FOUNDATION EXAMINATION **SET 2**
MODEL QUESTION PAPER **TERM DEC-2026**
PAPER – 3 **SYLLABUS - 2022**

FUNDAMENTALS OF BUSINESS MATHEMATICS AND STATISTICS

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

Answer all questions. Each question carries 2 marks.

1.	If A : B = 1 : 2, B : C = 4 : 5, C : D = 10 : 11, then A : B : C : D =		
	(a)	2 : 4 : 8 : 11	O
	(b)	4 : 8 : 10 : 11	O
	(c)	4 : 9 : 20: 22	O
	(d)	2 : 8 : 10: 11	O
2.	The mean proportional of 0.16 and 0.36 is		
	(a)	0.12	O
	(b)	0.26	O
	(c)	0.24	O
	(d)	0.28	O
3.	If $a \propto \frac{1}{b}$ and $a = 3$ when $b = 7$, then $a = \frac{7}{3}, b$ is		
	(a)	3	O
	(b)	3/7	O
	(c)	49	O
	(d)	9	O
4.	The simple interest on ₹ 50 at the rate of 2% p.a. for 3 years is		
	(a)	₹ 4	O
	(b)	₹ 5	O
	(c)	₹ 3	O
	(d)	₹ 6	O
5.	The type of annuity when flow of money occurs at the end of a period is called		
	(a)	Regular annuity	O
	(b)	Deferred annuity	O
	(c)	Annuity due	O
	(d)	Perpetuity	O
6.	A sum of ₹ 10,000 deposited at C.I. becomes double after 5 years. After 20 years it will become		
	(a)	₹ 1,20,000	O
	(b)	₹ 2,00,000	O
	(c)	₹ 1,50,000	O
	(d)	₹ 1,60,000	O

7.	A car moves 90 km in 4 hours. If the time is reduced by 20 minutes, how much distance would be covered in the given time?		
	(a)	80.5 km	O
	(b)	89.2 km	O
	(c)	82.5 km	O
	(d)	78.5 km	O
8.	The set of integers greater than 3 and less than 7 can be written as		
	(a)	{3, 4, 5, 6, 7}	O
	(b)	{4, 5, 6, 7}	O
	(c)	{3, 4, 5, 6}	O
	(d)	{4, 5, 6}	O
9.	Find the number of permutations for 11 bikes if 5 bikes are to be taken at a time		
	(a)	54540	O
	(b)	55440	O
	(c)	44550	O
	(d)	45450	O
10.	Find the value of $\log_{\sqrt[3]{4}} 64$.		
	(a)	1	O
	(b)	3	O
	(c)	9	O
	(d)	27	O
11.	If $\binom{18}{r} = \binom{18}{r+2}$, find the value of $\binom{r}{5}$.		
	(a)	50	O
	(b)	56	O
	(c)	55	O
	(d)	336	O
12.	If $a^2 = b,\ b^2 = c, c^x = a^2$, find x.		
	(a)	½	O
	(b)	2	O
	(c)	1	O
	(d)	4	O

13.	If the sum of the roots of the quadratic equation $(a+1)x^2+(2a+3)x+(3a+7)=0$ be -1, then the value of a is		
	(a)	0	O
	(b)	-2	O
	(c)	-3	O
	(d)	1	O
14.	If α and β are roots of the equation $x^2-4x+2=0$, find the value of $\frac{1}{\alpha}+\frac{1}{\beta}$.		
	(a)	4	O
	(b)	3	O
	(c)	2	O
	(d)	1	O
15.	The letters of the word TRIANGLE are arranged in a row in all possible ways. The number of arrangements beginning with A and end with N is		
	(a)	60	O
	(b)	124	O
	(c)	680	O
	(d)	720	O
16.	A and B are two subsets of the universal set U such that n(U) = 800, n(A) = 300, n(B) = 400, n(A ∩ B) = 100, then the number of elements in the set ($A^{/} \cap B^{/}$) is equal to		
	(a)	400	O
	(b)	300	O
	(c)	200	O
	(d)	100	O
17.	If $f(x)=\frac{x^2+2}{x+2}$, $0 \le x <1$ $=\frac{2x+1}{x^2+1}$, $1 \le x < 3$ then $f(0)+2f(2)$ is equal to		
	(a)	$\frac{3}{2}f(1)$	O
	(b)	$2f(1)$	O
	(c)	$\frac{2}{3}f(1)$	O
	(d)	$3f(1)$	O

18.	The logarithm of a number of the base $3\sqrt{3}$ is k. What is its logarithm to the base 3?		
	(a)	$\sqrt{3}k$	O
	(b)	$\frac{3}{2}k$	O
	(c)	$\frac{2}{3}k$	O
	(d)	$3k$	O
19.	A textile industry has a yearly fixed cost ₹ 1,08,000 and a monthly production cost ₹ 23 per unit produced. The product is sold at ₹ 45 per unit. Find the cost function.		
	(a)	45x +9,000	O
	(b)	45x + 1,05,000	O
	(c)	23x +9,000	O
	(d)	23x + 1,08,000	O
20.	The minimum value of the function $f(x) = x^2 - 6x + 10$ is		
	(a)	1	O
	(b)	2	O
	(c)	3	O
	(d)	10	O
21.	In an ogive what is plotted on vertical axis?		
	(a)	Frequency	O
	(b)	Class limit	O
	(c)	Class-mark	O
	(d)	Cumulative frequency	O
22.	When the basis of classification is according to differences in time, then it is called		
	(a)	Spatial data	O
	(b)	Temporal data	O
	(c)	Quantitative data	O
	(d)	Qualitative data	O
23.	Tabulation of data is made so that		
	(a)	data may be more easily understood	O
	(b)	data may be easily presented textually	O
	(c)	more comprehensive secondary data could be obtained	O
	(d)	data may be more easily synchronized	O

24.	The daily wages (in ₹) of 7 persons are the following: 220, 170, 250, 200, 290, 270, 300 The quartile deviation is		
	(a)	₹ 42	O
	(b)	₹ 45	O
	(c)	₹ 50	O
	(d)	₹ 52	O
25.	The mean, median and the coefficient of variation of a distribution are respectively 45,42 and 40%. Find the Karl Pearson's coefficient of skewness.		
	(a)	0.8	O
	(b)	1.2	O
	(c)	0.5	O
	(d)	0.2	O
26.	Mean deviation of a frequency distribution		
	(a)	is a maximum if the deviations are taken from median	O
	(b)	is a minimum if the deviations are taken from median	O
	(c)	is a maximum if the deviations are taken from mean	O
	(d)	is a minimum if the deviations are taken from mean	O
27.	In a factory 25% workers are female and their mean wage is fourth-fifth of the mean wage of the male workers. If the mean wage of all workers is ₹1710, then find the mean wage of the females.		
	(a)	₹ 2304	O
	(b)	₹ 3240	O
	(c)	₹ 1800	O
	(d)	₹ 1440	O
28.	The range of the first 10 prime numbers is		
	(a)	27	O
	(b)	17	O
	(c)	18	O
	(d)	22	O
29.	Which of the following is ***not*** a characteristic of skewness?		
	(a)	mean ≠ median ≠ mode	O
	(b)	third quartile − median ≠ median − first quartile	O
	(c)	sum of positive deviations from median = sum of negative deviations from median	O
	(d)	The graph of frequency distribution is not a normal bell shaped curve.	O

30.	The standard deviation of two observations is equal to		
	(a)	range of the observations	O
	(b)	half of range of the observations	O
	(c)	twice of range of the observations	O
	(d)	none of above	O
31.	For any two positive observations		
	(a)	$HM = \sqrt{AM \times GM}$	O
	(b)	$GM = \sqrt{AM \times HM}$	O
	(c)	$AM = \sqrt{GM \times HM}$	O
	(d)	$GM = [AM + HM]/2$	O
32.	Which one is TRUE? Regression coefficients are		
	(a)	independent of change of origin but dependent of change of scale	O
	(b)	independent of change of scale but dependent of change of origin	O
	(c)	independent of both change of origin and scale	O
	(d)	neither independent of change of origin nor change of scale	O
33.	Find the probable error of the correlation coefficient 0.9 of 64 observations.		
	(a)	0.016	O
	(b)	0.043	O
	(c)	0.024	O
	(d)	0.012	O
34.	Which one is true? Correlation coefficient between two variables is		
	(a)	independent of change of origin but dependent of change of scale	O
	(b)	independent of change of scale but dependent of change of origin	O
	(c)	independent of both change of origin and scale	O
	(d)	neither independent of change of origin nor change of scale	O
35.	For a bivariate data the following data are obtained for x and y: $\bar{x} = 27.9, \bar{y} = 53.2\ b_{yx} = -0.2, b_{xy} = -1.5.$ Calculate the estimated value of x when y = 60.		
	(a)	19.7	O
	(b)	13.4	O
	(c)	17.7	O
	(d)	15.6	O

36.	Find the correlation coefficient from the following data: $sd(x) = 2.80,\ var(y) = 100,\ cov(x,y) = -17.5.$		
	(a)	– 0. 652	O
	(b)	– 0. 625	O
	(c)	0.652	O
	(d)	0.625	O
37.	The slope of the regression line *y* on *x* is		
	(a)	$\frac{\sigma_y}{\sigma_x}$	O
	(b)	$r\frac{\sigma_y}{\sigma_x}$	O
	(c)	$\frac{\sigma_x}{\sigma_y}$	O
	(d)	$r\frac{\sigma_x}{\sigma_y}$	O
38.	For the following bivariate distribution, calculate the regression coefficient *y* on *x*. x: -2 -1 0 1 2 y: 4 1 0 1 4		
	(a)	0	O
	(b)	0.5	O
	(c)	-1	O
	(d)	1	O
39.	Which one is True?		
	(a)	$b_{yx} > 0, b_{xy} > 0\ , 0 < r_{xy} \leq 1$	O
	(b)	$b_{yx} < 0, b_{xy} > 0\ , 0 < r_{xy} \leq 1$	O
	(c)	$b_{yx} > 0, b_{xy} < 0\ , 0 < r_{xy} < 1$	O
	(d)	$b_{yx} > 0, b_{xy} < 0\ , -1 < r_{xy} \leq 0$	O
40.	If three events *A, B* and *C* are mutually exclusive, exhaustive and equally likely, then $P(A)$ is		
	(a)	1	O
	(b)	1/3	O
	(c)	2/3	O
	(d)	0	O

41.	If $P(A) = \frac{1}{2}, P(B) = \frac{1}{4}$ and $P(A\|B) = \frac{1}{3}$, find the probability that at least one of the two events will occur.		
	(a)	1/12	O
	(b)	1/3	O
	(c)	2/3	O
	(d)	5/12	O
42.	Mr. X can hit a target in 2 out of 3 shots whereas Ms. Y can hit the same target in 5 out of 11 shots. Find the probability that the target would be hit if they both try.		
	(a)	9/11	O
	(b)	10/33	O
	(c)	3/11	O
	(d)	6/11	O
43.	Two urns contain 2 red and 3 black, and 3 red and 2 black balls respectively. An urn is chosen randomly. A ball is selected from the chosen urn and it is found to be red. Find the probability that that the ball is selected from the first urn.		
	(a)	3/5	O
	(b)	1/5	O
	(c)	2/5	O
	(d)	4/5	O
44.	Sheela gets a gift from her mother on each Sunday. Find the probability that she gets 53 gifts in a randomly selected leap year.		
	(a)	2/3	O
	(b)	1/3	O
	(c)	1/7	O
	(d)	2/7	O
45.	Three events *A, B* and *C* are mutually exclusive and exhaustive such that $P(A) = 2P(B) = 3P(C)$. Then $P(B) =$?		
	(a)	6/11	O
	(b)	3/11	O
	(c)	1/6	O
	(d)	1/3	O

46.	If $\sum P_0Q_0 = 63$, $\sum P_nQ_0 = 94$, $\sum P_0Q_n = 54$, $\sum P_nQ_n = 108$, then the Paasche's quantity index is		
	(a)	200.0	O
	(b)	149.2	O
	(c)	114.9	O
	(d)	85.7	O
47.	From the following data calculate the price index using simple aggregate method: Item: A B C D E Base year price (in ₹): 5.95 3.48 17.65 15. 42 10.80 Base year quantity (in kg): 10 8 2 3 6 Current year price (in ₹): 6.40 5.20 18.20 14.85 13.20		
	(a)	108.5	O
	(b)	105.8	O
	(c)	110.4	O
	(d)	106.7	O
48.	"Production of a factory is badly affected on account of labour strike" is an example of		
	(a)	secular trend	O
	(b)	seasonal movement	O
	(c)	cyclical movement	O
	(d)	irregular movement	O
49.	Fill in the blank: If the weights of different years of a time series are same, then the weighted moving average is ------ to the simple moving average.		
	(a)	equal	O
	(b)	higher	O
	(c)	lower	O
	(d)	any of the above	O
50.	If Laspeyres' price index and Bowley's price index numbers are 125.7 and 129.1 respectively, then Fisher's price index is		
	(a)	129.06	O
	(b)	120.18	O
	(c)	128.72	O
	(d)	130.24	O