Question Paper Booklet No. 1528055

GENERAL INSTRUCTIONS TO CANDIDATES

1. Please do not open this Booklet till you are told to do so.
2. **If the Question Paper Booklet does not contain 100 questions or if it is not of the medium opted or Answer Sheet is not in good condition, ask for change immediately.**
3. Duration of the test is 2 hours.
4. Before commencement of the exam, please fill up the necessary information in the space provided below and also in the answer sheet.
5. Use HB pencil only to darken the circles for answers in the answer sheet.
6. After each MCQ, four options are given. Choose the correct and most appropriate option and darken the appropriate circle against the question number in the OMR Answer Sheet, completely, as shown below, with HB Pencil.

Marking the Answers	
Example : For Question No. 12, if the candidate considers the correct answer to be C, he is to mark as shown below **(Correct Method)** 12 (A) (B) ● (D)	**Not as shown below (Wrong method) :** 12 (A) (B) (C) (D) 12 (A) (B) (C) (D) 12 (A) (B) (C) (D) 12 (A) (B) (C) (D) 12 (A) ● ● (D)

7. Any answer marked in the question booklet will not be considered and no marks will be awarded.
8. If a candidate wants to change the answer already darkened, he should erase it completely, with good quality eraser and ensure that no mark is visible after erasing.
9. For each correct answer, one mark will be awarded. For each wrong answer, 1/4th of the mark earmarked for each question will be deducted. If more than one circle is darkened for a question, it will be treated as wrong answer. For questions not answered i.e. blanks, a zero will be given.
10. Rough work, if any, must be done on the pages, specified as SPACE FOR ROUGH WORK only and nowhere else in the question paper booklet or in the answer sheet.
11. When you have completed, even before time, please remain in your seat. The Invigilator will come to you and collect your Answer Sheet against acknowledgement on the admit card. No candidate can leave the examination hall till the end of the test.
12. Candidate found copying or receiving or giving any help or defying instructions of the Invigilators or having/using mobile phone or smart watch will be expelled from the examination and will also be liable for further punitive action.

Time : 2 Hours **Maximum Marks : 100**

Total No. of Printed Pages : 24

Question Paper Booklet Code | N | B | D |

Roll No. | 5 | 5 | 4 | 4 | 6 | 8 |

Question Paper Booklet No. 1528055

Name of the Candidate Saumya Singh

OMR Answer Sheet No. | 8 | 1 | 0 | 4 | 9 | 2 | 7 |

Saumyasingh

Signature of the Candidate

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(1) After each MCQ, four options have been given. Choose the correct and most appropriate option and darken the corresponding circle against the MCQ number in the OMR answer sheet.

(2) Please ensure to write and darken correct MCQ booklet number in the OMR answer sheet. The correct MCQ booklet number must also be written in the attendance register.

(3) Please write your Roll No. and name on the topmost page of the MCQ booklet at the specified place without fail.

1. 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) B (D) E

2. Six friends P, Q, R, S, T and U are sitting around the hexagonal table each at one corner and are facing the centre of the hexagonal. P is second to the left of U. Q is neighbour of R and S. T is second to the left of S.

Which one is sitting opposite to P ?

(A) R (B) Q

(C) T (D) S

3. A, B, C, D and E are sitting on a bench. A is sitting next to B, C is sitting next to D, D is not sitting with E who is on the left end of the bench. C is on the second position from the right. A is to the right of B and E. A and C are sitting together. In what position A is sitting ?

(A) Between B and D (B) Between B and C

(C) Between E and D (D) Between C and E

4. In a class, there are seven students (including boys and girls) A, B, C, D, E, F and G. They sit on three benches I, II and III, such that atleast two students on each bench and atleast one girl on each bench. C who is a girl student, does not sit with A, E and D. F the boy student sits with only B. A sits on the bench I with his best friends. G sits on the bench III. E is the brother of C.

Which of the following is the group of girls ?

(A) BCG (B) BFC

(C) BCD (D) CDF

5. Study the following information carefully :

- A3P means A is the mother of P.
- A4P means A is the brother of P.
- A9P means A is the husband of P.
- A5P means A is the daughter of P.

Which of the following means that K is the mother-in-law of M ?

(A) M9N3K4J (B) M9N5K3J

(C) K5J9M3N (D) K3J9N4M

6. Q, W, E, R, T and Y are members of a family consisting of two children, one of whom is T is a boy. Q and R are brothers and Q is an engineer. E is a doctor married to one of the brothers. W is married to R, and Y is their only child. How T is related to Q ?

(A) Father (B) Brother

(C) Nephew (D) Son

7. K is the son of A's mother's sister. Q is daughter of D, who is the father of G and grandfather of A. P is the daughter of H, who is grandmother of K. D is husband of H and G is husband of L. How is P related to Q ?

(A) Mother (B) Sister

(C) Daughter (D) Cousin

8. If "A # B" means A is father of B, "A * B" means A is brother of B, "A @ B" means A is mother of B, then which of the following is correct about G @ T # P ?

(A) G is mother of P. (B) P is father of T.

(C) T is son of G. (D) P is brother of T.

9. Pointing to a photograph, Rajesh said, "He is Aarav and he is the son of the only daughter of the father of my brother", how Rajesh is related to the Aarav referred in the photograph ?

(A) Nephew (B) Brother

(C) Father (D) Maternal Uncle

10. The curve obtained by joining the points, whose X co-ordinates are the upper limits of the class intervals and Y co-ordinates are corresponding cumulative frequencies, is called

(A) Ogive
(B) Histogram
(C) Frequency polygon
(D) Frequency curve

11. The following data relate to the wages of a group of workers :

Wages (in ₹) :	Below 100	Below 200	Below 300	Below 400
No. of workers :	15	38	65	90

How many workers got wages more than ₹ 300 ?

(A) 25
(B) 65
(C) 90
(D) 27

12. The mode of a continuous frequency distribution can be determined graphically from

(A) By using Histogram
(B) By using frequency polygon
(C) By using ogive
(D) By using frequency curve

13. Frequency density corresponding to a class interval for the continuous frequency distribution, is the ratio of

(A) class frequency to the total frequency
(B) class frequency to the class length
(C) class length to the class frequency
(D) class frequency to the cumulative frequency

14. Which of the following statements about simple random sampling is NOT true ?

(A) Simple random sampling ensures that each unit in the population has an equal chance of being selected.

(B) In simple random sampling with replacement, each selected unit is replaced to the population before the next unit is drawn.

(C) Simple random sampling is highly effective when the population is very large and heterogeneous.

(D) In a simple random sampling without replacement, a unit is selected, it will never be selected again.

15. A frequency curve which starts with a minimum frequency and then gradually reaches its maximum frequency at the other extremity is known as

(A) Bell shaped curve
(B) Mixed curve
(C) U-shaped curve
(D) J-shaped curve

16. The law of statistical regularity says that _____.

(A) Sample drawn from the population under discussion possesses the characteristics of population.

(B) A large sample drawn at random from the population would possess the characteristics of the population.

(C) A large sample drawn at random from the population would possess the characteristics of the population on an average.

(D) An optimum level of efficiency can be attained at a minimum cost.

17. A population comprises 5 members. The number of possible samples of size 2, that can be drawn from it with replacement is

(A) 100
(B) 15
(C) 125
(D) 25

18. If Arithmetic Mean (A.M.) and Geometric Mean (G.M.) of two numbers are 6.50 and 6 respectively, then the two numbers are

(A) 6 and 7 (B) 9 and 4

(C) 10 and 3 (D) 8 and 5

19. Which of the following is not a method of dispersion ?

(A) Standard deviation (B) Mean deviation

(C) Range (D) Concurrent deviation method

20. Find out co-efficient of variation, if $N = 14$, $\Sigma fx = 280$ and σ(S.D.) = 3.

(A) 20 (B) 15

(C) 4.67 (D) Zero

21. The monthly profit/loss for six months of the firm is as under :

Months :	January	February	March	April	May	June
Profit/loss (in ₹) :	1,000	900	0	–200	–400	2,000

The co-efficient range of the above data is

(A) 122 (B) 150

(C) 33.33 (D) 55.55

22. In tabulation, source of data, if any, is shown in the

(A) Footnote (B) Body

(C) Stub (D) Caption

23. A helicopter flies from A to B at the rate of 500 km/hr. and comes back at the rate 700 km/hr. The average speed of the helicopter is

(A) 600 km/hr. (B) 583.33 km/hr.

(C) $100\sqrt{35}$ km/hr. (D) 620 km/hr.

24. Which one of the following measures of central tendency is based on only fifty percent (50%) of the central values ?

(A) Geometric Mean
(B) Harmonic Mean
(C) Median
(D) Mode

25. The Arithmetic Mean (A.M.) and mode of the data are 32 and 26, respectively, then find the median of the data.

(A) 30
(B) 12
(C) 6
(D) 29

26. Find out the mode from the following data :

100, 110, 125, 225, 325, 125, 90, 80, 455, 375, 125

(A) 325
(B) 110
(C) 455
(D) 125

27. Which one of the following is the absolute measure of dispersion for open ended distributions ?

(A) Range
(B) Standard deviation
(C) Mean deviation
(D) Quartile deviation

28. If the mean of the following frequency distribution is 2.6, then the value of Y is

Marks (X) :	1	2	3	4	5
No. of Students (f) :	8	10	Y	2	4

(A) 16
(B) 6
(C) 26
(D) 12

29. A father had three sons namely, Kailash, Harish and Prakash. All are above 65 years in age. Prakash happens to be the eldest while Kailash as youngest. As per the health history, it is estimated that the probability that Kailash survives another 5 years is $\frac{4}{5}$, Harish survives another 5 years is $\frac{3}{5}$ and Prakash survives another 5 years is $\frac{1}{2}$. The probabilities that Kailash and Harish survive another 5 years is 0.46, Harish and Prakash survive another 5 years is 0.32 and Kailash and Prakash survive another 5 years is 0.48. The probability that all three sons survive another 5 years is 0.26. What shall be the probability that at least one of them survives another 5 years ?

(A) 0.78 (B) 0.72

(C) $\frac{7}{10}$ (D) $\frac{9}{10}$

30. Two dice are thrown simultaneously. Find the probability that the sum of digits on the two dice would be 8 or more.

(A) $\frac{5}{18}$ (B) $\frac{5}{12}$

(C) $\frac{5}{36}$ (D) $\frac{7}{12}$

31. A number is selected from the first 20 natural numbers. Find the probability that it would be divisible by 3 or 7.

(A) $\frac{7}{20}$ (B) $\frac{12}{37}$

(C) $\frac{24}{67}$ (D) $\frac{8}{20}$

32. A problem is given to 5 students P, Q, R, S and T. If the probability of solving the problem individually is $\frac{1}{2}, \frac{1}{3}, \frac{2}{3}, \frac{1}{5}$ and $\frac{1}{6}$ respectively, then find the probability that the problem is solved.

(A) 0.47 (B) 0.93

(C) 0.57 (D) 0.27

33. In a leap year, what is the probability that there will be 53 Sundays ?

(A) $\frac{53}{365}$ (B) $\frac{1}{7}$

(C) $\frac{3}{7}$ (D) $\frac{2}{7}$

34. Poisson probability distribution is appropriately applied in

(A) The height of students in the university.

(B) The distribution of passing of students in university examinations.

(C) Tossing of a coin hundred times.

(D) Number of deaths by a rare disease.

35. In a class, there are 15 boys and 10 girls. Three students are selected at random. The probability that 1 girl and 2 boys are selected is

(A) $\frac{21}{46}$ (B) $\frac{25}{17}$

(C) $\frac{1}{50}$ (D) $\frac{3}{25}$

36. Two cards are drawn from a pack of 52 cards. The probability that one is a spade and one is a heart; is

(A) $\frac{3}{20}$ (B) $\frac{29}{34}$

(C) $\frac{47}{100}$ (D) $\frac{13}{102}$

37. If 5% of the families in large population city do not use gas as a fuel, what will be the probability of selecting 10 families in a random sample of 100 families who do not use gas as a fuel ?

[Given that $e^{-5} = 0.0067$]

(A) 0.038 (B) Zero

(C) 0.018 (D) 0.048

38. The correlation co-efficient between X and Y is 0.8. If we add a number 10 in the X variable and subtracted 20 from Y variable, then the new correlation co-efficient will be

(A) 0.4 (B) 0.6

(C) 0.9 (D) 0.8

39. When both the regression co-efficients are $b_{xy} = 0.7$ and $b_{yx} = 0.8$, respectively, then correlation co-efficient between x and y is

(A) 0.75 (B) 0.56

(C) 0.28 (D) 0.87

40. If the points of inflexion of a normal curve are 6 and 14, then standard deviation of the distribution is

(A) 4 (B) 8

(C) 9.17 (D) 32

41. What is the probability of making 3 corrected guesses in 5 True-False answer type questions ?

(A) 0.3125 (B) 0.4156

(C) 1.3888 (D) 0.5235

42. Given $x = 2y + 4$ and $y = kx + 6$ are the two lines of regression x on y and y on x respectively. If the value of correlation co-efficient (r) is 0.5, then the value of k is

(A) $\frac{1}{8}$ (B) $\frac{1}{4}$

(C) $\frac{1}{3}$ (D) $\frac{1}{2}$

43. If $\Sigma p_n q_n = 249$, $\Sigma p_0 q_0 = 150$, $\Sigma p_n q_0 = 145$ and Paasche's Index Number = 150, then Fisher's Ideal Price Index Number is

(A) 75 (B) 126.9

(C) 120.62 (D) 171

44. From the following data, find out an Index number for 2022 taking 2021 as base (using simple aggregative method) :

Commodities	Price in 2021	Price in 2022
A	80	120
B	220	200
C	300	400

(A) 100 (B) 120

(C) 108 (D) 190

45. For 9 college students group, the sum of squares of differences in ranks for History and Hindi marks was found to be 62, then what is the value of rank correlation co-efficient ?

(A) 1 (B) 0.48

(C) 0.52 (D) 0.87

46. If r = 0.7, then co-efficient of non-determination is

(A) 0.49 (B) 0.51

(C) Zero (D) 0.71

47. Chain Index is equal to

(A) $\frac{\text{link relative of current year} \times \text{chain index of current year}}{100}$

(B) $\frac{\text{link relative of previous year} \times \text{chain index of current year}}{100}$

(C) $\frac{\text{link relative of current year} \times \text{chain index of previous year}}{100}$

(D) $\frac{\text{link relative of previous year} \times \text{chain index of previous year}}{100}$

48. From the following chain base index numbers based on 2015, find out new chain base index number for the year 2022 by shifting the base year 2019.

Years :	2015	2016	2017	2018	2019	2020	2021	2022
Index No. : (Base 2015)	100	105	95	85	120	110	130	150

(A) 125 (B) 180

(C) 100 (D) 150

49. The prices of a commodity in the years 2015 and 2020 were 50 and 60 respectively. Price relative of 2015 on 2020 is

(A) 100 (B) 110

(C) 83.33 (D) 120

50. If $\log \frac{a+b}{4} = \frac{1}{2}(\log a + \log b)$, then the value of $\frac{a}{b} + \frac{b}{a}$ will be

(A) 12 (B) 14

(C) 16 (D) 8

51. If $4^x = 5^y = 20^z$, then z is equal to

(A) xy (B) $\frac{(x+y)}{xy}$

(C) $\frac{1}{xy}$ (D) $\frac{xy}{(x+y)}$

52. If ₹ 58 is divided among 150 children such that each girl and each boy gets 25 p and 50 p respectively. Then how many girls are there ?

(A) 52 (B) 54

(C) 68 (D) 62

53. A startup business was initiated by an entrepreneur by investing ₹ 1,40,000. His friend joined him after six months with an amount of ₹ 2,10,000. Thereafter an angel investor joined them with ₹ 2,80,000 after another six months. What should be the ratio of distribution of total earnings, three years since beginning of business among entrepreneur, his friend and angel investor ?

(A) 7 : 6 : 10 (B) 12 : 15 : 16

(C) 42 : 45 : 56 (D) 2 : 3 : 4

54. The sum of three numbers is 98. If the ratio of the first to second number is 2 : 3 and that of the second to third is 5 : 8, then the second number is

(A) 20 (B) 30

(C) 48 (D) 58

55. For equation $x^3 - 6x^2 + 5x + 12 = 0$, the product of two roots is 12. Which of the following is correct set of roots of the equation ?

(A) $1, -3, -4$
(B) $1, 6, 2$
(C) $-1, 3, 4$
(D) $-1, -6, -2$

56. On solving the inequalities $6x + y \geq 18$, $x + 4y \geq 12$, $2x + y \geq 10$; which of the following are correct solutions ?

(A) (0, 18), (12, 0), (4, 2) and (2, 6)
(B) (3, 0), (0, 3), (4, 2) and (7, 6)
(C) (5, 0), (0, 10), (2, 4) and (2, 6)
(D) (0, 18), (12, 0), (4, 2) and (0, 7)

57. The longest side of a triangle is 2 times the shortest side and the third side is 4 cm shorter than the longest side. If the perimeter of the triangle is at least 61 cm, find the minimum length of the shortest side.

(A) 7 cm
(B) 9 cm
(C) 11 cm
(D) 13 cm

58. Puru gets on the elevator at the 11th floor of a building and rides up at the rate of 57 floors per minute. At the same time, Ishu gets on an elevator at the 51st floor of the same building and rides down at the rate of 63 floors per minute. If they continue travelling at these rates, then at which floor will their paths cross ?

(A) 17
(B) 19
(C) 27
(D) 30

59. The quadratic equation $2x^2 - \sqrt{5}x + 1 = 0$ has

(A) Two distinct real roots
(B) Two equal real roots
(C) No real roots
(D) More than two real roots

60. The effective annual rate of interest corresponding to a nominal rate of 6% per annum payable half-yearly is

(A) 6.06%
(B) 6.07%
(C) 6.08%
(D) 6.09%

61. The compound interest on a certain sum for 2 years at 10% per annum is ₹ 525. The simple interest on the same sum for double the time at half the rate percent per annum is

(A) ₹ 400
(B) ₹ 500
(C) ₹ 600
(D) ₹ 800

62. Find the future value of an investment of ₹ 7,000 compounded quarterly at 10% per annum for 3 years. [Given that $(1.025)^{12} = 1.34489$]

(A) ₹ 9,414.20
(B) ₹ 7,435.73
(C) ₹ 7,941.42
(D) ₹ 8,000.00

63. A sum of ₹ 725 is lent in the beginning of a year at a certain rate of simple interest. After 8 months, a sum of ₹ 362.50 more is lent but at the rate twice the former. At the end of the year, ₹ 33.50 is earned as interest from both the loans. What was the original rate of interest ?

(A) 3.6%
(B) 4.54%
(C) 3.46%
(D) 4.12%

64. There is 60% increase in amount in 6 years at simple interest. What will be the compound interest of ₹ 12,000 after three years at the same rate ?

(A) ₹ 2,160
(B) ₹ 3,120
(C) ₹ 3,972
(D) ₹ 6,240

65. If you deposit ₹ 4,000 into an account paying 6% annual interest compounded quarterly, how much approximate money will be in the account after 5 years ?
[Given that $(1.015)^{20} = 1.34489$]

(A) ₹ 3387.42
(B) ₹ 4387.42
(C) ₹ 5387.42
(D) ₹ 6387.42

66. Relationship between annual nominal rate of interest and annual effective rate of interest, if frequency of compounding is greater than one

(A) Effective rate < Nominal rate
(B) Effective rate > Nominal rate
(C) Effective rate = Nominal rate
(D) Effective rate = 0.9 times Nominal rate

67. Madhu invests ₹ 15,000 in a scheme and at the time of maturity the amount became ₹ 25,000. If CAGR for this investment is 8.88%, calculate the approximate number of years for which she has invested the amount.
[Given that $\log(1.667) = 0.2219$ and $\log(1.089) = 0.037$]

(A) 6 years
(B) 7.7 years
(C) 5.5 years
(D) 7 years

68. Raju will pay instalments of ₹ 3,150 per month for the next 3 years towards his loan at an interest rate 12.4%, discounted monthly, what was the approximate amount of loan taken initially ?
[Given that $(1.01033)^{36} = 1.448$]

(A) ₹ 13,683.60
(B) ₹ 9,742.29
(C) ₹ 94,345.17
(D) ₹ 74,158.24

69. Shiv deposits ₹ 10,000 annually in a bank for 5 years, at 10 percent annual compounding interest rate. Calculate the approximate value of this series of deposits at the end of five years, if each deposit occurs at the beginning of the year.

(A) ₹ 61,050
(B) ₹ 67,156
(C) ₹ 71,050
(D) ₹ 77,160

70. Find the approximate future value of an annuity due of ₹ 500 per quarter for 8 years and 9 months at the interest rate of 6% compounded quarterly.

[Given that $(1.015)^{35} = 1.6839$]

(A) ₹ 13,740.86 (B) ₹ 29,428.23

(C) ₹ 56,971.95 (D) ₹ 22,796.66

71. A project is expected to provide cash inflows as follows for 3 years :

Year	:	1	2	3
Cash Inflows (₹)	:	40,000	50,000	30,000

The company's cost of capital or required rate of return is 15%. What is the present value of cash inflows of the company ?

(A) ₹ 99,240 (B) ₹ 1,02,840

(C) ₹ 1,12,640 (D) ₹ 92,315

72. How much approximate amount should you save annually to accumulate ₹ 20,00,000 by the end of 12 years, if the saving earns an interest of 14 percent compound annually ?

[Given that $(1.14)^{12} = 4.8179$]

(A) ₹ 4,15,118 (B) ₹ 5,23,848

(C) ₹ 73,339 (D) ₹ 1,11,200

73. Dinesh received a cash bonus of ₹ 1,00,000 which he deposited in a bank which pays 10 percent interest compounded annually. How much approximate equal amount can Dinesh withdraw annually for a period of 10 years ?

[Given that $(1.1)^{10} = 2.59374$]

(A) ₹ 16,273 (B) ₹ 38,554

(C) ₹ 62,745 (D) ₹ 32,474

74. Seema, Bharati, Priyanka, Khusboo and Lalita are 5 speakers. The number of ways in which Seema will always speak before Bharati shall be

(A) 24
(B) $4! \times 2!$
(C) 5!
(D) 12

75. A team of 3 persons is to be constituted from a group of 2 men and 3 women. In how many ways can this be done if these teams would consist of 1 man and 2 women ?

(A) 10
(B) 6
(C) 16
(D) 8

76. Find the sum of n terms of the A.P., whose n^{th} term is $5n + 1$.

(A) $\frac{n}{2}$
(B) $\frac{2n}{7}$
(C) $\frac{n(7 + 5n)}{2}$
(D) $\frac{n(7 + 4n)}{2}$

77. The sum of first three terms of a G.P. is $\frac{21}{2}$ and their product is 27. Which of the following is not a term of the G.P., if the numbers are positive ?

(A) 3
(B) $\frac{2}{3}$
(C) $\frac{3}{2}$
(D) 6

78. In how many of distinct permutations of the letters in "MISSISSIPPI" when four I's do not come together ?

(A) 34650
(B) 40320
(C) 840
(D) 33810

79. Out of 7 consonants and 4 vowels, how many words of 3 consonants and 2 vowels can be formed ?

(A) 210
(B) 1050
(C) 25200
(D) 21400

80. Which of the following relations is transitive but not reflexive for the set $S = \{3, 4, 6\}$?

(A) $R = \{(3, 4), (4, 6), (3, 6)\}$ (B) $R = \{(1, 2), (1, 3), (1, 4)\}$

(C) $R = \{(3, 3), (4, 4), (6, 6)\}$ (D) $R = \{(3, 4), (4, 3)\}$

81. If $A = \{1, 2, 3, 4\}$, $B = \{2, 4, 6, 8\}$ and $C = \{3, 4, 5, 6\}$, the value of $A - \{B \cup C\}$ is

(A) $\{1, 2, 3\}$ (B) $\{2, 3, 4, 5\}$

(C) $\{1\}$ (D) $\{0\}$

82. The range of the function $f(x) = 3x - 2$ is

(A) $(-\infty, \infty)$ (B) $R - \{3\}$

(C) $(-\infty, 0)$ (D) $(0, -\infty)$

83. Find the value of $\lim_{x \to 4} \frac{(x^2 - 2x - 8)}{(x - 4)}$.

(A) 0 (B) 2

(C) 8 (D) 6

84. Insert 4 numbers between 2 and 22 such that the resulting sequence is an Arithmetic Progression (A.P.).

(A) 4, 8, 12, 16 (B) 5, 9, 13, 17

(C) 4, 10, 15, 19 (D) 6, 10, 14, 18

85. Find the sum of series $1 + \frac{1}{2} + \frac{1}{4} + \ldots\ldots$ upto 6 terms.

(A) $\frac{63}{32}$ (B) $\frac{32}{63}$

(C) $\frac{26}{53}$ (D) $\frac{53}{26}$

NBD

86. Find $\frac{dy}{dx}$, where $x = \frac{e^t + e^{-t}}{2}$ and $y = \frac{e^t - e^{-t}}{2}$

(A) $\frac{y}{x}$ (B) $\frac{x}{y}$

(C) $\frac{e^t}{e^{-t}}$ (D) $\frac{1}{e^t}$

87. What is the differential function of $\sqrt{(x^2 + 2)}$?

(A) $x\sqrt{(x^2 + 2)}\,dx$ (B) $\frac{x}{\sqrt{x^2 + 2}}dx$

(C) $\frac{x}{\sqrt{x^2 - 2}}dx$ (D) $-\frac{x}{\sqrt{x^2 + 2}}dx$

88. Identify the next number in the following series :

2, 8, 26, 62, 122, 212, _____.

(A) 332 (B) 338

(C) 356 (D) 362

89. Find the missing number in the given series :

4, 18, ____, 100, 180, 294, 448

(A) 48 (B) 52

(C) 56 (D) 64

90. Evaluate : $\int_2^4 (3x - 2)^2\,dx$.

(A) 104 (B) 100

(C) 10 (D) 52

91. Determine f(x), given that $f'(x) = 12x^2 - 4x$ and $f(-3) = 17$

(A) $f(x) = 4x^3 - 2x^2 + 143$ (B) $f(x) = 6x^2 - x^4 + 137$

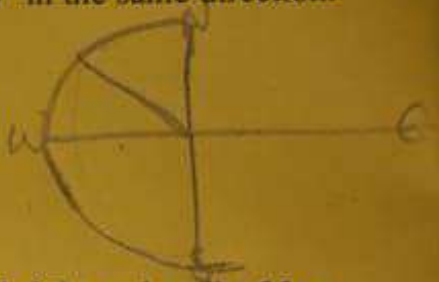
(C) $f(x) = 3x^4 - x^3 - 137$ (D) $f(x) = 4x^3 - 2x^2 - 143$

92. A certain code "564" means "all the best", "736" means "best of luck" and "428" means "all is luck". Which of the following is the code for "luck" ?

(A) 6 (B) 4

(C) 3 (D) 7

93. A man is facing North-West. He turns 90° in the clockwise direction, then 180° in the anticlockwise direction and then another 90° in the same direction. Which direction is he facing now ?



(A) South (B) South-West

(C) South-East (D) East

94. Rajni walked 20 m towards the North. Then she turned right and walks 30 m. Then she turns right and walks 35 m. Then she turns left and walks 15 m. Finally she turns left and walks 15 m. In which direction and how many meters is she from the starting position ?

(A) 15 m West (B) 30 m East

(C) 30 m West (D) 45 m East

95. Find the odd man out from the following :

445, 221, 109, 46, 25, 11, 4

(A) 25 (B) 46

(C) 109 (D) 221

96. In a certain code "CH4IR" is written as "GL8MV". How is "1N5T4GR4M" is written in that code ?

(A) 4HFID8E8N (B) 4P8W7JU8O

(C) 5R9X8KV8Q (D) 5KF2E4GR4

97. Some boys are sitting in three rows all facing North such that A is in the middle row. P is just to the right of A but in the same row. Q is just behind of P, while R is in the North of A. In which direction of R is Q ?

(A) South
(B) South-West
(C) North-East
(D) South-East

98. Seven persons namely H, I, J, K, M, N, O are sitting in a straight line facing North direction. Total three number of persons are sitting between H and N. Both N and H sits at extreme sides. Total two number of persons sit between H and O. M is not an immediate neighbour of H or N. I sits third to the right of M. I and H both are not an immediate neighbours. M is also not an immediate neighbour of J. Who is sitting between H and M ?

(A) J
(B) O
(C) I
(D) K

99. At a crossing, there was a direction pole, which was showing all the four correct directions. But due to the wind, it turns in such a manner that now West pointer is showing South. Harish went in the wrong direction thinking that he was travelling East. In which direction he was actually travelling ?

(A) South
(B) North
(C) West
(D) East

100. Two cars start from the opposite places on a highway, 150 km apart. First car runs for 25 km and takes a right turn and then runs 15 km. It then turns left and then runs for another 25 km and then takes the direction back to reach the main road. In the mean time, due to minor break down the other car has run only 35 km along the main road. What would be the distance between two cars at this point ?

(A) 65 km.
(B) 75 km.
(C) 80 km.
(D) 85 km.

(24)

NBD

Space For Rough Work