

B. Sc. DEGREE EXAMINATION, NOVEMBER 2024
PSYCHOLOGY
THIRD SEMESTER

COURSE : ALLIED – CORE
PAPER : STATISTICS IN PSYCHOLOGY
SUBJECT CODE : 23PY/AC/ST35
TIME : 3 HOURS

MAX.MARKS:100

Q. No.	SECTION A (10 X 3=30) ANSWER ALL THE QUESTIONS NOT EXCEEDING 50 WORDS	CO	KL																																								
1.	What is descriptive statistics?	CO1	K1																																								
2.	Define dispersion.	CO1	K1																																								
3.	Highlight the need for acquiring knowledge about the significance of the difference between means.	CO1	K1																																								
4.	What is analysis of variance?	CO1	K1																																								
5.	List the limitations of Spearman’s rank correlation coefficient.	CO1	K1																																								
6.	Differentiate diagrams from graphs.	CO2	K2																																								
7.	How is arithmetic mean different from median?	CO2	K2																																								
8.	Illustrate positive and negative skewness using the distribution curve representation.	CO2	K2																																								
9.	Distinguish between linear and non-linear correlation.	CO2	K2																																								
10.	Give any 2 examples where chi-square test can be used.	CO2	K2																																								
Q. No.	SECTION B (5 X 8=40) ANSWER ALL THE QUESTIONS NOT EXCEEDING 400 WORDS	CO	KL																																								
11.	<p>a) Analyze the functions of statistics.</p> <p style="text-align: center;">(or)</p> <p>b) Group the data into a frequency table using exclusive method of classification. Find cumulative and relative frequency for the same.</p> <p>The following are the mark obtained by 50 students in statistics.</p> <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <tbody> <tr> <td>67</td><td>55</td><td>85</td><td>35</td><td>76</td><td>54</td><td>30</td><td>88</td><td>40</td><td>69</td> </tr> <tr> <td>41</td><td>26</td><td>95</td><td>65</td><td>92</td><td>83</td><td>20</td><td>5</td><td>78</td><td>66</td> </tr> <tr> <td>72</td><td>59</td><td>63</td><td>74</td><td>43</td><td>38</td><td>91</td><td>86</td><td>64</td><td>75</td> </tr> <tr> <td>43</td><td>27</td><td>64</td><td>87</td><td>80</td><td>48</td><td>69</td><td>58</td><td>73</td><td>66</td> </tr> </tbody> </table>	67	55	85	35	76	54	30	88	40	69	41	26	95	65	92	83	20	5	78	66	72	59	63	74	43	38	91	86	64	75	43	27	64	87	80	48	69	58	73	66	CO4	K4
67	55	85	35	76	54	30	88	40	69																																		
41	26	95	65	92	83	20	5	78	66																																		
72	59	63	74	43	38	91	86	64	75																																		
43	27	64	87	80	48	69	58	73	66																																		

	21	9	53	84	79	72	68	78	90	33																				
12.	<p>a) Analyze the merits and demerits of measures of central tendency.</p> <p style="text-align: center;">(or)</p> <p>b) Simplify the given data by drawing a pie diagram for the following data:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Monthly expenses list</th> <th style="width: 50%;">Monthly expenses in rupees</th> </tr> </thead> <tbody> <tr> <td>Rent</td> <td>25000</td> </tr> <tr> <td>Groceries</td> <td>10000</td> </tr> <tr> <td>Health care</td> <td>5000</td> </tr> <tr> <td>Kids education</td> <td>15000</td> </tr> <tr> <td>Utilities (Electricity, water, gas, etc)</td> <td>5000</td> </tr> <tr> <td>Transportation</td> <td>5000</td> </tr> <tr> <td>Personal care</td> <td>5000</td> </tr> <tr> <td>Savings/ Investment</td> <td>10000</td> </tr> </tbody> </table>										Monthly expenses list	Monthly expenses in rupees	Rent	25000	Groceries	10000	Health care	5000	Kids education	15000	Utilities (Electricity, water, gas, etc)	5000	Transportation	5000	Personal care	5000	Savings/ Investment	10000	CO4	K4
Monthly expenses list	Monthly expenses in rupees																													
Rent	25000																													
Groceries	10000																													
Health care	5000																													
Kids education	15000																													
Utilities (Electricity, water, gas, etc)	5000																													
Transportation	5000																													
Personal care	5000																													
Savings/ Investment	10000																													
13.	<p>a) Infer the characteristics and assumptions of parametric and non-parametric tests.</p> <p style="text-align: center;">(or)</p> <p>b) Compare and explain Sign test and Mann-Whitney U test.</p>										CO4	K4																		
14.	<p>a) Determine the standard deviation for the data given below:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Age</th> <th style="width: 70%;">No. of people smoking</th> </tr> </thead> <tbody> <tr> <td>20-30</td> <td>4</td> </tr> <tr> <td>30-40</td> <td>6</td> </tr> <tr> <td>40-50</td> <td>3</td> </tr> <tr> <td>50-60</td> <td>2</td> </tr> <tr> <td>60-70</td> <td>9</td> </tr> <tr> <td>70-80</td> <td>7</td> </tr> </tbody> </table> <p style="text-align: center;">(or)</p> <p>b) Two types of therapy was used for treating anxiety. Therapy X and therapy Y were used in treatment for 5 and 5 individuals respectively. The decrease in anxiety levels after the treatment for 6 months was as follows:</p>										Age	No. of people smoking	20-30	4	30-40	6	40-50	3	50-60	2	60-70	9	70-80	7	CO5	K5				
Age	No. of people smoking																													
20-30	4																													
30-40	6																													
40-50	3																													
50-60	2																													
60-70	9																													
70-80	7																													

	<table border="1"> <tr> <th>Therapy A</th> <th>Therapy B</th> </tr> <tr> <td>6</td> <td>9</td> </tr> <tr> <td>4</td> <td>5</td> </tr> <tr> <td>5</td> <td>8</td> </tr> <tr> <td>7</td> <td>7</td> </tr> <tr> <td>2</td> <td>4</td> </tr> </table> <p>Is there significant difference in the efficacy of two therapies? Determine which therapy is better for treatment of anxiety.</p>	Therapy A	Therapy B	6	9	4	5	5	8	7	7	2	4											
Therapy A	Therapy B																							
6	9																							
4	5																							
5	8																							
7	7																							
2	4																							
15.	<p>a) Determine Spearman's correlation coefficient between the quality of sleep and productivity levels of the individuals given below:</p> <table border="1"> <thead> <tr> <th>Participants</th> <th>Quality of sleep</th> <th>Productivity level</th> </tr> </thead> <tbody> <tr> <td>CK</td> <td>3</td> <td>5</td> </tr> <tr> <td>VC</td> <td>6</td> <td>4</td> </tr> <tr> <td>SN</td> <td>2</td> <td>1</td> </tr> <tr> <td>KD</td> <td>1</td> <td>3</td> </tr> <tr> <td>BT</td> <td>5</td> <td>6</td> </tr> <tr> <td>SG</td> <td>4</td> <td>2</td> </tr> </tbody> </table> <p style="text-align: center;">(or)</p> <p>b) Appraise the underlying assumptions, uses and limitations of chi-square test.</p>	Participants	Quality of sleep	Productivity level	CK	3	5	VC	6	4	SN	2	1	KD	1	3	BT	5	6	SG	4	2	CO5	K5
Participants	Quality of sleep	Productivity level																						
CK	3	5																						
VC	6	4																						
SN	2	1																						
KD	1	3																						
BT	5	6																						
SG	4	2																						
Q. No.	SECTION C (2 x 15=30) ANSWER ANY 2 QUESTIONS NOT EXCEEDING 800 WORDS	CO	KL																					
16.	Bring out the utility of t-distribution with relevant examples.	CO3	K3																					
17.	Apply the formulas and find the mean, median, and mode for the following data:	CO3	K3																					
	<table border="1"> <thead> <tr> <th>Marks in psychology</th> <th>No. of Students</th> </tr> </thead> <tbody> <tr> <td>0-10</td> <td>2</td> </tr> <tr> <td>10-20</td> <td>5</td> </tr> <tr> <td>20-30</td> <td>4</td> </tr> </tbody> </table>	Marks in psychology	No. of Students	0-10	2	10-20	5	20-30	4															
Marks in psychology	No. of Students																							
0-10	2																							
10-20	5																							
20-30	4																							

	<table border="1"> <tr><td>30-40</td><td>6</td></tr> <tr><td>40-50</td><td>3</td></tr> <tr><td>50-60</td><td>14</td></tr> <tr><td>60-70</td><td>26</td></tr> <tr><td>70-80</td><td>17</td></tr> <tr><td>80-90</td><td>8</td></tr> </table>	30-40	6	40-50	3	50-60	14	60-70	26	70-80	17	80-90	8																							
30-40	6																																			
40-50	3																																			
50-60	14																																			
60-70	26																																			
70-80	17																																			
80-90	8																																			
18.	Identify and explain the characteristics and properties of a normal curve along with its applications.	CO3	K3																																	
19.	Utilize the appropriate formula and find pearson's correlation coefficient between happiness levels and life satisfaction levels of the individuals given below:	CO3	K3																																	
	<table border="1"> <thead> <tr> <th>Participants</th> <th>Level of happiness</th> <th>Life satisfaction level</th> </tr> </thead> <tbody> <tr><td>MN</td><td>8</td><td>9</td></tr> <tr><td>BJ</td><td>4</td><td>3</td></tr> <tr><td>CR</td><td>11</td><td>13</td></tr> <tr><td>FI</td><td>9</td><td>6</td></tr> <tr><td>AR</td><td>2</td><td>4</td></tr> <tr><td>RS</td><td>12</td><td>9</td></tr> <tr><td>NB</td><td>8</td><td>4</td></tr> <tr><td>VD</td><td>5</td><td>2</td></tr> <tr><td>PE</td><td>10</td><td>14</td></tr> <tr><td>GT</td><td>7</td><td>10</td></tr> </tbody> </table>	Participants	Level of happiness	Life satisfaction level	MN	8	9	BJ	4	3	CR	11	13	FI	9	6	AR	2	4	RS	12	9	NB	8	4	VD	5	2	PE	10	14	GT	7	10		
Participants	Level of happiness	Life satisfaction level																																		
MN	8	9																																		
BJ	4	3																																		
CR	11	13																																		
FI	9	6																																		
AR	2	4																																		
RS	12	9																																		
NB	8	4																																		
VD	5	2																																		
PE	10	14																																		
GT	7	10																																		
