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Exam Code: 508402 Paper Code: 2209

Programme: Master of Science (Mathematics) (FYIP) Semester-II

Course Title: Statistical Analysis Using Excel

Course Code: FMAL-2330

Time: 3 hours Max. Marks: 35

Note: Candidates are required to attempt five questions in all, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 7 marks. Students can use log tables.

Section–A

Q-1 (a) Write a short note on Sources of data and types of data

(b) What are the features of Microsoft Excel

(c) Draw a multiple bar diagram to show the following data

Wages in Rs.	3-4	4-6	6-7	7-10	10-11	11-12	12-14	14-15
No. of workers	100	220	150	600	220	200	300	100

(2,2,3)

Q-2 (a) Calculate missing frequencies when mean is 13.913 from the following data

x	5	6	8	10	X_5	12	15	20
f	4	6	5	10	9	18	2	1

(b) Define Harmonic mean. Calculate H.M. of the 10,15,20,30

(c) Define Mode for Uni-Modal,Bi-Modal, Tri- Modal distribution with graph.

(3,2,2)

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Section–B

Q-3 (a) Find Quartile deviation in case of continuous Series

Age (years)	0-20	20-40	40-60	60-80	80-100
Persons	4	10	15	20	11

(b) Define Standard Deviation, Variance and different methods to calculate it (5,2)

Q-4 (a) Find Bowley's coefficient of skewness for the following distribution

No. of Children per family	0	1	2	3	4	5	6
Number of Families	7	10	16	25	18	11	8

b) What are the different measurement of Kurtosis. Discuss the Kurtosis of the following Distribution and interpret the result

x	2	3	4	5	6
f	1	3	7	3	1

(5,2)

Section-C

Q-5 (a) What are three methods of Correlation Analysis. Explain in detail

(b) Calculate Karl Pearson's Coefficient of Correlation Between X and Y

X	10	12	18	16	15	19	18	17
Y	30	35	45	44	42	48	47	46

(5,2)

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Q-6 (a) Two judges in the beauty competition rank 12 entries as follows:

X	1	2	3	4	5	6	7	8	9	10	11	12
Y	12	9	6	10	3	5	4	7	8	2	11	1

b) Define Spearman's Coefficient of Correlation with its characteristic.

(5,2)

Section–D

Q-7 (a) Find the equation of regression lines of Y on X and X on Y from the following data and estimate X for Y = 6 and Y for X = 9

X	4	3	5	2	1	8
Y	5	2	3	=4	2	7

(b) What is the difference between Correlation and Regression (5,2)

Q-8 (a) Explain the methods to calculate the correlation coefficient between X and Y1, X and Y2, X and Y3 using **Excel** for the following data.

X	Y1	Y2	Y3
2	80	65	10
5	95	69	30
6	76	60	15
8	58	95	25
10	67	80	10

(b) Using the following information, you are required to find regression coefficient

$\sum X = 424$, $\sum XY = 12815$, $\sum Y^2 = 15123$, $\sum Y = 363$, $\sum X^2 = 21926$, N=10

(4,3)

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Exam Code: 508402 **Paper Code: 2206**

Programme: Master of Science (Mathematics) (FYIP) Semester-II

Course Title: Sequences and Series

Course Code: FMAL-2333

Time Allowed:- 3 Hours **Max. Marks:- 70**

Note: Attempt five questions in all selecting at least one question from each section. Fifth question can be attempted from any section. Each question carries equal marks.

Section-A

1. State and Prove Sandwich theorem and hence Show that

$\lim_{n\to\infty}\left[\frac{1}{n^2}+\frac{1}{(n+1)^2}+\frac{1}{(n+2)^2}+------+\frac{1}{(2n)^2}\right]=0$ (14)

2. (a) Prove that the sequence $\left\{\frac{2n-3}{5n+7}\right\}$ is

(i) Monotonically increasing

(ii) Bounded

(iii) Convergent

(b) Apply Cauchy's general principle of convergence to show that $\{a_n\}$ where

$a_n = 1+\frac{1}{2^2}+\frac{1}{3^2}+\frac{1}{4^2}+------+\frac{1}{n^2}$ Converges. (7,7)

Section-B

3. (a) Discuss the convergence or divergence of the series $\sum\frac{1}{n}\tan\frac{1}{n}$

(b) State and prove D 'Alembert RatioTest. (7,7)

4. (a) Discuss the convergence of the series $\sum\frac{(n!)^2}{2n!}x^n, x>0$.

(b) If $\alpha<0, \beta>0$, then show that the series

$$1+\frac{\alpha+1}{\beta+1}+\frac{(\alpha+1)(2\alpha+1)}{(\beta+1)(2\beta+1)}+\frac{(\alpha+1)(2\alpha+1)(3\alpha+1)}{(\beta+1)(2\beta+1)(3\beta+1)}+---$$

Converges if $\beta>\alpha$ and diverges if $\alpha\geq\beta$. (7,7)

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Section-C

5. (a) Use Leibnitz's Test to show that the alternating series $1-\frac{1}{2\sqrt{2}}+\frac{1}{3\sqrt{3}}-\frac{1}{4\sqrt{4}}+\cdots$ ... ... is convergent.

(b) State and prove Leibnitz test. (7,7)

6. (a) Show that the series $\frac{1}{\log 2}-\frac{1}{\log 3}+\frac{1}{\log 4}-\frac{1}{\log 5}+-----$ is conditionally convergent.

(b) Find the radius of convergence and interval of convergence of the power series $\sum\frac{(n+1)x^n}{(n+2)(n+3)}$ (7,7)

Section-D

7(a) Find a fourier series for the function defined by f(x)=

$$\begin{cases} \frac{\pi}{3}, & 0<x<\frac{\pi}{3} \\ 0, & \frac{\pi}{3}<x<\frac{2\pi}{3} \\ -\frac{\pi}{3}, & \frac{2\pi}{3}<x<\pi \end{cases}$$

(b) Find a series of sines of multiples of x, when function is defined as

$$f(x)=\begin{cases} 0 & ,0\le x<\frac{\pi}{2} \\ \frac{\pi}{2}, & \frac{\pi}{2}<x\le\pi \end{cases}$$ (7,7)

8. (a) Find a fourier series for the function defined by f(x)=

$$\begin{cases} x, & 0<x<1 \\ 0, & 1<x<2 \end{cases}$$

(b) Obtain the Fourier series for e^x in the interval - $\pi<x<\pi$ (7,7)

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Exam Code: 508402 **Paper Code: 2207**

Programme: Master of Science (Mathematics) (FYIP) Semester-II

Course Title: Algebra

Course Code: FMAL-2334

Time Allowed: 3 Hours **Max. Marks: 70**

Note: Attempt five questions in all selecting at least one question from each section. Fifth question can be attempted from any section. Each question carries 14 marks.

Section-A

1. (a) Find the principal value of $-2-2i$. 4

(b) Prove that the n th rots of unity form a series in G.P. Also show that their sum is zero and product is equal to $(-1)^{n-1}$. 10

2. (a) Prove by the principle of mathematical induction that for all $n \in N 1^2+2^2+3^2+\cdots \ldots . n^2=\frac{1}{6} n(n+1)(2n+1)$. 7

(b) Find all the values of $(i)^{\frac{1}{3}}$. 7

Section-B

3. (a) Prove that the following subset of the vector space of all polynomials is L.D.

$$S=\{1, x+x^2, x-x^2, 3x\}$$ 7

(b) If V is the set of all 2×2 matrices over R, then prove that the set of all 2×2 singular matrices is not a subspace of V. 7

4. (a) Define basis and dimension of vector space. Also give the standard basis of R^2 and R^3 with explanation. 7

(b) Prove that the vectors $x_1=(2,1,0), x_2=(1,2,1)$ and $x_3=(0,2,-1)$ are L.I. 7

Section-C

5. (a) Prove that the following mapping is a linear transformation:

$T: R^2 \to R$ defined by $T(x,y)=(x-y)$. 7

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(b) Let T be a linear operator on R^2 defined by

$$T(x,y) = (4x - 2y, 2x + y)$$

Find the matrix of T relative to the basis $B = \{(1,1), (-1,0)\}$. 7

6. (a) For the given linear transformation $T: V \rightarrow W$. Find the basis and dimension of its (i) Range Space (ii) Null Space, where $T: R^2 \rightarrow R^3$ be defined by $T(x,y) = (x + y, x - y, y)$ 7

(b) Describe explicitly the linear transformation $T: R^2 \rightarrow R^2$ such that $T(1,2) = (3,4)$ and $T(0,1) = (0,0)$. 7

Section-D

7. (a) State and prove Cayley-Hamilton Theorem. 7

(b) Solve the equations

$$x + y + z = 0$$
$$x + 2y + 3z = 0$$
$$x + 3y + 4z = 0$$

7

8. (a) Find the column rank of the matrix $\begin{bmatrix} 1 & 2 & 31 \\ 2 & 4 & 62 \\ 1 & 2 & 32 \end{bmatrix}$ 7

(b) Find the Eigen values of the matrix $\begin{bmatrix} 3 & 1 & 1 \\ 2 & 4 & 2 \\ 1 & 1 & 3 \end{bmatrix}$ 7

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Exam Code: 508402 **Paper Code: 2208**

Programme: Master of Science (Mathematics) (FYIP) Semester II

Corse Title: Object Oriented Programming C++

Course Code: FMAM - 2135

Time allowed: 3 Hours **Max. Marks: 40**

Note: Attempt five questions in all selecting at least one question from each section. Fifth question can be attempted from any section. Each question carries equal marks (8 marks)

Section A

1. What is an operator? Explain binary operators in detail.
2. Write a note on:
   a. Type conversion
   b. DOS Shell

Section B

3. What is a constructor? How a constructor be overloaded? Illustrate with a programming example.
4. Explain different characteristics of Object Oriented Programming.

Section C

5. How a binary operator can be overloaded? Explain with an example.
6. What is a function? How it can be overloaded?

Section D

7. What is an Inheritance? Explain different types of inheritance with a programming example.
8. Explain the following in detail:
   a. Friend function
   b. Virtual Functions

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Exam Code: 508404 (20) Paper Code: 4200

Programme: Master of Science (Mathematics) (FYIP)
Semester-IV

Course Title: Vector Calculus

Course Code: FMAL-4331

Time Allowed: 3 Hours **Max Marks: 80**

Note: Attempt five questions in all, selecting at least one question from each section. The fifth question may be attempted from any Section. All question carry equal 16 marks.

Section A

Q1. (a) If a, b and c are three vectors, show that $a-2b+3c, -2a+3b-4c$ and $a-3b+5c$ are coplanar

(b) Show that the necessary and sufficient condition for the vector function $\overrightarrow{g(t)}$ to have constant magnitude is $\vec{g}.\frac{d\vec{g}}{dt}=0$. [8 X 2=16]

Q2. (a) Find the directional derivative of $f=xy+yz+zx$ in the direction of vector $\hat{\imath}+2\hat{\jmath}+2\hat{k}$ at the point $(1,2,0)$.

(b) Find the values of the constants a and b such that the surfaces $ax^2-byz=(a+2)x$ and $4x^2y+z^3=4$ may intersect orthogonally at $(1,-1,2)$. [8 X 2=16]

Section B

Q3. (a) Check whether the vector $\vec{v}=\frac{-y\,\hat{\imath}+x\,\hat{\jmath}}{x^2+y^2}$, is irrotational or not.

(b) Show that divergence of $\vec{f}\times\vec{r}=0$ if $\nabla\times\vec{f}=\vec{0}$. [8X2=16]

Q4. (a) Is $grad\ div\ \vec{v}=curl\ curl\ \vec{v}+\nabla^2\vec{v}$ or not ? Justify your answer.

(b) Check whether $\nabla^2(r\,\vec{r})=\left(\frac{4}{r}\right)\vec{r}$ where the symbols have the usual meaning. [8 X 2=16]

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Section C

Q5. (a) If $u = 3x + 2, v = y + 3, w = z - 2$, check whether u, v, w are orthogonal or not.

(b) If $\vec{f} = 2y\,\hat{\imath} - 2\hat{\jmath} + x\hat{k}$, evaluate $\oint_C \vec{f} \times \overrightarrow{dr}$, along the curve $x = \cos t, y = \sin t, z = 2\cos t\ from\ t = 0\ to\ \frac{\pi}{2}$. [8 X 2=16]

Q6. (a) Find the circulation of $\vec{f} = (2x - y + z)\,\hat{\imath} + (x + y - z^2)\,\hat{\jmath} + (3x - 2y + 4z)\,\hat{k}$ along the circle in the xy plane having the centre at the origin and radius 2.

(b) Verify Green's theorem in plane for $\oint_C (y^2 + xy)dx + (x^2)dy$, around the boundary C of the region enclosed by $x^2 = y\ and\ x = y$. [8 X 2=16]

Section D

Q7. (a) If $\vec{G} = \nabla P\ and\ \nabla^2 P = -6\pi h$, then show that $\int \overrightarrow{G}.\vec{n}\,dS = -6\pi \int h\,dV$.

(b) Verify Gauss Divergence Theorem for the vector $\vec{A} = x\hat{\imath} + y\hat{\jmath} + z\hat{k}$ over the region bounded by $x^2 + y^2 + z^2 = 16$. [8 X 2=16]

Q8. State and prove Stoke's Theorem. Hence verify Stoke's Theorem for a vector field defined by $\vec{F} = (y - \sin x)\,\hat{\imath} + \cos x\,\hat{\jmath}$, over the triangle with vertices $(0,0)$, $\left(\frac{\pi}{2}, 0\right), \left(\frac{\pi}{2}, 1\right)$. [16]

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Exam Code: 508404 **Paper Code: 4201**
(20)

Programme: Master of Science (Mathematics) (FYIP)

Semester-IV

Course Title: Partial Differential Equations

Course Code: FMAL-4332

Time Allowed: 3 Hours **Max Marks: 80**

Note: Candidates are required to attempt five question, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 16 marks.

Section A

1. (a) Find the partial differential equation of $ax^2 + by^2 + cz^2 = 0$ where a, b, c are constants. 8

(b) Find the general solution of the linear partial differential equation $y^2p - xyq = x(z - 2y)$. 8

2. (a) Prove that general solution of lagrange's first order linear partial differential equation $Pp + Qq = R$ is $F(u, v) = 0$. 8

(b) Find the general solution of the linear partial differential equation $x(x^2 + 3y^2)p - y(3x^2 + y^2)q = 2z(y^2 - x^2)$. 8

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Section B

3. (a) Find the complete integral of the equation

$$p^2x + q^2y = z$$ 8

(b) Find the equation of the integral surface of the differential equation 8

$$2y(z-3)p + (2x-z)q = y(2x-3)$$

which passes through the circle $z = 0, x^2 + y^2 = 2x$

4. (a) Find the surface which intersects the surface of the system $z(x+y) = c(3z+1)$ orthogonally and which passes through the circle $x^2 + y^2 = 1, z = 1$ 8

(b) Solve $(D^2 + 3DD' + 2D'^2)z = x + y$ 8

Section C

5. (a) Solve $(D^2 - DD' - 2D)z = e^{2x+y}$ 8

(b) Solve $(D - D'^2)z = \cos(x - 3y)$ 8

6. (a) Solve $x^2r - y^2t + px - qy = logx$ 8

(b) Solve $r - s + 2q - z = x^2y^2$ 8

Section D

7. (a) Solve $s - t = \frac{x}{y^2}$ 8

(b) Show that a surface of revolution satisfying the differential $r = 12x^2 + 4y^2$ and touching the plane $z = 0$ is $z = (x^2 + y^2)^2$. 8

8.(a) Classify 8

$$u_{xx} + u_{yy} = u_{zz}$$

(b) Solve $rx = (n-1)p$ 8

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Exam Code: 508404 **Paper Code: 4202**
(20)

Programme: Master of Science (Mathematics) (FYIP)
Semester-IV

Course Title: Group Theory

Course Code: FMAL-4333

Time Allowed: 3 Hours **Max Marks: 80**

Note: Attempt five questions in all, selecting atleast one question from each section and the fifth question may be attempted from any section. Each questions carry 16 marks.

Section-A

1. (a) For n ≥ 1, Show that $\frac{n(n+1)(2n+1)}{6}$ is an integer. 8

   (b) Find integers x, y, z satisfying gcd (198,288,512)= 198x+288y+512z. 8

2. (a) Prove that each Positive integer n can be uniquely written as $2^k m$ where k ≥ 0 and m is a positive odd integer. 6

   (b) Let m be a fixed Positive integer. Let R=$\{(a, b)$: a, b ∈ Z and $a - b$ is divisible by $m\}$.

   Show that R is an equivalence relation on Z. 6

   (c) If gcd (a,b)= lcm[a,b], for non-zero positive integers a,b then.

   Prove that a=b. 4

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Section-B

3. (a) Prove that the set $Z_4 = \{0,1,2,3\}$ is not a group under multiplication module 4. 6

(b) Prove that in a group identify element is unique. 5

(c) Let $H=\{a + bi : a, b \in R, ab > 0\}$. Prove or disprove that H is a sub group of C under addition. 5

4. (a) Let H be a non empty finite subset of a group G. If H is closed under the operation of G, then H is a subgroup of G. 8

(b) Let G=GL (2,R) be the group of all 2x2 non-singular matrices over reals under the composition of matrix multiplication. Find the centre of G. 8

Section-C

5. (a) If H and K are finite subgroup of a group G, then $O(HK) = \frac{O(H)O(k)}{O(H \cap K)}$ 8

(b) Let G be the group $\left\{\begin{bmatrix} 1 & a \\ 0 & b \end{bmatrix} : \text{where } a,b \in R, b \neq o\right\}$ and H $= \left\{\begin{bmatrix} 1 & x \\ 0 & 1 \end{bmatrix}, \text{where } x \in R\right\}$. Show that H is a subgroup of G. Is H a normal subgroup of G? Justify your answer. 8

6. (a) Let G be a group such that G/Z (G) is cyclic, where Z (G) is the centre of G. Then Prove that G is ~~a bellian~~ abelian. 8

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(b) How many generators are there of the Cyclic group of order. 8. 6

(c) State Lagrange's Theorem. 2

Section-D

7. (a) Write down all the elements of S_3. 4

(b) Prove that the order of a Permutation of a finite set written in disjoint cycle form is the least common multiple of the lengths of the cycles. 8

(c) Express the Permutation (1235) (413) as a Product of disjoint cycles. 4

8. (a) Prove that Inverse of even permutation is an even permutation. 8

(b) What cycle is $(a_1\, a_2\, a_3 \text{-----} a_n)^{-1}$? 2

(c) Show that every element in A_n for $n \geq 3$ can be expresses as a 3-cycle ~~on~~ or product of 3-cycles. 6

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Exam Code: 508404 **Paper Code: 4204**
(20)

Programme: Master of Science (Mathematics) (FYIP)
Semester-IV

Course Title: Foundation of Statistical Computing

Course Code: FMAM-4135

Time Allowed: 3 Hours **Max Marks: 50**

Note: Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 10 marks.

Section — I

1. Explain the terms sampling and cumulative Statistics. 10
2. Explain subletting in R with examples. Also explain Data Frames. 10

Section — II

3. Explain factors and tables in R with examples. 10
4. Explain Decision Making, Loop and Loop Control Statements in R with Programming examples. 10

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Section — III

5. Write a program script in R to print Fibbonacci Series. 10

6. Explain input and output functions in R with programming examples. 10

Section — IV

7. Explain Graphs in R. Explain various functions to create Bar, Multiple Bar plots and Historgram. Also explain par command to generate plots. 10

8. Explain Low level and High level plot functions in R. 10

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Exam Code: 508404 (20) Paper Code: 4203

Programme: Master of Science (Mathematics) (FYIP) Semester-IV

Course Title: Statistical Methods

Course Code: FMAM-4334

Time Allowed: 3 Hours Max Marks: 50

Note: Attempt five questions in all, selecting at least one question from each section. The fifth question may be attempted from any Section. The Students can use only non Programmable & Non storage Type calculator and statistical tables. Each question carries 10 marks.

Section-A

1. If U= Ax+By and V= cX + dY, when X and Y are measured from their respective means and if r is the correlation coefficient between X and Y and if U and V are uncorrelated, show that

$\sigma_U.\sigma_V$ = (ad-bc) $\sigma_X\sigma_Y(1-r^2)^{\frac{1}{2}}$ [6]

(b). Define the following terms- [4]

(i) Standard error (ii) Probable error of correlation coefficient

(iii)Spearman's Rank correlation coefficient (iv) Coefficient of concurrent deviation

2(a). Calculate the rank correlation coefficient for the following data- [5]

X	5	10	6	3	19	5	6	12	8	2	10	19
Y	8	3	2	9	12	3	17	18	22	12	17	20

(b). Find the angle between two regression lines with the cases r=0 and r= ± 1 and also explain why there are two lines of regressions. [5]

Section-B

3(a). State all the properties of t-distribution and prove that m.g.f of t-distribution does not exist. [5]

(b). Define F- distribution . Find its mean and variance. [5]

4(a). If F~F(n_1, n_2) distribution. If $n_2 \to \infty$, then $\chi^2 = n_1$F follows χ^2 distribution with n_1 degrees of freedom. [5]

(b). If X_1 and X_2 are two independent χ^2 - variates with n_1 and n_2 degrees of freedom respectively, then U = $\frac{X_1}{X_1+X_2}$ and V =$X_1 + X_2$ are independently distributed, U as a $\beta_1(\frac{n_1}{2}, \frac{n_2}{2})$ variate as a χ^2 variate with $(n_1 + n_2)$ degrees of freedom. [5]

Section-C

5(a). Is it likely that a sample of 300 items, with mean 16.0 is a random sample from a large population whose mean is 16.8 and standard deviation 5.2. Calculate the 98% limits of the means of such samples. [5]

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(b). Intelligence test of two groups of boys and girls gave the following results :

	Sample Mean	Sample S.D.	Sample Size
Girls	75	8	60
Boys	73	10	100

Examine if difference between mean scores is significant. [5]

6(a). Explain Null Hypothesis, Alternative Hypothesis, Level of significance, Type I and Type II error[4]

(b). Two types of drugs were used on 6 and 7 patients for reducing weight. The decrease in the weight after using the drugs for six months was as follows:

Drug A:	12	14	15	12	13	18	
Drug B:	6	7	10	5	8	4	11

Test for the significance of difference in the efficiency of the two drugs at 1% level of significance.[6]

Section-D

7(a). Two random samples drawn from two normal populations are:

Sample-I 20,16,26,27,23,22,18,24.25,19

Sample-II 27,33,42,35,32,34,38,28,41,43,30,37

Obtain estimates of variance of the populations and test whether the populations have same variances. [Given: $F_{0.05} = 3.11$ for 11 and 9 degrees of freedom.] [5]

(b). An experiment was conducted to check the effectiveness of a vaccination over the disease. Let A represents the vaccination and B attacked by the disease and following data was obtained:

	A(Vaccinated)	α(Non-Vaccinated)	Total
B(attacked by disease)	68	10	78
β(not attacked by disease)	92	30	122
Total	160	40	200

Use Chi-square test to analyse the independence between A and B at 5% level of significance. [5]

8(a).Describe Chi-Square test of goodness of fit. List the underlined assumptions. Also test the significance of departure from a theoretical ratio 3 : 3 : 1 : 1 for four classes, whose observed frequencies are given below-

BC	Bc	bC	bc
288	282	96	94

(b). Explain F-test for equality of two population variances with assumptions. [5]

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Paper Code: 2115

Programme	Exam Code	Course Code
Master of Commerce (FYIP)	508302	FCOL-2102
Master of Science (Mathematics) (FYIP)	508402	FMAL-2102
Master of Science (Physics) (FYIP)	508602	FPHL-2102

Semester-II
Course Title: Communicative English-II
(100)

Time Allowed: 3 Hours **Max Marks: 35**

Attempt five question in all, selecting at least one from each section. Fifth question may be attempted from any section. Each question carries 7 marks.

SECTION-A

1. What are the steps you need to take while making notes on reading? 7
2. How can you make notes while listening to a radio talk? 7

SECTION-B

3. Write any paragraph and analyse it for its unity, coherence and structure? 7
4. Write a paragraph on Electioneering? 7

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SECTION-C

5. Define the ABC of Good Notes on the basis of your reading of "The written word ". 7

6. Find words that are similar in meaning to the following:-
   a) A person whose position or status is lower
   b) An idea in the mind by some experience
   c) A type of some spoken communication
   d) Widely accepted and used
   e) To appear
   f) Correctly
   g) To explain why 7x1=7

SECTION-D

7. Write an essay on 'Myself' and analyse for it's effectivity. 7

8. Highlight the main verb and underline the entire nominalized subject:
   a) The researcher's claim that he had discovered a cure for the common cold was received with disbelief by the scientific community.
   b) The government's decision to raise income taxes has angered a lot of people.
   c) The student's slow and painful adjustment to life overseas was to expected.
   d) The allegation by some people that immigrants take more out of the U.S economy that they contribute to it is rejected by most economist. 7

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Lib-24/5/25 (EVE) K.M.V.

Paper Code: 2104

Programme	Exam Code	Couse Code
Master of Commerce(FYIP)	508302	FCOL-2421
Master of Arts (English) (FYIP)	508502	FENL-2421
Master of Science (Mathematics) (FYIP)	508402	FMAL-2421
Master of Science (Physics) (FYIP)	508602	FPHL-2421

Semester-II
Course Title: Punjabi (Compulsory)
(100)

Time Allowed: 3 Hours **Max Marks: 35**

ਨੋਟ:- ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹਨ ।ਹਰ ਸੈਕਸ਼ਨ ਵਿੱਚੋਂ ਇੱਕ ਪ੍ਰਸ਼ਨ ਕਰਨਾ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿੱਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ। ਹਰ ਪ੍ਰਸ਼ਨ ਦੇ ਸੱਤ ਅੰਕ ਹਨ।

ਸੈਕਸ਼ਨ- I

1. ਸੁਹਾਗ ਇਕਾਂਗੀ ਦਾ ਵਿਸ਼ਾ ਵਸਤੂ ਆਪਣੇ ਸ਼ਬਦਾਂ ਵਿੱਚ ਲਿਖੋ।
2. ਇੱਕ ਐਤਵਾਰ ਇਕਾਂਗੀ ਦਾ ਸਾਰ ਲਿਖੋ।

ਸੈਕਸ਼ਨ -II

3. ਜੁੱਤੀਆਂ ਦਾ ਜੋੜਾ ਇਕਾਂਗੀ ਦੇ ਸਾਰ ਤੇ ਚਾਨਣਾ ਪਾਓ।

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4. ਕੱਚ ਦਾ ਗਜਰਾ ਇਕਾਂਗੀ ਦੇ ਵਿਸ਼ਾ ਵਸਤੂ ਸਬੰਧੀ ਆਪਣੇ ਵਿਚਾਰ ਪ੍ਰਗਟ ਕਰੋ।

ਸੈਕਸ਼ਨ -III

5. ਹੇਠ ਲਿਖੇ ਮੁਹਾਵਰਿਆਂ ਤੇ ਅਖਾਣਾ ਵਿੱਚੋਂ ਕਿਸੇ ਸੱਤ ਨੂੰ ਵਾਕਾਂ ਵਿੱਚ ਵਰਤੋ।

   ਉਂਗਲ ਕਰਨੀ, ਉੱਲੂ ਬਣਾਉਣਾ, ਊੜਾ ਐੜਾ ਨਾ ਆਉਣਾ, ਅੱਖਾਂ ਵਿੱਚ ਲਾਲੀ ਉਤਰਨੀ, ਆਪਣੇ ਅੱਗੇ ਕੰਢੇ ਬੀਜਣਾ, ਈਨ ਮੰਨਣਾ,ਇੱਟ ਕੁੱਤੇ ਦਾ ਵੈਰ ਹੋਣਾ, ਉੱਚੀ ਦੁਕਾਨ ਫਿੱਕਾ ਪਕਵਾਨ , ਆਪ ਕੁਚੱਜੀ ਵਿਹੜੇ ਨੂੰ ਦੋਸ਼, ਉਲਟਾ ਚੋਰ ਕੋਤਵਾਲ ਨੂੰ ਡਾਂਟੇ।

6. ਛੋਟੇ ਭਰਾ ਨੂੰ ਪੱਤਰ ਲਿਖੋ ਕਿ ਉਹ ਪੜ੍ਹਾਈ ਦੇ ਨਾਲ ਨਾਲ ਖੇਡਾਂ ਵਿੱਚ ਵੀ ਹਿੱਸਾ ਲਵੇ।

ਸੈਕਸ਼ਨ-IV

7. ਪੜਨਾਂਵ ਦੀ ਪਰਿਭਾਸ਼ਾ ਦਿੰਦੇ ਹੋਏ ਇਸ ਦੀਆਂ ਕਿਸਮਾਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਦਿਓ।

8. ਕਿਰਿਆ ਦੀ ਪਰਿਭਾਸ਼ਾ ਦਿੰਦੇ ਹੋਏ ਇਸ ਦੀਆਂ ਕਿਸਮਾਂ ਦੀ ਉਦਾਹਰਨ ਸਹਿਤ ਜਾਣਕਾਰੀ ਦਿਓ।

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Paper Code: 2107

Programme	Exam Code	Course Code
Master of Commerce(FYIP)	508302	FCOL-2031
Master of Arts (English) (FYIP)	508502	FENL-2031
Master of Science (Mathematics) (FYIP)	508402	FMAL-2031
Master of Science (Physics) (FYIP)	508602	FPHL-2031

Semester-II
Course Title: Basic Punjabi
(20)

Time Allowed: 3 Hours **Max Marks: 35**

ਨੋਟ:- ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹਨ ।ਹਰ ਸੈਕਸ਼ਨ ਵਿੱਚੋਂ ਇੱਕ ਪ੍ਰਸ਼ਨ ਕਰਨਾ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿੱਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ। ਹਰ ਪ੍ਰਸ਼ਨ ਦੇ ਸੱਤ ਅੰਕ ਹਨ।

ਸੈਕਸ਼ਨ-I

1. ਨਾਂਵ ਦੀ ਪਰਿਭਾਸ਼ਾ ਦਿੰਦਿਆਂ ਇਸਦੀਆਂ ਕਿਸਮਾਂ ਬਾਰੇ ਦੱਸੋ।
2. ਕਿਰਿਆ ਦੀ ਪਰਿਭਾਸ਼ਾ ਦਿੰਦਿਆਂ ਇਸ ਦੀਆਂ ਕਿਸਮਾਂ ਬਾਰੇ ਦੱਸੋ।

ਸੈਕਸ਼ਨ-II

3. ਸਾਧਾਰਨ ਵਾਕ ਬਾਰੇ ਦੱਸੋ ।
4. ਬਿਆਨੀਆਂ ਵਾਕ ਤੇ ਚਰਚਾ ਕਰੋ।

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ਸੈਕਸ਼ਨ-III

5. ਹੇਠਾਂ ਲਿਖੇ ਕਿਸੇ ਇੱਕ ਵਿਸ਼ੇ ਤੇ ਪੈਰ੍ਹਾ ਰਚਨਾ ਲਿਖੋ।
   ੳ. ਰੁੱਖ ਲਗਾਓ
   ਅ. ਸਵੇਰ ਦੀ ਸੈਰ
   ੲ. ਸੁੰਦਰਤਾ
6. ਹੇਠ ਲਿਖੇ ਪੈਰ੍ਹੇ ਦਾ ਸਿਰਲੇਖ ਦਿੰਦਿਆਂ ਸੰਖੇਪ ਰਚਨਾ ਕਰੋ।
   ਤੁੱਛ ਬੁੱਧੀ ਵਾਲੇ ਲੋਕਾਂ ਦੇ ਸੁਭਾਵ ਵਿੱਚ ਆਮ ਕਰਕੇ ਉਪਭਾਵਕਤਾ ਬਹੁਤ ਹੁੰਦੀ ਹੈ। ਨਿੱਜੀ ਘਰੋਗੀ ਮਾਮਲਿਆਂ ਤੋਂ ਲੈ ਕੇ ਕੌਮੀ ਤੇ ਕੌਮਾਂਤਰੀ ਮਾਮਲਿਆਂ ਤੱਕ ਉਹਨਾਂ ਦੇ ਮਨ ਤੇ ਵਿਚਾਰ ਘਟੀਆ ਤੇ ਅਸ਼ੁੱਧ ਭਾਵਾਂ ਨਾਲ ਭਰੇ ਹੁੰਦੇ ਹਨ। ਉਹਨਾਂ ਦੇ ਨਿੱਜੀ ਦੁਸ਼ਮਣਾਂ, ਉਹਨਾਂ ਦੇ ਸੰਪਰਦਾਇਕ ਤੇ ਸ਼੍ਰੇਣੀ, ਕੌਮੀ ਹਿੱਤਾਂ ਦੇ, ਜਿਸ ਤਰ੍ਹਾਂ ਉਹ ਇਹਨਾਂ ਨੂੰ ਸਮਝਦੇ ਹੋਣ, ਵਿਰੋਧੀਆਂ ਵਿਰੁੱਧ ਕੋਈ ਗੱਲ ਹੋਵੇ, ਉਹਨਾਂ ਨੂੰ ਚੰਗੀ ਲੱਗੇਗੀ, ਭਾ ਜਾਏਗੀ।

ਸੈਕਸ਼ਨ-IV

7. ਆਪਣੀ ਮਿੱਤਰ/ਸਹੇਲੀ ਨੂੰ ਆਪਣੀ ਭੈਣ ਦੇ ਵਿਆਹ ਵਿੱਚ ਸ਼ਾਮਿਲ ਹੋਣ ਲਈ ਪੱਤਰ ਲਿਖੋ।
8. ਹੇਠ ਲਿਖੇ ਮੁਹਾਵਰਿਆਂ ਅਤੇ ਅਖਾਣਾਂ ਵਿੱਚੋਂ ਕੋਈ ਸੱਤ ਨੂੰ ਵਾਕਾਂ ਵਿੱਚ ਵਰਤੋ।
   ਉਗਲ ਕਰਨੀ, ਅੱਗ ਲਾਉਣਾ , ਇੱਟ ਨਾਲ ਇੱਟ ਖੜਕਾਉਣਾ, ਸਬਰ ਦਾ ਘੁੱਟ ਭਰਨਾ, ਹੱਥ ਤੰਗ ਹੋਣਾ, ਉਹ ਦਿਨ ਡੁੱਬਾ ਜਦੋਂ ਘੋੜੀ ਚੜ੍ਹਿਆ ਕੁੱਬਾ, ਇੱਕ ਅਨਾਰ ਸੌ ਬਿਮਾਰ, ਇੱਕ ਚੁੱਪ ਸੌ ਸੁੱਖ, ਸੱਦੀ ਨਾ ਬੁਲਾਈ ਮੈਂ ਲਾੜੇ ਦੀ ਤਾਈ, ਖਰਬੂਜ਼ੇ ਨੂੰ ਦੇਖ ਕੇ ਖਰਬੂਜਾ ਰੰਗ ਬਦਲਦਾ ਹੈ।

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Paper Code: 2110

Programme	Course Code	Exam Code
Master of Arts (English) (FYIP)	FENL-2431	508502
Master of Science (Mathematics) (FYIP)	FMAL-2431	508402
Master of Science (Physics) (FYIP)	FPHL-2431	508602

Semester: II

Course Title: Punjab History and Culture

Time Allowed: 3 Hours **Max Marks: 35**

Note: Attempt five questions in 500 words, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 7 marks.

Section - A

1. Explain the struggle of Chandra Gupt Maurya with Alaxander. What was its impact on political history of Punjab?
2. Discuss the chief features of Mauryan polity and administration with special reference to the reforms brought out by Ashoka.

Section - B

3. Discuss the achievements of Kanishka with special reference to his services to Buddhism.
4. What were the major achievements in the field of literature and architecture under the Guptas?

Section - C

5. Describe the conquests, administration and literary activities of Harsha Vardhana.
6. What was the political and cultural pattern of Punjab from 7th to 1000 A.D.?

Section - D

7. Explain the growth of languages in Ancient Punjab with special reference to Taxila from 7th to 1000 A.D.
8. Write down the development of Art and Architecture in Ancient Punjab.