



# UNIVERSITY OF JAMMU

(NAAC ACCREDITED 'A' GRADE' UNIVERSITY)  
Baba Sahib Ambedkar Road, Jammu-180006 (J&K)

## NOTIFICATION (21/Nov./Cont./49)

It is hereby notified for the information of all concerned that the Vice-Chancellor, in anticipation of the approval of the Academic Council, is pleased to authorize the Continuation of the existing Syllabi and Courses of Study in the subject of **Statistics** for semester IVth, Vth and VIth under the **Choice Based Credit System** at the **Undergraduate level** for the Regular and Re-Appear Candidates for the examinations to be held in the years indicated against each semester as per the details given below:-

Subject	Semester	For the examinations to be held in the year
Statistics	Semester-IV	May 2022 and 2023
	Semester-V	December 2022 and 2023
	Semester-VI	May 2023 and 2024

Sd/-

DEAN ACADEMIC AFFAIRS

No. F.Acd/II/20/9513-9528

Dated: 18-11-2021

Copy to:

1. Dean, Faculty of Mathematical Sciences
2. HOD/Convener, Board of Studies in Statistics
3. All members of the Board of Studies
4. C.A. to the Controller of Examinations
5. Director, Computer Centre, University of Jammu
6. Asst. Registrar (Conf./Exams. UG/Evaluation-Non.Prof.)
7. Incharge University Website for necessary action please

*Sumitashama*  
17/11/21  
Deputy Registrar (Academic)

*SS*  
17/11/21  
*4*  
17/11/21



# UNIVERSITY OF JAMMU

(NAAC ACCREDITED 'A' GRADE' UNIVERSITY  
Baba Sahib Ambedkar Road, Jammu-180006 (J&K)

## NOTIFICATION

(21/Nov./Adp/44)

It is hereby notified for the information of all concerned that the Vice-Chancellor, in anticipation of the approval of the Academic Council, is pleased to authorize the adoption of the revised Syllabi and Courses of Study in the subject of **Statistics** for semesters Ist and IInd under the **Choice Based Credit System at the Undergraduate level (as given in the Annexure)** for the examinations to be held in the years indicated against each semester as under:-

Subject	Semester	Course Code	For the examinations to be held in the year	% of Change
Statistics	Semester-I	USTTC103(Core Course)	Dec. 2022, 2023 and 2024	Nomenclature change with 10%-12% change
		USTPC104(Practical Course)	Dec. 2022, 2023 and 2024	Nomenclature change with 12%-15% change
	Semester-II	USTTC 203 (Core Course)	May 2023, 2024 and 2025	Nomenclature change with 10%-12% change
		USTPC204(Practical Course)	May 2023, 2024 and 2025	Nomenclature change with 12%-15% change

The Syllabi of the courses is also available on the University website: [www.jammuuniversity.ac.in](http://www.jammuuniversity.ac.in)

Sd/-

DEAN ACADEMIC AFFAIRS

No. F. Acd/II/21/9529-9543

Dated: 18-11-2021

Copy for information and necessary action to:

1. Dean Faculty of Mathematical Sciences
2. HOD/Convener, Board of Studies Statistics
3. All members of the Board of Studies
4. C.A. to the Controller of Examinations
5. Director, Computer Centre, University of Jammu
6. Deputy Registrar/Asst. Registrar (Conf. /Exams. P.G)
7. Incharge University Website for necessary action please

Sumitasharma  
17/11/21  
Deputy Registrar (Academic)

8  
17/11/21

17/11/21

**ANNEXURE-A**

**Distribution of Courses and Credits B.A./B.Sc. Statistics (CBCS)  
Semester-I and Semester-II w.e.f. 2021**

**Semester – I**

<b>Course Code</b>	<b>Paper</b>	<b>Credits</b>	<b>Percentage Change made as per recommendations of expert committee</b>	<b>Contact Hours per week L-Tu-P</b>
USTTC 103	Statistical Methods-I	4	Nomenclature Change with 10%-12% change in syllabus	4-1-0
USTTC 104	Statistical Computing - I	2	Nomenclature Change with 12%-15% change in syllabus	0-0-2
<b>Total</b>		<b>06</b>		<b>4-1-2</b>

**Semester – II**

<b>Course Code</b>	<b>Paper</b>	<b>Credits</b>	<b>Percentage Change made as per recommendations of expert committee</b>	<b>Contact Hours per week L-Tu-P</b>
USTTC 203	Statistical Methods-II	4	Nomenclature Change with 10%-12% change in syllabus	4-1-0
USTTC 204	Statistical Computing -II	2	Nomenclature Change with 12%-15% change in syllabus	0-0-2
<b>Total</b>		<b>06</b>		<b>4-1-2</b>

L – Number of Lecture, Tu – Number of Tutorials, P – Number of Practical hours.

1. P. Kumar  
2.

3. J. J. J.

4. M. H. S.

5. [Signature]

## SCHEME OF EXAMINATIONS

The 20% of the marks allotted to each theory paper and 50% of the marks allotted to each practical paper including field work, wherever prescribed, shall be reserved for internal assessment. The evaluation of a candidate shall be awarded and record thereof be maintained in accordance with the Regulations prescribed for the purpose under the CBCS as per the following:

THEORY	Syllabus to be covered in the examination	Time allotted	% Weightage (Marks)
<b>Internal Assessment Test</b> Pattern: One long answer type question of 10 marks and Five short answer type questions of 2 marks each.	Upto 50% (after 45 days)	1 hour	20
<b>External/ End Semester University Exam</b> Pattern: As proposed by the concerned BOS and approved by Academic Council	Upto 100% (after 90 days)	2 $\frac{1}{2}$ hour	80
<b>Total</b>			<b>100</b>
<b>PRACTICAL</b>			
<b>Internal:</b> Daily evaluation of practical records/Viva voce/attendance etc.	50(25 marks) (including 20% for attendance, 20% for Viva-voce, 40% for internal test and 20% for day-to-day performance)		
<b>External:</b> Final Practical Performance + viva voce	100% Syllabus		50 (25 marks) 40 Exam 10 viva-voce
<b>Total</b>			<b>100</b>

### NOTE FOR PAPER SETTING: End Semester External University Examination

The question paper will contain three Sections. **Section-A** will consist of **FIVE COMPULSORY** very short answer type questions (to be answered in 70-80 words) one question from each unit of **3 marks** each. **Section- B** will contain **FIVE COMPULSORY** short answer type questions (to be answered in 250-300 words) one question from each unit of **7 marks** each. **Section -C** will contain **FIVE** long answer type questions (to be answered in 500-600 words), one question from each unit of **15 marks** each and the student has to attempt two questions.

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1. Prerna  
2.

3. Prerna

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5. Prerna

**Annexure –B**  
**Core Course**

**Syllabus and Courses of Study in Statistics for B. Sc./B.A. (Semester I)**

**Under CBCS For the Examination to be held in**

**December 2022, 2023 and 2024**

**SEMESTER-I**

**Paper Code: USTTC 103**  
**Title: Statistical Methods - I**  
**Credits: 4 (60 Contact Hours)**

**Max. Marks: 100**  
**Internal Test: 20 (1 Hour)**  
**End semester Exam: 80 (2½ Hours)**

**Objectives:** The Objectives of this course is to impart students the basic knowledge of measures of central tendencies and measure of dispersion along with the introduction to concept of probability and its basic theory.

**Unit- I**

Definitions, Scope and importance of statistics, General nature of statistical data, qualitative and quantitative data, discrete and continuous data, Primary and secondary data, classification & Tabulation, frequency distribution and their graphical and diagrammatic representations histogram, frequency curves, bar diagram, Ogive and measures of central tendency - A.M., G.M., H.M., Median and mode, their merits and demerits.

**Unit-II**

Measures of Dispersion: Range. Inter Quartile range, Mean Deviation, Standard Deviation, Variance & Coefficient of Variation, Partition values, Moments (raw and central moments) up to order four. Effect of change of origin and scale on moments. Shephard's correction (without proof). Skewness and Kurtosis meaning and measures.

**Unit-III**

Bivariate data: Scatter Diagram, Product moment correlation coefficient - its assumptions and properties with illustrations. Spearman's rank correlation coefficient, Intra class correlation coefficient, Correlation ratio and Coefficient of determination.

**Unit -IV**

Regression lines, regression coefficient and their properties. Principle of least squares, fitting of a straight line, parabola, logarithmic and exponential curve by the method of least squares. Multivariate Data: Multiple regression line, Partial and multiple correlation coefficients of three variables only (Derivations and simple illustrations).

**Unit V**

Scales of measurement of data, Theory of Attributes: Notation and terminology for attributes, contingency table, class frequency, ultimate class frequency, relationship between class frequencies, consistency of data, conditions for consistency of data. Association and independence of attributes (upto three attributes), Yule's coefficient of association, Coefficient of Colligation, Chi-square test for independence of attributes in contingency table with examples.

**Books Recommended:**

1.	Gupta, S.C. and Kapoor V.K. (2017)	Fundamentals of Mathematical Statistics, S Chand publication
2.	Mood, A.M., Graybill, F and Boes, D. (2017)	Introduction to Theory of Statistics, McGraw Hill

1. Penman 2.

3. Jain

4. Mar 5. Singh

## Syllabus and Courses of Study in Statistics for B. Sc./B.A. (Semester-I)

Under CBCS For the Examination to be held in  
December 2022, 2023 and 2024

### SEMESTER-I

Paper Code: USTTC 103  
Title: Statistical Methods - I  
Credits: 4 (60 Contact Hours)

Max. Marks:100  
Internal Test: 20 (1 Hour)  
End semester Exam: 80 (2½ Hours)

3.	Hogg,R., and Craig, A. (2012)	Introduction to Mathematical Statistics, Pearson
4.	Yule G.U. and Kendal M.G. (2019)	An Introduction to Theory of Statistics. University Press Stall
5.	Gupta S.P. (2017)	Statistical Methods, Sultan Chand & Sons
6.	Croxton F.E., Cowden D.J. and Kelin, S. (2014)	Applied General Statistics, Prentice Hall of India
7.	Rohtagi,V.K. and Saleh A.K.M.E. (2015)	An Introduction to Probability and Statistics, Wiley
8.	Srivastava & Srivastava (2009)	Fundamentals of Statistics, Anmol Publications Pvt. Ltd
9.	Schiller,J., Srinivasan, A.R. and Spiegel, M. (2012)	Outline of Probability and Statistics, Mc Graw Hill
10.	Fruend, J. E. (2006)	Modern Elementary Statistics, Prentice Hall, New Jersey
11.	Biswas, S. & Srivastava G.L. (2006)	Mathematical Statistics, Narosa Publishing House

### Scheme of Examination:

THEORY	Syllabus to be covered in the examination	Time allotted	% Weightage (Marks)
<b>Internal Assessment Test</b> Pattern: One long answer type question of 10 marks and five short answer type questions of 2 marks each.	Upto 50% (after 45 days)	1 hour	20
<b>External / End Semester University Exam</b> Pattern: As proposed by the concerned BOS and approved by Academic Council	Upto 100%(after 90 days)	2½ hour	80
<b>Total</b>			<b>100</b>

### NOTE FOR PAPER SETTING: End Semester External University Examination

The question paper will contain three Sections. **Section-A** will consist of **FIVE COMPULSORY** very short answer type questions (to be answered in 70-80 words) one question from each unit of **3 marks** each. **Section-B** will contain **FIVE COMPULSORY** short answer type questions (to be answered in 250-300 words) one question from each unit of **7 marks** each. **Section -C** will contain **FIVE** long answer type questions (to be answered in 500-600 words), one question from each unit of **15 marks** each and the student has to attempt two questions.

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1. Penman  
2.

3. Janak

4. Yash

5. Sunil

**Syllabus and Courses of Study in Statistics for B. Sc./B.A. (Semester- I)**

**Under CBCS For the Examination to be held in  
December 2022, 2023 and 2024**

**SEMESTER-I**

**Paper Code: USTTC 103  
Title: Statistical Methods - I  
Credits: 4 (60 Contact Hours)**

**Max. Marks: 100  
Internal Test: 20 (1 Hour)  
End semester Exam: 80 (2½ Hours)**

**EVALUATION/EXAMINATION PATTERN/NOTE FOR PAPER SETTING**

**(EXCEPT FOR SKILL BASED COURSES)**

<b>(a) Internal Assessment Test: (20 Marks)</b>		<b>Time Duration-1 Hour</b>
<b>Section -A (10 marks)</b>	<b>5 Very Short Answer questions of 2 marks each to be attempted from 8 given questions covering 50% of the syllabus, set across all Units (at least 2) covered</b>	
<b>Section -B (10 marks)</b>	<b>1 Long Answer question of 10 marks to be attempted out of 2 given questions set from at least two different units of the 50% syllabus covered.</b>	
<b>(b) External End Semester University Examination: (80 Marks)</b>		<b>Time Duration—2½ Hours</b>
<b>Section -A (15 marks)</b>	<b>5 Short Answer compulsory questions representing all units/syllabi i.e., one question from each unit having 70-80 words to be answered/ attempted in about 6 minutes and of 3 marks each.</b>	
<b>Section -B (35 marks)</b>	<b>5 Medium Answers type compulsory questions representing all units/syllabi i.e. one question from each unit having 250-300 words to be answered/attempted in about 12 minutes and of 7 marks each.</b>	
<b>Section -C (30 marks)</b>	<b>2 Long Answer type questions to be attempted from 5 given questions representing all units/syllabi i.e. one question from each unit having 500-600 words to be answered/attempted in about 30 minutes of 15 marks each.</b>	

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1. Suman 2.

3. Jay

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**Practical Course**

**Syllabus and Courses of Study in Statistics for B. Sc./B.A. (Semester- I)**

**Under CBCS For the Examination to be held in  
December 2022, 2023 and 2024**

**SEMESTER-I**

**Paper Code: USTPC 104**

**Title: Statistical Computing - I**

**Credits: 2 (30 Contact Hours)**

**Max. Marks: 50**

**Internal : 25**

**External : 25 (Exam:20,viva-Voce:05)**

**Objectives:** The objective of the course is to expose the students to the real-life applications Statistical Tools.

There shall be at least twenty computing exercises covering the applications of Statistics based on the entire syllabus of course USTTC103.

**Scheme of Examination**

The 20% of the marks allotted to each theory paper and 50% of the marks allotted to each practical paper including field work, wherever prescribed, shall be reserved for internal assessment. The evaluation of a candidate shall be awarded and record thereof maintained in accordance with the Regulations prescribed for the purpose under the CBCS as per the following:

<b>THEORY</b>	<b>Syllabus to be covered in the examination</b>	<b>Time allotted</b>	<b>% Weightage (Marks)</b>
<b>Internal Assessment Test</b> Pattern: One long answer type question of 10 marks and five short answer type questions of 2 marks each.	Upto 50% (after 45 days)	1 hour	20
<b>External / End Semester University Exam</b> Pattern: As proposed by the concerned BOS and approved by Academic Council	Upto 100% (after 90 days)	2 $\frac{1}{2}$ hour	80
<b>Total</b>			<b>100</b>
<b>PRACTICAL</b>			
<b>Internal:</b> Daily evaluation of practical records/Viva voce/attendance etc.	50(25 marks) (including 20% for attendance, 20% for Viva-voce, 40% for internal test and 20% for day-to-day performance)		
<b>External:</b> Final Practical Performance + viva voce	100% Syllabus		50 (25 Marks) 40 Exam 10 viva-voce
<b>Total</b>			<b>100</b>

1. *Pennar*  
2.

3. *Juni*

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*Juni*



**Annexure –C**  
**Core Course**

**Syllabus and Courses of Study in Statistics for B. Sc./B.A. (Semester- II)**  
**Under CBCS For the Examination to be held in**  
**May 2023, 2024 and 2025**

**SEMESTER-II**

**Paper Code: USTTC 203**

**Title: Statistical Methods - II**

**Credits: 4 (60 Contact Hours)**

**Max. Marks: 100**

**Internal Test: 20 (1 Hour)**

**End semester Exam: 80 (2½ Hours)**

**Objectives:** This course aims at imparting the students the basic knowledge of measures of central tendencies and measure of dispersion and probability and distributions.

**Unit -I**

Probability: Random experiment, events, algebra of events, sample space, definitions of Probability with illustrations for events, conditional Probability, theorem on Probability of two events and its extension. Independent events with illustrations, Bayes Theorem and its applications, Random Variable - discrete and continuous.

**Unit – II**

Distribution Function, Probability mass function (pmf) and Probability density function (pdf), joint marginal and conditional pmf and pdf, Jacobian Transformation for one and two variables. Independence of random variables. Mathematical expectation, expectation of sum of random variables and product of independent random variables, conditional expectation and conditional variance, moment generating function and its properties, Characteristics Function-Definition.

**Unit – III**

Discrete Probability distributions: Uniform distribution – definition, mean and variance, Bernoulli distribution, binomial distribution (B.D.) – definition, mean, variance, mode, mgf and recurrence relation for B.D. Negative binomial distribution (N.B.D.) – definition, moments, mgf, mean, variance and recurrence formula. Poisson distribution (P.D.) - Definition, moments and mgf. P.D. as a limiting case of B.D. and N.B.D. Recurrence relation of Poisson distribution. Geometric distribution - definition, mean, variance.

**Unit – IV**

Rectangular distribution; Moments of rectangular distribution, mgf and mean deviation of rectangular distribution. Normal distribution: its definition, mean, median, mode, mean deviation, variance and mgf. Properties of Normal curve, simple problems on Normal distribution including area problems, Normal distribution as a limiting case of binomial distribution, under the conditions to be stated.

**Unit –V**

Gamma and Beta distribution: Definition and properties of Gamma distribution, beta distribution of first kind as well as of second kind, Exponential distribution, mean, variance and its memory-less property.

**Books Recommended:**

1.	Gupta, S.C. and Kapoor V.K. (2017)	Fundamentals of Mathematical Statistics, S Chand publication
2.	Mood, A.M., Graybill, F. and Boes, D (2017)	Introduction to Theory of Statistics, McGraw Hill
3.	Hogg, R. and Craig, A. (2012)	Introduction to Mathematical Statistics, Pearson

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**Syllabus and Courses of Study in Statistics for B.Sc./B.A. (Semester-II)**

**Under CBCS For the Examination to be held in  
May 2023, 2024 and 2025**

**SEMESTER-II**

**Paper Code: USTTC 203**  
**Title: Statistical Methods - II**  
**Credits: 4 (60 Contact Hours)**

**Max. Marks: 100**  
**Internal Test: 20 (1 Hour)**  
**End semester Exam: 80 (2½ Hours)**

4.	Parzen, E. (1992)	Modern Probability Theory & its Applications, Wiley-Interscience
5.	Gupta S.P. (2017)	Statistical Methods, Sultan Chand & Sons
6.	Rohtagi, V.K. and Saleh A.K.M.E. (2015)	An Introduction to Probability and Statistics, Wiley
7.	Johnson N.L, Kotz, S. & Balakrishnan (1995)	Continuous Univariate Distributions Vol.2, John Wiley & Sons
8.	Schiller, J., Srinivasan, A. R. and Spiegel, M. (2012)	Outline of Probability and Statistics, Mc Graw Hill
9.	Johnson N.L, Kotz, S. & Balakrishnan (2005)	Discrete Univariate Distributions Vol.3, John Wiley & Sons
10.	Biswas, S. & Srivastava G.L. (2006)	Mathematical Statistics, Narosa Publishing House
11.	Hoel P.G. (2004)	Introduction to Mathematical Statistics, John Wiley & Sons

**Scheme for Examination:**

THEORY	Syllabus to be covered in the examination	Time allotted	% Weightage (Marks)
<b>Internal Assessment Test</b> <b>Pattern:</b> One long answer type question of 10 marks and five short answer type questions of 2 marks each.	Upto 50% (after 45 days)	1 hour	20
<b>External / End Semester University Exam</b> <b>Pattern:</b> As proposed by the concerned BOS and approved by Academic Council	Upto 100% (after 90 days)	2½ hour	80
<b>Total</b>			<b>100</b>

**NOTE FOR PAPER SETTING: End Semester External University Examination**

The question paper will contain three Sections. **Section-A** will consist of **FIVE COMPULSORY** very short answer type questions (to be answered in 70-80 words) one question from each unit of **3 marks** each. **Section-B** will contain **FIVE COMPULSORY** short answer type questions (to be answered in 250-300 words) one question from each unit of **7 marks** each. **Section -C** will contain **FIVE** long answer type questions (to be answered in 500-600 words), one question from each unit of **15 marks** each and the student has to attempt two questions.

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**Syllabus and Courses of Study in Statistics for B.Sc./B.A. (Semester- II)**

**Under CBCS For the Examination to be held in  
May 2023, 2024 and 2025**

**SEMESTER-II**

**Paper Code: USTTC 203  
Title: Statistical Methods - II  
Credits: 4 (60 Contact Hours)**

**Max. Marks: 100  
Internal Test: 20 (1 Hour)  
End semester Exam: 80 (2½ Hours)**

**EVALUATION/EXAMINATION PATTERN/NOTE FOR PAPER SETTING  
(EXCEPT FOR SKILL BASED COURSES)**

<b>(a) Internal Assessment Test: (20 Marks)</b>		<b>Time Duration-1 Hour</b>
<b>Section -A (10 marks)</b>	<b>5 Very Short Answer questions of 2 marks each to be attempted from 8 given questions covering 50% of the syllabus, set across all Units (at least 2) covered</b>	
<b>Section -B (10 marks)</b>	<b>1 Long Answer question of 10 marks to be attempted out of 2 given questions sets from at least two different units of the 50% syllabus covered.</b>	
<b>(b) External End Semester University Examination: (80 Marks)</b>		<b>Time Duration—2½ Hours</b>
<b>Section -A (15 marks)</b>	<b>5 Short Answer compulsory questions representing all units/syllabi i.e., one question from each unit having 70-80 words to be answered/ attempted in about 6 minutes and of 3 marks each.</b>	
<b>Section -B (35 marks)</b>	<b>5 Medium Answers type compulsory questions representing all units/syllabi i.e. one question from each unit having 250-300 words to be answered/attempted in about 12 minutes and of 7 marks each.</b>	
<b>Section -C (30 marks)</b>	<b>2 Long Answer type questions to be attempted from 5 given questions representing all units/syllabi i.e. one question from each unit having 500-600 words to be answered/attempted in about 30 minutes of 15 marks each.</b>	

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## Practical Course

### Syllabus and Courses of Study in Statistics for B. Sc./B.A. (Semester -II)

Under CBCS For the Examination to be held in  
May 2023, 2024 and 2025

#### SEMESTER-II

Paper Code: USTPC 204

Title: Statistical Computing - II

Credits: 2 (30 Contact Hours)

Max. Marks: 50

Internal : 25

External : 25 (Exam:20,viva-Voce:05)

**Objectives:** The objective of the course is to expose the students to the real-life applications Statistical Tools.

There shall be at least twenty computing exercises covering the applications of Statistics based on the entire syllabus of course USTTC 203.

#### Scheme of Examination

The 20% of the marks allotted to each theory paper and 50% of the marks allotted to each practical paper including field work, wherever prescribed, shall be reserved for internal assessment. The evaluation of a candidate shall be awarded and record thereof maintained in accordance with the Regulations prescribed for the purpose under the CBCS as per the following:

THEORY	Syllabus to be covered in the examination	Time allotted	% Weightage (Marks)
<b>Internal Assessment Test</b> <b>Pattern:</b> One long answer type question of 10 marks and five short answer type questions of 2 marks each.	Upto 50% (after 45 days)	1 hour	20
<b>External / End Semester University Exam</b> <b>Pattern:</b> As proposed by the concerned BOS and approved by Academic Council	Upto 100% (after 90 days)	2 $\frac{1}{2}$ hour	80
<b>Total</b>			<b>100</b>
<b>PRACTICAL</b>			
Daily evaluation of practical records/Viva voce/attendance etc.	50(25 marks) (including 20% for attendance, 20% for Viva-voce, 40% for internal test and 20% for day-to-day performance)		
Final Practical Performance + viva voce (External Examination)	100% Syllabus		50(25 marks) 40 Exam 10 viva-voce
<b>Total</b>			<b>100</b>

1. *Prunus* 2.

3. *July*

4. *Yase*

5. *Prunil*