FOUNDATION EXAMINATION **SET 2**

MODEL QUESTION PAPER **TERM JUNE-2025**

PAPER - 3

FUNDAMENTALS OF BUSINESS MATHEMATICS & STATISTICS

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

Answer all questions. Each question carries 2 marks.

1.	The Monthly incomes of two persons Ram and Raja are in the ratio 5:7 and their monthly expenditures are in the ratio 7:11. If each of them saves Rs.60 per month. Find their monthly income.		
	(a)	₹200 and ₹280	O
	(b)	₹250 and ₹350	O
	(c)	₹300 and ₹400	O
	(d)	₹150 and ₹210	O
2.	Using the properties of proportion, solve the following equation for y, given $\frac{341}{91} = \frac{y^3+3y}{3y^2+1}$		
	(a)	14	O
	(b)	12	O
	(c)	11	O
	(d)	10	O
3.	Divide Rs.2,760 in two parts such that simple interest on one part at 12.5% p.a for 2 years is equal to the simple interest on the other part at 12.5% p.a for 3 years		
	(a)	₹1,500 and ₹1,260	O
	(b)	₹1,656 and ₹1,104	O
	(c)	₹1,700 and ₹1,060	O
	(d)	₹1,800 and ₹960	O
4.	The annual birth and death rate per 1000 are 39.4 & 19.4. How many years population will be double.		
	(a)	25	O
	(b)	35	O
	(c)	40	O
	(d)	30	O

5.	Find the sum of the first 9 terms of the geometric series: 5,10,20,40,80,...		
	(a)	₹2555	O
	(b)	₹2355	O
	(c)	₹2455	O
	(d)	₹2755	O
6.	A man secures an interest free loan of Rs. 14,500 from a friend and agrees to repay it in 10 installments. He pays Rs.1,000 as first instalment and then increases each instalment by equal amount over the preceding instalment. What will be his last instalment?		
	(a)	₹1500	O
	(b)	₹2000	O
	(c)	₹2200	O
	(d)	₹1900	O
7.	The distance between two terminal stations of Metro is 240 km. A metro rail takes 2 hours to cover the distance. Calculate the total distance covered in 5 days, if 10 trips to and fro takes place between the two stations in a day?		
	(a)	6,000 km	O
	(b)	12,000 km	O
	(c)	24,000 km	O
	(d)	18,000 km	O
8.	The distance between two terminal metro stations A & B is 300 km. A metro rail takes 1.50 hours to cover the distance. Calculate the total time worked by the driver (in terms of days) in a week, if 6 trips from Station A to Station B takes place in a day?		
	(a)	5.25 days	O
	(b)	2.50 days	O
	(c)	3.50 days	O
	(d)	4.25 days	O
9.	How many triangles can be made by using 8 points, in which no point lie on a straight line.		

	(a)	63	O
	(b)	45	O
	(c)	70	O
	(d)	56	O
10.	From a group of 15 men, how many selections of 9 men can be made so as to exclude 3particular men?		
	(a)	150	O
	(b)	220	O
	(c)	180	O
	(d)	210	O
11.	Find 'k' for which roots are equal of $4x^2 - 12x + k = 0$		
	(a)	9	O
	(b)	10	O
	(c)	8	O
	(d)	7	O
12.	In Venn diagram, Universal Set is represented by _____		
	(a)	Stars	O
	(b)	Squares	O
	(c)	Circles	O
	(d)	Rectangle	O
13.	Find the value of $(1.25)^q$, when $(1/3)^{4q} = (6561)^{-1}$		
	(a)	1.5 + 0.0625	O
	(b)	1.5625	O
	(c)	$(1.25)^2$	O
	(d)	All of the above	O
14.	Compute $\underline{12!}$		

		(8!× 4!)	
	(a)	450	O
	(b)	495	O
	(c)	512	O
	(d)	505	O
15.	If b2 – 4ac > 0, is a perfect square, the nature of roots would be		
	(a)	Real and Unequal	O
	(b)	Imaginary	O
	(c)	Real and Equal	O
	(d)	Unreal	O
16.	There are two groups in a question paper, each group contains 7 questions. A candidate has to answer questions but taking not more than 5 from any group. The total number of selections of 9 questions is		
	(a)	1050	O
	(b)	1260	O
	(c)	1470	O
	(d)	1680	O
17.	Find the base when 3 is the logarithm of 729		
	(a)	7	O
	(b)	11	O
	(c)	9	O
	(d)	3	O
18.	In a class of 100 students, 45 students read Physics, 52 students read Chemistry and 15 students read both the subjects. Find the number of students who study neither Physics nor Chemistry		
	(a)	18	O
	(b)	10	O
	(c)	28	O

	(d)	22	O
19.	A functions is defined as follows : f(x) = 2x – 1, x < 3 = k , x = 3 = 8 – x, x > 3. For what value of k, f(x) is continuous at x = 3		
	(a)	4	O
	(b)	5	O
	(c)	3	O
	(d)	6	O
20.	For a firm the Total Revenue (TR) and Total Cost (TC) functions are given as TR = 20Q and TC = Q2 + 4Q + 20 where Q = Output. Find the maximum profit.		
	(a)	30	O
	(b)	36	O
	(c)	44	O
	(d)	50	O
21.	Statistics is a tool in the hands of mankind		
	(a)	To translate complex facts into simple and understandable statements of facts	O
	(b)	To translate statistical information into mathematical statements of facts	O
	(c)	To translate business information into simple and understandable statements of facts	O
	(d)	To translate complex facts into presentable forms through tables and diagrams	O
22.	In Statistics classification		
	(a)	Separates data into different unrelated parts	O
	(b)	Separates data into different dispersed groups	O
	(c)	Separates data into different modal groups	O

	(d)	Separates data into different but related parts	O
23.	The sum of deviations of a certain number of observations (ungrouped data) measured from 4 is 72 and the sum of the deviations of the observations from 7 is –3. Find the number of observations and their mean.		
	(a)	30 observations, mean = 7.2	O
	(b)	25 observations, mean = 6.88	O
	(c)	25 observations, mean = 7	O
	(d)	30 observations, mean = 6.5	O
24.	In a class of 60 students, 12 students failed with an average of 3 marks. The total marks of the class were 300. Find the average marks of the passed students.		
	(a)	4	O
	(b)	4.5	O
	(c)	5.5	O
	(d)	5	O
25.	Find the coefficient of the mean deviation about the median for the first 5 natural numbers.		
	(a)	0.4	O
	(b)	0.5	O
	(c)	0.2	O
	(d)	0.3	O
26.	A class has 50 students with average weight of 45 kgs. Out of these there are 30 girls with average weight of 42.5 kgs. Find average weight of boys.		
	(a)	48.25	O
	(b)	49.50	O
	(c)	50.90	O
	(d)	48.75	O
27.	Mean weight of students in a class is 48 kg. If mean weight of girl students is 40 kg. and that of boys is 60 kg.		
	(a)	Boys = 50%, Girls = 50%	O

	(b)	Boys = 40%, Girls = 60%	O
	(c)	Boys = 30%, Girls = 70%	O
	(d)	Boys = 60%, Girls = 40%	O
28.	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
29.	If A = 500, i = 1000 & $\Sigma fd' = 232$ & $\Sigma f = 120$ $\bar{x}$ is		
	(a)	527.84;	O
	(b)	2433.33;	O
	(c)	501.93;	O
	(d)	1017.24;	O
30.	A group of friends recorded the number of hours spent studying each week: 8, 12, 10, 9, 8, 11, 15, 9. What is the range of study hours?		
	(a)	7	O
	(b)	5	O
	(c)	8	O
	(d)	6	O
31.	In a bivariate regression analysis for dependent variable if d = Actual value – Predicted value then at different values of independent variable		
	(a)	Best fit curve occurs when $d1^2 + d2^2 + \ldots \ldots \ldots + dn^2$ is minimum	O
	(b)	Best fit curve occurs when $d1^2 + d2^2 + \ldots \ldots \ldots + dn^2$ is is maximum	O
	(c)	Best fit curve occurs when $d1^2 + d2^2 + \ldots \ldots \ldots + dn^2$ is is zero	O
	(d)	Best fit curve occurs when $d1^2 + d2^2 + \ldots \ldots \ldots + dn^2$ is is one	O

32.	Find 'r' from the regression line 2x + 3y = 5		
	(a)	1	O
	(b)	0	O
	(c)	0.5	O
	(d)	-1	O
33.	If the covariance between X and Y variables is 10 and the variance of X and Y are respectively 16and 9, find the coefficient of correlation.		
	(a)	2/3	O
	(b)	5/6	O
	(c)	1/2	O
	(d)	3/4	O
34.	For certain X and Y series which are correlated, the two lines of regression are: 5X – 6Y + 90 = 0 and 15X – 8Y – 130 = 0. Find the means of the two series.		
	(a)	40,50	O
	(b)	20,40	O
	(c)	30,40	O
	(d)	30,50	O
35.	If $b_{yx} = 0.2$, $b_{xy} = 0.3$ & $\sigma_x = 2$, find σ_y .		
	(a)	- 0.821	O
	(b)	1	O
	(c)	5.67	O
	(d)	-1	O
36.	In a bi-variate 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

37.	In a regression equation		
	(a)	Regression coefficient represents the increment in the value of the independent variable for a unit change in the value of the dependent variable	O
	(b)	Regression coefficient represents the increment in the value of the dependent variable for a unit change in the value of the independent variable	O
	(c)	Regression coefficient represents the mean value of the independent variable for a unit change in the value of the dependent variable	O
	(d)	Regression coefficient represents the mean value of the dependent variable for a unit change in the value of the independent variable	O
38.	Two cards are drawn from a pack of cards at random. What is the probability that it will be (a) a diamond and a heart.		
	(a)	13/102	O
	(b)	2/102	O
	(c)	13/221	O
	(d)	2/221	O
39.	"Sun will disappear from blue sky today forever". With our available information & belief which one of the following value is most appropriate as probability to this event?		
	(a)	0.2	O
	(b)	0.8	O
	(c)	1	O
	(d)	0	O
40.	What is the chance that a leap year, selected at random will contain 53 Sundays?		
	(a)	1/7	O
	(b)	4/53	O
	(c)	2/53	O
	(d)	2/7	O

41.	The probability that X and Y will be alive ten years hence is 0.5 and 0.8 respectively. What is the probability that both of them will be alive ten years hence?		
	(a)	0.4	O
	(b)	0.6	O
	(c)	0.3	O
	(d)	0.5	O
42.	A class consists of 100 students, 25 of them are girls and 75 boys, 20 of them are rich and remaining poor, 40 of them are fair complexioned. What is the probability of selecting a fair complexioned rich girl?		
	(a)	0.05	O
	(b)	0.25	O
	(c)	0.02	O
	(d)	0.52	O
43.	For an event Odds in favour are “five to two” This means that		
	(a)	In a total of seven trials the event will occur five times	O
	(b)	In a total of seven trials the event will occur two times	O
	(c)	In a total of five trials the event will occur two times	O
	(d)	In a total of seven trials the event will not occur five times	O
44.	A lot contains 10 items of which 3 are defective. Three items are chosen from the lot at random one after another without replacement. The probability that all the three are defective is		
	(a)	0.992	O
	(b)	0.067	O
	(c)	0.008	O
	(d)	0.05	O

45. 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)	12.74	O
	(d)	78.12	O

46. 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)	100.23	O
	(b)	111.45	O
	(c)	190.15	O
	(d)	103.23	O

47. Consider the following:

Commodity	Base Price (₹)	Current Price (₹)	Weight
A	22	45	8
B	15	15	6
C	80	90	7
D	110	130	3
E	125	30	5

Weighted A.M of price relative index number is:

	(a)	123.34	O
	(b)	156.11	O
	(c)	176.52	O
	(d)	142.89	O

48. From the following data the five year moving average against year 5:

Years	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

49. The weighted average from the following observation is Rs.46.23

Price per tonne (Rs.)	45.60	50.70	7
Tonnes Purchased	135	40	25

Simple average of the observation is?

(a) ₹66.63 O
(b) ₹46.23 O
(c) ₹46.26 O
(d) ₹46.24 O

50. Consider the following:

Commodity	Base Price (₹)	Current Price (₹)	Weight
A	22	45	8
B	15	15	6
C	80	90	7
D	110	130	3
E	125	30	5

Weighted aggregative index number is:

(a) 156.11 O
(b) 123.34 O
(c) 176.52 O
(d) 142.89 O