

03442

MASTER OF ARTS (PSYCHOLOGY)

Term-End Examination

December, 2017

MPC-006 : STATISTICS IN PSYCHOLOGY

Time : 2 hours

Maximum Marks : 50

Note : All sections are compulsory. Use of simple calculator be permitted.

SECTION - A

Answer any two of the following questions in about 450 words each :

2x10=20

1. Define nonparametric statistics and discuss its advantages and disadvantages. 3+7
2. Discuss multiple correlation. Explain partial correlation with suitable example. 3+7
3. Define correlation. Find out if relationship exists between the data given below with the help of Pearson's Product Moment Coefficient of Correlation. 3+7

A B C D E F G H I J

Data 1 : 2 3 4 7 8 9 2 3 4 8

Data 2 : 10 7 8 2 3 1 10 10 7 2

4. A research was carried out to find if significant difference exists in motivation of three groups of employees after they received three different training programmes. Compute ANOVA for the data given below : 10

Group A (Training 1) : 2, 3, 2, 3, 5

Group B (Training 2) : 5, 5, 5, 10, 10

Group C (Training 3) : 10, 10, 2, 3, 5

Critical value : 0.05 level of significance = 19.41

0.01 level of significance = 99.46

SECTION - B

Answer any four of the following questions in about 250 words each :

4x6=24

5. Discuss normal curve. Explain divergence from normal distribution, indicating the causes for the same. 2+4
6. Compute Mann - Whitney U test with the help of the following data : 6
Data 1 : 13, 16, 40, 47, 56, 70
Data 2 : 34, 12, 25, 39, 64
7. Male and female participants responded with strongly agree, agree, undecided, disagree and strongly disagree to a health related attitude questionnaire. The data is given below, compute chi square. 6

	strongly agree	agree	undecided	disagree	strongly disagree
Males	1	4	7	8	5
Females	3	2	6	4	5

Critical Value : for 0.01 level of Significance = 13.277
for 0.05 level of Significance = 9.488

8. Compute Kendall's tau for the following data : 6
- | | | | | | | |
|---|---|---|---|---|----|----|
| | A | B | C | D | E | F |
| X | 2 | 7 | 1 | 5 | 8 | 10 |
| Y | 4 | 5 | 6 | 8 | 10 | 9 |
9. Explain null hypothesis with an example. Discuss 3+3 errors in hypothesis testing.

SECTION - C

Write short notes on **any two** of the following in about 100 words each : 2x3=6

10. Regression equation. 3
11. Measuring divergence from normal curve. 3
12. Ratio and Interval data. 3

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04521

MASTER OF ARTS (PSYCHOLOGY)

Term-End Examination

June, 2017

MPC-006 : STATISTICS IN PSYCHOLOGY

Time : 2 hours

Maximum Marks : 50

Note : (i) All sections are compulsory.

(ii) Use of simple calculator be permitted.

SECTION - A

Answer any two of the following questions in
about 450 words each : $2 \times 10 = 20$

1. Define and differentiate between Parametric and non-parametric statistics. $4+6$
2. Explain step by step the calculation of point biserial correlation and phi coefficient and indicate their uses. $5+5$
3. Explain linear and non-linear relationship. Find out the degree of relationship between the 2 data given below using Spearman's Rho. $3+7$

	A	B	C	D	E	F	G	H	I	J
Data 1 :	22	23	29	20	25	27	30	34	37	35
Data 2 :	35	39	22	40	31	45	30	28	25	20

4. A research was carried out to find the effectiveness of three techniques of stress management. The data collected from three different groups on stress scale are given below. Find out using ANOVA if the obtained differences are significant. 10

Group A (Technique 1) : 2, 4, 5, 6, 7

Group B (Technique 2) : 3, 2, 3, 2, 4

Group C (Technique 3) : 3, 6, 2, 4, 7

Critical Value : 0.05 level of significance = 19.41

0.01 level of significance = 99.46

SECTION - B

Answer **any four** of the following questions in about 250 words each : 4x6=24

5. Describe the four levels of measurement and indicate the data for which they are used. 6
6. Compute Mann - Whitney U test for the following data : 6
Data 1 : 10, 24, 14, 15, 30, 17, 29
Data 2 : 20, 12, 16, 18, 36, 38, 50
7. For question 'How often do you exercise ?', the replies given by males and females were categorized as frequently, occasionally, rarely and never. Is there any association between gender and frequency ? 6

Frequently Occasionally Rarely Never

Males	10	5	4	6
Females	20	10	3	2

Critical Value : for 0.01 level of significance = 11.345

for 0.05 level of significance = 7.815

8. Compute Kendall's tau for the following data : 6

	A	B	C	D	E
X	4	7	8	9	3
Y	3	4	7	8	9

9. Describe the properties of Normal Probability Curve. 6

SECTION - C

Write short notes on **any two** of the following in about 100 words each : 2x3=6

10. Errors in Hypotheses testing 3
11. Correlation and Causality 3
12. Interactional effect 3

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05461

MASTER OF ARTS (PSYCHOLOGY)

Term-End Examination

December, 2016

MPC-006 : STATISTICS IN PSYCHOLOGY

Time : 2 hours

Maximum Marks : 50

Note : (i) All sections are compulsory.

(ii) Use of simple calculator be permitted.

SECTION - A

Note : Answer **any two** of the following questions
in about **500** words each : **2x10=20**

1. Discuss the concept of Normal Curve. Describe 3+7
properties of Normal Probability Curve.
2. Define Non-parametric Statistics. Describe the 3+7
assumptions and use of non-parametric tests.
3. A research was carried out to find if significant 10
difference exists in the self concept of early,
middle and late adolescents. The scores obtained
on self concept are given below. Using ANOVA
indicate if the groups differ on self concept
significantly.

Group I (Early)	Group II (Middle)	Group III (Late)
14	8	7
15	13	5
13	14	7
12	22	6
11	14	8
10	24	8
9	12	10
5	15	8
3	20	6
4	15	6

Critical value : 5.49 at 0.01 level of significance.

3.35 at 0.05 level of significance.

4. Compute regression equation for X and Y based on the data given below : 10

Individuals	X	Y
A	2	10
B	7	12
C	8	3
D	3	10
E	5	10

SECTION - B

Note : Answer **any four** of the following questions
in about **300** words each : **4x6=24**

5. Define hypothesis testing. Discuss general 2+4
procedure for testing a hypothesis with the help
of suitable example.

6. Calculate Mann-Whitney U-test with the help of 6
the following data :

Group 1 : 40, 17, 46, 51, 45

Group 2 : 12, 18, 20, 15, 17

7. Compute Chi-square for the following data : 6

Gender	Answers given	
	Correct	Incorrect
Males	50	60
Females	40	30

8. Compute Spearman's Rank Correlation for the 6
following data :

Data 1 : 44, 45, 45, 34, 43, 23, 54, 34, 67, 45

Data 2 : 12, 21, 32, 12, 12, 15, 26, 12, 16, 12

9. Describe point biserial correlation and tetrachoric 3+3
correlation.

SECTION - C

Note : Write short notes on **any two** of the following in about **100** words each : **2x3=6**

- | | | |
|-----|---|---|
| 10. | Kruskal-Walli's ANOVA Test | 3 |
| 11. | Levels of measurement | 3 |
| 12. | Wilcoxon Matched Pair Signed Ranks Test | 3 |
-



076870

MASTER OF ARTS (PSYCHOLOGY)

Term-End Examination

June, 2016

MPC-006 : STATISTICS IN PSYCHOLOGY

Time : 2 hours

Maximum Marks : 50

Note : (i) All sections are compulsory.

(ii) Use of simple calculator be permitted.

SECTION - A

Answer any two of the following questions
in about 450 words each : 2x10=20

1. Define parametric and nonparametric statistics. 5+5
Discuss their assumptions.
2. Describe divergence of normality with suitable diagrams. Explain the factors causing divergence in normal curve. 10
3. A research was carried out to find if significant difference exists in Achievement Motivation Scores obtained by three groups. Using ANOVA, find out if there exists difference in the 3 groups. 10

Group - I	Group - II	Group - III
4	8	7
4	12	7
6	14	7
2	23	8
4	14	7
4	25	8
5	15	9
2	15	8
3	14	8
4	13	6

Critical value : 5.49 at 0.01 level of significance
3.35 at 0.05 level of significance

4. Compute regression equation for X and Y based on the data given below : 10

Individuals	X	Y
A	3	2
B	6	4
C	4	7
D	5	9
E	3	11
F	9	12

SECTION - B

Answer any four of the following questions in about 250 words each : 4x6=24

5. Explain the meaning of descriptive statistics. Discuss its advantages and disadvantages. 2+4
6. Calculate Mann - Whitney U - test with the help of the following data : 6
- Group 1 : 38, 64, 66, 70, 46
- Group 2 : 45, 65, 71, 62, 70, 43

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 7. Compute Chi - square for the following data :

6

Years of Experience	Organisational Citizenship	
	High	Low
1 - 5 Years	10	15
6 - 10 Years	15	20
11- 15 Years	20	13

8. Compute Spearman's Rank correlation for the following data : 6
 Data 1 : 34, 45, 54, 34, 23, 43, 45, 45, 43, 45
 Data 2 : 43, 45, 54, 34, 34, 43, 43, 23, 34, 43
9. Describe Phi Coefficient and Biserial Correlation. 3+3

SECTION - C

Write short notes on any two of the following in about 100 words each :

2x3=6

10. Kendall's Tau 3
11. Wilcoxon Matched Pair Signed Rank Test 3
12. Multiple Correlation 3

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No. of Printed Pages : 4

MPC-006

MASTER OF ARTS (PSYCHOLOGY)

Term-End Examination

December, 2015

MPC-006 : STATISTICS IN PSYCHOLOGY

Time : 2 hours

Maximum Marks : 50

Note : All sections are **compulsory**. Use of simple calculator is permitted.

SECTION A

Answer any **two** of the following questions in about 500 words each :

$2 \times 10 = 20$

1. What is hypothesis testing ? Discuss the steps involved in setting up the level of significance with suitable examples. 4+6
2. Define Correlation. Find out if relationship exists between the two data given below with the help of Spearman's Rank coefficient of correlation : 2+8
Data 1 : 20, 31, 42, 60, 51, 77, 62, 45, 50, 59
Data 2 : 21, 34, 39, 59, 53, 79, 61, 47, 48, 58

3. Differentiate between parametric and non-parametric statistics. Compute chi-square for the following data :

3+7

For the following question 'Whether cancer is contagious?', the replies given by individuals belonging to low and high Socio-Economic Status (SES) is given below :

	<u>Response</u>		Total
	Yes	No	
Low SES	72	48	120
High SES	34	46	80

Critical value : 0.01, level of significance = 6.635

4. Explain the term variance. A research was carried out to study the effectiveness of three different methods in enhancing mathematical performance of students. The data based on the performance test is given below. Find out if significant difference exists in the performance of the students with the help of ANOVA.

3+7

Group A (Method 1)	Group B (Method 2)	Group C (Method 3)
6	12	10
10	9	7
9	12	8
7	13	6
10	11	5
8	10	7
11	15	9
11	18	13
10	8	11
12	14	8

Critical value = 0.01, level of significance = 5.49.

SECTION B

Answer any **four** of the following questions in about 300 words each : 4×6=24

5. Differentiate between descriptive and inferential statistics. 6
6. Compute the regression equation with the help of the following data : 6
X: 7, 6, 10, 7, 10
Y: 9, 7, 10, 4, 5
7. Calculate Mann-Whitney U test with the help of the following data : 6
Data 1 : 20, 27, 30, 31, 32, 25
Data 2 : 26, 33, 40, 36, 28, 21
8. Explain divergence in normality with the help of a suitable diagram. 6
9. Discuss the merits and demerits of Two-way ANOVA. 6

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SECTION C

Write short notes on any **two** of the following in about 100 words each :

2×3=6

- | | |
|----------------------------|---|
| 10. Levels of Significance | 3 |
| 11. Linear Relationship | 3 |
| 12. Degree of Freedom | 3 |
-

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MASTER OF ARTS (PSYCHOLOGY)

Term-End Examination

June, 2015

MPC-006 : STATISTICS IN PSYCHOLOGY

Time : 2 hours

Maximum Marks : 50

Note : All sections are **compulsory**. Use of simple calculator be permitted.

SECTION A

Note : Answer any **two** of the following questions in about 500 words each : $2 \times 10 = 20$

1. Discuss the graphical and diagrammatic presentation of data. $5 + 5 = 10$

2. Define Correlation and Regression. Find out if a relationship exists between the two groups of data given below with the help of Spearman's Rank coefficient of correlation. $3 + 7 = 10$

Data 1 : 11, 10, 7, 9, 5, 8, 3, 6, 12, 13

Data 2 : 4, 3, 2, 20, 13, 12, 11, 10, 6, 5

3. Define non-parametric statistics. Compute chi-square for the following data : 3+7=10

Age group	Attitude towards Tribals		
	+ve	-ve	
11 – 15	25	30	55
16 – 20	20	40	60
21 – 25	10	20	30
26 – 30	35	20	55
Total	90	110	200

χ^2 at 0.01 level = 11.345

4. Explain the meaning of variance. Three groups of employees were given training for enhancing communication skills. Three different techniques were used. The scores of their performance test are given as follows. With the help of ANOVA, find out whether significant difference exists in their performance. 3+7=10

Group A	Group B	Group C
6	5	7
3	5	3
7	9	7
1	4	1
3	3	5
5	5	5
3	4	5

Critical value = 0.01, level of significance = 6.01

SECTION B

Note : Answer any **four** of the following questions in
about 300 words each : 4×6=24

5. Describe the measures of central tendency with hypothetical data. 6
6. Explain regression equation with the help of hypothetical data. 6
7. Calculate Mann-Whitney U-test with the help of the following data : 6

Data 1 : 37, 62, 71, 65, 66, 45

Data 2 : 42, 61, 70, 63, 72, 47
8. Describe the different scales of measurement with suitable examples. 6
9. Discuss the advantages and disadvantages of ANOVA. 6

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SECTION C

Note : Write short notes on any **two** of the following
in about 100 words each :

2×3=6

- | | |
|-------------------------------|---|
| 10. Type I and Type II errors | 3 |
| 11. Linear Regression | 3 |
| 12. Kurtosis | 3 |
-

M.A. IN PSYCHOLOGY (MAPC)

Term-End Examination

December, 2014

MPC-006 : STATISTICS IN PSYCHOLOGY

Time : 2 hours

Maximum Marks : 50

Note : Answer *any five* questions. Use of simple calculator is permitted. All questions carry *equal* marks.

1. What are the various assumptions underlying Parametric and non-Parametric Statistics ? **10**
2. Describe briefly the significance of the difference between the means of two independent samples. Find out whether the two groups differ significantly on the IQ scores given below. **3+7**

Groups	IQ scores	SD
A	120	2.0
B	140	6.0
N = 25		25

3. Differentiate between descriptive and Inferential Statistics with suitable examples. **10**
4. State the various forms of graphical presentation of Data. **10**

5. How do we determine the strength of relationship between two variables ? Find out $R_{h\phi}$ (Spearman's rank correlation) for the following data.

	X	Y
1	7	8
2	11	16
3	16	14
4	9	12
5	6	8
6	17	16
7	7	9
8	11	12
9	5	7
10	14	15

6. When do we use partial and multiple correlations ? Write the regression equation for the following.

Academic achievement	Anxiety
x	y
1	4
3	2
4	1
5	0
8	0

7. Elucidate the concept of Normal curve and its properties. 10

8. Describe standard error of the mean for large and small sample. 10
9. When do we use Kruskal Wallis Analysis of variance ? What relevant background information do you require on Kruskal Wallis ANOVA test ? 5+5
10. Write short notes on **any two** of the following : 5+5
- (a) Chi-square test
 - (b) Skewness
 - (c) Variance and Covariance : Building blocks of correlations
 - (d) Regression
 - (e) one-tail and two-tail test.
-



No. of Printed Pages : 3

MPC-006

M.A. IN PSYCHOLOGY (MAPC)

02012

Term-End Examination

June, 2014

MPC-006 : STATISTICS IN PSYCHOLOGY

Time : 2 hours

Maximum Marks : 50

Note : Attempt any **five** questions. All questions carry equal marks. Use of simple calculator is permitted.

1. Define Parametric and Non-parametric Statistics. Discuss their advantages and disadvantages. 5+5
2. Discuss in detail the four major statistical techniques for organising the data. 10
3. Describe the Hypothesis-testing process. What are the implications if you reject or fail to reject the Null Hypothesis ? 3+7
4. Delineate the steps in setting up the level of significance. 10
5. Describe linear and non-linear relationship with suitable examples. 10

6. Define Product moment coefficient of correlation.

Calculate “ r ” for the following data :

3+7

	Set X	Set Y
1	30	25
2	35	30
3	35	35
4	40	40
5	45	55
6	55	50
7	65	70
8	50	60
9	45	45
10	50	40
Total	450	450

7. When do we use Kendall “Tau” ? Find out Tau value for the following data :

2+8

Subject	R_x	R_y
A	1	1
B	2	3
C	3	2
D	4	4

8. Describe with example, the divergence from Normality (The Non-Normal Distribution).

10

9. Discuss the procedure involved in Analysis of Variance. Find out the F-value for the following data : 4+6

Group A	Group B	Group C
4	15	6
6	20	10
8	25	12
10	30	15
12	35	20

10. Write short notes on any **two** of the following : 5+5

- (a) Point estimation and Interval estimation
- (b) Type I and Type II errors
- (c) Degrees of freedom
- (d) Variance
- (e) Points to remember while testing the significance of difference in two means.

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M.A. IN PSYCHOLOGY (MAPC)

Term-End Examination

December, 2013

MPC-006 : STATISTICS IN PSYCHOLOGY

Time : 2 hours

Maximum Marks : 50

Note : Answer *any five* questions. Each question carries **10 marks**. Only simple calculator is *permitted*.

1. Define statistics and differentiate between 2+8
descriptive and inferential statistics.
2. What do you mean by decision errors ? Discuss 6+4
applications of one-tailed and two - tailed
hypothesis tests in statistics.
3. From the following data, find Rank-Difference 10
Coefficient of correlation :

Student	Score on Test I	Score on Test II
	X	Y
A	10	16
B	15	16
C	11	24
D	14	18
E	16	22
F	20	24
G	10	14
H	8	10
I	7	12
J	9	14
N=10		

4. Define regression ? Differentiate between linear 2+8
and multiple regression by citing example.
5. Discuss the level of measurement with suitable 10
examples.
6. What do you mean by non-parametric 2+8
statistics ? Discuss advantages and disadvantages
of non-parametric statistics.
7. What do you mean by two sample tests ? Write 10
step by step procedure for Wilcoxon test for small
sample.
8. What are assumptions of Analysis of Variance ? 4+6
Discuss uses and limitations of ANOVA.
9. Write short notes on *any two* of the following : 10
 - (a) Type I Error
 - (b) Level of significance
 - (c) Alternative hypothesis

10. Calculate simple regression from the following raw scores. and set up regression for predicting Y from X, and also X from Y. 10

X	Y	X^2	Y^2	XY
10	12	100	144	120
11	18	121	324	198
12	20	144	400	240
9	10	81	100	90
8	10	64	100	80
50	70	510	1068	728
X	Y	X^2	Y^2	XY
		N=5.		

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No. of Printed Pages : 3

MPC-006

M.A. IN PSYCHOLOGY (MAPC)

Term-End Examination

June, 2013

MPC-006 : STATISTICS IN PSYCHOLOGY

Time : 2 hours

Maximum Marks : 50

- Note : (i) Answer **any five** questions.
(ii) Each question carries **10** marks.
(iii) Only simple calculator is **allowed**.*

1. Differentiate between parametric and non - parametric statistics and discuss advantages to non - parametric statistics. 6+4
2. What do you mean by inferential statistics ? 10
Discuss advantages and disadvantages of descriptive statistics over inferential statistics.
3. Find the correlation between two sets of scores 10
from the following data :

Subjects X Y

A	15	40
B	18	42
C	22	50
D	17	45
E	19	43
F	20	46
G	16	41
H	21	41

4. Write importance of normal distribution. An IQ 4+6
test was conducted on 500 students of class X.
The mean and SD was found 100 and 16
respectively. Find how many students of the
class X having IQ below 80 and above 120 .
5. What do you mean by hypothesis testing ? 4+6
Discuss significance of One - Tailed and
Two - Tailed hypothesis testing in research .
6. Define correlation. In four experiments, the 2+8
correlations between X and Y were as follows :
.60, .20, .70 and .40. The N's were 26, 31, 42 and
35. What is the mean r : the weighted average of
these 4r's ?
7. Write assumptions of Chi square and calculate 10
Chi square from following :
- | | Right | Wrong |
|-------|-------|-------|
| f_o | 80% | 20% |
| f_e | 50% | 50% |
8. Four groups of 8 students , each having an equal 10
number of boys and girls were randomly selected
and assigned to four different conditions of an
experiment. Use ANOVA to test the main effects
due to conditions of sex, and the interaction of
the two.

	Con.I	II	III	IV
Boys	7	9	12	12
	0	4	6	14
	5	5	10	9
	8	6	6	5
Girls	3	4	3	6
	3	7	7	7
	2	5	4	6
	0	2	6	5

9. Write short notes on *any two* of the following : 5+5
- Characteristics of variance
 - Importance of alternative hypothesis
 - Importance of standard error of mean.
10. A group of 10 students was given four trials on a test of physical efficiency. The scores on the I and IV trials are given below. Test whether there was a significant gain from the first to the fourth trials. 10

Students	Trial - I	Trial -IV
1	15	20
2	16	22
3	17	22
4	20	25
5	25	35
6	30	30
7	17	21
8	18	23
9	10	17
10	12	20

03924

M.A. IN PSYCHOLOGY (MAPC)

Term-End Examination

December, 2012

MPC-006 : STATISTICS IN PSYCHOLOGY

Time : 2 hours

Maximum Marks : 50

Note : (i) Answer *any five* questions.

(ii) Each questions carries **10** marks

(iii) Use of a simple calculator may be *permitted*.

1. Discuss in detail parametric tests and highlight 10
their assumptions.
2. Calculate rank correlation coefficient for the 10
following scores obtained by employees on
Emotional Intelligence [EI] and Leadership [L]
$$EI = \frac{A \ B \ C \ D \ E \ F \ G \ H \ I \ J \ K}{85 \ 75 \ 70 \ 68 \ 65 \ 60 \ 58 \ 56 \ 55 \ 45 \ 80}$$
$$L = 90 \ 74 \ 70 \ 65 \ 64 \ 62 \ 60 \ 48 \ 50 \ 86 \ 82$$
3. Explain the concept of hypothesis testing and 10
highlight the errors in hypothesis testing.
4. Discuss in detail the setting up of the level of 10
confidence or significance.

5. A group of individuals obtained following scores on two tests A and B. Calculate regression equations for both the tests. 10

	Individuals				
Test A =	1	2	3	4	5
	8	9	12	11	10
Test B =	10	10	20	18	12

6. A research was conducted to find out the effectiveness of three teaching methods namely, lecture method, group discussion and case study method. For this purpose three groups of 10 students each ,were formed and were assigned one of the teaching methods. The performance of the students is given as follows : 10

Group 1 [Lecture Method]	Group 2 [Group Discussion]	Group 3 [Case Study]
6	14	10
10	8	7
9	19	8
7	15	6
10	10	5
8	11	7
11	13	9
11	12	13
10	9	11
12	12	8

Using ANOVA find out significance of difference in the performance of three groups.

- Critical values of $F = 3.35$ at 0.05 level of significance
- Critical values of $F = 5.49$ at 0.01 level of significance

7. Explain Normal Distribution and highlight its characteristics. 10
8. The opinions of 90 educated and 100 uneducated persons were taken on a health related attitude scale. The data collected is given as follows : 10

	Agree	No. Opinion	Disagree
Educated	14	10	66
Uneducated	27	7	66

With the help of Chi square, find out whether significant difference in opinion exists in terms of the level of education of the persons.

- Critical value of $\chi^2 = 5.991$ at 0.05 level of significance
 - Critical value of $\chi^2 = 9.210$ at 0.01 level of significance.
9. Define correlation and discuss product moment coefficient of correlation in detail with suitable example. 10

10. A researcher wanted to study the stress level of employees in public and private sector organisations. The scores of the employees are given as follows :

<u>Public Sector</u>	<u>Private Sector</u>
116	100
110	112
99	116
112	108
118	104
97	105
110	98
90	108
94	121
115	125
	110
	117
	106
	116
	118
	<u>120</u>
<u> </u>	
$N_2 = 10$	$N_1 = 16$

with the help of 'U' test find out whether scores of the two groups differ significantly or not.

- Critical value of U for
- $N_1 = 16$ and $N_2 = 10$ is 48]

05962

M.A. IN PSYCHOLOGY (MAPC)

Term-End Examination

June, 2012

MPC-006 : STATISTICS IN PSYCHOLOGY

Time : 2 hours

Maximum Marks : 50

- Note :** (i) Answer *any five* questions.
(ii) Each questions carries **10** marks
(iii) Use of a simple calculator may be *permitted*.

1. Compare parametric and non parametric tests. 10
2. Calculate product moment correlation for the 10
following coefficient of scores obtained by students
on test A and test B.

Students	1	2	3	4	5
Test A	15	25	20	30	35
Test B	60	70	40	50	30

3. Discuss in detail the organization of data in terms 10
of :
(a) Classification of data and
(b) Tabulation of data
4. Explain in detail the propertis of normal 10
probability curve.

5. A study was conducted to examine the effect of three techniques on the stress level of the subjects. Test the difference among the three groups by using Analysis of variance (ANOVA) **10**

Technique 1	Technique 2	Technique 3
3	4	5
5	5	5
3	3	5
1	4	1
7	9	7
3	5	3
6	5	7

- Critical value of $F = 19.43$ at 0.05 level of significance.
 - Critical value of $F = 99.44$ at 0.01 level of significance.
6. Discuss in detail significance of mean difference and standard error of the mean. **10**
7. Define chi square distribution and highlight its uses as a test of 'Goodness of fit'. **10**

8. 100 females and 60 males were asked to select one of the five optional subjects. The choices are given in the table as follows : 10

Subjects	Females	Males
A	10	15
B	25	15
C	10	5
D	30	15
E	25	10
Total	100	60

Find whether the choice of the subject depends on the gender of the individuals.

- Critical value of $\chi^2 = 9.488$ at 0.05 level of significance.
- Critical value of $\chi^2 = 13.277$ at 0.01 level of significance.

9. Calculate regression equations for x and y based on the data given as follows : 10

$$x = 4, 5, 4, 6, 3, 2$$

$$y = 3, 5, 2, 4, 3, 1$$

10. A research was conducted to find out the effectiveness of group discussion and lecture method as methods of teaching. Two groups were involved in research group A was given group discussion and group B was given lecture method. With the help of 'U' test examine whether scores differ significantly or not. 10

Group A : 8, 6, 10, 5

Group B : 9, 7, 11, 8, 12

The critical value for U for $N=5$ and $N_s=4$ is 0.008.



M.A. IN PSYCHOLOGY (MAPC)

Term-End Examination

December, 2011

MPC-006 : STATISTICS IN PSYCHOLOGY

Time : 2 hours

Maximum Marks : 50

Note : Answer *any five* questions. Each question carries **10** marks. Only a simple calculator (but, not a scientific calculator) is permitted.

1. What is parametric statistics ? Describe the basic assumptions and significance of Parametric Statistics. **10**
2. From the following data, find Karl Pearson Coefficient of correlation and interpret it. **10**

X	Y
5	1
10	6
5	2
11	8
12	5
4	1
3	4
2	6
7	5
1	2

3. Discuss Rank Correlation and its application. Compute Spearman Rank Correlation coefficient between marks in Statistics and Mathematics. **3+7=10**

Marks in Statistics : 35 90 70 40 95 40 60
80 80 50

Marks in Mathematics: 45 70 65 30 90 40 50
75 85 60

4. Define partial and multiple correlation. From the following data obtain the regression equation of X on Y and Y on X. **4+6=10**

X: 1 2 3 4 5

Y: 1 3 7 10 9

5. Define standard error of the mean and state its function. The achievement scores of 10 students before and after practice are given below. Using 't' test examine whether practice makes a significant difference in the achievement score. **4+6=10**

Before practice : 70 65 90 95 80 90 65 75
80 60

After practice : 120 80 110 105 110 135
115 82 110 80

(The Critical 't' value with $df = 9$ at .05 level = 2.26, .01 level = 3.25).

6. Discuss the characteristics of normal distribution. The details of marks obtained by boys and girls on IQ test is given. Is the difference between the mean marks obtained by boys and girls significant ? 5+5=10

Boys : $n = 90$, Mean = 50, SD = 12

Girls : $n = 100$, Mean = 55, SD = 7.5

(Critical value at .05 level = 1.96 and at .01 level = 2.58)

7. Describe chisquare and its distribution. The following table gives the classification of students according to the sex and examination results. Test whether examination result is independent of sex of the student. 5+5=10

	Male	Female
Passed	30	40
Failed	20	10

(Critical χ^2 value with 1 df at .05 level = 3.84, and at .01 level = 6.64)

8. What do you mean by Analysis of Variance ? 10
Describe the different steps involved in calculating 'F' for one way analysis of variance.

9. Describe Kendall Rank correlation.

The rank of 12 students' on authoritarianism and social status are given below. Find out Kendall Rank Correlation co-efficient - τ (tau) for the following data. **4+6=10**

Authoritarianism	Social Status
2	3
6	4
5	2
1	1
10	8
9	11
8	10
3	6
4	7
12	12
7	5
11	9

10. Write short notes on *any two* of the followings : **5x2=10**

- (a) Type II Error
- (b) Difference between descriptive statistics and inferential statistics.
- (c) Level of significance



02526

M.A. IN PSYCHOLOGY (MAPC)

Term-End Examination

June, 2011

MPC-006 : STATISTICS IN PSYCHOLOGY

Time : 2 hours

Maximum Marks : 50

Note : Answer any five questions. Each question carries 10 marks.

1. What do you mean by nonparametric statistics ? 10

Discuss the basic assumptions, advantages and disadvantages of nonparametric statistics.

2. Discuss Bivariate Regression. Find out Karl Pearson correlation coefficient between stress and adjustment scores given below. 4+6=10

Stress score : 2 4 5 6 8 11

Adjustment score : 18 12 10 8 7 5

3. Discuss Spearman's Rank Correlation. Compute Spearman rank-order correlation coefficient between scores on home environment and academic achievement scores given below : 4+6=10

Home Environment : 110 106 109 82 95 95

Academic Achievement : 68 68 80 63 71 60

4. Define partial and multiple correlation. Obtain the regression equations of x and y from the following data : 5+5=10

X :	4	5	3	2	6	1	7	3
Y :	6	4	0	0	5	2	1	5

5. Discuss the main features of Normal probability distribution. Why is the Normal probability distribution most popular in statistical analysis ? 10

6. Describe t-test and Mann - Whitney U-test. Two independent samples of 8 and 7 items respectively had the following values. Is the difference between means of the two samples significant ? 5+5=10
- Sample I : 9 11 13 11 13 9 12 14
- Sample II : 10 12 12 14 9 8 10

7. Define chi-square distribution. A questionnaire containing items for testing neurotic symptoms is administered on 50 normal and 75 neurotic persons. Using χ^2 (chi square), find out whether items differentiate normal person from neurotic

Responses 4+6=10

	No	Yes
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Normal	30	20
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Neurotic	60	15
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(The critical χ^2 value with 1 df at .05 level = 3.84 and .01 level = 6.64)

8. Describe Kruskal Wallis Analysis of variance. An experimenter is interested in examining the effectiveness of three methods of teaching. A group of 15 subjects were randomly divided into three groups. The scores are given below. Examine whether the three of teaching differed in terms of effectiveness or not ? 4+6=10

Subjects	Method I	Method II	Method III
1	1	2	4
2	3	0	2
3	2	1	3
4	3	2	4
5	2	1	3

(The critical value of χ^2 corresponding to 2 and 12 df at .05 level = 3.88 and at .01 level = 6.93).

9. Discuss significance of difference between the means. There were two groups. Experimental group was trained for stress management while control group was untrained. The following table gives their scores on stress inventory. By using 'U' test examine whether scores differ significantly or not ? 4+6=10

Experimental Group	Control Group
12	17
13	16
15	14
9	22
8	19
	11

(for $m_1 = 5$, $m_2 = 6$, the probability associated with $U = 4$ is .013)

10. Write Short Notes on *any two* of the followings :

- (a) Type I Error **5x2=10**
 - (b) One tail test and two tail test
 - (c) Yate's correction in chi-square
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