TOTAL PAGES: 2

22SOU412N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BA DEGREE EXAMINATION MAY 2026
(Fourth Semester)
Branch – **SOCIOLOGY**
SOCIAL STATISTICS – II WITH COMPUTER APPLICATIONS

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Yule's coefficient of association is used to measure: a) Correlation between variables b) Independence between attributes c) Consistency of time series d) Normal distribution fit	K1	CO1
	2	If attributes are inconsistent, it implies: a) Perfect independence b) Data errors or contradictions c) High correlation d) Random variation	K2	CO1
2	3	The mean of a Poisson distribution is: a) σ b) npq c) μ^2 d) μ	K1	CO2
	4	Which distribution is used to approximate the binomial when n is large and p is small? a) Normal b) Exponential c) Poisson d) Chi-square	K2	CO2
3	5	The main source of vital statistics in India is: a) NSSO b) Civil Registration System c) SEBI d) RBI	K1	CO3
	6	A life table is primarily used to: a) Summarize mortality patterns b) Predict future stock prices c) Calculate standard deviation d) Measure seasonal trends	K2	CO3
4	7	Seasonal variation repeats itself: a) Randomly b) occupationally c) Every decade d) Every year	K1	CO4
	8	If seasonal variation is high, the time series data shows: a) No periodicity b) Clear periodic fluctuations c) Only upward trend d) Complete randomness	K2	CO4
5	9	Which MS Excel function is most suitable for checking the consistency of attributes by computing a contingency table? a) Pivot Table b) = AVERAGE ( ) c) Data Validation d) Conditional Formatting	K1	CO5
	10	Moving average analysis in Excel is part of: a) Solver b) What-If Analysis c) Data Analysis ToolPak d) Page Layout	K2	CO5

SECTION - B (35 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain with an example what is meant by association of attributes.	K2	CO1
		(OR)		
1	11.b.	Given the following contingency table showing two attributes A and B in 100 individuals: Check whether attributes A and B are independent using the concept of consistency.	K2	CO1

		B	
		Yes	No
A	Yes	30	10
	No	20	40

Cont...

<table>
<tr><td rowspan="3">2</td><td>12.a.</td><td>Define the Poisson distribution and state one example of its application. If the average number of calls arriving at a call center is 3 per hour, find the probability of receiving exactly 2 calls in an hour.</td><td rowspan="3">K3</td><td rowspan="3">CO2</td></tr>
<tr><td colspan="2">(OR)</td></tr>
<tr><td>12.b.</td><td>Explain the multiplication theorem for independent events. In two successive tosses of a fair coin, find the probability that both tosses result in heads.</td></tr>
<tr><td rowspan="3">3</td><td>13.a.</td><td>Explain the sources of vital statistics and discuss their importance in public health planning.</td><td rowspan="3">K3</td><td rowspan="3">CO3</td></tr>
<tr><td colspan="2">(OR)</td></tr>
<tr><td>13.b.</td><td>a. Define Crude Birth Rate (CBR) and General Fertility Rate (GFR).
b. Given a population of 200,000 and 4000 live births in one year with 50,000 women aged 15-49, compute CBR and GFR.</td></tr>
<tr><td rowspan="3">4</td><td>14.a.</td><td>Explain seasonal variation in time series. What is the simple average method for measuring seasonal indices? Illustrate with a brief example.</td><td rowspan="3">K4</td><td rowspan="3">CO4</td></tr>
<tr><td colspan="2">(OR)</td></tr>
<tr><td>14.b.</td><td>What is the method of moving averages? Calculate 3-year moving averages for the following production data:
<table>
<tr><td>Year</td><td>2018</td><td>2019</td><td>2020</td><td>2021</td><td>2022</td></tr>
<tr><td>Production</td><td>100</td><td>120</td><td>130</td><td>110</td><td>150</td></tr>
</table></td></tr>
<tr><td rowspan="3">5</td><td>15.a.</td><td>Explain how MS Excel can be used to calculate and interpret Yule's coefficient of association between two attributes. What are the benefits of using Excel for this calculation in research?</td><td rowspan="3">K4</td><td rowspan="3">CO5</td></tr>
<tr><td colspan="2">(OR)</td></tr>
<tr><td>15.b.</td><td>Explain the process of fitting a linear trend to time series data using Excel. What Excel tools or functions assist in performing regression or trend line analysis?</td></tr>
</table>

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

<table>
<tr><th>Module No.</th><th>Question No.</th><th>Question</th><th>K Level</th><th>CO</th></tr>
<tr><td>1</td><td>16</td><td>(a) Define Yule's Coefficient of Association. Explain its significance and interpret the possible range of values.
(b) Given the following data of two attributes A and B:
<table>
<tr><td></td><td></td><td colspan="2">B</td></tr>
<tr><td></td><td></td><td>Yes</td><td>No</td></tr>
<tr><td rowspan="2">A</td><td>Yes</td><td>30</td><td>10</td></tr>
<tr><td>No</td><td>20</td><td>40</td></tr>
</table>
Calculate Yule's Coefficient of Association and interpret the strength and direction of association between A and B.</td><td>K2</td><td>CO1</td></tr>
<tr><td>2</td><td>17</td><td>Demonstrate your understanding of Normal Distribution by explaining its important properties and using it to solve: Given a normal variable X with mean 50 and standard deviation 10, find the probability that X is between 40 and 70.</td><td>K3</td><td>CO2</td></tr>
<tr><td>3</td><td>18</td><td>Explain the construction and uses of a life table. Briefly describe the meaning of l_x and $q_x$in a life table.</td><td>K3</td><td>CO3</td></tr>
<tr><td>4</td><td>19</td><td>Explain the components of a time series and discuss their significance in data analysis.</td><td>K4</td><td>CO4</td></tr>
<tr><td>5</td><td>20</td><td>Explain the role of MS Excel in performing statistical analysis with an emphasis on how it supports:
• Probability distribution functions (binomial, normal, Poisson),
• Regression and trend analysis for time series.
Discuss the advantages and limitations of using Excel for statistical inference in research.</td><td>K4</td><td>CO5</td></tr>
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Z-Z-Z END