

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2023  
(Fourth Semester)

Branch – COSTUME DESIGN AND FASHION

APPAREL STATISTICS

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 The data collected by questionnaires are
  - (i) Primary data
  - (ii) Secondary data
  - (iii) Published data
  - (iv) Grouped data
- 2 Classifying data on the basis of time is
  - (i) Geographical
  - (ii) Chronological
  - (iii) Serial
  - (iv) Spatial
- 3 Empirically mode is equal to
  - (i) 3 median – 2 mean
  - (ii) 2 median – 3 mean
  - (iii) 3 (median – mean)
  - (iv) 3 (mean – median)
- 4 Seasonal variations recur at an interval of
  - (i) 7 years
  - (ii) 5 years
  - (iii) 3 years
  - (iv) 1 year
- 5 Process capability generally uses
  - (i) Specifications
  - (ii) Control limits
  - (iii) Process standard deviation
  - (iv) Mean of any one sample

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Explain the uses of statistics.  
OR  
b Describe the limitations of statistics.
- 7 a Describe the various parts of the table.  
OR  
b Represent the following data by means of a percentage bar diagram.

Items	Cost of Production (Rs.)		
	2020	2021	2022
Raw Material	5000	6600	9000
Labour	2000	3000	3000
Overhead	2000	1800	1800
Others	1000	600	1200
Total	10000	12000	15000

- 8 a Explain the merits and demerits of mean and median.  
OR  
b The following data relate to the age of a group of employees. Calculate the standard deviation and its coefficient of variation.

Age	20-25	25-30	30-35	35-40	40-45	45-50	50-55
No. of Employees	170	110	80	45	40	30	25

- 9 a Explain the components of time series.  
OR  
b Assuming no trend in the series, calculate seasonal indices for the following data.

Year	Quarter			
	I	II	III	IV
2014	78	66	84	80
2015	76	74	82	78
2016	72	68	80	70
2017	74	70	84	74
2018	76	74	86	82

- 10 a Explain the uses of statistical quality control.

OR

- b The following data gives the readings for 8 samples of size 6 each in the production of a certain product. Find the control limits using mean chart.

Sample	1	2	3	4	5	6
Mean	300	342	351	319	326	333
Range	25	37	20	28	30	22

Given  $n = 6$ ,  $A_2 = 0.483$ .

**SECTION -C (30 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Elucidate the various methods of collecting primary data.

OR

- b Highlight the essentials of a good questionnaire.

- 12 a Discuss the various types of classification of data with suitable example.

OR

- b Draw a Histogram and also find the modal wage.

Weekly Wage (Rs. in '00)	300-320	320-340	340-360	36-380	380-400
No. of Labourers	25	50	75	60	15

- 13 a Analyze the following data by applying mean, median and mode.

Marks	0-10	10-20	20-30	30-40	40-50
No. of Students	3	5	9	3	2

OR

- b Analyze the data by applying Karl Pearson's coefficient of skewness.

25, 15, 23, 40, 27, 25, 23, 25, 20

- 14 a Analyze the following time series data by using 5 yearly moving average and also calculate short term fluctuations.

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020
Expenditure (Rs. in Lakhs)	203	220	231	245	253	264	260	248	273

OR

- b Fit a straight line trend to the following time series data by using least square method.

Year	2010	2011	2012	2013	2014	2015
Production	72	75	74	78	83	82

- 15 a Smart bulbs Inc is a famous LED bulb manufacturer. The supervisor drew a randomly constant sample size of 200 bulbs every hour and reported the number of defective bulbs for each lot. Based on the given data, prepare the control chart for the number of defectives and determine whether the process is in statistical control.

Lot	1	2	3	4	5	6	7	8	9	10
Sample Size	200	200	200	200	200	200	200	200	200	200
No. of defective in the sample (np)	4	8	6	6	4	8	2	1	9	6
Lot	11	12	13	14	15	16	17	18	19	20
Sample Size	200	200	200	200	200	200	200	200	200	200
No. of defective in the sample (np)	8	1	2	9	4	3	9	6	2	7

OR

- b Mobile charger supplier drawn randomly constant sample size of 500 chargers every day for quality control test. Defects in each charger are recorded during testing. Based on the given data, draw the appropriate control chart and comment on the state of control.

Lot	1	2	3	4	5	6	7	8	9	10
Sample Size	500	500	500	500	500	500	500	500	500	500
No. of defects in the sample (c)	12	14	16	18	16	14	12	12	32	16
Lot	11	12	13	14	15	16	17	18	19	20
Sample Size	500	500	500	500	500	500	500	500	500	500
No. of defects in the sample (c)	18	16	14	12	16	18	12	19	18	21