

**FOUNDATION EXAMINATION****SET 1****MODEL QUESTION PAPER****TERM DECEMBER-2026****PAPER – 3****SYLLABUS 2022****FUNDAMENTALS OF BUSINESS MATHEMATICS & STATISTICS****Time Allowed: 1 Hour****Full Marks: 100**

Answer all questions. Each question carries 2 marks.

1.	The continued ratio $x:y:z = a:b:c$ can be written as		
	(a)	$ax = by = cz$	O
	(b)	$bx = ay = cz$	O
	(c)	$\frac{x}{a} = \frac{y}{b} = \frac{z}{c}$	O
	(d)	$\frac{x}{b} = \frac{y}{a} = \frac{z}{c}$	O
2.	The third proportional to 4 and 9 is		
	(a)	9/16	O
	(b)	81/4	O
	(c)	36	O
	(d)	16/9	O
3.	If $x - y \propto x + y$, then which one is FALSE?		
	(a)	$x^2 + y^2 \propto x^2 - y^2$	O
	(b)	$x^2 + y^2 \propto xy$	O
	(c)	$x \propto y$	O
	(d)	$x^2 - y^2 \propto \frac{x}{y}$	O
4.	₹ 500 amounts to ₹ 700 at simple interest in 2 years. The rate of interest p.a. is		
	(a)	20%	O
	(b)	5%	O
	(c)	10%	O
	(d)	12%	O
5.	A sum of money becomes ₹ 3,364 at 16% compounded annually for 2 years. The sum of money is		
	(a)	₹ 2,200	O
	(b)	₹ 1,800	O
	(c)	₹ 3,800	O
	(d)	₹ 2,500	O



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6.	If $P = \{2,3,5\}$, $Q = \{2,3,4\}$, then $P \Delta Q$ is		
	(a)	null set	O
	(b)	$\{2, 3\}$	O
	(c)	$\{3, 5\}$	O
	(d)	$\{4, 5\}$	O
7.	The seventh term of an AP 2, 5, 8, 11,...is		
	(a)	14	O
	(b)	20	O
	(c)	18	O
	(d)	15	O
8.	The first and last term of an AP are – 4 and 146 respectively. If the sum of n terms is 7171, then n is		
	(a)	100	O
	(b)	99	O
	(c)	101	O
	(d)	98	O
9.	Find the value of $\log_{\frac{1}{2}} 16$.		
	(a)	-4	O
	(b)	4	O
	(c)	-2	O
	(d)	2	O
10.	If $\binom{n}{r} = k \binom{n}{n-r}$ find the value of k .		
	(a)	1	O
	(b)	r	O
	(c)	n	O
	(d)	2	O
11.	Mr. A takes 5 hours to travel a distance of 120 km while Ms. B takes 6 hours to travel the same distance. How much time would B take more than A to cover 240 km?		
	(a)	4 hours	O
	(b)	3 hours	O
	(c)	2 hours	O
	(d)	1 hours	O



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12.	The value of $(\frac{1}{27})^{-1/3}$ is		
	(a)	81	O
	(b)	3	O
	(c)	27	O
	(d)	9	O
13.	If $\log_{10} x = m + n, \log_{10} y = m - n$, then $\log_{10} \left(\frac{10x}{y^2} \right) = ?$		
	(a)	$1 + m - 3n$	O
	(b)	$m - 1 + 3n$	O
	(c)	$1 - m + 3n$	O
	(d)	$m + 1 + 3n$	O
14.	Determine the nature of the roots of the equation $x^2 - 8x + 16 = 0$.		
	(a)	Roots are imaginary	O
	(b)	Roots are real and unequal	O
	(c)	Roots are real and irrational	O
	(d)	Roots are real and equal	O
15.	If α and β are roots of the equation $x^2 - 4x + 2 = 0$, find the value of $\alpha^2 + \beta^2$.		
	(a)	4	O
	(b)	3	O
	(c)	12	O
	(d)	1	O
16.	If $6 \times n - 1_{P_3} = n - 1_{P_4}$, find n .		
	(a)	10	O
	(b)	12	O
	(c)	8	O
	(d)	14	O
17.	If $\frac{1}{3!} + \frac{1}{4!} - \frac{x}{5!} = 0$, find x .		
	(a)	25	O
	(b)	24	O
	(c)	23	O
	(d)	20	O



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18.	If $f(x) = e^{cx+d}$, then $f(x+y)$ is	
(a)	$f(x) + f(y)$	O
(b)	$f(x)f(y)$	O
(c)	$e^d f(x)f(y)$	O
(d)	$e^{-d} f(x)f(y)$	O
19.	If $y = xe^x$, then $\frac{dy}{dx}$ is	
(a)	xe^x	O
(b)	$(x+1)e^x$	O
(c)	$(x-1)e^x$	O
(d)	$xe^x(x-1)$	O
20.	A firm produces output at a cost given by $C(x) = \frac{1}{10}x^3 - 6x^2 + 70x + 11$. The Average Cost (AC) is	
(a)	$\frac{3}{10}x^2 - 12x + 70$	O
(b)	$\frac{1}{10}x^2 - 6x + 70 + \frac{11}{x}$	O
(c)	$\frac{1}{10}x^2 - 6x$	O
(d)	$12x + 70$	O
21.	First-hand statistical data is known as	
(a)	Primary data	O
(b)	Secondary data	O
(c)	Attribute data	O
(d)	Variable data	O
22.	The average of lower and upper class limits is called	
(a)	Class-mark	O
(b)	Class- boundary	O
(c)	Class-width	O
(d)	Class frequency	O
23.	Which diagram is suitable for representing the frequency distribution of heights of soldiers in terms of cumulative frequencies of the classes?	
(a)	Histogram	O
(b)	Step diagram	O
(c)	Ogive	O
(d)	Line diagram	O



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24.	The mean height of 10 students of a class is 100 cm. Two new students having heights 150 cm and 182 cm join the class. The new mean height (in cm) is		
	(a)	103	O
	(b)	195	O
	(c)	111	O
	(d)	109	O
25.	If the median of 8, 10, $2x - 1$, $2x + 1$, 27 and 32 written in ascending order of magnitude is 24, then x is		
	(a)	8	O
	(b)	12	O
	(c)	12.5	O
	(d)	11.5	O
26.	From the following frequency distribution find the difference between median and mode. $\begin{array}{ccccccc} x & 2 & 5 & 8 & 11 & 14 & 17 & \text{total} \\ f: & 4 & 2 & 3 & 8 & 4 & 1 & 22 \end{array}$		
	(a)	0	O
	(b)	1	O
	(c)	2	O
	(d)	2.5	O
27.	Find the standard deviation when $N = 10$, $\sum fx = 60$, $\sum fx^2 = 1000$.		
	(a)	6	O
	(b)	10	O
	(c)	8	O
	(d)	12	O
28.	Find the coefficient of variation if the sum of squares of deviations of 10 observations taken from the mean 50 is 360.		
	(a)	8%	O
	(b)	12%	O
	(c)	10%	O
	(d)	15%	O



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29.	Find the quartile deviation of the daily wages (in ₹) of 7 workers from the following data: 312, 167, 216, 210, 319, 412, 328	
(a)	76	O
(b)	122.5	O
(c)	80.5	O
(d)	59	O
30.	If all observations are equal to a , then	
(a)	mean = a , variance = a	O
(b)	mean = a , variance = 0	O
(c)	mean = 0, variance = 0	O
(d)	mean = 0, variance = a	O
31.	If the sum of product of deviations from their respective means of the two variables is zero, then the correlation coefficient is	
(a)	1	O
(b)	-1	O
(c)	0	O
(d)	0.5	O
32.	Two regression lines y on x and x on y are $y + 2x - 3 = 0$ and $8x + y - 3 = 0$ respectively. The correlation coefficient between x and y is	
(a)	$\frac{1}{4}$	O
(b)	$\frac{1}{2}$	O
(c)	$-\frac{1}{2}$	O
(d)	$-\frac{1}{4}$	O
33.	If $cov(x, y) = 3$, $var(x) = 4.5$, $var(y) = 5.5$, then $r(x, y)$ is	
(a)	0.347	O
(b)	0.121	O
(c)	0.070	O
(d)	0.603	O
34.	Given $n = 25$, $\sum x = 125$, $\sum y = 100$, $\sum x^2 = 650$, $\sum y^2 = 436$, $\sum xy = 520$, then the correlation coefficient is	
(a)	0.67	O
(b)	0.75	O
(c)	0.42	O
(d)	0.84	O



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35.	If the differences between two ranks of x and y are 2.5, 0.5, - 1.5, 1.5, then the rank correlation coefficient is		
	(a)	- 0.2	O
	(b)	0.1	O
	(c)	- 0.1	O
	(d)	0.2	O
36.	Two regression lines are $x + 2y = 5$ and $2x + 3y = 8$. The means $(\bar{x}, \bar{y})$ are		
	(a)	$\bar{x} = 1, \bar{y} = 3$	O
	(b)	$\bar{x} = -1, \bar{y} = -2$	O
	(c)	$\bar{x} = 1, \bar{y} = 2$	O
	(d)	$\bar{x} = 0, \bar{y} = 0$	O
37.	If $x = X - \bar{X}$, $y = Y - \bar{Y}$, $\sum x^2 = 90$, $\sum xy = 60$, $s.d(y) = 25$, $r = 0.8$, then the number of observations (n) is		
	(a)	8	O
	(b)	12	O
	(c)	15	O
	(d)	10	O
38.	For a skewed distribution mean = 100, median = 98.5 and s. d. = 9. Then the coefficient of skewness is		
	(a)	- 0.50	O
	(b)	0.17	O
	(c)	0.33	O
	(d)	0.50	O
39.	Three perfect dice are thrown. The number of sample points in the sample space is		
	(a)	729	O
	(b)	36	O
	(c)	216	O
	(d)	None of these	O
40.	For two events A and B , $P(A) = \frac{3}{8}$, $P(B) = \frac{1}{2}$, $P(A \cap B) = \frac{1}{4}$. If $P(A B) = kP(B A)$, then k is		
	(a)	1/2	O
	(b)	2/3	O
	(c)	3/4	O
	(d)	4/3	O

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41.	Two dice are thrown once. What is the probability of getting the sum at least 3?		
	(a)	5/12	O
	(b)	1/6	O
	(c)	35/36	O
	(d)	31/36	O
42.	Given $P(E) = \frac{2}{5}$, $P(F) = \frac{3}{5}$, $P(E \cup F) = \frac{4}{5}$, then E and F are		
	(a)	mutually exclusive	O
	(b)	mutually independent	O
	(c)	both mutually exclusive and independent	O
	(d)	neither mutually exclusive nor independent	O
43.	If $P(A) = \frac{1}{2}$, $P(B) = \frac{5}{8}$ and $P(A B) = \frac{2}{3}$, then $P(A \cup B)$ is		
	(a)	17/24	O
	(b)	7/8	O
	(c)	2/5	O
	(d)	1/4	O
44.	Two perfect dice are thrown and numbers are noted. Find the probability that the product of the numbers is 12.		
	(a)	1/9	O
	(b)	1/12	O
	(c)	1/36	O
	(d)	1/18	O
45.	Two unbiased coins are thrown. Find the probability of getting either both heads or both tails		
	(a)	1/4	O
	(b)	1/2	O
	(c)	1/3	O
	(d)	3/4	O
46.	Net monthly income of an employee was ₹ 12,000 P.M in 2010. The consumer price index number was ₹ 120 in 2010. It became ₹ 350 in 2025. Calculate the additional D.A to be paid to the employee if he has to be compensated.		
	(a)	₹ 20,000	O
	(b)	₹ 35,000	O
	(c)	₹ 32,000	O
	(d)	₹ 23,000	O

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47.	The method of moving average is used to determine ---- of a time series.		
	(a)	the cyclical fluctuation	O
	(b)	the seasonal variation	O
	(c)	the trend	O
	(d)	the irregular movement	O
48.	Calculate the 5-year weighted moving average with weights 0.1, 0.2, 0.3, 0.3 and 0.1 for the year 2018 from the following time series data: Year: 2015 2016 2017 2018 2019 2020 2021 Sales (₹ '000): 121 125 127 193 221 230 198		
	(a)	₹187.6	O
	(b)	₹195.6	O
	(c)	₹158.8	O
	(d)	₹185.1	O
49.	If $\sum P_0 Q_0 = 36$, $\sum P_n Q_0 = 49$, $\sum P_0 Q_n = 44$, $\sum P_n Q_n = 88$, then the Fisher's price index is		
	(a)	244.4	O
	(b)	272.2	O
	(c)	179.6	O
	(d)	165.0	O
50.	If Laspeyres' price index and Paasche's price index numbers are 125.7 and 132.5 respectively, then Bowley's price index is		
	(a)	129.1	O
	(b)	120.1	O
	(c)	128.7	O
	(d)	130.2	O