FOUNDATION EXAMINATION **SET 1**

MODEL QUESTION PAPER TERM DECEMBER-2024

PAPER - 3

FUNDAMENTALS OF BUSINESS MATHEMATICS AND STATISTICS

Time Allowed: 1 Hour **Full Marks: 100**

Answer all questions. Each question carries 2 marks.

1.	Two numbers are in the ratio 7: 9, if the sum of the numbers is 288, then the smaller number is :		
	(a)	126	O
	(b)	288	O
	(c)	162	O
	(d)	144	O
2.	Find the next 6 terms for the series: 128, 139, 150, 161, 172, 183.		
	(a)	194, 205, 216, 228, 240, 252	O
	(b)	194, 205, 217, 229, 242, 256	O
	(c)	194, 205, 218, 231, 245, 259	O
	(d)	194, 205, 216, 227, 238, 249	O
3.	y is the yardstick to measure the performance of two vehicles, where y = Speed × Time × Distance. If Time taken by one of the vehicle (1st Vehicle) is increased by 10%, what would be the impact on the yardstick?		
	(a)	No change	O
	(b)	1st vehicle would be better than 2nd Vehicle	O
	(c)	2nd Vehicle would be better than 1st Vehicle	O
	(d)	None of the Above	O
4.	If A $\propto$ and A = 7 when B = 3, then when B = 2 , A is _____		
	(a)	3/7	O
	(b)	3	O
	(c)	9	O
	(d)	1	O
5.	Find the Duplicate ratio of : 8 :a$\sqrt{4b}$		
	(a)	$64a^2:2b^2$	O
	(b)	$16a^2:b^2$	O
	(c)	$32a^2:4b^2$	O
	(d)	$32a^2:8b^2$	O

6.	Find the amount and the compound interest of Rs.9, 350 at the rate of 8% p.a. compounded half-yearly for four years.		
	(a)	Rs. 12,795 and Rs. 3,445	O
	(b)	Rs. 12,720 and Rs. 3,370	O
	(c)	Rs. 12,758 and Rs. 3,408	O
	(d)	Rs. 12,835 and Rs. 3,485	O
7.	For any series having 50 terms forming A.P. with first term equal to 25, what will be the value of 'n'?		
	(a)	50	O
	(b)	25	O
	(c)	75	O
	(d)	100	O
8.	A Train takes 35 hours to reach Punjab from Kolkata (1940 km) and takes 42 hours to reach Kolkata from Gujarat (2160 km). But it took 25 hours from Punjab to Gujarat (1420 km). How many days it take for a trip from Kolkata-Punjab-Gujarat-Kolkata and what is the distance covered?		
	(a)	4 days 6 hours and 5520 km	O
	(b)	3 days 18 hours and 5520 km	O
	(c)	4 days and 2680 km	O
	(d)	5 days and 2680 km	O
9.	What will be the value of $3^6 \times 3^4 \times 3^{-2} \times 3^{-3} \times 3^6$?		
	(a)	3^{21}	O
	(b)	3^{16}	O
	(c)	3^{19}	O
	(d)	3^{11}	O
10.	For any sum of roots of quadratic equation, 'a' represents -		
	(a)	Coefficient of x	O
	(b)	Coefficient of x^2	O
	(c)	Constant term	O
	(d)	None of the above	O
11.	If $\log_4(t-1)+1 = 2\times\log_4 t$, find the value of t.		

	(a)	1	O
	(b)	0	O
	(c)	4	O
	(d)	2	O
12.	Find t when $\log_t 3125 = 5$		
	(a)	5	O
	(b)	125	O
	(c)	25	O
	(d)	625	O
13.	Which one of the following is Discriminant of a quadratic equation?		
	(a)	$-b+b^2-4ac$	O
	(b)	$-b+b^2-4ac$	O
	(c)	b^2-4ac	O
	(d)	$\sqrt{b^2}+4ac$	O
14.	Form the equation whose roots are 9, –4		
	(a)	$x+5x-36=0$	O
	(b)	$x^2-5x-36=0$	O
	(c)	$x^2-5x+36=0$	O
	(d)	$x^2+5x+36=0$	O
15.	Form quadratic equation with roots as $a-t$, $a+t$		
	(a)	$x^2-2ax+a^2-t^2=0$	O
	(b)	$x^2+2ax+a^2-t^2=0$	O
	(c)	$x^2-2ax-a^2+t^2=0$	O
	(d)	$x^2+2ax-a^2+t^2=0$	O
16.	Find the LCM of {12!, 14!, 13!}		
	(a)	11!	O
	(b)	15!	O
	(c)	12!	O
	(d)	14!	O
17.	If ${}^nP_7 : {}^nP_8 = 4:1$, find the value of n.		

	(a)	12	O
	(b)	10	O
	(c)	11	O
	(d)	13	O
18.	$\lim_{x\to 3}(x^3+1)$		
	(a)	52	O
	(b)	53	O
	(c)	55	O
	(d)	54	O
19.	When $y = 4^x$ then derivative of y is ——		
	(a)	$x(4^{x-1})$	O
	(b)	$\frac{4^x}{2log2}$	O
	(c)	$4^x 2\log 2$	O
	(d)	None of these	O
20.	$y = (4x-3)^3 + (5x-2)^2$. Calculate y_1		
	(a)	$182x^2 + 13x + 29$	O
	(b)	$96x^2 + 13x + 29$	O
	(c)	$12x^2 + 26x + 29$	O
	(d)	$192x^2 + 26x + 58$	O
21.	A demand function is given by: $P = a - bQ$ and the cost function is given by $C = Q^2$. Find the value of Q for which profit will be maximum under perfect competition.		
	(a)	$\frac{a}{(a+1)}$	O
	(b)	$\frac{a}{2(b+1)2}$	O
	(c)	$\frac{a}{2(b+1)}$	O
	(d)	$\frac{b}{2(a+1)}$	O

22.	There are four person named A, B, C, & D. A is a sales person whereas B, C, D are students. A collected sales figures for his region and B, C, D used these data in order to study sales pattern. Which one of the following is correct?		
	(a)	B uses secondary data	O
	(b)	A & B both are using primary data	O
	(c)	A, B, C, D all are using secondary data	O
	(d)	B, C, D are using primary data	O
23.	Find the odd man out from the following :		
	(a)	Regression	O
	(b)	Kurtosis	O
	(c)	Sampling	O
	(d)	Central Tendency	O
24.	"The pass result of 50 students who took up a class test is given below: Marks : 4 5 6 7 8 9 No of Students: 8 10 9 6 4 3 "		
	(a)	0.42	O
	(b)	3.06	O
	(c)	4.74	O
	(d)	2.1	O
25.	Assumed mean is 35 ,$\sum fd$ =-425 & $\sum f$= 63 . $\bar{x}$ is:		
	(a)	20	O
	(b)	25.87	O
	(c)	28.25	O
	(d)	19.34	O
26.	The mean daily salary paid to all employees in a certain company was Rs.600. The mean daily salaries paid to the male and female employees were Rs.620 and Rs.520 respectively. Male to female employees ratio in the company is :		
	(a)	3:2;	O
	(b)	4:5	O
	(c)	5:7;	O
	(d)	4:1;	O

27.	In a certain factory a unit of work is completed by A in 4 minutes, by B in 5 minutes, by C in 6 minutes, by D in 10 minutes, and by E in 12 minutes. Average number of units of work completed per minute is		
	(a)	25/4	O
	(b)	5/48	O
	(c)	4/25	O
	(d)	25/48	O
28.	$\Sigma(X - \bar{X})$ is always equal to :		
	(a)	1;	O
	(b)	-1;	O
	(c)	0;	O
	(d)	∞ ;	O
29.	Which one of the following is a Positional Average?		
	(a)	Geometric Mean;	O
	(b)	Harmonic Mean;	O
	(c)	Mode;	O
	(d)	Progressive Average;	O
30.	$\sum_{x=1}^{20} x = 54120$ While computing this, it was observed that two entries were wrongly entered as 850 and 320 instead of 580 and 230. Correct value of x is :		
	(a)	2688;	O
	(b)	2746.5;	O
	(c)	2720;	O
	(d)	2662;	O
31.	If b_{XY} and b_{YX} are regression coefficients of series X on series Y and regression coefficients of series Y on series X respectively then which one of the following is correct?		
	(a)	$b_{XY} \times b_{YX} = r$, where r is the correlation coefficient	O
	(b)	$b_{XY} \times b_{YX} = r2$, where r is the correlation coefficient	O
	(c)	$b_{XY} \times b_{YX} = -r$, where r is the correlation coefficient	O
	(d)	$b_{XY} \times b_{YX} = 1/r$, where r is the correlation coefficient	O

32.	If $r^2 = 0.3$ & $b_{XY} = -1.5$ then b_{YX} is equal to :		
	(a)	+ 1	O
	(b)	– 0.2	O
	(c)	– 1	O
	(d)	– 0.45	O
33.	In a bivariate regression analysis comprising of series X & Y, if $\Sigma(X - \bar{X})^2 = \Sigma(Y - \bar{Y})^2$ then :		
	(a)	$b_{XY} = b_{YX}$	O
	(b)	$b_{XY} > b_{YX}$	O
	(c)	$b_{XY} < b_{YX}$	O
	(d)	Correlation co -eeficient = 1	O
34.	"Consider the following results: N = 12, $\Sigma dx = 0$, $\Sigma dy = 4$, $\Sigma dx^2 = 1344$, $\Sigma dy^2 = 215$, $\Sigma dxdy = -4360$ Appropriate regression coefficient is -"		
	(a)	-0.821	O
	(b)	1	O
	(c)	5.67	O
	(d)	-3.244	O
35.	"Consider the following results: N = 6, $\Sigma y = 42$, $\Sigma y^2 = 318$, $b_{yx} = -11/34$, $\Sigma x^2 - 1/n (\Sigma x)^2 = 34$ Then b_{xy} is"		
	(a)	-11/34	O
	(b)	11/24	O
	(c)	-34/11	O
	(d)	-11/24	O
36.	"X = 1.36Y – 5.2 & Y = 0.61X + 1.51 are two regression equations. Correlation coefficient between X & Y is :"		
	(a)	– 0.67	O
	(b)	– 0.911	O
	(c)	0.911	O
	(d)	0.67	O
37.	In a bivariate analysis if two regression equations are 8x – 10y + 66 = 0 & 40x – 18y – 214 = 0. Then x , y , the mean of the series $\bar{x}$ & $\bar{y}$ care respectively :		

	(a)	13,17	O
	(b)	17,17	O
	(c)	5/4,20/9	O
	(d)	8,18	O
38.	If an experiment has a set of events that includes every possible outcomes, then the set is called :		
	(a)	Mutually Exclusive set	O
	(b)	Mutually Exhaustive set	O
	(c)	Collectively Exhaustive set	O
	(d)	Exhaustive & Exclusive set	O
39.	Addition rule for mutually exclusive events A & B is :		
	(a)	P(A or B) = P(A) +P(B)	O
	(b)	P(A or B) = P(A+B)	O
	(c)	P(A or B) = P(A) +P(B)-P(AB)	O
	(d)	P(A or B) = P(A+B - AB)	O
40.	The probability that a leap year selected at random contain 53 Sundays is :		
	(a)	0.143	O
	(b)	1	O
	(c)	0.286	O
	(d)	0.48	O
41.	Three coins are tossed together. The probability of getting exactly two heads is :		
	(a)	5/8	O
	(b)	3/8	O
	(c)	1/8	O
	(d)	None	O
42.	A bag contains 10 red and 10 green balls. A ball is drawn from it. The probability that it will be green is :		
	(a)	1/10	O
	(b)	1/3	O
	(c)	1/2	O
	(d)	None of these	O

43.	A survey by Air travelers' association revealed that 60% of its member made airline reservations last year. Two members are selected at random. The probability that both the members made airline reservations last year is :		
	(a)	0.6	O
	(b)	0.4	O
	(c)	0.36	O
	(d)	0.16	O
44.	If p: q are the odds in favour of an event, then the probability of that event is :		
	(a)	p/q	O
	(b)	p/(p + q)	O
	(c)	q/(p + q)	O
	(d)	None of these	O
45.	If P (A) = 0.3,P(B) = 0.2 and P (C) = 0.1, then assuming A,B and C are independent events, the probability of occurrence of at least one of the three events is :		
	(a)	0.7	O
	(b)	0.8	O
	(c)	0.006	O
	(d)	0.496	O
46.	"By using arithmetic mean method the index number from the following data is Commodity Base price Current price Weight Rice 30 52 8 Wheat 25 30 6 Fish 130 150 3 Potato 35 49 5 Oil 70 105 7"		
	(a)	144.92	O
	(b)	202.34	O
	(c)	161.87	O
	(d)	115.22	O
47.	Consider the following series of observation.		

	Year 1 2 3 4 5 6 7 8 9 10 11 Sales (Rs.) 2 6 1 5 3 7 2 6 4 8 3 5 year moving average against year 6 is:		
	(a)	3.6	O
	(b)	4.6	O
	(c)	4.4	O
	(d)	5.4	O
48.	"From the following series find out a three year weighted moving average against year 4 with weights 1,4,1 is: Year 1 2 3 4 5 6 7 Values 12 14 15 17 18 20 23 "		
	(a)	20.17	O
	(b)	16.83	O
	(c)	18.17	O
	(d)	15.17	O
49.	" Fisher's ideal index for prices from the following data is: Item / Base Year (Unit Price, Quantity) / Current Year (Unit Price, Quantity) A 8 6 12 5 B 10 5 11 6 C 15 8 10 5 "		
	(a)	97.72	O
	(b)	80.15	O
	(c)	95.67	O
	(d)	89.14	O
50.	"Consider the following table: Commodity / Weights / Base price p.u. (Rs.) / Current price p.u (Rs.) A 40 16 30 B 25 40 70 C 5 0.5 1.5 D 20 5.12 7.25		

	E 10 2 2.5 Weighted A.M price relative index is "		
	(a)	146.98	O
	(b)	174.7	O
	(c)	124.33	O
	(d)	156.01	O