Mock Test Paper - Series I: December 2024

Date of Paper: 23rd December 2024

Time of Paper: 10.30 P.M. to 12.30 P.M.

FOUNDATION COURSE

PAPER 3: QUANTITATIVE APTITUDE

Time: 2 Hours **Marks: 100**

1. $\log_4(x^2 + x) - \log_4(x + 1) = 2$. find x.
   (a) 16
   (b) 0
   (c) -1
   (d) None of these
2. If $x = \log_{24}12$; $y = \log_{36} 24$; $z = \log_{48} 36$ then $xyz + 1 = ?$
   (a) 2xy
   (b) 2zx
   (c) 2yz
   (d) 2
3. In a two digits number; the digit in the ten's place is twice the digit in the unit's place. If 18 be subtracted from the number the digits are reversed. Find the number.
   (a) 63
   (b) 21
   (c) 42
   (d) None of these
4. For a certain commodity the demand equation giving "y" units for a price "p" in rupees per unit is $y = 100 (10 - p)$. The supply equation giving the supply z units for a price "p" in rupees per unit is $z = 75(p-3)$. The market price is such at which demand equals supply. Find the market price and quantity that will be brought and sold.
   (a) ₹ 7; 300 units
   (b) ₹ 8; 400 units
   (c) ₹ 5; 200 units
   (d) None

5. The age of a person is 8 years more than thrice the age of the sum of his two grandsons who were twins. After 8 years his age will be 10 years more than twice the sum of the ages of his grandsons. Then the age of the person when the twins were born is:

   (a) 86 years

   (b) 73 years

   (c) 68 years

   (d) 63 years

6. Roots of the equation $3x^2 – 14x – k = 0$ will be reciprocal of each other if:

   (a) k= -3

   (b) k = 0

   (c) k = 3

   (d) k = 14

7. It roots of equation $x^2 + x + r = 0$ are ‘α’ and ‘β’ and $\alpha^3 + \beta^3 = -6$. Find the value of ‘r’?

   (a) -5/3

   (b) 7/3

   (c) -4/3

   (d) 1

8. Find the value of: $[1 – \{1 – (1 – x^2)^{-1}\}^{-1}]^{-1/2}$ is

   (a) 1/x

   (b) x

   (c) 1

   (d) none of these

9. The value of $(3^{n+1}+3^n)/ (3^{n+3}- 3^{n+1})$ is equal to:

   (a) 1/5

   (b) 1/6

   (c) 1/4

   (d) 1/9

10. If $u^{5x} = v^{5y} = w^{5z}$ and $u^2 = vw$ then $xy + zx – 2yz$

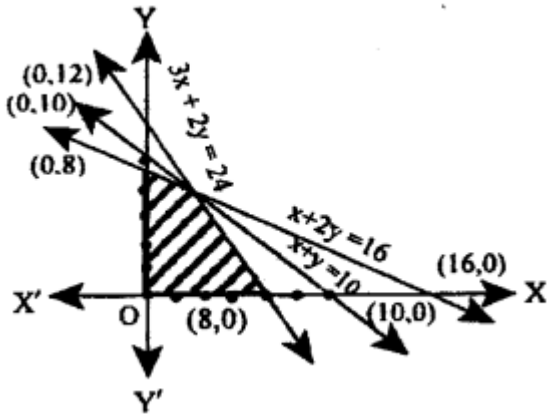
    (a) 0

    (b) 1

    (c) 2

    (d) None of these

11. The shaded region represents



(a) $3x + 2y \le 24, x + 2y \ge 16, x + y \le 10x, x \ge 0, y \ge 0$

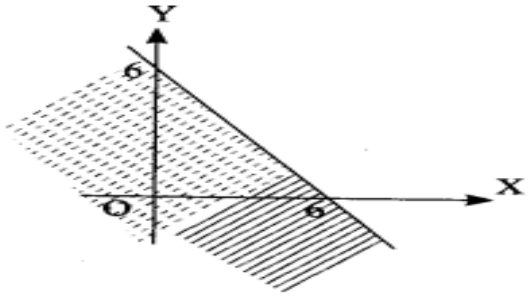
(b) $3x+2y \le 24, x + 2y \le 16, x + y \ge 10, x \ge 0, y \ge 0$

(c) $3x + 2y \le 24, x + 2y \le 16, x + y \le 10, x \ge 0, y \ge 0$

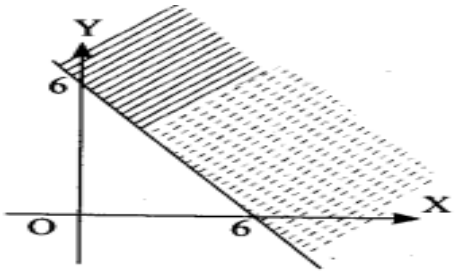
(d) None of these.

12. Which of the following graph represents the in equality $x + y \le 6$ is

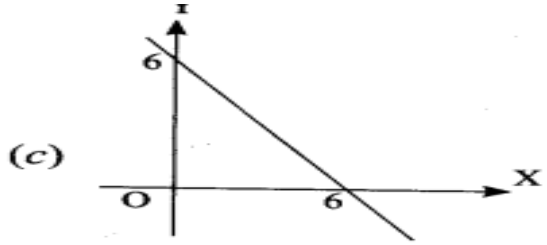
(a)



(b)



(c)



(d) None of these

13. The time by which a sum of money is 8 times of itself if it double itself in 15 years.

    (a) 42 years

    (b) 43 years

    (c) 45 years

    (d) 46 years

14. What is the rate of simple interest if a sum of money amount ₹ 2,784 in 4 years and ₹ 2,688 in 3 years ?

    (a) 1%p.a.

    (b) 4%p.a.

    (c) 5%p.a.

    (d) 8%p.a.

15. In how many years, a sum will become double at 5% p.a. compound interest.

    (a) 14.0 years

    (b) 14.1 years

    (c) 14.2 years

    (d) 14.3 years

16. Mr. X bought an electronic item for ₹ 1000. What would be the future value of the same item after two years, if the value is compounded semi-annually at the rate of 22% per annum ?

    (a) ₹ 1488.40

    (b) ₹ 1518.07

    (c) ₹ 2008.07

    (d) ₹ 2200.00

17. The difference between simple and compound interest on a sum of ₹ 10000 for 4 years at the rate of interest 10% per annum is

    (a) 650

    (b) 640

    (c) 641

    (d) 600

18. How much will ₹ 25,000 amount to in 2 years at compound interest if the rates for the successive years are 4% and 5% per year:

    (a) ₹ 27,000

    (b) ₹ 27,300

    (c) ₹ 27,500

    (d) ₹ 27,900

19. The value of furniture depreciates by 10% a year, if the present value of the furniture in an office is ₹ 21870, calculate the value of furniture 3 years ago:

    (a) ₹ 30,000

    (b) ₹ 40,000

    (c) ₹ 35,000

    (d) ₹ 50,000

20. The effective rate of interest does not depend upon

    (a) Amount of Principal

    (b) Amount of Interest

    (c) Number of Conversion Periods

    (d) None of these

21. If p. i^2 = 96, and R = 8% compounded annually then P =

    (a) ₹ 14,000

    (b) ₹ 15,000

    (c) ₹ 16,000

    (d) ₹17,000

22. If a bank pays 6% interest compounded quarterly what equal deposit have to be made at the end of the each quarter for 3 years if you want to have ₹ 1500 at the end of 3 years?

    (a) ₹ 117.86

    (b) ₹ 115.01

    (c) ₹ 150.50

    (d) None of these

23. Find the present value of an annuity which pays 200 at the end of each 3 months for 10 years assuming money to be worth 5% converted quarterly?

    (a) ₹ 3473.86

    (b) ₹ 3108.60

    (c) ₹ 6265.38

    (d) None of these

24. Mr. A borrows 5,00,000 to buy a house. If he pays equal instalments for 20 years and 10% interest on outstanding balance what will be the equal annual instalment?

    (a) ₹ 58239.84

    (b) ₹ 58729.84

    (c) ₹ 68729.84

    (d) None of these

25. A company establishes a sinking fund to provide for the payment of ₹ 2,00,000 debt maturing in 20 years. Contributions to the fund are to be made at the end of every year. Find the amount of each annual deposit if interest is 5% per annum:

    (a) ₹ 6,142

    (b) ₹ 6,049

    (c) ₹ 6,052

    (d) ₹ 6,159

26. Suppose your mom decides to gift you ₹ 10,000 every year starting from today for the next sixteen years. You deposit this amount in a bank as and when you receive and get 8.5% per annum interest rate compounded annually. What is the present value of this money: [Given that P (15, 0.085) = 8.304236]

    (a) 83,042

    (b) 90,100

    (c) 93,042

    (d) 10,100

27. The number of triangles that can be formed by choosing the vertices from a set of 12 points, seven of which lie on the same straight line, is:

    (a) 185

    (b) 175

    (c) 115

    (d) 105

28. A boy has 3 library tickets and 8 books of his interest in the library. Of these 8, he does not want to borrow Mathematics part-II unless Mathematics part - 1 is also borrowed? In how many ways can he choose the three books to be borrowed?

    (a) 41

    (b) 51

    (c) 61

    (d) 71

29. An examination paper consists of 12 questions divided into two parts A and B. Part A contains 7 questions and part B contains 5 questions. A candidate is required to attempt 8 questions selecting at least 3 from each part. In how many maximum ways can the candidate select the questions ?

    (a) 35

    (b) 175

    (c) 210

    (d) 420

30. In how many ways can the letters of the word FAILURE be arranged so that the consonants may occupy only odd positions?

(a) 576

(b) 476

(c) 376

(d) 276

31. In how many ways can a party of 4 men and 4 women be seated at a circular table, so that no two women are adjacent ?

(a) 164

(b) 174

(c) 144

(d) 154

32. The sum of the series: 0.5 + 0.55 + 0.555 + ……. to n terms is:

(a) $\frac{5n}{9}+\frac{5}{9}[1-(0.1)^n]$

(b) $\frac{5n}{9}-\frac{5}{81}[1-(0.1)^n]$

(c) $\frac{5n}{9}+\frac{5}{81}[1-(0.1)^n]$

(d) $\frac{5n}{9}+\frac{5}{81}[1+(0.1)^n]$

33. (x + 1), 3x, (4x + 2) are in A.P. Find the value of x.

(a) 2

(b) 3

(c) 4

(d) 5

34. The 4th term of an A.P. is three times the first and the 7th term exceeds twice the third term by 1. Find the first term ‘a’ and common difference ‘d’.

(a) a = 3, d = 2

(b) a = 4, d = 3

(c) a = 5, d = 4

(d) a = 6, d = 5

35. There are 40 students, 30 of them passed in English, 25 of them passed in Maths and 15 of them passed in both. Assuming that every Student has passed atleast in one subject. How many student’s passed in English only but not in Maths.

(a) 15

(b) 20

(c) 10

(d) 25

36. If A = (1, 2, 3, 4, 5), B = (2, 4) and C = (1, 3, 5) then (A – C) × B is:

(a) {(2, 2)(2, 4)(4, 2)(4, 4)(5, 2) (5, 4)}

(b) {(1, 2) (1, 4) (3, 2) (3, 4) (5, 2) (5, 4)}

(c) {(2, 2) (4, 2) (4, 4) (4, 5)}

(d) {(2, 2) (2, 4) (4, 2) (4, 4)}

37. If A= {1,2,3} then the relation R = {(1,1), (2,3), (2,2), (3,3), (1,2)} on A is:

(a) Reflexive

(b) Symmetric

(c) Transitive

(d) Equivalence

38. The cost function for the production of x units of a commodity is given by C(x) = $2x^3 – 15x^2 + 36x + 15$, The cost will we minimum when 'x' equal to:

(a) 3

(b) 2

(c) 1

(d) 4

39. A seller makes an offer of selling certain articles that can be described by the equation x = 25 – 2y where x is price per unit and y denotes the No. of units. The cost price of the article is ₹ 10 per unit. The maximum quantity that can be offered in single deal to avoid loss is:

(a) 6

(b) 7

(c) 8

(d) 9

40. $\int x\, e^x dx$ is:

(a) $(x-1)e^x+C$

(b) $x.e^x+C$

(c) $\log x + x.e^x+C$

(d) None of these

41. Find odd man out of the following:

(a) 295

(b) 381

(c) 552

(d) 729

42. In a certain code, TEACHER is written as VGCEJGT. How is CHILDREN written in that code ?

(a) EJKNEGTP

(b) EGKNEITP

(c) EJKNFGTO

(d) EJKNFTGP

43. If HEALTH is written as GSKZDG, then how will NORTH be written in that code?

(a) OPSUI

(b) GSQNM

(c) FRPML

(d) IUSPO

44. If HONEY is coded as JQPGA, which word is code as VCTIGVU ?

(a) CARPETS

(b) TRAPETS

(c) TARGETS

(d) UMBRELU

45. Which of the following is odd one?

(a) CEHL

(b) KMPT

(c) OQTX

(d) NPSV

46. Shweta moved a distance of 75 metres towards the north. She then turned to the left and walking for about 25 metres, turned left again and walked 80 metres. Finally, she turned to the right at an angle of 45°. In which direction was she moving finally?

(a) South

(b) South-West

(c) North-East

(d) North-West

47. A man is facing East, then he turns left and goes to 10 metres then turns right and goes 5 metres then goes 5 metres to the South and from there 5 metres to West. In which direction is he from his original place?

(a) East

(b) West

(c) North

(d) South

48. Rahim started from point X and walked straight 5 km. East, then turned left and walked straight 2 km. and again turned left and walked straight 7 km. In which direction is he from the point X ?

(a) North-East

(b) South-West

(c) South-East

(d) North-West

49. Sangeeta leaves from her home. She first walk 30 metres in North-West direction, and then 30m in South West direction, next she walks 30 metres in South-East direction. Finally she turns towards her house. In which direction is she moving?

(a) North-West

(b) North-East

(c) South-East

(d) South-West

50. A person is facing towards North. He moves 70° clock-wise direction. Again he is moving 300° clock-wise direction. Now, in which direction is he presently facing ?

(a) North-West

(b) South-East

(c) North-East

(d) South-West

51. 8 leaders P, Q, R, S, T, U, V and W are sitting on a bench facing towards North.

(i) T is fourth to the left of P

(ii) S is fourth to the right of W

(iii) U and R are not sitting at the ends, but they are neighbours of T and Q respectively.

(iv) P is next to the right of W and but left of Q.

Who are sitting at the extreme ends ?

(a) T&S

(b) P&Q

(c) U&R

(d) None

Directions (52-53): Read the following informations carefully to answer these questions:

(i) Six flats on a floor in two rows facing North and South are allotted to P, Q, R, S, T and U.

(ii) Q gets a North facing flat and is not next to S.

(iii) S and U get diagonally opposite flats.

(iv) R, next to U, gets a South facing flat and T gets a North facing flat.

52. The flats of which of the other pairs than SU, are diagonally opposite to each other ?

(a) QP

(b) PT

(c) QR

(d) TS

53. Which of the following combinations gets South facing flats ?

(a) UPT

(b) URP

(c) QTS

(d) Data inadequate

54. A, B, C, D, E and F are sitting around a round table. A is between E and F, E is opposite to D, and C is not in either of the neighbouring seats of E. Who is opposite to B ?

(a) C

(b) D

(c) F

(d) None of these

55. Five boys A, B, C, D and E are sitting in a row. A is to the right of B and E is to the left of B but to the right of C. A is to the left of D. Who is second from the left end ?

(a) D

(b) A

(c) E

(d) B

56. A prisoner introduced a boy who came to visit him to the jailor as “Brothers and sisters, I have none, he is my father’s son’s son”. Who is the boy ?

(a) Nephew

(b) Son

(c) Cousin

(d) Uncle

57. Pointing to a man in a photograph, a woman said, “the father of his brother is the only son of my grandfather”, how is the woman related to the man in the photograph?

(a) Mother

(b) Aunty

(c) Daughter

(d) Sister

(Directions 58-59) R is the father of P, who is son in law of M and S is the mother of G. S is a sister of K, who is a brother in law of P and H is the daughter of T, Who is a grandmother of G ?

58. How is G is related to P ?

(a) Son

(b) Daughter

(c) Grand daughter

(d) Cannot be determined

59. If M is a Female, then How is H is related to M ?

(a) Son-in-Law

(b) Daughter-in-law

(c) Mother-in-law

(d) Father-in-law

60. There are two couples in a family. K has two children. M is wife of O, who is brother of B. F is daughter of K. U is sister of S, who is son of O. T is son of B, who is a male How is U related to T?

(a) Mother

(b) Brother

(c) Sister

(d) Cousin

61. The graphical representation of a cumulative frequency distribution is called.

(a) Histogram

(b) Ogive

(c) Both

(d) None of these

62. A table has ____ parts:

(a) Four

(b) Two

(c) Five

(d) None

63. Out of 1000 persons, 25 per cent were industrial workers and the rest were agricultural workers. 300 persons enjoyed world cup matches on T.V. 30 per cent of the people who had not watched world cup matches were industrial workers. What is the number of agricultural workers who had enjoyed world cup matches on TV ?

(a) 230

(b) 250

(c) 240

(d) 260

64. The column headings of a table are known as:

(a) Body

(b) Stub

(c) Box-head

(d) Caption

65. Arrange the dimensions of Bar diagram, Cube diagram, Pie diagram in sequence

(a) 1, 2, 3

(b) 2, 1, 3

(c) 2, 3, 2

(d) 3, 2, 1

66. In a class of 11 students, 3 students were failed in a test. 8 students who passed secured 10,11,20,15,12,14,26 and 24 marks respectively. What will be the median marks of the students

(a) 12

(b) 15

(c) 13

(d) 13.5

67. Suppose a population A has 100 observations 101,102,103,200 and another population B has 100 observations 151, 152, 153, ……. 250. If VA and VB represents the variance of the two populations respectively, then V_A / V_B = : _____

(a) 9/4

(b) 1

(c) 4/9

(d) 2/3

68. Out of these, which is not a probability sampling?

(a) cluster sampling

(b) stratified sampling

(c) quota sampling

(d) simple random sampling

69. With the increase in sample size, the error also____

(a) decreases

(b) increases

(c) remains same

(d) all of the above

70. For a moderately skewed distribution, which of the following relationship holds?

(a) Mean – Median = 3 (Median – Mode)

(b) Median -Mode = 3 (Mean -Median)

(c) Mean – Mode 3 (Mean – Median)

(d) Mean – Median 3 (Mean – Mode)

71. If mean and coefficient of variation of the marks of n students is 20 and 80 respectively. What will be variance of them

(a) 256

(b) 16

(c) 25

(d) None of these

72. A company's past 10 years average earnings is ₹ 40 crores. To have the same average earning for 11 years including theses 10 years, how much earning must be made by the company in the eleventh year ?

(a) ₹ 40 crores

(b) ₹$\frac{40\times10}{11}$ crores

(c) More than Rs. 40 crores

(d) None of these

73. Origin is shifted by 5, then

(a) SD will increase by 5

(b) QD will increase by 5

(c) MD will increase by 5

(d) There will be no change in SD

74. Two unbiased dice are thrown. The expected value of sum of numbers on the upper side is

(a) 3.5

(b) 7

(c) 12

(d) 6

75. An example of bi-parametric continuous probability distribution.

(a) Binomial

(b) Poisson

(c) Normal

(d) (a) and (b)

76. If 5 is subtracted from each observation of some certain item then its co-efficient of variation is 10% and if 5 is added to each item then its coefficient of variation is 6%. Find original coefficient of variation.

(a) 8%

(b) 7.5%

(c) 4%

(d) None of these

77. A bag contains 3 white and 5 black balls and second bag contains 4 white and 2 black balls. If one ball is taken from each bag, the probability that both balls are white is _____

(a) 1/3

(b) ¼

(c) ½

(d) None of these

78. If the difference between mean and mode is 63, then the difference between Mean and Median will be _____

(a) 63

(b) 31.5

(c) 21

(d) None of the above

79. A lady travel at a speed of 20km/h and returned at quicker speed. If her average speed of the whole journey is 24km/h, find the speed of return journey (in km/h)

(a) 25

(b) 30

(c) 35

(d) 38

80. Three identical dice are rolled. The probability that the same number will appear on each of them is:

(a) 1/6

(b) 1/12

(c) 1/36

(d) 1

81. The theory of compound probability states that for any two events A and B:

(a) $P(A \cap B) = P(A) \times P(B)$

(b) $P(A \cap B) = P(A) \times P(B/A)$

(c) $P(A \cup B) = P(A) \times P(B/A)$

(d) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

82. In a non-leap year, the probability of getting 53 Sundays or 53 Tuesdays or 53 Thursdays is :

(a) 4/7

(b) 2/7

(c) 3/7

(d) 1/7

83. A card is drawn from a well shuffled pack of 52 cards. Let E, “a king or a queen is drawn” & E_2: “a queen or a jack is drawn”, then:

(a) E_1 and E_2 are not independent

(b) E_1 and E_2 are mutually exclusive

(c) E_1 and E_2 are independent

(d) None of these

84. The overall percentage of failure in a certain examination is 0.30. What is the probability that out of a group of 6 candidates at least 4 passed the examination?

(a) 0.74

(b) 0.71

(c) 0.59

(d) 0.67

85. A manufacturer, who produces medicine bottles, finds that 0.1 % of the bottles are defective. The bottles are packed in boxes containing 500 bottles. A drug manufacturer buys 100 boxes from the producer of bottles. Using Poisson

distribution, find how many boxes will contains at least two defectives: [Given: $e^{-05} = 0.6065$]

(a) 7

(b) 13

(c) 9

(d) 11

86. The probability than a man aged 45 years will die within a year is 0.012. What is the probability that of 10 men, at Least 9 will reach their 46^{th} birthday? [Given: $e^{-0.12} = 0.88692$]

(a) 0.0935

(b) 0.9934

(c) 0.9335

(d) 0.9555

87. Shape of Normal Distribution Curve:

(a) Depends on its parameters

(b) Does not depend on its parameters

(c) Either (a) or (b)

(d) Neither (a) nor (b)

88. The mean of Binomial distribution is 20 and Standard deviation is 4 then;

(a) n = 100, p = 1/5, q = 4/5

(b) n = 50, p = 2/5, q = 2/5

(c) n = 100, p = 2/5, q = 4/5

(d) n = 100, p = 1/5, q = 3/5

89. In a Poisson distribution if P(x = 4) = P(x = 5) then the parameter of Poisson distribution is :

(a) 45

(b) 54

(c) 4

(d) 5

90. If the rank correlation co-efficient between marks in Management and Mathematics for a group of students is 0.6 and the sum of the squares of the difference in rank is 66. Then what is the number of students in the group ?

(a) 9

(b) 10

(c) 11

(d) 12

91. Correlation coefficient between X and Y will be negative when

(a) X and Y are decreasing

(b) X is increasing, Y is decreasing

(c) X and Y are increasing

(d) None of these

92. Two variables X and Y are related as 4x + 3y = 7 then correlation between x and y is _____

(a) Perfect positive

(b) Perfect negative

(c) Zero

(d) None of these

93. Given the regression equations as 3x + y = 13 and 2x +5y = 20. Find regression equation of y on x.

(a) 3x + y = 13

(b) 2x + Y = 20

(c) 3x + 5y = 13

(d) 2x + 5y = 20

94. Regression coefficient are _____

(a) dependent of change of origin and of scale.

(b) independent of both change of origin and of scale.

(c) dependent of change of origin but not of scale.

(d) independent of change of origin but not of scale

95. If one of regression coefficient is ____ unity, the other must be ____ unity.

(a) more than, more than

(b) Less than, Less than

(c) more than, less than

(d) Positive, Negative

96. Circular test is satisfied by which index number?

(a) Laspeyre's

(b) Paasche's

(c) Fisher's

(d) Simple Geometric mean of price Relatives and the aggregative with Fixed weights.

97. Which of the following statement is true ?

(a) Paasche's index number is based on base year quantity

(b) Fisher's index satisfies the circular test

(c) Arithmetic mean is the most appropriate average for constructing the index number

(d) Splicing means constructing one continuous series from two different indices on the basis of common base.

98. Monthly salary of an employee was ₹ 10,000 in the year 2000 and it was increased to ₹ 20,000 in the year 2013 while the consumer price index number is 240 in year 2013 with the base year 2000, what should be his salary in comparison of consumer price index in the year 2013 ?

(a) 2,000

(b) 16,000

(c) 24,000

(d) None of these

99. Purchasing power of money is _____

(a) Reciprocal of price index number

(b) Equal to price index number

(c) Unequal to price index number

(d) None of these

100. In the year 2010 the monthly salary was ₹ 24,000. The consumer price index number was 140 in the year 2010 which rises to 224 in the year 2016. If he has to be rightly compensated what additional monthly salary to be paid to him

(a) ₹ 14,400

(b) ₹ 38,400

(c) ₹ 7,200

(d) None of these