

# MIZORAM PUBLIC SERVICE COMMISSION

## GENERAL COMPETITIVE EXAMINATIONS FOR RECRUITMENT TO THE POST OF ASSISTANT SUB INSPECTOR (MINISTERIAL) UNDER HOME DEPARTMENT, OCTOBER, 2018.

### MATHEMATICS

Time Allowed : 3 hours

Full Marks : 100

Pass Marks : 35

*All questions carry equal mark of 1 each. Attempt all questions.*

- In a group of 850 persons 600 can speak English, 340 can speak Hindi, find the number of persons that can speak English only.  
(a) 420 (b) 510  
(c) 570 (d) 610
- Lala brought a book for ₹ 500 and sold it for ₹ 750, his gain percent is  
(a) 40 % (b) 50 %  
(c) 60 % (d) 10 %
- If C.P = ₹ 1650 and gain = 4 %, then S.P = ?  
(a) ₹ 1617 (b) ₹ 1721  
(c) ₹ 1616 (d) ₹ 1716
- If M.P = ₹ 500, S.P = ₹ 450, then the discount percentage is  
(a) 10 % (b) 20 %  
(c) 30 % (d) None of these
- If  $a : b = 7 : 5$  and  $b : c = 10 : 13$ , find  $a : c$   
(a) 7 : 8 (b) 12 : 11  
(c) 14 : 13 (d) 15 : 13
- 6 bowls cost ₹ 180. What would be the cost of 20 such bowls?  
(a) ₹ 900 (b) ₹ 600  
(c) ₹ 700 (d) None of these
- What same number must be added to the terms of the ratio 11:29, so that the ratio becomes 11:20?  
(a) 9 (b) 11  
(c) 13 (d) 15
- What should be subtracted from  $\frac{-5}{7}$  to get -1?  
(a)  $\frac{2}{7}$  (b)  $\frac{5}{7}$   
(c)  $\frac{3}{7}$  (d) None of these
- The value of  $\sqrt[3]{2744}$  is  
(a) 7 (b) 12  
(c) 14 (d) 16

10.  $\sqrt{32} + \sqrt{8} - \sqrt{18} = ?$

(a)  $5\sqrt{2}$

(b)  $3\sqrt{2}$

(c)  $2\sqrt{2}$

(d)  $4\sqrt{3}$

11.  $\frac{1}{\sqrt{9} - \sqrt{8}}$  is equal to

(a)  $3 - 2\sqrt{2}$

(b)  $2 + 3\sqrt{2}$

(c)  $3 + 2\sqrt{2}$

(d) None of these

12. If  $3^{2x+1} \div 9 = 27$ , the value of x is

(a) 1

(b) -1

(c) 0

(d) 2

13.  $\left(\frac{1}{2}\right)^{-2} + \left(\frac{1}{3}\right)^{-2} + \left(\frac{1}{4}\right)^{-2} = ?$

(a) 29

(b) 34

(c) 42

(d) None of these

14. If  $x + \frac{1}{x} = 5$ , then the value of  $x^2 + \frac{1}{x^2}$  is

(a) 21

(b) 23

(c) 25

(d) 22

15. What percent of 80 is 16?

(a) 10 %

(b) 15 %

(c) 20 %

(d) 25 %

16. If 12 % of a number is 15, then 20 % of the number is

(a) 10

(b) 15

(c) 20

(d) 25

17. If 36 % of the pupils in a school are girls and the number of boys in the school is 816. Then the number of girls in the school is

(a) 453

(b) 457

(c) 459

(d) 467

18. The cost of a printer at a shop was ₹ 4500. The sales tax charged was 5 %. Find the bill amount

(a) ₹ 4725

(b) ₹ 4735

(c) ₹ 5724

(d) ₹ 5624

19.  $\frac{2}{3}$  of a number is 20 less than original number, find the number

(a) 40

(b) 50

(c) 60

(d) 70

20. Siami's mother is four times as old as Siami. After 5 years, her mother will be three times as old as she will be then. Then Siami's present age is

(a) 40

(b) 30

(c) 20

(d) 10

21. In what time, ₹ 500 will become ₹ 1200 when annual rate of interest is 10%.
- (a) 12 years (b) 14 years  
(c) 16 years (d) 20 years
22. Find the amount on ₹ 6250 for 1 Year at 8% per annum compounded half yearly.
- (a) ₹ 6760 (b) ₹ 6770  
(c) ₹ 6750 (d) None of these
23. If mean of 2, 5,  $x$  and 8 is 6, then find the value of  $x$
- (a) 6 (b) 7  
(c) 5 (d) 9
24. Find the median of 4, 7, 5, 2, 13, 9, 11, 16
- (a) 6 (b) 7  
(c) 8 (d) 9
25. The mean of 10 numbers is 25. If 5 is added to each number, what will be new mean?
- (a) 25 (b) 30  
(c) 35 (d) 40
26. If the mode of the following data 11, 10, 12, 10, 17, 14, 17, 13, 12,  $x$ , 9, 7 is 17, then the value of  $x$  is
- (a) 14 (b) 12  
(c) 10 (d) 17
27. The class mark of the class 120 – 140 is
- (a) 120 (b) 125  
(c) 130 (d) 135
28. The complement of  $\frac{2}{3}$  of a right angle is
- (a)  $30^\circ$  (b)  $60^\circ$   
(c)  $90^\circ$  (d) None of these
29. A speed of 25 m/s equals to
- (a) 50 km/h (b) 60 km/h  
(c) 90 km/h (d) 20 km/h
30. A and B together can do a piece of work in 12 days, while A alone can finish it in 30 days. In how many days B alone finish the work?
- (a) 10 days (b) 20 days  
(c) 30 days (d) 25 days
31. What is the probability of a sure event?
- (a) 0 (b) 1  
(c)  $\frac{1}{2}$  (d) None of these
32. A bag contains 3 white, 4 red and 5 black balls. One ball is drawn at random. What is the probability that the ball drawn is neither black nor white?
- (a)  $\frac{1}{4}$  (b)  $\frac{1}{3}$   
(c)  $\frac{3}{4}$  (d)  $\frac{1}{2}$

33. One card is drawn at random from a well-shuffled deck of 52 cards. What is the probability of getting an ace?
- (a)  $\frac{1}{26}$  (b)  $\frac{1}{4}$   
(c)  $\frac{1}{13}$  (d)  $\frac{4}{13}$
34. Which term of the AP 72, 68, 64, 60, ..... is 0?
- (a) 15<sup>th</sup> term (b) 17<sup>th</sup> term  
(c) 19<sup>th</sup> term (d) None of these
35. Find the 8<sup>th</sup> term from the end of the AP 7, 10, 13, ....., 184
- (a) 153 (b) 161  
(c) 163 (d) 172
36. Find the sum of the AP 2, 7, 12, ..... to 10 terms
- (a) 224 (b) 245  
(c) 345 (d) 425
37. If  $\cot^2 45^\circ - \sin^2 60^\circ = x \sin 45^\circ \cos 45^\circ$ , then  $x = ?$
- (a) 2 (b)  $\frac{1}{2}$   
(c)  $-\frac{1}{2}$  (d) 1
38. Find the angular elevation of the sun when the shadow of a 10m long pole is 10 metres
- (a)  $60^\circ$  (b)  $45^\circ$   
(c)  $30^\circ$  (d)  $90^\circ$
39. The distance of the point P(8,6) from origin is
- (a) 7 units (b) 8 units  
(c) 10 units (d) 12 units
40. The perimeter of a rectangular plot of land is 80 m and its breadth is 16m, then the length is
- (a) 24 m (b) 16 m  
(c) 18 m (d) 20 m
41. A wire is looped in the form of a circle of radius 28 cm. It is rebent into a square form. Determine the length of the side of the square
- (a) 24 cm (b) 44 cm  
(c) 64 cm (d) 34 cm
42. The length of each side of an equilateral triangle having an area of  $9\sqrt{3}$  cm<sup>2</sup> is
- (a) 4 cm (b) 6 cm  
(c) 8 cm (d) 36 cm
43. The lateral surface area of a cube is 256 cm<sup>2</sup>, then the volume of the cube is
- (a) 216 cm<sup>3</sup> (b) 27 cm<sup>3</sup>  
(c) 64 cm<sup>3</sup> (d) 512 cm<sup>3</sup>
44. A cube of side 6 cm is cut into a number of cubes each of side 2 cm. The number of cubes formed is
- (a) 6 (b) 9  
(c) 12 (d) 27

45. The two complimentary angles are in the ratio 2:3. The smaller angle is  
(a)  $36^\circ$  (b)  $120^\circ$   
(c)  $108^\circ$  (d)  $40^\circ$
46. A man goes 15 m due west and 8 m due north, how far is he from the starting point?  
(a) 15 m (b) 16 m  
(c) 17 m (d) None of these
47. If  $75 : 15 = x : 7$ , the value of  $x$  is  
(a) 25 (b) 35  
(c) 40 (d) 45
48. If  $x = 4 + 12 \div 2 + 7 - 5 \times 6$ , the value of  $x$  is  
(a) -13 (b) 20  
(c) -32 (d) None of these
49. The population of a town increases from 50,000 to 52,000. The increase per cent is  
(a) 2% (b) 3%  
(c) 4% (d) 5%
50. The acute angle between the minute hand and the hour hand of a clock at 2 O'clock.  
(a)  $75^\circ$  (b)  $60^\circ$   
(c)  $45^\circ$  (d)  $30^\circ$
51. If a student scores 320 marks out of 500 marks, what is the percentage of marks scored?  
(a) 60% (b) 62%  
(c) 64% (d) None of these
52. The sum of two numbers is 46 and their difference is 12. The two numbers are  
(a) 30 and 16 (b) 17 and 29  
(c) 20 and 26 (d) 12 and 24
53. The circumference of a circle is 88 cm. Its radius is  
(a) 14 cm (b) 10.5 cm  
(c) 7 cm (d) 3.5 cm
54. A train 100 metres long is running at a speed of 60 km/hr. The time taken by it to pass a telegram post is  
(a) 4 secs (b) 5 secs  
(c) 6 secs (d)  $\frac{5}{3}$  secs
55. A loan of ` 60,000 is to be cleared in three equal instalments of ` 22,000 each. The total interest charged is  
(a) ` 3,000 (b) ` 4,000  
(c) ` 5,000 (d) ` 6,000
56. There is a rope of length 20m and you want to cut it at every 2m long. How many times do you need to cut the given rope?  
(a) 8 times (b) 9 times  
(c) 10 times (d) 11 times
57. If  $(x - y) = 2$  and  $xy = 15$ , the value of  $(x^2 + y^2)$  is  
(a) 35 (b) 34  
(c) 33 (d) 32

58. How many complete revolutions does the minute hand of a clock make in one day, i.e., 24 hours
- (a) 24 (b) 60  
(c) 3600 (d) 1440
59. The first two angles of a triangle are  $50^\circ$  and  $60^\circ$ . The third angle of the triangle is
- (a)  $50^\circ$  (b)  $60^\circ$   
(c)  $70^\circ$  (d)  $80^\circ$
60. If the price of a pen has gone down from ₹ 25 to ₹ 20, the percentage of decrease in the price of the pen is
- (a) 5% (b)  $33\frac{1}{2}\%$   
(c) 25% (d) 20%
61. If  $a:b = 3:4$  and  $b:c = 6:5$ , What is  $a:b:c$ ?
- (a) 3:4:5 (b) 3:4:6  
(c) 4:5:6 (d) 9:12:10
62. A discount series of 30% and 20% is equivalent to a single discount of
- (a) 56% (b) 44%  
(c) 46% (d) 50%
63. A person spends 75% of his monthly salary and saves ₹ 15,000. His monthly salary is
- (a) ₹ 40,000 (b) ₹ 50,000  
(c) ₹ 60,000 (d) None of these
64. The angles of a triangle are in the ratio 1:2:3. The largest angle is
- (a)  $90^\circ$  (b)  $75^\circ$   
(c)  $60^\circ$  (d)  $50^\circ$
65. The ages (in years) of 10 students are 14, 15, 13, 14, 17, 16, 15, 11, 12, 15. What is their average age?
- (a) 15 yrs (b) 14.2 yrs  
(c) 14 yrs (d) 13.2 yrs
66. A train is moving at a uniform speed of 75 km/hr. How far will it travel in 20 minutes?
- (a) 1500 km (b) 20 km  
(c) 35 km (d) 25 km
67. The value of  $\frac{\sqrt{50} \times \sqrt{20} \times \sqrt{24}}{\sqrt{200} \times \sqrt{135}}$  is
- (a)  $\frac{2\sqrt{2}}{3}$  (b)  $\sqrt{2}$   
(c)  $\frac{2}{3}\sqrt{6}$  (d) None of these
68. What rate per cent of 1 minute 12 seconds to an hour?
- (a) 3.5% (b) 3%  
(c) 2.5% (d) 2%
69. A number exceeds 20% of itself by 40. The number is
- (a) 40 (b) 50  
(c) 60 (d) 80

70. A man saw a lightning in the sky and heard the thunder after 2 seconds, if the speed of sound in air was 332m/s, the distance between the man and the cloud was
- (a) 664m (b) 334m  
(c) 166m (d) None of these
71. 1089 students are sitting in a hall in such a manner that there are as many students in a row as there are rows in the hall. How many rows are there in the hall?
- (a) 37 (b) 36  
(c) 33 (d) 32
72. One-fourth of a number decreased by 4 is equal to 3. The number is
- (a)  $\frac{3}{4}$  (b) 28  
(c)  $\frac{4}{3}$  (d) 27
73. Mr. Anand can do a piece of work in 12 days and Mr. Binod is twice as fast as Mr. Anand. If they work together on the same piece of work. In what time will they complete the piece of work?
- (a) 2 days (b) 3 days  
(c) 4 days (d) 5 days
74. (5% of  $\sqrt{100} + 100\%$  of  $\sqrt{5}$ ) equals
- (a)  $\sqrt{100}$  (b)  $\sqrt{15}$   
(c)  $\sqrt{10}$  (d)  $\sqrt{5}$
75. A student has to secure 40% marks to pass. He gets 178 marks and fails by 22 marks. The full marks must be –
- (a) 500 (b) 520  
(c) 560 (d) 600
76. An inlet pipe can fill a cistern in 5 hours which an outlet pipe can empty it in 6 hours. If both the two pipes are turned on together simultaneously in the empty cistern, when will the cistern be filled completely?
- (a) 11 hours (b) 22 hours  
(c) 24 hours (d) 30 hours
77. The scale of a map is 1 cm to 5km. An area is represented on this map by a rectangle of dimensions (9cm $\times$ 5cm). The actual area is
- (a) 1125 sq. km (b) 225 sq. km  
(c) 2025 sq. km (d) 140 sq. km
78. The length of the longest pole that can be placed in a room of length 10 feet, breadth 10 feet and height 5 feet is
- (a) 10 feet (b) 12 feet  
(c) 15 feet (d) 16 feet
79. The diagonal of a square field is 110m. Its area is
- (a) 6050m<sup>2</sup> (b) 1210 m<sup>2</sup>  
(c) 6000 m<sup>2</sup> (d) 1200 m<sup>2</sup>
80. A ladder 5m long when placed against a vertical wall reaches the top of the wall. If the foot of the ladder is 3m from the base of the wall, what is the height of the wall?
- (a) 3.5m (b) 4m  
(c) 6m (d) 8m

81. Two persons start from the same place and walk in opposite directions at 5km/hr and 6km/hr respectively. At the end of 2 hours, the distance between them is
- (a) 11km (b) 16km  
(c) 18km (d) 22km
82. Out of 38 students of a class, 3 were absent. 20% of the remaining failed to do the homework. How many students did the homework?
- (a) 7 (b) 9  
(c) 24 (d) 28
83. By selling a watch for ₹ 660, a dealer gains 10%. The cost of the watch is
- (a) ₹ 733.33 (b) ₹ 726  
(c) ₹ 600 (d) ₹ 574
84. The value of  $\frac{\sqrt{81}}{\sqrt{0.09}}$  is
- (a) 300 (b) 30  
(c) 3 (d) 0.3
85. The average of three numbers is 7 and the average of the first two numbers is 4. The third number is
- (a) 13 (b) 14  
(c) 15 (d) 16
86. The HCF and LCM of two numbers are 4 and 24 respectively. If one of the numbers is 8, what is the other number?
- (a) 6 (b) 8  
(c) 10 (d) 12
87. A can do a piece of work in 5 days, B in 4 days and A, B and C together in 2 days. In what time can C alone do it?
- (a) 23 days (b) 22 days  
(c) 20 days (d) 18 days
88. The electrical energy meter of a household reads 5800 units. After one month, it reads 6100 units. How much the house owner has to pay for one month's bill if the cost of 1 unit of electrical energy is ₹ 2?
- (a) ₹ 300 (b) ₹ 400  
(c) ₹ 500 (d) ₹ 600
89. The value of  $3\frac{1}{3} \div 2\frac{1}{2} \times \frac{3}{4} \div \left(\frac{1}{3} \times 20\right) \times \frac{7}{6}$  is
- (a)  $\frac{7}{10}$  (b)  $\frac{7}{20}$   
(c)  $\frac{7}{40}$  (d) None of these
90. The value of  $\frac{3 \times 3 + 2 \times 3 \times 2 + 2 \times 2}{3 \times 3 - 2 \times 3 \times 2 + 2 \times 2}$  is
- (a) 1 (b) 3  
(c) 20 (d) 25

91. If  $\sqrt{18 \times 14 \times x} = 84$ , the value of  $x$  is  
(a) 24 (b) 28  
(c) 22 (d) 32
92. A watch is available for ₹ 1248 inclusive of sales tax. If the marked price of the watch is ₹ 1200, the rate of sales tax is  
(a) 3% (b) 4%  
(c) 4.5% (d) 6%
93. At one corner of a rectangular field  $25\text{m} \times 20\text{m}$ , a horse is tied with a rope of length 14m. The maximum area the horse can graze in the field is  
(a)  $4312 \text{ m}^2$  (b)  $308 \text{ m}^2$   
(c)  $154 \text{ m}^2$  (d) None of these
94. The average age of 25 students is 10 years. If the teacher's age is included, the average age becomes 11 years. The age of the teacher is  
(a) 25 years (b) 30 years  
(c) 32 years (d) 36 years
95. A room is 15 feet long and 12 feet wide. Its floor is to be covered by a carpet 6 feet wide. What should be the length of the carpet?  
(a) 27 feet (b) 30 feet  
(c) 33 feet (d) 36 feet
96. A floor is of dimensions  $(14 \times 12 \text{ feet})$ . How many square floor tiles of side 2 feet would be used to cover the floor?  
(a) 42 (b) 36  
(c) 32 (d) 24
97. A copper wire of length 44cm is bent to form a circle. The same wire is also bent to form a square. Which of the two will have more area and by how much?  
(a) square, by  $33 \text{ cm}^2$  (b) circle, by  $33 \text{ cm}^2$   
(c) square, by  $121 \text{ cm}^2$  (d) circle, by  $154 \text{ cm}^2$
98. By selling a bike for ₹ 99,000 each, a dealer gains 10% on one and losses 10% on the other. On the whole transaction, the dealer  
(a) losses (b) gains  
(c) neither gain nor losses (d) data insufficient
99. The smallest number by which 396 must be multiplied so that the product becomes a perfect square is  
(a) 11 (b) 22  
(c) 3 (d) 2
100. In tossing 3 coins, the probability of getting 2 heads is  
(a)  $\frac{1}{2}$  (b)  $\frac{2}{3}$   
(c)  $\frac{3}{8}$  (d)  $\frac{1}{4}$