

Section II: Mathematical Skills

41. Father's age is 4 times that of his son. 5 years back, it was 7 times. His age now is

- (1) 30 (2) 35 (3) 40 (4) 45

42. A salesman averages Rs. 240 during a normal 40-hour week. During a sale, his rates are increased by 50%. What is his commission if he puts in 60 hours during the sale ?

- (1) 390 (2) 540 (3) 600 (4) 640

43. What is the next number in the series given below?

2, 5, 9, 14, 20

- (1) 25 (2) 26 (3) 27 (4) 28

44. If two numbers are in the ratio 6:13 and their least common multiple is 312, then the sum of the numbers is

- (1) 75 (2) 57 (3) 76 (4) 67

45. If $\frac{5a + 3b}{2a - 3b} = \frac{23}{5}$, then the value of $a : b$ is

(1) 2 : 1 (2) 1 : 4
(3) 1 : 2 (4) 4 : 1

46. Two dice are tossed. The probability that the total score is a prime number is

- (1) $\frac{1}{6}$ (2) $\frac{5}{12}$ (3) $\frac{1}{2}$ (4) $\frac{7}{9}$

47. In how many ways can six different rings be worn on four fingers of one hand?

- (1) 10
(2) 12
(3) 15
(4) 16

48. What is the next number in the series given below?

53, 48, 50, 50, 47

- (1) 51
- (2) 46
- (3) 53
- (4) 52

49. A travels from B to C a distance of 250 miles in 5.5 hours. He returns to B in 4 hours 40 minutes. His average speed is

- (1) 44
- (2) 46
- (3) 48
- (4) 50

50. A machine is sold at a profit of 10%. Had it been sold for Rs. 40 less, there would have been a loss of 10%.

What was the cost price?

- (1) Rs. 175
- (2) Rs. 200
- (3) Rs. 225
- (4) Rs. 250

51. I derive an annual income of Rs. 688.25 from Rs. 10,000 invested partly at 8% p.a. and partly at 5% p.a. Simple interest. How much of my money is invested at 5%?

- (1) Rs. 3,725
- (2) Rs. 4,225
- (3) Rs. 4,800
- (4) Rs. 5,000

52. A right-angled triangle has a hypotenuse of 13 cm and one side of 12 cm. Its area is

- (1) 30
- (2) 39
- (3) 80
- (4) 78

53. A circular park of 20-metre diameter has a circular path just inside the boundary of width 1 meter. The area of the path is

- (1) 15π (2) 17π
(3) 19π (4) 25π

54. An inspector rejects .08% of the meters as defective. How many will he examine to reject 2?

- (1) 200
(2) 250
(3) 2500
(4) 3000

55. In a survey, it was found that 65% of the people watched news on TV, 40% read in newspaper, 25% read Newspaper and watched TV. What percentage of people neither watched TV nor read newspaper?

- (1) 0%
(2) 5%
(3) 10%
(4) 20%

56. $x\%$ of y is $y\%$ of

- (1) x (2) $\frac{y}{100}$ (3) $\frac{x}{100}$ (4) $100x$

57. A can do a work in 18 days, B in 9 days and C in 6 days. A and B start working together and after 2 days C joins them. What is the total number of days taken to finish the work?

- (1) 4.33
(2) 4.5
(3) 4.66
(4) 5.33

58. The surface area of a cube is 150 sq cm. What is the length of its diagonal in cm?

- (1) 5 (2) $\frac{5\sqrt{3}}{2}$ (3) $5\sqrt{3}$ (4) $5\sqrt{2}$

59. What is the missing figure in the expression given below?

$$\frac{16}{7} \times \frac{16}{7} - \frac{*}{7} \times \frac{9}{7} + \frac{9}{7} \times \frac{9}{7} = 1$$

(1) 1 (2) 7 (3) 4.57 (4) 32

60. If the circumference and the area of a circle are numerically equal, then what is the numerical value of the Diameter?

- (1) 1
- (2) 2
- (3) 4
- (4) π

61. In a house, there are six 40-watts lamps which are on for 5 hours a day and three 80-watt fans which are on for 10 hours a day. If electricity costs Rs. 2 per kilowatt hour, what is the monthly electricity bill?

- (1) Rs. 216
- (2) Rs. 280
- (3) Rs. 315
- (4) Rs. 400

62. A driver's income consists of his salary and tips. During one week his tips were $\frac{5}{4}$ of his salary. What fraction of his income came from tips?

- (1) $\frac{4}{9}$
- (2) $\frac{5}{9}$
- (3) $\frac{5}{8}$
- (4) $\frac{5}{4}$

63. A house costs C rupees. Later it was sold for a profit of 25%. What is the capital gains tax if it is 50% of the Profit?

- (1) $\frac{C}{24}$
- (2) $\frac{C}{8}$
- (3) $\frac{C}{4}$
- (4) $\frac{C}{2}$

64. What is the value of the following expression ?

$$(1+x)(1+x^2)(1+x^4)(1+x^8)(1-x)$$

- (1) $1+x^{16}$ (2) $1-x^{16}$
(3) $x^{16}-1$ (4) x^8+1

65. In a triangle ABC, $\angle A = 90^\circ$ and D is mid-point of AC. The value of $BC^2 - BD^2$ is equal to

- (1) AD^2 (2) $2AD^2$
(3) $3AD^2$ (4) $4AD^2$

66. If an angle is its own complementary angle, then its measure is

- (1) 30 (2) 45
(3) 60 (4) 90°

67. Which of the following equations has real roots ?

- (1) $3x^2 + 4x + 5 = 0$
(2) $x^2 + x + 4 = 0$
(3) $(x-1)(2x-5) = 0$
(4) $2x^2 - 3x + 4 = 0$

68. A wire is in the form of a circle of radius 35 cm. If it is bent into the shape of a rhombus, what is the side of the rhombus ?

- (1) 32 cm (2) 70 cm
(3) 55 cm (4) 17 cm

69. In a G.P., the first term is 5 and the common ratio is 2. The eighth term is

- (1) 640 (2) 1280
(3) 256 (4) 160

70. How much water must be added to 100 cc of 80% solution of boric acid to reduce it to a 50% solution ?

- (1) 30 (2) 40
(3) 50 (4) 60

71. What is the value of $\frac{P+Q}{P-Q}$ if

$$\frac{P}{Q} = 7 ?$$

- (1) $\frac{4}{3}$ (2) $\frac{2}{3}$ (3) $\frac{2}{6}$ (4) $\frac{7}{8}$

72. If the arithmetic mean of two numbers is 5 and geometric mean is 4, then the numbers are

- (1) 4, 6 (2) 4, 7
(3) 3, 8 (4) 2, 8

73. X is what percent of $\frac{4}{5}$ th of X ?

- (1) 75 (2) 80
(3) 120 (4) 125

74. Square root of 117649 is

- (1) 347 (2) 343
(3) 353 (4) 357

75. Cube root of 658503 is

- (1) 83 (2) 77
(3) 87 (4) 97

76. Two rockets approach each other, one at 42,000 mph and the other at 18,000 mph. They start 3256 miles apart. How far are they apart (in miles) 1 minute before impact ?

- (1) 1628 (2) 1000
(3) 826 (4) 1200

77. A bought 4 bottles of beer and B bought one bottle of lager, lager per bottle costing twice that of the beer. C bought nothing but paid Rs. 50 for his share of the drink which they mixed together and shared equally. If C's Rs. 50 covered his share, then what is the cost of the lager?

- (1) 50 (2) 75 (3) 30 (4) 46

78. In a class, 20 opted for Physics, 17 for Maths, 5 for both and 10 for other subjects. The class contains how many students?

- (1) 35 (2) 42 (3) 52 (4) 60

79. In a community of 175 persons, 40 read the Times, 50 read the Samachar and 100 do not read any. How many Persons read both the papers?

- (1) 10 (2) 15 (3) 20 (4) 25

80. A worker is paid Rs. 56 for 35-hour week. Upto 40 hours, he is paid at the normal rate and on overtime, 1.5 times the normal. How many hours did he work to get Rs. 88?

- (1) 48 (2) 52 (3) 58 (4) 55

Answers:

41 (3)

42 (2)

43 (3)

44 (3)

45 (4)

46 (2)

47 (3)

48 (4)

49 (4)

50 (2)

51 (1)

52 (2)

53 (3)

54 (3)

55 (4)

56 (1)

57 (None)

58 (3)

59 (4)

60 (3)

61 (1)

62 (2)

63 (2)

64 (2)

65 (3)

66 (2)

67 (3)

68 (3)

69 (1)

70 (4)

71 (1)

72 (4)

73 (4)

74 (2)

75 (3)

76 (2)

77 (1)

78 (2)

79 (2)

80 (None)