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

Answer all questions. Each question carries 2 marks.

1.	Find the fourth proportional to 6, 8, 9 is:		
	(a)	18	O
	(b)	12	O
	(c)	7	O
	(d)	13	O
2.	AB LLP is expecting to receive a certain sum of money five years from now. If the present value of this sum is ₹38,400 at current market interest rate of 6% when the interest is compounded monthly, then how much amount they will receive after 5 years?		
	(a)	₹52,684	O
	(b)	₹52,884	O
	(c)	₹51,904	O
	(d)	₹51,794	O
3.	"For the given series: 66, 71, 76, 81, 86, 91, 96 ….666, 671, 676. With 'n' terms in the series, what will be the value of 'd' ?"		
	(a)	-5	O
	(b)	15	O
	(c)	-3	O
	(d)	5	O
4.	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

4 year centered moving average against year 6 is

	(a)	4.00	O
	(b)	4.24	O
	(c)	4.26	O
	(d)	4.03	O

5.	If the sum of the series is 297, how many terms are there in the series?		
	(a)	8	O
	(b)	9	O
	(c)	10	O
	(d)	7	O
6.	With 5% increase in Distance and 2.50% increase in Time, what would be the impact on Speed?		
	(a)	Decrease by 2.44%	O
	(b)	Increase by 2.44%	O
	(c)	Increase by 2.38%	O
	(d)	Decrease by 2.38%	O
7.	If a Toto travels for 6 hours on a working day to cover 1.5 times the distance travelled on holiday and on a holiday it takes 4 hours to cover 110 km. than for a span of 7 days: (5 Working and 2 Holidays), how much distance is covered?		
	(a)	1054 km	O
	(b)	1045 km	O
	(c)	880 km	O
	(d)	990 km	O
8.	When the effective rate of interest is 7.82% payable quarterly, what would be the nominal rate of interest?		
	(a)	8.00%	O
	(b)	7.60%	O
	(c)	7.00%	O
	(d)	8.20%	O
9.	Find the square of the difference of the roots of $115+ 5(x^2 -12x) = 0$		
	(a)	24	O
	(b)	48	O
	(c)	26	O
	(d)	52	O
10.	What would be the factorial notation for: $11\times10\times9\times8\times7$		
	(a)	11! / 6!	O
	(b)	11! / 5!	O

	(c)	10! / 5!	O
	(d)	11! / 6!	O
11.	In how many different ways can 4 different cars, one of each of the 4 manufacturers, be parked in a parking lane?		
	(a)	20 ways	O
	(b)	22 ways	O
	(c)	24 ways	O
	(d)	26 ways	O
12.	If $b^2 - 4ac > 0$, is a perfect square, the nature of roots would be		
	(a)	Real and Equal	O
	(b)	Imaginary	O
	(c)	Unreal	O
	(d)	Real and Unequal	O
13.	Find the value of $11^{78}/11^{81}$?		
	(a)	11^3	O
	(b)	$1 / 11^3$	O
	(c)	1331	O
	(d)	–1331	O
14.	If $\log_y 32 = 10$, then which of the following is the value of y ?		
	(a)	4	O
	(b)	2	O
	(c)	$\sqrt{4}$	O
	(d)	$\sqrt{2}$	O
15.	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
16.	Choose the correct form (From the alternatives given below) in which quadratic equation is generally written -		
	(a)	$ax^2 + bx + c = 0$	O

	(b)	$x^2 + ax - b = 0$	O
	(c)	$ax^2 - bx + c = 0$	O
	(d)	$x - bx + c = 0$	O
17.	Solve: $\log(9t - 2) = 2$		
	(a)	$\frac{102}{9}$	O
	(b)	$\frac{98}{9}$	O
	(c)	$\frac{109}{2}$	O
	(d)	$\frac{91}{2}$	O
18.	When α and β are the roots of $5x^2 - 7x + 9 = 0$ then find the values of $1/\beta + 1/\alpha$		
	(a)	7/9	O
	(b)	-7/9	O
	(c)	9/7	O
	(d)	-9/7	O
19.	If $y = xe^x$ then $\frac{dy}{dx}$ =?		
	(a)	xe^x	O
	(b)	$e^x (x + 1)$	O
	(c)	$e^x (x - 1)$	O
	(d)	e^x/x	O
20.	A soft-drink manufacturer has a revenue function $R = 7Q^2 - 19Q + 30$and the cost function is given by 9Q. Find the number of cans produced by the firm, under perfect competition.		
	(a)	2	O
	(b)	4	O
	(c)	6	O
	(d)	8	O
21.	"$f(x) = x^2/3 + 2x^2 + 3x + 7$"		
	(a)	Maximum, x = – 3 ; Minimum, x = – 1	O
	(b)	Maximum, x = 1/2 ; Minimum, x = 2	O
	(c)	Maximum, x = 1 ; Minimum, x = 4	O
	(d)	No curvature	O
22.	With respect to accuracy :		
	(a)	Diagrammatic presentation is preferable to Tabular presentation	O

	(b)	Textual presentation is preferable to diagrammatic presentation	O
	(c)	Tabular presentation is preferable to Diagrammatic presentation	O
	(d)	Textual presentation is preferable to Tabular presentation	O
23.	Which one of the following is a method of collecting primary data?		
	(a)	Information collected through newspapers and periodicals	O
	(b)	Information obtained from the publications of trade associations	O
	(c)	Information collected by Government through Census	O
	(d)	Information gathered from research paper published in research journal	O
24.	"The weighted average from the following observation is ₹46.23. Price per tonne (₹) : 45.60 50.70 ? Tonnes Purchased : 135 40 25 Simple average of observation is "		
	(a)	₹ 46.23	O
	(b)	₹ 46.26	O
	(c)	₹ 66.63	O
	(d)	₹ 46.24	O
25.	The mean of the frequency distribution $((x\ f_1, 1),(x_2, f_2),(x_3, f_3)\ldots\ldots\ldots(x_n, f_n))$ is:		
	(a)	$\Sigma x / \Sigma f$	O
	(b)	$\Sigma x / n$	O
	(c)	$\Sigma fx / n$	O
	(d)	$\Sigma fx / \Sigma f$	O
26.	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
27.	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
28.	Because of heavy rain on Sunday average rainfall of a city for the week increased to 0.6 inch from the average rainfall 0.3 inch measured from Monday to Saturday. The rainfall on Sunday was-		
	(a)	2.4 inch;	O
	(b)	0.3 inch;	O
	(c)	2.1 inch;	O
	(d)	1.5 inch	O
29.	The sum of the squares of deviations of a set of observations is the minimum when deviations are taken from the :		
	(a)	Geometric Mean;	O
	(b)	Harmonic Mean;	O
	(c)	Arithmetic Mean;	O
	(d)	Mode;	O
30.	If b_{XY} & b_{YX} are regression coefficients between X on Y and Y on X respectively then		
	(a)	$\sqrt{b_{XY}} \times b_{XY} \leq r$	O
	(b)	$\sqrt{b_{XY}} \times b_{YX} \geq r$	O
	(c)	$\sqrt{b_{XY}} \times b_{XY} = -r$	O
	(d)	None of the Above	O
31.	Consider the following table:		

Item	Year 1		Year 2	
	Unit Price	Quantity	Unit Price	Quantity
I	1	16	3	15
II	3	15	8	20
III	5	18	10	21

Pasche's price index of year 2 with respect to year 1 is

	(a)	189.13	O
	(b)	230.56	O
	(c)	245.12	O
	(d)	256.78	O

32.	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
33.	From the following find the Fisher's Quantity index		

Item	Base Year		Current Year	
	Unit Price (P_0)	Quantity (Q_0)	Unit Price (P_1)	Quantity (Q_1)
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)	12.74	O
34.	If r = 0.52, σX = 4.6 & σY = 36.8 then b_{XY} is equal to:		
	(a)	0.24	O
	(b)	4.16	O
	(c)	1	O
	(d)	0.065	O
35.	If Mean = 50 cm and C.V. = 60%, then the S.D. is		
	(a)	25 cm	O
	(b)	30 cm	O
	(c)	28 cm	O
	(d)	20 cm	O
36.	The regression equation of y on x is 3x – 5y = - 12 and regression equation of x on y is 2x – y = 7. The value of y when x = 10 is		
	(a)	8.4	O
	(b)	6.5	O
	(c)	7	O
	(d)	9	O

37.	For a given frequency distribution C.V = 30%, variance = 36 and Pearson's Coefficient of Skewness = - 0.25, the mode of the distribution is		
	(a)	24	O
	(b)	20	O
	(c)	21.5	O
	(d)	24.5	O
38.	When Var (x) = 2.25, Var (y)=1 and Cov (x, y) = 0.9, then correlation coefficient is		
	(a)	0.45	O
	(b)	0.8	O
	(c)	0.6	O
	(d)	0.75	O
39.	The value of the correlation coefficient lies between		
	(a)	0 and 1	O
	(b)	- 1 and 1	O
	(c)	-1 and 0	O
	(d)	- 0.5 and 0.5	O
40.	If y = 3x + 30 and mean of x is 20, then the mean of y is		
	(a)	90	O
	(b)	80	O
	(c)	70	O
	(d)	100	O
41.	The probability of two events A and B are 0.05 and 0.95 respectively. We can infer that		
	(a)	Event A is more probable to happen	O
	(b)	Event B is more improbable to happen	O
	(c)	Event B is more probable to happen	O
	(d)	Event A & B are sure to happen	O
42.	A bag contains 30 balls numbered from 1 to 30. One ball is drawn at random. The probability that the number of the drawn ball will be multiple of 3 or 7 is :		
	(a)	7/15	O
	(b)	13/30	O

	(c)	1/2	O
	(d)	None of these	O
43.	In IPL Kolkata Knight Riders plays 70% of their games at night (8 O'clock slot) and 30% during the day (4 O clock slot). The team wins 50% of their night games and 90% of their day games. According to today's newspaper they own yesterday. The probability that the game was played at night is :		
	(a)	0.4667	O
	(b)	0.5645	O
	(c)	0.35	O
	(d)	0.5	O
44.	4 coins are tossed. The probability that there are 2 heads is :		
	(a)	1/2	O
	(b)	3/8	O
	(c)	1/8	O
	(d)	None of these	O
45.	The regression equation of profit (X) on sales (Y) of a certain firm is 3Y – 5X + 108 = 0. The average sales of the firm were ₹44,000 and the variance of profits is 9/16thof the variance of sales. Find the average profit .		
	(a)	₹ 25642.60	O
	(b)	₹ 24621.60	O
	(c)	₹26421.60	O
	(d)	None of these	O
46.	What is the chance of getting a king in a draw from a pack of 52 cards?		
	(a)	1/16	O
	(b)	1/52	O
	(c)	1/13	O
	(d)	3/26	O
47.	A bag contains 7 red, 12 white and 4 green balls. What is the probability that 3 balls drawn are one of each colour ?		
	(a)	0.1897	O
	(b)	1.999	O

	(c)	0.1998	O
	(d)	1.00	O
48.	A petrol pump proprietor sells on an average ₹ 80,000 worth of petrol on rainy days and an average of ₹ 95,000 on clear days. Statistics from the Meteorological Department show that the probability is 0.76 for clear weather and 0.24 for rainy weather on coming Monday. Find the expected value of petrol sale on coming Monday.		
	(a)	₹ 49,100	O
	(b)	₹ 91,400	O
	(c)	₹ 1,00.400	O
	(d)	₹ 19,400	O
49.	Calculate a 1st four quarter weighted moving average for the number of shares outstanding for a company. The data are reported in thousands. Apply weights of 0.1, 0.2, 0.3 and 0.4 respectively for Q1, Q2, Q3 & Q4.		

Year	Quarter	No of sharesOutstanding
2023	Q1	28766
	Q2	30057
	Q3	31336
	Q4	33240

	(a)	31584.8	O
	(b)	35841.8	O
	(c)	30441.8	O
	(d)	31854.8	O
50.	From the data given below the wholesale price index number for the year 1 taking year 0 as base using simple arithmetic average of relatives' method is		

Commodity	Price year 0	Price year 1
A	80	120
B	120	150
C	40	80
D	100	150
E	200	240

	(a)	180	O
	(b)	112	O
	(c)	134	O
	(d)	149	O