

**PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)**

**BCom DEGREE EXAMINATION MAY 2024  
(First Semester)**

Branch – **COMMERCE (COST MANAGEMENT AND ACCOUNTING)**

**BUSINESS MATHEMATICS AND STATISTICS**

Time: Three Hours

Maximum: 75 Marks

**SECTION-A (10 Marks)**

Answer **ALL** questions

**ALL** questions carry **EQUAL** marks

(10 x 1 = 10)

- 1 Two sets which have no common element are said to be
 

(i) union	(ii) disjoint
(iii) complement	(iv) intersection
- 2 The  $n^{\text{th}}$  term of G.P. is given by
 

(i) $a_n = a + (n-1)d$	(ii) $a_n = a + (n)d$
(iii) $a_n = ar^{n-1}$	(iv) $a_n = ar^n$
- 3 Diagrams and graphs are tools of
 

(i) Collection of data	(ii) Analysis of data
(iii) Presentation of data	(iv) Interpretation of data
- 4 In percentage bar diagram, the heights of the bars are
 

(i) equal	(ii) not equal
(iii) different	(iv) parallel
- 5 The value of the middle most item when all the items are in order of magnitude is
 

(i) mode	(ii) harmonic mean
(iii) median	(iv) arithmetic mean
- 6 The root mean square deviations of the values from their arithmetic mean is
 

(i) mean deviation	(ii) standard deviation
(iii) quartile deviation	(iv) range
- 7 If the two variables move in the same ratio, it is called
 

(i) partial correlation	(ii) multiple correlation
(iii) linear correlation	(iv) no correlation
- 8 Scatter diagram is used to
 

(i) represent data	(ii) measure scatterness
(iii) study correlation	(iv) present data
- 9 The probability of an event always lies between
 

(i) -1 to +1	(ii) -1 to 0
(iii) 0 to +1	(iv) 1 to 2
- 10 Occurrence or non-occurrence of one event no way connected to another event is called
 

(i) Dependent event	(ii) Independent event
(iii) Mutually exclusive event	(iv) Equally likely event

**Cont...**

**SECTION - B (35 Marks)**

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 7 = 35)

- 11 a (i) What amount lent at 10% p.a. compound interest will fetch Rs 630 as interest in 2 years?  
(ii) In an A.P. sum of four consecutive terms is 28 and the sum of their squares is 276. Find the four numbers.

OR

- b (i) Find how many four letter words can be formed from the letters of the word "LOGARITHMS".  
(ii) In a G.P., the 4<sup>th</sup> term is  $\frac{8}{9}$  and the 7<sup>th</sup> term is  $\frac{64}{243}$ . Find the Geometric Progression.

- 12 a Explain the scope of statistics.

OR

- b Construct a histogram and frequency polygon for the given data.

Age (years)	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of persons	5	12	19	21	18	10	4

- 13 a Calculate mean and mode for the given data.

Wages	0-20	20-40	40-60	60-80	80-100
No. of persons	8	12	30	20	10

OR

- b Calculate Karl Pearson's coefficient of skewness from the given data.

Size	30	40	50	60	70	80	90	100
Frequency	7	10	14	35	102	136	43	8

- 14 a Calculate Karl Pearson's coefficient of correlation for the following data.

Sales	10	12	18	24	23	27
Profit	13	18	12	25	30	10

OR

- b Calculate rank correlation coefficient for the following data.

X	68	65	63	72	68	70	69	75
Y	85	90	85	76	85	76	83	60

- 15 a There are 3 bags containing 6 white balls and 4 red balls, 7 white balls and 3 red balls, 4 white balls and 6 red balls respectively. Find the probability that a white ball is selected come out in

- (i) First bag  
(ii) Second bag  
(iii) Third bag

OR

Cont...

- b Let  $X$  be a random variable with probability distribution

$X$	0	1	2	3
$P(x)$	$1/3$	$1/2$	0	$1/6$

Find (i)  $E(X)$  (ii)  $E(X^2)$  (iii)  $E(X-1)^2$

**SECTION - C (30 Marks)**

Answer any **THREE** Questions

**ALL** Questions Carry **EQUAL** Marks (3 x 10 = 30)

- 16 (i) A question paper has two parts namely Part A and Part B, Each part contains 10 questions, If the student has to choose 8 from part A and 5 from part B, in how many ways can he choose the questions?  
(ii) Given that  $A = \{0, 1, 3, 5\}$ ,  $B = \{1, 2, 4, 7\}$  and  $C = \{1, 2, 3, 5, 8\}$ , prove that (a)  $(A \cap B) \cap C = A \cap (B \cap C)$  and (b)  $(A \cup B) \cup C = A \cup (B \cup C)$ .

- 17 Construct a Pie diagram for the following data.

Item	Food	Clothing	Rent	Education	Medicine	Fuel	Savings	Others
Amount (Rs)	225	150	120	370	320	300	135	380

- 18 The following are the marks scored by Regular and Part-Time students of MBA. Find out which group shows consistency.

Regular	85	65	78	80	69	72	70	75	80	82
Part-Time	65	58	62	85	75	70	63	65	60	49

- 19 Calculate the two regression equations from the given data.

X	25	28	35	32	31	36	29	38	34	32
Y	43	46	49	41	36	32	31	30	33	39

Also estimate the value of  $X$  when  $Y$  is given to be 30.

- 20 The weekly wages of workers are normally distributed around a mean of Rs 70 with a S.D. of Rs 5. Estimate the number of workers whose weekly wages will be  
(i) Between Rs 69 and Rs 72  
(ii) Less than Rs 69  
(iii) More than Rs 72