday
Rs. 156000 on Saturday

Find his average sales per day during that week.

(A) 152000   (B) 125000   (C) 135000   (D) 132000

53. A trader giving a discount of 11.11% on his product. At how many percent above the cost price does he mark his goods so that he makes a gain of 14.28%. ?

(A) 28.56%   (B) 35%   (C) 22.22%   (D) None of these

54. Two men, Mohit and Neerej started walking towards each other, simultaneously from places P and Q respectively, which are 72 miles apart. They met after 6 hours. After their meeting, Mohit reduced his speed by 1 mile/h and Neerej increased by 1 mile/h. They arrived at Q and P respectively at the same time. Find their initial speeds :

(A) 6 ½ miles/h and 7½ miles/h   (B) 6 miles/h and 7 miles/h
(C) 6.5 miles/h and 5.5 miles/h   (D) 15 ½ miles/h and 9 miles/h

55. The weight of an empty bucket is 25% of the weight of the bucket when filled with some liquid. Some of the liquid has been removed. Then, the bucket, along with the remaining liquid, weighed three-fifth of the original weight. What fractional part of the liquid has been removed?

(A) 2/5   (B) 8/15   (C) 7/13   (D) 5/8

56. If the square of a two digit number is reduced by the square of the number formed by reversing the digits of the number, the final result is.

(A) divisible by 11   (B) divisible by 9   (C) necessarily irrational   (D) (A) & (B) both

57. Mrs. Kapoor goes to the market and after hassling with the fruit vendor is able to get the price of a dozen bananas reduced by Rs.1, from the initial price. Thus she gets 1 bananas extra for every rupee saved. The initial and final prices of a dozen bananas are (in Rs.) :

(A) 9, 8   (B) 12, 11   (C) 14, 13   (D) 24, 23

58. A can build a wall in the same time in which B and C together can do it. If A and B together could do it in 25 days and C alone in 35 days, in what time could B alone do it?

(A) 175 days   (B) 100 days   (C) 90 days   (D) None of these

59. A company makes toy cars at a production cost of Rs 17.50 per unit. A market survey reveals that 10% of the product will be lost, 5% will be rejected, 5% will decay and 5% will be stolen. At what unit price must the company sell it to realize 28% profit ?

(A) Rs. 29.86   (B) Rs. 28   (C) Rs. 31.70   (D) Rs. 20.5

60. Divya made a profit of 25% when selling a salwar Kameez at Rs. 6000. If she has to now pay Rs. 600 more for the same dress, what should be her new selling price in order to make the same percentage profit?

(A) 8250   (B) 7500   (C) 6750   (D) 6600

61. With an average speed of 50 km/hr a train reaches its destination in time. If it goes with an average speed of 40 km/hr, it is late by 24 minutes. The total journey is

(A) 40 km   (B) 70 km   (C) 30 km   (D) 80 km

62. An employer reduces the number of his employees in the ratio 12 : 7 and increases their wages in the ratio 14 : 15. State whether his bill of total wages increases or decreases and in what ratio

(A) 5 : 8   (B) 8 : 5   (C) 10 : 11   (D) 9 : 8

63. A train which travels at the uniform rate of 20 m per second leaves Madras for Arconum at 6:30 a. m. At what distance from Madras will it meet a train which leaves Arconum for Madras at 7:15 a. m., and travels one-fourth faster than the former does, the distance from Madras to Arconum being 162 km?

(A) 72 km.   (B) 90 km.   (C) 102 km.   (D) None of these

64. The average age of a husband and wife at the time of their marriages was 25 years. A son was born to them two years after their marriage. The present average age of all three of them is 24 years. How many years is it since the couple got married?

(A) 5 yrs   (B) 6 yrs   (C) 8yrs   (D) 9 yrs

65. If the harmonic mean of two numbers is to their Geometric mean as 24 to 25. Find the ratio of numbers.

(A) 2/3, 3/2   (B) 4/3, 3/4   (C) 4/9, 9/4   (D) 16/9, 9/16

66. A five digit number divis ble by 3 is to be formed using the numerals 0, 1, 2, 3, 4 and 5, without repetition. The total number of ways in which this can be done is

(A) 216   (B) 240   (C) 600   (D) 3125

67. The entrance fee for the movie "LAJJA" in the ORIENT cinema is Rs. 50. When the price of the ticket was lowered, the number of visitors increased by 60% and the box office collection recorded an increase of 36%. Find the reduction in the ticket price.

(A) Rs. 12.50   (B) Re. 5   (C) Re. 7.50   (D) Re. 6

68. 15 men take 21 days of 8 hours each to do a piece of work. How many days of 6 hours each would 21 women take, if 3 women do as much work as 2 men?

(A) 20   (B) 18   (C) 25   (D) 30

69. A wheel makes 1000 revolutions in covering a distance of 88 km. The diameter of the wheel is:

(A) 24 m   (B) 40 m   (C) 28 m   (D) 14 m

70. The value of $\dfrac{(2.3)^3 - 0.027}{(2.3)^2 + 0.69 + 0.09}$ is

(A) 2   (B) 3   (C) 2.327   (D) 2.273

Directions for questions 71 – 79: The problems below contain a question and two statements giving certain data. You have to decide whether the data given in the statements are sufficient for answering the questions. The correct answer is

A. If Statement I alone is sufficient but Statement II alone is not sufficient.

B.   If Statement II alone is sufficient but Statement I atone is not sufficient.

C. If both statements I and II together are sufficient but neither of statements alone is sufficient.

D   If Statement I and II together are not sufficient.

71. f 'x' is an integer, is x/2 an even integer?

  I.   x is multiple of 2   II.   x is multiple of 4

72. s pq a prime number?

  I.   p is a prime number   II.   q is a fraction

73. Is PQ > RP?

  I.   x = y   II.   y = z

74. a, b, c are in geometric progression. Is the common ratio negative?

  I.   b is less than a   II.   abc is greater than ac

75. If 5 is added to the numerator and denominator each of the fraction a/b, will the new fraction be less than the original one?

    I.   a =101, b = 161   II.   a > b, a and b are real numbers.

76. What is the area of right angled triangle ABC?

    I.   The hypotenuse BC = 8   II.   AC = 4

77. When a body falls from rest its distance from the starting point varies as the square of the time it has fallen. How far does it fall in 10th second?

    I.   it falls through 122.6 m in 5 seconds.   II.   it falls through 490.4 m.

78. How many revolutions does a cycle wheel make in traveling one km?

    I.   It is pedalled at the speed of 3 kms an hour

    II.   The height of the topmost point of the wheel from the ground is 1.3 meters.

79. Is b negative?

    I. ab^3 is negative   II. a^3b is negative

Directions for questions 80 – 83: Each question given below is followed by various steps. Some or all the steps may be required to find correct answer. In each case, decide the steps which are both correct and necessary to answer that questions and accordingly choose your answer. If all the steps are not given, choose the ones out of the given which are correct as well as necessary.

80. A trader sells two articles at the same sales price. On one of the articles, he makes a profit of 20% while on the other, he incurs a loss of 15%. If the sales price of both the articles is Rs. 10,200 each what is the overall profit/loss made by the trader?

    (a) Calculate the profit earned on the first article and the loss incurred on the second article

    (b) Calculate the cost price for both the articles.

    (c) Deduct the sum of the cost prices of both articles from Rs. 20,400,

    (A)   All (a), (b) and (c) are correct and necessary

    (B)   Only (b) and (c) are correct and necessary

    (C)   Only (a) and (c) are correct and necessary

    (D)   Only (c) is correct and necessary

81. A sum of Rs. 25000 is invested at the simple rate of interest of 12.5% p.a. How much interest would it earn in a span of 5 years?

    (a) Calculate the simple interest for one year   (b) Multiply (a) by 5

    (c) Calculate the simple interest for 5 years

    (A)   Only (c) is correct and necessary

    (B)   Only (a) and (b) are correct and necessary

    (C)   Either (a) and (b) together or (c) alone is correct and necessary

    (D)   Only (a) is correct and necessary

82   From a 20 litre mixture of water and mi k, containing water and milk in the ratio 1:4, 2 litres of mixture is removed
      and replaced by milk. What would be the ratio of water and milk in the resultant solution?

      (a)   Subtract the quantities of water and milk in the 2 lit. mixture from those in the 20 litres mixture
             respectively.

      (b)   Calculate the individual quantities of water and milk in the original solution of 20 litres as well those in the 2
             litres.

      (c)   Add 2 litres to the quantity of milk obtained as per step (a) and determine the required ratio.

      (A)   All the steps (a), (b) and (c) are correct and necessary, to be performed in the order of (b) - (a) - (c).

      (B)   All the steps (a), (b) and (c) are correct and necessary, to be performed in the order of (a) - (b) - (c).

      (C)   Only (b) and (c) are correct and necessary.

      (D)   All the steps (a), (b) and (c) are correct and necessary, to be performed in the order of (a)- (c) – (b).

83.   A room of the size 30 ft. (length) $\times$ 15 ft. (breadth) $\times$ 12 ft (height) is to be painted. What would be the total cost of
      painting if the unit cost of painting is Rs. 20 per sq. ft.?

      (a) Calculate the total surface area of the room by using the formula:

          Total surface area = 2 ($l \times b + b \times h + l \times h$)

      (b) Multiply the total surface area, as obtained in (a) above by Rs. 20.

      (c) Calculate the volume of the room by using the formula : "$V = l \times b \times h$", and multiply it by Rs 20.

      (A) only (a) is correct and necessary.   (B) only (c) is correct and necessary.

      (C) only (a) and (b) are correct and necessary.   (D) none of the steps is correct and necessary.

Directions for questions 84 – 91: Following graph gives data about the population of Mumbai over two decades. The
population figures are given for Mumbai Island, Mumbai Suburbs, Greater Mumbai and Total population of Mumbai on Y1
axis on the left. Further, the population figures for Kalyan, Thane and Virar are given on Y2 axis on the right.

84.   Which of the following shows the maximum % increase in population?
      (A) Thane, 81   (B) Virar, 71   (C) Kalyan, 81   (D) Thane, 71

85. Which of the following shows the minimum % increase in population over the given period?

(A) Mumbai Island   (B) Mumbai Suburbs   (C) Greater Mumbai   (D) Total population

86. Which of the following shows a constant % increase in population over the given period?

(A) Mumbai Island   (B) Mumbai Suburbs   (C) Greater Mumbai   (D) Total population

87. In 1961, the population of suburbs and island is what fraction of total population?

(A) 33/55   (B) 3/5   (C) 11/55   (D) 'A' or 'B'

88. The population of Kalyan and Thane as a fraction of total population has

(A) Increased over the given decades   (B) Decreased over the given decades

(C) Remains constant over the decades   (D) None of these

89. Assuming that the total population increases at the same rate then the 'total population of Mumbai in the year 2001 will be (in lakhs)

(A) 115.6   (B) 134.5   (C) 139.8   (D) 142.3

90. By what % has the % increase in population in 1971 for Mumbai suburbs been more than the % increase in the population in 1981 for Greater Mumbai?

(A) 24%   (B) – 38%   (C) 44%   (D) – 60%

91. What is the difference in the % increase in the population of Virar and Mumbai island from 1961 to 1981?

(A) 12   (B) 28   (C) 53   (D) 62

Directions for questions 92 – 95: refer to the pie-chart given below:

Distribution of materials in Ghoshbabu's body (as % of total body weight)
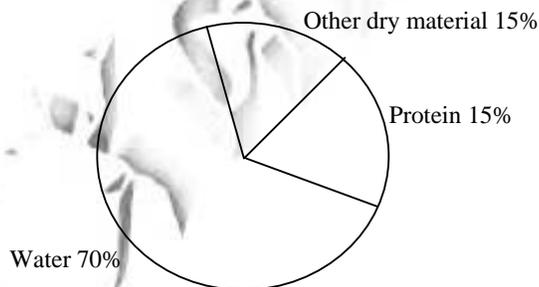
Occurrence of proteins in different organs in Ghoshbabu's body
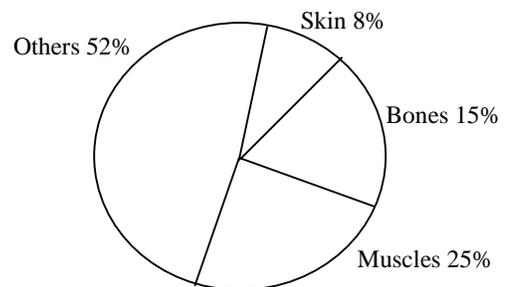
92. What fraction of Ghosh babu's weight consists of muscular and skin proteins?

(A) 1/13   (B) 1/30   (C) 1/20   (D) Cannot be determined

93. Ratio of distribution of protein in muscle to the distribution of protein in skin is

(A) 3 : 1   (B) 3 : 10   (C) 1 : 3   (D) $3\frac{1}{2}$: 1

94. What percent of Ghoshbabu's body weight is made up of skin

(A) 0.15   (B) 10   (C) 1.2   (D) Cannot be determined

95. In terms of total body weight, the portion of material other than water and protein is closest to

(A) 3/20   (B) 1/15   (C) 85/100   (D) 1/20

Directions for questions 96 – 100: are based on the following bar graph.

(Number of Industrial Townships in 1978 is 1, 60, 000)
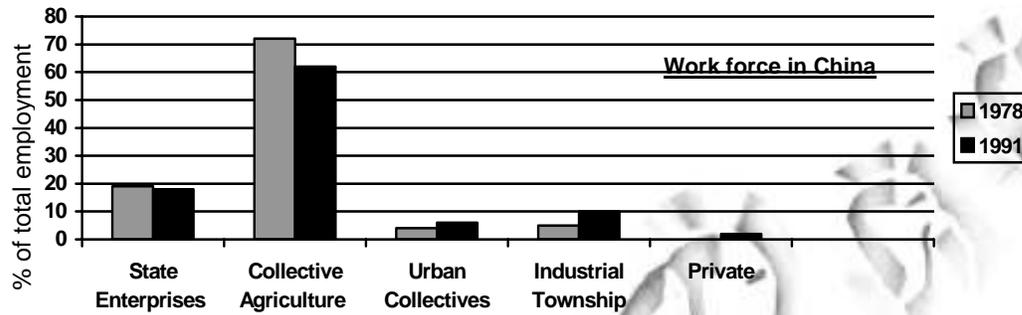
96. If the number of people employed in State Enterprises in 1991 was 2.5 million, then the difference in the number of people employed in Urban Collective and industrial townships in 1991 was closest to…

(A) 554000   (B) 634000   (C) 734000   (D) None of these

97. Which was the first year when people were employed in private enterprises?

(A) 1978   (B) 1991   (C) 1989   (D) Cannot be determined

98. If it is known that the total work force in China increases at a simple rate of 10% per annum, then by what percent does the number of people employed in the Urban Collectives change?

(A) 150   (B) 190   (C) 250   (D) Cannot be determined

99. It can be inferred that, in absolute terms,

(A) Collective agriculture has lost its charm for the work force

(B) Collective agriculture remains at the 1978 level, in terms of attracting the work force.

(C) Collective agriculture has succeeded in attracting a larger work force in 1991 than in 1978

(D) None of the above can be inferred.

100. How many new industrial townships have been set up in China from 1978 to 1991?

(A) 150   (B) 1500   (C) 15000   (D) cannot be determined

ANSWERS

41. (C)	42. (D)	43. (A)	44. (D)	45. (C)	46. (D)	47. (D)	48. (A)
49. (C)	50. (C)	51. (D)	52. (A)	53. (A)	54. (C)	55. (B)	56. (D)
57. (B)	58. (A)	59. (A)	60. (C)	61. (D)	62. (B)	63. (C)	64. (C)
65. (D)	66. (A)	67. (C)	68. (D)	69. (D)	70. (A)	71. (B)	72. (D)
73. (A)	74. (D)	75. (A)	76. (C)	77. (A)	78. (B)	79. (D)	80. (B)
81. (C)	82. (A)	83. (D)	84. (B)	85. (C)	86. (C)	87. (D)	88. (D)
89. (B)	90. (D)	91. (C)	92. (C)	93. (A)	94. (D)	95. (A)	96. (A)
97. (D)	98. (C)	99. (D)	100. (D)				