FOUNDATION EXAMINATION **SET 2**

MODEL QUESTION PAPER **TERM DEC-2025**

PAPER - 3

FUNDAMENTALS OF BUSINESS MATHEMATICS AND STATISTICS

Time Allowed: 1 Hour Full Marks: 100

Answer all questions. Each question carries 2 marks.

1.	Given B : C = 4 : 5 and C : D = 7 : 9, what is the combined ratio B : C : D?		
	(a)	4 : 5 : 7	O
	(b)	8 : 10 : 12	O
	(c)	28 : 35 : 45	O
	(d)	20 : 25 : 35	O
2.	The Universe of Discourse (or Universal Set) refers to:		
	(a)	A fixed set containing all elements under consideration, whose subsets include every relevant set	O
	(b)	A set under consideration for a topic	O
	(c)	A fixed set containing no elements	O
	(d)	A set that is always finite	O
3.	When the number 1580 is increased in the ratio 5: 9, the new number is :		
	(a)	788	O
	(b)	2488	O
	(c)	878	O
	(d)	2844	O
4.	Given: Q = {1, 2, 3, 5} W = {3, 4, 5, 7} What is the union QUW?		
	(a)	{1,2,3,4,5}	O
	(b)	{1,2,3,5,7}	O
	(c)	{1,2,3,4,5,7)	O
	(d)	{3,4,5}	O
5.	In how many ways can the letters of the word SIGNAL be arranged so that the vowels occupy only the odd positions?		
	(a)	144	O
	(b)	240	O
	(c)	480	O
	(d)	1,440	O

6.	What formula is used to calculate the present value under compound interest?		
	(a)	PV=A x r x n	O
	(b)	PV = A ÷ ((1 + r) ^{n}	O
	(c)	PV=A - (r x A)	O
	(d)	PV = A + (1 + r) ^{n}	O
7.	In Venn diagram, Universal Set is represented by		
	(a)	Stars	O
	(b)	Squares	O
	(c)	Rectangle	O
	(d)	Circles	O
8.	Find the sum of the first 9 terms for the series: 5, 10, 20, 40, 80		
	(a)	2550	O
	(b)	2560	O
	(c)	2610	O
	(d)	2555	O
9.	Let A be the set of all positive integers and B be the set of all negative integers. Then AU B is:		
	(a)	The set of all integers	O
	(b)	{0}	O
	(c)	None of these	O
	(d)	The set of all integers except zero	O
10.	The ratio of the number of faces to the number of edges of a box is		
	(a)	3: 8	O
	(b)	8: 3	O
	(c)	1: 2	O
	(d)	2: 1	O
11.	In how many ways can 6 customers stand in a queue at a bank?		
	(a)	240	O
	(b)	720	O
	(c)	1,440	O
	(d)	360	O

12.	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
13.	A class consists of 48 male students and 23 female students. Find the ratio of female students to total strength of the class.		
	(a)	23: 48	O
	(b)	48: 23	O
	(c)	48: 71	O
	(d)	23: 71	O
14.	Choose the correct condition for any equation to be Quadratic equation-		
	(a)	5 constants and all constants > 0.	O
	(b)	5 constants and all constants < 0.	O
	(c)	3 constants and a > 0	O
	(d)	3 constants and a ≠ 0.	O
15.	The compound ratio of 1.2: 2.5, 2.1 3.2, 5: 3 is:		
	(a)	5:12	O
	(b)	21:40	O
	(c)	25:36	O
	(d)	6:7	O
16.	In a hall there are 10 lamps, each can be switched on independently. In how many ways can the hall be illuminated (i.e., with at least one lamp on)?		
	(a)	1023	O
	(b)	210	O
	(c)	-10	O
	(d)	1022	O
17.	y is the yardstick to measure the performance of two vehicles, where y = Speed × Time × Distance. If Distance travelled by one of the vehicle (2nd Vehicle) is increased by 2%, what would be the impact on the yardstick?		

	(a)	1st Vehicle would travel 4% more distance	O
	(b)	2nd Vehicle would travel 4% more distance	O
	(c)	No change in the distance travelled by any of the vehicle	O
	(d)	None of the above	O
18.	Find the value of $\frac{(10! - 9!)}{(8!)}$		
	(a)	81	O
	(b)	80	O
	(c)	10	O
	(d)	9	O
19.	$y = (4x - 3)^3 + (5x - 2)^2$ 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
20.	Find whether the function is minimum or maximum - $f(x) = 6x^2 + 11x - 35$		
	(a)	Maximum	O
	(b)	Minimum	O
	(c)	No Curvature	O
	(d)	None of the above	O
21.	A person walks 8 km at 4km an hour, 6km at 3km an hour and 4km at 2km an hour. Average speed per hour is		
	(a)	0.33	O
	(b)	2	O
	(c)	3	O
	(d)	0.5	O
22.	Which one of the following is not a feature of Arithmetic Mean (AM)?		
	(a)	AM is affected very much by extreme values;	O
	(b)	AM is widely used in the study of qualitative phenomenon;	O
	(c)	AM provides a good basis for comparison;	O
	(d)	AM is rigidly defined so different interpretation by different people are not possible;	O

23.	Which one of the following is a Positional Average?		
	(a)	Geometric Mean	O
	(b)	Harmonic Mean	O
	(c)	Mode	O
	(d)	Progressive Average	O
24.	The mean daily salary paid to all employees in a certain company was `600. The mean daily salaries paid to the male and female employees were `620 and `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
25.	$\Sigma (X - \bar{X})$ is always equal to		
	(a)	1;	O
	(b)	-1;	O
	(c)	0;	O
	(d)	∞ ;	O
26.	In a bivariate regression analysis the difference between actual value of dependent variable and the predicted value of the dependent variable is called		
	(a)	Outlier	O
	(b)	Slope	O
	(c)	Residual	O
	(d)	Scattered point	O
27.	Probability theory is often referred to as		
	(a)	Science of prediction	O
	(b)	Science of uncertainty	O
	(c)	Science of chance	O
	(d)	Science of decision making	O
28.	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

29.	The weighted average from the following observation is ₹46.23.		
	Price per tonne (₹) | 45.60 | 50.70 | ?		
	Tonnes Purchased | 40 | 25 | 135		
	Simple average of the observation is		
	(a)	₹46.23;	O
	(b)	₹46.26;	O
	(c)	₹66.63;	O
	(d)	₹46.24;	O
30.	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 coefficient =1	O
31.	In general probability is		
	(a)	A numerical value between 0 and 1, exclusive, describing the absolute possibility an event will occur	O
	(b)	A numerical value between 0 and 1, inclusive, describing the absolute possibility an event will occur	O
	(c)	A numerical value between 0 and 1, exclusive, describing the relative possibility an event will occur	O
	(d)	A numerical value between 0 and 1, inclusive, describing the relative possibility an event will occur	O
32.	If b_{XY} & b_{YX} are regression coefficients between X on Y and Y on X respectively then		
	(a)	$\sqrt{bXY \times byx} \leq 1$	O
	(b)	$\sqrt{bXY \times byx} \geq 1$	O
	(c)	$\sqrt{bXY \times byx} = -1$	O
	(d)	$\sqrt{bXY \times byx} = 1$	O

33.	If two unbiased coins are tossed once, the probability of getting both the heads is		
	(a)	0.25	O
	(b)	0.50	O
	(c)	0.75	O
	(d)	1	O
34.	Consider the following: Year : 1 2 3 4 5 6 7 8 Annual Sales (₹ '0000) 3.6 4.3 4.3 3.4 4.4 5.4 3.4 2.4 5 year moving average against year 4 is :		
	(a)	3.8	O
	(b)	4	O
	(c)	4.36	O
	(d)	4.18	O
35.	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
36.	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
37.	From the following data the five year moving average against year 5 Year 1 2 3 4 5 6 7 8 9 Sales (₹) 36 43 43 34 44 54 34 24 14		

	(a)	40	O
	(b)	43.6	O
	(c)	34	O
	(d)	41.8	O
38.	A person walks 8 km at 4km an hour, 6km at 3km an hour and 4km at 2km an hour. Average speed per hour is		
	(a)	0.33;	O
	(b)	2;	O
	(c)	3;	O
	(d)	0.5;	O
39.	In a bivariate analysis if two regression equations are $mx - y + 10 = 0$ & $-2x + 5y = 14$. If coefficient of correlation between x & y is $\frac{1}{\sqrt{10}}$, then value of m is		
	(a)	10	O
	(b)	5/2	O
	(c)	4	O
	(d)	1	O
40.	The sum of the deviations of a certain number of observations measured from 4 is 72 and the sum of the deviations of the observations from 7 is -3. Mean of the observations is		
	(a)	6.88;	O
	(b)	25;	O
	(c)	3.63;	O
	(d)	Cannot be ascertained with given data;	O
41.	Which one of the following is correct?		
	(a)	Regression equation predicts maximum probable values of one variable for specified values of other variable	O
	(b)	Regression equation predicts most likely values of one variable for specified values of other variable	O
	(c)	Regression equation predicts maxi-min values of one variable for specified values of other variable	O
	(d)	Regression equation predicts minimum probable values of one variable for specified values of other variable	O

42.	Sum of probability of an event A and its complement is __ (a) (b) (c) (d) 1 2		
	(a)	1	O
	(b)	0	O
	(c)	$\frac{1}{2}$	O
	(d)	$-\frac{1}{2}$	O
43.	From the following find the Simple average (GM) of Relative Quantity index Item Base Year Quantity Current Year Quantity A 8 12 B 10 11 C 15 10		
	(a)	32.76	O
	(b)	72.34	O
	(c)	82.89	O
	(d)	12.74	O
44.	From the following find the Fisher's Quantity index Item Base Year Current Year Unit Price Quantity Unit Price Quantity A 8 6 12 5 B 10 5 11 6 C 17 8 8 5		
	(a)	32.76	O
	(b)	72.34	O
	(c)	82.89	O
	(d)	12.72	O
45.	Two dice are thrown together. The probability of the event that the sum of numbers shown is greater than 5 is		
	(a)	13/18	O
	(b)	15/18	O
	(c)	1	O
	(d)	None	O

46.	It is the most suitable average when it is desired to give greater weight to smaller observations and less weight to larger ones. It is		
	(a)	AM;	O
	(b)	HM;	O
	(c)	GM;	O
	(d)	Median;	O
47.	The range of the correlation coefficient is:		
	(a)	0 to 1	O
	(b)	–1 to +1	O
	(c)	$-\infty$ to $+\infty$	O
	(d)	0 to ∞	O
48.	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
49.	The sum of the squares of deviations of a set of observations is the minimum when deviations are taken from the		LL
	(a)	Geometric Mean;	O
	(b)	Harmonic Mean;	O
	(c)	Arithmetic Mean;	O
	(d)	Mode;	O
50.	Which of the following is not a property of the correlation coefficient?		
	(a)	It is independent of the origin and scale	O
	(b)	It lies between –1 and +1	O
	(c)	It measures only linear relationships	O
	(d)	It depends on the units of measurement	O