FOUNDATION EXAMINATION **Syllabus - 2022**

MODEL QUESTION PAPER **TERM JUNE-2026**

PAPER – 3

FUNDAMENTALS OF BUSINESS MATHEMATICS AND STATISTICS

Time Allowed: 1 Hour Full Marks: 100

Answer all questions. Each question carries 2 marks.

1.	A sum of Rs.480 is divided among A, B, and C such that A's share : B's share = 3 : 5 and B's share: C's share = 10 : 12. Find C's share.		
	(a)	Rs.180	O
	(b)	Rs.205	O
	(c)	Rs.240	O
	(d)	Rs.192	O
2.	If Rs.5,000 is invested for 4 years at 10% per annum simple interest, what is the total interest earned?		
	(a)	Rs.2400	O
	(b)	Rs.2500	O
	(c)	Rs.2200	O
	(d)	Rs.2000	O
3.	If Rs.12,000 is invested for 2 years at compound interest and the total amount is Rs.13,824, what is the rate of interest per annum?		
	(a)	7.35%	O
	(b)	8%	O
	(c)	8.5%	O
	(d)	9%	O
4.	A boat goes 30 km upstream in 2 hours and returns downstream in 1.5 hours. Find the speed of the stream.		
	(a)	3 km/h	O
	(b)	4 km/h	O
	(c)	2.5 km/h	O
	(d)	6 km/h	O

5.	A train running at 54 km/h crosses a pole in 30 seconds. What is the length of the train in meters?		
	(a)	300	O
	(b)	450	O
	(c)	540	O
	(d)	600	O
6.	If the sum of the first n terms of an AP is $S_n = 3n^2 + 2n$, what is the 10th term?		
	(a)	62	O
	(b)	65	O
	(c)	59	O
	(d)	67	O
7.	If x : y = 5 : 7 and y : z = 14 : 15, find x : z.		
	(a)	10:21	O
	(b)	10:15	O
	(c)	10:30	O
	(d)	5:15	O
8.	If the quadratic equation 2x2 + kx + 8 = 0 has equal roots, then the value of k is:		
	(a)	4	O
	(b)	±8	O
	(c)	$\pm 4\sqrt{2}$	O
	(d)	$\pm 8\sqrt{2}$	O
9.	From a group of 8 men and 6 women, a committee of 4 is to be formed such that at least 2 women are included. How many such committees are possible?		
	(a)	695	O
	(b)	670	O
	(c)	610	O
	(d)	595	O

10.	How many different committees of 3 men and 2 women can be formed from 6 men and 5 women?		
	(a)	250	O
	(b)	150	O
	(c)	200	O
	(d)	300	O
11.	How many ways can 6 students be seated in a row if 2 particular students must sit together?		
	(a)	240	O
	(b)	144	O
	(c)	360	O
	(d)	120	O
12.	The quadratic equation x2 - 6x + k = 0 will have real and distinct roots if:		
	(a)	$k > 9$	O
	(b)	$k = 9$	O
	(c)	$k < 9$	O
	(d)	$k \leq 9$	O
13.	In a group of 60 students, 25 like cricket, 30 like football, and 10 like both. How many students like neither cricket nor football?		
	(a)	5	O
	(b)	10	O
	(c)	15	O
	(d)	20	O
14.	In a class of 50 students, 28 play basketball, 22 play volleyball, and 10 play both. How many play exactly one sport?		
	(a)	30	O
	(b)	40	O
	(c)	50	O

	(d)	60	O
15.	How many ways can 5 books be arranged on a shelf if 2 specific books must not be together?		
	(a)	72	O
	(b)	100	O
	(c)	120	O
	(d)	60	O
16.	If one root of 2x2 + 3x + k = 0 is double the other, then k equals:		
	(a)	1/2	O
	(b)	1	O
	(c)	4	O
	(d)	2	O
17.	How many 4-digit numbers can be formed using digits 1,2,3,4,5 without repetition?		
	(a)	120	O
	(b)	625	O
	(c)	240	O
	(d)	256	O
18.	A firm's marginal cost MC = 3x2 - 6x + 4. If fixed cost = 20, find the total cost function.		
	(a)	x3 - 3x2 + 4x + 20	O
	(b)	x3 - 2x2 + 4x + 20	O
	(c)	x3 - 3x2 + 2x + 20	O
	(d)	x3 - x2 + 4x + 20	O
19.	If the total cost function of producing x units is C = 5x2 + 20x + 100, then the marginal cost at x = 10 units is:		
	(a)	120	O

	(b)	200	O
	(c)	60	O
	(d)	100	O
20.	For the profit function P(x) = -2x2 + 40x - 100, the maximum profit occurs at x =:		
	(a)	5	O
	(b)	8	O
	(c)	10	O
	(d)	12	O
21.	The ogive of a distribution is rising steeply in the middle range and flat at both ends. This indicates:		
	(a)	Most data concentrated in the middle classes	O
	(b)	Data skewed to the left	O
	(c)	Data skewed to the right	O
	(d)	Uniform distribution	O
22.	The cumulative frequency curve can be used to determine:		
	(a)	Mean only	O
	(b)	Median and quartiles	O
	(c)	Mode only	O
	(d)	Range only	O
23.	The relationship between mean, median, and mode in a positively skewed distribution is:		
	(a)	Mean < Median < Mode	O
	(b)	Mode < Median < Mean	O
	(c)	Median < Mode < Mean	O
	(d)	Mean = Median = Mode	O
24.	Find the coefficient of variation (CV) for data with mean 50 and standard deviation 5.		

	(a)	5%	O
	(b)	10%	O
	(c)	15%	O
	(d)	20%	O
25.	If standard deviation is 0, then:		
	(a)	Data is highly variable	O
	(b)	Data has all identical values	O
	(c)	Mean = 0	O
	(d)	Median = 0	O
26.	Data: 5, 10, 15, 20, 25. Find skewness (approx) using (Mean–Median)/SD.		
	(a)	0	O
	(b)	0.5	O
	(c)	1	O
	(d)	-0.5	O
27.	Data: 4, 6, 8, 10, 12, 14, 16. Find Q1 and Q3.		
	(a)	6 and 14	O
	(b)	5 and 15	O
	(c)	6 and 12	O
	(d)	5 and 13	O
28.	Data: 2, 4, 4, 6, 8, 8, 8, 10. Mode is:		
	(a)	4	O
	(b)	8	O
	(c)	6	O
	(d)	10	O
29.	The quartile deviation measures:		

	(a)	Total spread of data	O
	(b)	Spread of middle 50% of data	O
	(c)	Maximum value difference	O
	(d)	Average deviation from mean	O
30.	Which measure of dispersion is least affected by extreme values?		
	(a)	Range	O
	(b)	Variance	O
	(c)	Standard deviation	O
	(d)	Quartile deviation	O
31.	Correlation measures:		
	(a)	Strength of cause-effect relationship	O
	(b)	Strength and direction of linear relationship	O
	(c)	Difference between means	O
	(d)	Deviation from mean	O
32.	Given data: X:1,2,3; Y:2,4,6. Compute correlation coefficient (r).		
	(a)	1	O
	(b)	0.9	O
	(c)	0.8	O
	(d)	0.7	O
33.	Which correlation type is least affected by outliers?		
	(a)	Pearson’s correlation	O
	(b)	Spearman’s rank correlation	O
	(c)	Point-biserial correlation	O
	(d)	Product-moment correlation	O
34.	If r= –0.9, it indicates:		

	(a)	Strong positive correlation	
	(b)	Strong negative correlation	
	(c)	Weak correlation	
	(d)	No correlation	
35.	If correlation coefficient r = 0, it implies:		
	(a)	No linear relationship	O
	(b)	Negative relationship	O
	(c)	Perfect positive relationship	O
	(d)	None of the above	O
36.	Correlation coefficient r is always:		
	(a)	Between $-\infty$ and $+\infty$	O
	(b)	Between –1 and +1	O
	(c)	Between 0 and 1	O
	(d)	Between –2 and +2	O
37.	Data: X:1,2,3; Y:2,4,8. Find regression coefficient b of Y on X.		
	(a)	1	O
	(b)	3	O
	(c)	2	O
	(d)	4	O
38.	Regression and correlation are related as:		
	(a)	$r^2=bYX*bXY$	O
	(b)	$r=bYX*bXY$	O
	(c)	$r^2=bYX/bXY$	O
	(d)	$r^2=bYX+bXY$	O
39.	A bag contains 5 white and 7 black balls. Two balls are drawn with replacement.		

	Probability that both are black is:		
	(a)	24/144	O
	(b)	49/144	O
	(c)	35/144	O
	(d)	59/144	O
40.	Events A and B are independent with P(A)=0.5, P(B)=0.4. Then P(A ∪ B) is:		
	(a)	0.2	O
	(b)	0.7	O
	(c)	0.5	O
	(d)	0.9	O
41.	From a standard deck of 52 cards, a card is drawn at random. The probability that it is a king or a heart is:		
	(a)	8/52	O
	(b)	17/52	O
	(c)	4/13	O
	(d)	8/13	O
42.	In a factory, 2 machines produce 60% and 40% of total output. Their defect rates are 3% and 5% respectively. If a product is defective, the probability it came from Machine 1 is:		
	(a)	0.36	O
	(b)	0.47	O
	(c)	0.5	O
	(d)	0.6	O
43.	A card drawn from a deck. Probability that it is black or a king:		
	(a)	7/13	O
	(b)	9/13	O
	(c)	7/26	O

	(d)	6/13	O
44.	Probability of drawing an ace from a deck:		
	(a)	5/52	O
	(b)	7/52	O
	(c)	4/13	O
	(d)	1/13	O
45.	A box contains 8 balls numbered 1 to 8. A ball is drawn at random. Probability that it is prime or even:		
	(a)	3/8	O
	(b)	5/8	O
	(c)	1/2	O
	(d)	7/8	O
46.	Which of the following is a weighted index number?		
	(a)	Simple aggregate price index	O
	(b)	Laspeyres price index	O
	(c)	Paasche price index	O
	(d)	Both b and c	O
47.	The price of commodity X in 2019 was 50, in 2020 it became 55. Using 2019 as base year, the simple price index is:		
	(a)	110	O
	(b)	105	O
	(c)	120	O
	(d)	100	O
48.	In time series analysis, seasonal variation is:		

	(a)	Long-term trend	O
	(b)	Short-term fluctuations due to weather, festivals, etc.	O
	(c)	Random irregular variation	O
	(d)	Cyclical variation	O
49.	A Paasche price index tends to understate inflation compared to Laspeyres index when:		
	(a)	Prices are rising and quantities of expensive items decrease	O
	(b)	Prices are falling and quantities of expensive items decrease	O
	(c)	Prices are rising and quantities of expensive items increase	O
	(d)	Prices are falling and quantities of expensive items increase	O
50.	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