NATIONAL MANAGEMENT COLLEGE, THUDUPATHI.
CA FOUNDATION
PAPER – 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS
50% REVISION TEST 2 (11.05.2022)

Time Allowed : 1 hour **Maximum Marks: 50**

PART A

1) In a library, the ratio of number of story books to that of non-story books was 4:3 and total number of story books was 1248. When some more story books were bought, the ratio became 5:3. Find the number of story books bought.

a. 312 b. 321 c. 936 d. 1560

2) . 5% of one number and 4% of the other together amount to 16. If 6% of the first number and 8% of the second add up to 24, then these number are respectively.

A) 300,250 B) 200,150 C) 100,50 D) none of these

3) A solution of the inequality 3x-2y > 3 is

A) (1,0) B) (1,1) C) (2,1) D) (1,2)

4) what is $\frac{1}{log_2 N} + \frac{1}{log_3 N} + \frac{1}{log_4 N} + \cdots . + \frac{1}{log_{100} N}$

a) $\frac{1}{log_{100!} N}$ b) $\frac{1}{log_{99!} N}$ c) $\frac{99}{log_{100!} N}$ d)$\frac{99}{log_{99!} N}$

5)what is the value of $log_3 log_3 \sqrt{3\sqrt{3}}$ equal to ?

a)3 $log_2 3$ b) 1 - 3 $log_2 2$ c)1 – 2 $log_3 2$ d)3/8

5) Rs. 8400 is divided among A, B, C and D in such a way that the shares of A and B, B and C, and C and D are in the ratios of 2:3, 4:5 and 6:7 respectively. The share of A is

a) Rs. 1280 b) Rs. 8400 c) Rs. 8210 d) Rs. 1320

6) One root of a quadratic equation is 2+√3 , then product of roots will be

a) 7 b) 4 c) 0 d)1

7) The roots of quadratic equation are always rational if and only if

a) D is a perfect square b) D is a perfect square and coefficients are rational

c) D is not a perfect square d) D is not a perfect square and coefficients irrational

8) On solving the inequalities $5x + y \leq 100$, $x + y \leq 60$, $x \geq 0$ and $y \geq 0$, we get the following situation.

(a)(0, 0), (20, 0), (10, 50) and (0,60) (b)(0, 0), (60, 0), (10, 50)and (0,60)

(c)(0, 0), (20, 0), (0, 100)and (10,50) (d)none of these

9) Calculate the least whole number , which when subtracted from both the terms of the ratio 5:6 gives less than 17:22

a)5 b)3 c) 2 d) 4

10) If $5x-1 < 3x+2$ and $5x + 5 > 6-2x$; then x can take which of the following values ?

a) 0 b)1 c) -1 d) 2

11) The commom region in the graph of linear inequalities $2x + y \geq 18$, $x + y \geq 12$ and $3x + 2y \leq 34$ is

(a)unbounded (b) infeasible

(c) feasible and bounded (d) feasible and unbounded

12) 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) None of the above

13) Mr. X takes a loan of Rs 50,000 from HDFC Bank. The rate of interest is 10% per annum. The first installment will be paid at the end of year 5. Determine the amount of equal annual installments if Mr. X wishes to repay the amount in five installments.

a) Rs 19500 b) Rs 19400 c) Rs 19310 d) None of the above

14) A sum of Rs.4250 lent at simple interest at 12.5% per annum will double in:

a) 10 years b) 9 years c) $8\frac{1}{2}$ years d)8 years

15) The difference in compound interest and simple interest on a Rs. 18,000 loan over two years was Rs. 405. What was the interest rate?

a)16% b) 15% c) 15.5% d)12%

16) If the expected net cash flows of an equipment for 5 years is 50000,55000,65000,75000,75000 with the cost of equipment being Rs.2,00,000 then , compute the net present value ,

a)34493 b)36495 c)37495 d)35495

17)compute average rate of retrun for a equipment costing Rs 200,000 with the expected net cash flows of an equipment for 5 years is 50000,55000,65000,75000,75000

a) 0.12 b) 0.11 c) 0.13 d)0.1

18)Sachin deposits Rs.2,50,000 with the bank which pays 12% interest compounded annually for a period of 4 years. How much will he get on maturity?

A) Rs.3,98,000 B) Rs.3,93,380 C) Rs.3,90,365 D) Rs.3,99,652

19) . It takes n years, for Rs. 62,500 to amount to Rs. 1,08,000 at 20% per annum compounded annually. Find the value of n.

A) 7 B) 5 C) 4 D) 3

20) .The simple interest is 5.12 of principal in 4 years then find the rate of interest.

A) 125% B) 126% C) 127% D) 128%

PART B

21) . Gopal started walking 2km straight from his school. Then he turned right and walks 1km. Again he turned right and walked 1km to reach his house. If his house is south-east from his school, then in which direction did Gopal start walking from the school?

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

22) . Five boys A , B, C, F, E, are sitting in a park in a circle. A facing South-west, D is facing South-east, B and E are right opposite A and D respectively and C is equidistant between D and B. Which direction is C facing?

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

23) A child goes 50 meter towards South and then turning to his right, he goes 50 meter. Then, turning to his left, he goes 30 meter. Again he turns to his left and goes 50 meter. How far is he from his initial position?

(a) 30 m (b) 40 m (c) 50 m (d) 80 m

24) If A×B means A is to the south of B: A+B means A is to the north of B; A%B means A is to the east of B ; A –B means A is to the west of B ; then in P % Q + R- S, S is in which direction with repect to Q ?

a) south east b) north east c) north west d) south west

25) one morning after sunrise Nivedita and Niharika were talking to each other face to face at Dalphin crossing. If Niharika”s Shadow was exactly to the right of nivedita, which direction Niharika was facing ?

a)North b) south c) East d)west

26) A man is facing west. He turns 45 degree in the clockwise direction and then another 180 degree in the same direction and then 270 degree in the anticlockwise direction. Find which direction he is facing now ?

a) South-West b)West c)South d)East-South

27) Sidhu, Chinu, Partha, Verma, Nitish, Keshab, Amit and Rashmi are sitting around a circle facing the centre. Nitish is third to the right of Amit who is not an immediate neighbor of either Partha or Rashmi. Partha is second to the left of Rashmi who is third to the left of Sidhu. Chinu is fourth to the right of Rashmi.

What is Sidhu position with respect to Keshab?

a) second to the right b) fifth to the right

c) fourth to the right d) second to the left

28) Read the following information carefully to answer the given questions.
Six people P, Q, R, S, T and U are sitting on the ground in a hexagonal shape.

All the sides of the hexagon, so formed are of same length.

I . P is not adjacent to Q or R.

II. S is not adjacent to R or T.

III.Q and R are adjacent.

IV . U is in the middle of S and R.

Who is at the same distance from S as T is from S?

a)Q b)R c)S d)U

29) In a gathering seven members are sitting in a row. 'C' is sitting left to 'B' but on the right to 'D'. 'A' is sitting right to 'B'. 'F' is sitting right to 'E' but left to 'D'. 'H' is sitting left to 'E'. Find the person sitting in the middle.

a) C b) D c) E d) F

30) Read the following information to answer the given questions:

1. Pepper Potts, Hulk, Ironman, Hawkeye, Thor, Loki and Black Widow are sitting in a circle.

2. Pepper Potts, Hulk, Ironman, Hawkeye, Loki and Black Widow are sitting at equal distances from each other.

3. Ironman is sitting two places right of Loki, who is sitting one place right of Hawkeye.

4. Pepper Potts forms an angle of 90° from Thor and an angle of 120° from Hulk.

5. Hulk is just opposite Black Widow and is sitting on the left of Thor.

The angle between Thor and Hulk in the clockwise direction is?

a)150° b) 180° c) 210° d) None of these

Part c

31) In normal distribution what is the ratio of QD:MD:SD

(a) 12:10:15 (b)15:10:12 (c) 10:15;12 (d)10:12:15

32) The coefficient of correlation is independent of

a) change of scale only b) both change of scale and change of origin

c) change of origin only d) neither change of scale nor change of origin

33)Parameter is a charecterstic of

a) Population b) sample c)Probability distribution d) both a and b

34) Which one is not a condition of Poisson model

a) the probability of having success in a small time interval is constant

b) the probability of having success more than one in a small time interval is very small

c) the probability of having success in a small interval is independent of time and also of earlier success

d) the probability of having success in a small time interval (t,t+dt) is kt for a positive constant k

35) Out of 128 families with 4 children each, how many are expected to have atleast one boy and one girl?

(a)100 (b)105 (c) 108 (d) 112

36) The mean of a normal distribution is 500 and 16 per cent of the values are greater than 600. What is the standard deviation of the distribution?

(a) 75 (b) 100 (c) 50 (d)60

37) X and Y are independent normal variables with mean 50 and 80 respectiely and standard deviation as 4 and 3 respectively. What is the distribution of X+Y ?

a)N(130,7) b) N(130,3) c) N(130,5) d)N(130,4)

38) find the mean of x if x is a Possion variate statisfying the condition P(3) = P(4) ?

a)2 b)3 c)4 d)5

39) If x follows normal distribution with mean = 20 and variance = 25 . what is P(x ≥ 25) ? given P(z ≤ 1) = 0.841, P(z ≤2) = 0.977

a)0.023 b)0.16 c)0.32 d)0.046

40) Given x = 2y+4 and y=kx+6 are the lines of regression of x on y and y on x respectively. Find the value of k, if value of r is 0.5

a)1/8 b)1/3 c)1/2 d)1/4

41) If coefficient of correlation r_{xy} = 1 then

a) Regression lines become identical b) Perfect linear co relationship is observed

c)$b_{yx} = 1/b_{xy}$ d) all of the above

42) If a statistics professor tells his class, " All those who got 100 on the statistics test got 20 on the mathematics test, and all those that got 100 on mathematics test got 20 on the statististics test", he is saying that the correltion between the statistics test and the mathematics test is

A) negative b)positive c) zero d) none of the above

43) the following results relate to bivariate data on (x,y):

$\sum xy = 414$, $\sum x = 120$, $\sum y = 90$, $\sum y^2 = 300$, $\sum x^2 = 600$, n =30 . Later or , it was known that two pairs of observation (12, 11) and (6,8) were wrongly taken, the correct pairs of observations being (10, 9) and (8 , 10) . The corrected value of the correlation coefficient is

a) 0.752 b) 0.768 c)0.846 d) 0.953

44) when r=0 then cov (x,y) is equal to

a)+1 b)-1 c)0 d)none

45) Consumer Price index number for the year 1957 was 313 with 1940 as the base year. The Average Monthly wages in 1957 of the workers in to factory be Rs. 160/- their real wages is

(a) Rs. 48.40 (b) Rs. 51.12

(c) Rs. 40.30 (d) None of these

46) . Purchasing power of money is

(a) Reciprocal of the Price Index Number. (b) Equal to price index number.

(c) Unequal to price index number. (d) None of these.

47) Which of the following methods is used to calculate the Consumer Price Index?

a) Laspeyres's formula b)Fisher's formula c)Palgrave's formula d)None of the above

48) Index number for base year is always considered as------

a. 100 b.101 c. 201 d. 1000

49) Which is the best suitable measure of central tendency to construct index number?

a. A.M. b. G.M c. H.M d. Median

50) . The prices of commodity in the year 2015 and 2020 were 25 and 30 respectively taking 2015 as base year the price relative is

(a) 109.8 (b) 110.25 (c) 113.25 (d) 83.33