GUIDELINES

for

writing

Synopsis
&
Thesis/Dissertation
by
Postgraduate Students

Punjab Agricultural University
Ludhiana-141 004, INDIA
2008

Revised by

S K Mann
Gursharan Singh
2008

and

Gursharan Singh
S S Kang
2012

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Preface

It was in the year 1998 that Dr M S Bajwa, the then Dean, Postgraduate Studies of the Punjab Agricultural University, Ludhiana and his team, for the first time, compiled the guidelines for postgraduate students to write synopsis of research and thesis/dissertations. These guidelines proved very helpful both to the students and their Major Advisors for preparation of their manuscripts and also brought uniformity to the whole process. Over the years, some changes which have taken place, necessitated revision of this handbook for the benefit of postgraduate students and their advisors. As per the revised guidelines, both sides of a page will be utilized for typing, space between the lines has been reduced to 1.5 from 2.0 and font size has been reduced to 11 from 12. Apart from these, instructions have been issued to process the synopses of research within a discipline in one lot to save time for the approval of the same. Now the synopses seminars of Ph.D students will be conducted by the Dean, Postgraduate Studies right before the Synopsis Approval Committee of the University to facilitate critical scrutiny and reduce time for approval to the minimum possible.

During the revision of these guidelines, efforts made by Nominees of Dean, Postgraduate Studies at College level, especially Dr B S Sidhu and Dr K N Sharma are gratefully acknowledged. Special thanks are due to Dr Viraj Beri, former Head, Department of Soils for critical scrutiny of the manuscript and several suggestions regarding the same. Thanks are also due to Ms Sheetal Thapar for making several grammatical corrections in the text.

S K Mann

October 30, 2008 Gursharan Singh

GUIDELINES FOR PREPARING SYNOPSIS AND THESIS/DISSERTATION

Every postgraduate student shall be assigned to a major advisor by the concerned Head of the Department, keeping in view the recommendations of the Departmental Academic Affairs/Teaching Committee and approved by the Dean, Postgraduate Studies (Rule 5.2 of the semester rules).

There shall also be an Advisory Committee for each student to be appointed by the Dean, Postgraduate Studies on the recommendations of the major advisor through the Head of the Department. The Advisory Committee of the student shall comprise members (interdisciplinary) relevant to the research problem of the student and shall be chosen from postgraduate faculty.

The postgraduate (PG) student shall prepare a synopsis of his/her research problem suggested by the major advisor, and submit five copies of the same to the Dean, Postgraduate Studies through the Head of the Department. The selection of PG Research problem shall as far as possible relate to the:

i) Research goals of the department
ii) Area of specialization of the major advisor
iii) Studentôs aptitude and potential

Before writing synopsis, the student shall review the literature, up to date on the pertinent research problem, identify the knowledge gaps and submit the draft of the review to the major advisor before the End of the Term examination of first semester. The student will utilize the semester break for developing the synopsis in consultation with the major advisor.

A. The submission of synopsis by an M.Sc. students shall be preceded by the synopsis seminar to be delivered in his/her department. The synopsis seminar shall be organized in the first fortnight of the second semester for all the newly admitted students. The Head of the Department shall submit the synopses (5 copies for each student) of the whole batch of the students to the Dean, Postgraduate Studies by the 3rd week of the second semester for approval by the Synopsis Approval Committee of the University.

B. The synopses of the Ph.D. students shall be developed on the similar lines, however, they shall present the synopsis before the Synopsis Approval Committee consisting of the Deans, Director of Research, Director of Extension Education and concerned HOD. Meeting of the Synopsis Approval Committee shall be scheduled in the first month of the following semester (second semester of study of the student) in which the admission takes place for the Ph.D. programmes.

COMPONENTS OF THE SYNOPSIS

1. Title

The title should be in capital letters. It should be concise, specific and reflect the proposed research programme. Scientific names in the title, if any, must be written in Latin binomial or trinomial along with the authority.

2. Introduction

This section (comprising 2-3 pages) should highlight the scope and significance of the proposed research work along with the **knowledge gaps** and **objectives** of the study under separate sub-heads.

3. Expected new knowledge

Likely outcome of the study should be mentioned here.

4. Review of literature

An up-to-date and comprehensive review of relevant literature indicating history, developments and IPR relating to the topic of the proposed of research problem should be given.

5. Technical programme

The experiments should be planned in accordance with the objectives under the following sub-heads:

i) Name of the experiment

ii) Location: Field / Lab

iii) Methodology

iv) Observations to be recorded

v) Statistical analysis

6. Schedule work-flow diagram and milestones should be indicated

7. Collaboration (if any)

The consent of the Head of the Collaborating Department should be taken and nature of the collaboration be specified, if any.

8. References

List all the references in alphabetical order, giving all authors with initials after respective surname, year, full title of paper, abbreviated name of journal, volume and pages. Abbreviate all journals as in Chemical Abstracts, Biological Abstracts or World List of Scientific Periodicals.

Example:

Brar DS and Sidhu AS (1997) Effect of temperature on pattern of nitrogen release during decomposition of added green manure residue in soil. *J. Res. Punjab Agric. Univ.* **34**:251-58.

Adopt the style given in Annexure III.

APPROVAL OF THE SYNOPSIS

The synopsis shall be considered by Synopsis Approval Committee of the university under the chairmanship of Dean, Postgraduate Studies (rule 7.8.1 of the semester rules). The decision will be communicated by the Dean, Postgraduate Studies to the Major Advisor at the earliest possible during the 2nd semester of admission of the Masterôs./Ph.D. programme.

GUIDELINES FOR PREPARING THESIS/DISSERTATION

A PG student may submit his/her thesis/dissertation on any date during the semester after having completed the course requirements and the required number of research credits. The following steps should be followed for the preparation and submission of the thesis/dissertation to the Dean, Postgraduate Studies.

1. Presentation of thesis/dissertation seminar

Before the student starts preparing rough draft of the thesis/dissertation, a seminar should be given by him/her presenting all the data with statistical analyses to the advisory committee, other faculty members and postgraduate students in the department

2. Submission of the rough draft of the thesis/dissertation

Draft of the rough thesis/dissertation complete in all respects shall be submitted to the members of the Advisory Committee and Dean, Postgraduate Studies, at least 10 days before its final submission.

3. Submission of the final thesis/dissertation

Members of the Advisory Committee shall return the rough draft of the thesis/dissertation along with the suggestions within two weeks. The major advisor should ensure that the suggested changes, if any, have been incorporated.

Certificates I and II (Annexure IVa and IVb) along with the abstract (Annexure V) should be incorporated after the title page.

One copy of the thesis/dissertation should be submitted to the Head of the Department through Major Advisor. The Head of Department shall send this copy to the Dean, Postgraduate Studies for further necessary action. Five copies of the thesis/dissertation should be submitted after the oral examination incorporating the suggestions or rectifications of the errors.

Each student submitting a thesis/dissertation for M.Sc. or Ph.D, must also submit five copies of the one page abstract (not exceeding 250 words) separately.

COMPONENTS OF THESIS/DISSERTATION

(Ph.D students admitted w e f academic year 2010-11 will write their dissertations as per the instructions given under Important Note (see page 11); Master's students admitted w e f academic year 2011-12 should also see the note for necessary action at their end)

1. Preliminary pages

The preliminary pages must include the title page, the certificates, acknowledgements, abstract and table of contents. Dedications should not be given.

a) Title page

The title page should be printed exactly in accordance with the sample [Annexure III(a) or III(b)]. The date appearing on the title page must be the year in which the thesis/dissertation is submitted along with the copyright for IPR (Intellectual Property Rights)

b) Certificates

Certificates of completion of work and approval of the thesis/dissertation by the Examining Committee should be included in the preliminary pages. These two certificates must be included on two separate pages exactly as given in Annexure IV(a) and IV(b) of this booklet.

c) Acknowledgements

Acknowledgements should be brief (a single page). This should follow the title page and is assumed to be page iv, but the number is not typed on page. Care should be taken to avoid the social obligations in this section. All those who rendered the help in technical matters should be acknowledged.

d) Abstract

One page abstract (both in English and Punjabi), not exceeding 250 words should be included as per Annexure V.

e) Table of contents

Except the title page, certificates, acknowledgements and abstract, all other major divisions of the thesis/dissertation should be listed in the table of contents (Annexure VI). These division and sub-divisions, if any, must agree in wording and style with the text.

2. Main body of the thesis/dissertation for Master thesis only

a) Text

The detailed organization of the text will vary with theses in different subjects, but a consistent style must be followed. In general, the text is divided into: (i) Introduction, (ii) Review of Literature, (iii) Material and Methods, (iv) Results and Discussion, (v) Summary and (vi) References.

The text of the thesis may also include certain materials such as illustrations, tables, photographs, chemical and mathematical formulae and footnotes.

b) Tables

Tables should be self-explanatory. Headings and the column/row entries should be clearly related. Tables less than half a page should be preceded or followed by the text.
All tables should be numbered with Arabic numerals, consecutively throughout the thesis.

c) Formulae

Mathematical and chemical formulae should be carefully made out by computer. Complex mathematical formulae of two or more lines should not be included in text lines, but should be placed in the proper position in the centre of the page between lines of text.

d) Scientific names

Give generic names in full at the first mention, e.g. *Myzus persicae*. (Sulzer). Thereafter abbreviate them in the text, e.g. *M. persicae*.

e) Illustrations

Illustrations used in the thesis must appear in all the copies. Illustrative materials may be Arabic line drawings or photographs. Illustrations may be inserted wherever needed in the text, numbered in Arabic numerals typed on a thesis paper below the illustration. The illustrations must be prepared using computer. The size of illustrations could be reduced photographically.

f) Paper to be used

The original thesis/dissertation as well as the photocopies should be prepared on a good quality white bond paper of A 4 size. All pages must have 1.5ò margin on the left and 1ò on the right and on the top and bottom, with no gutter.

g) Typing

The general text of the manuscript should be typed in 1.5-space and tables/long quotations/foot notes/Abstract in single space. The general text should be typed using 11-font size with Times New Roman. Printing should be done on both sides of the page.

h) Pagination

Certificates of approval, title page, acknowledgements and abstract should not be given any page number. The first page of the table of contents is numbered vi. For text, Arabic numerals are used beginning with the first page of the text and continued throughout the rest of the thesis/dissertation including the figures, tables and references. Suppress the page number in first page of each chapter.

The pages on which the corrections have been suggested by the External Examiner will have to be retyped. It may happen in a few cases that the external examiner suggests adding new material: this would disturb the paging of the thesis and is, therefore, required to be corrected accordingly. Numbering pages like 15a, 15b, 15c etc. would not be permitted.

3. References in the text should be cited as under:

Bhatt (1940) and Beri *et al* (1980) reported é é or the results have been reported by several workers (Vij 1952, Smith *et al* 1958). Pattern of quoting references given in Annexure III should be strictly followed.

Refer to unpublished work only in the text (Smith A B unpublished), Brown C D (pers. comm.) and not in the reference section.

4. Appendices

Appendices should be avoided as far as possible. Any material like test forms, blank record forms, apparatus etc. may be included under Material and Methods.

5. Vita

The Vita should be given at the end of the thesis/dissertation on a separate page (Annexure VII).

6. Resubmission of thesis/dissertation

If a thesis/dissertation is not accepted, the candidate may be allowed to re-submit it after making modifications in the light of remarks of the Examination Committee. Resubmission is allowed after a lapse of not less than one full semester. Resubmission will be processed in the same manner as the original submission.

Note: In order to understand the corrections to be made in the text, the ñPunctuation Marksò and abbreviations for Weights/Measure/Calendar have been given in Annexure VIII.

IMPORTANT NOTE

General Guidelines

As per decision taken in 326th meeting of Academic Council held on 9th January 2013, the doctoral students of the University will compile the dissertations in the following format:

Chapter No	Title	Remarks
1.	General Introduction	Preferably not exceeding 5 pages (excluding references)
2.	Review of literature	Preferably not exceeding 12 pages (excluding references)
3.	Accepted/published/submitted research articles	The proof of submission/acceptance/publication of the research articles should be furnished
4	General Discussion	
5	Summary	Maximum 5 pages

The Council further decided that:

- General methodology should be given as an appendix in the thesis, if needed.
- Ph.D. students must have included three articles in their dissertation of which atleast two should be accepted/published research articles (as per ICAR guidelines) in ISBN journals from their study as per the approved Synopses of Research, whereas atleast one submitted article will fulfill requirements for masterôs students.
- The masterôs students will be required to submit the theses as per the current practice/guidelines, however, they need to submit a certificate from their Major Advisors that atleast one paper from thesis has been submitted or will be submitted as a part of comprehensive paper for which further research is needed.
- The postgraduate student can publish their research article (s) based upon their theses/dissertation before submission.

(The above mentioned guidelines for writing thesis/dissertation will be followed by the Ph.D. students admitted in the academic year 2010-11 and M.Sc. students admitted in the academic session 2011-12)

ANNEXURE I

PUNJAB AGRICULTURAL UNIVERSITY

Synopsis of Research of Postgraduate Students: Master's/Ph.D.

Name of the Student (Capital letters)_____Admission No._____
Major Subject_____ Minor Subject_____
Major Advisor_____

1. Title:_____

2. Introduction

3. Expected new knowledge

4. Review of literature

5. Technical programme

The details of each experiment should be given as under:

Experiment No.1

i) Name of the experiment ii) Location: Field/Lab
iii) Methodology iv) Observations to be recorded v) Statistical analysis

Similar details of other experiment(s), if any, should be given.

6. Schedule work-flow diagram

7. Collaboration (if any)

Name of the Department

Consent of the:

i) Collaborating teacher_____ ii) Head of collaborating Department _____

8. References

_____
Signature of the Student

ADVISORY COMMITTEE

	Name	Designation	Department	Signature
Major Advisor	_____	_____	_____	_____
Member	_____	_____	_____	_____
Member	_____	_____	_____	_____
Member	_____	_____	_____	_____
Nominee of Dean PGS	_____	_____	_____	_____

Forwarded five copies to the Dean, Postgraduate Studies, for approval by the Synopsis Approval Committee.

Head of the Department

Dean, Postgraduate Studies
PAU, Ludhiana

Annexure II

Schedule Work Flow Diagram																			
	Activity	Semester II						Semester-III						Semester IV					
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
1	Collection of samples/materials	★																	
	Standardization of methods	★	★	★															
	Lab. Experiment set-up		★	★															
	Sample preparations			★															
	Biochemical Analysis			★	★														
	Data collection & compilation				★														
II	Field experiment					★													
	Field preparation & layout					★													
	Sowing					★													
	Soil sampling						★						★						
	Plant sampling												★						
	Biochemical Analysis												★						
	Field observations							★	★										
	Harvesting & threshing											★							
III	Data collection & compilation												★	★					
									★	★									
										★	★								
												★	★						
															★				
IV	Thesis seminar															★	★		
	Thesis writing																	★	
	Rough thesis submission																	★	
	Final thesis submission																		★

JFMAé . D refer to name of the month

Activity table and time schedule should be prepared as per the individual case

Note: Experiment methods & materials will vary and, accordingly the activities at I & II can be partitioned in the schedule of work

ANNEXURE III
Style of Writing References

One or more references by the first author

a. When there is only single author, arrange references year wise.
b. In case of two or more authors, see the second author and arrange references alphabetically. When first and second authors are the same then see the third author and arrange references alphabetically.
c. In alphabetically arranged references, references with two or more same authors are to be arranged year wise.

Dawson K A (1987) Mode of action of yeast culture in the rumen. *J Anim Sci* **65**:101-12.

Dawson K A (1990) Designing the yeast culture of tomorrow. *Anim Prod* **50**:483-89.

Dawson K A and Hopkins D M (1991) Differential effect of live yeast on cellulolytic activities of anaerobic ruminal bacteria. *Agron J* **69**:531-34.

Dawson K A, Hopkins D M and Boling J A (1989) Effect of yeast culture on rumen metabolism. *J Sci Food Agri* **52**:400-12.

Dawson K A, Hopkins D M and Newman K E (1990) Starch conversion by *Saccharomyces cerevisiae*. *J Sci food Agric* **53**:587-94

Dawson K A, Hopkins D M and Newman K e (1991) Effect of yeast culture supplement on the growth of celluloytic bacteria. *J Anim Sci* **69**: 1140-49.

Dawson K A and Newman K E (1987) Growth and activities of rumen bacteria as influenced by the diet. *J Anim Sci* **65**:240-45.

References by the same author(s) in the same year

Stern R A and Gazit S (1996a) Lychee pollination by honey bee. *J Amer Soc Hort Sci* **121**:152-57.
Stern R A and Gazit S (1996b) Anatemical structure of two day old lichi ovules in relation to fruit set and yield. *J Hort Sci* **71**:661-71.

Abstracts

El Hassen S M, Newbold C J and Wallace R J (1993) The effect of yeast culture on rumen fermentation. *Anim Prod* **56**:463 (Abstr).

Special supplements of Journals

Miller J E, Famandez J M, Barras S r and Hoover D T (1997) Comparison of gastromestive nematode infection in four breeds of sheep. *J Anim Sci* **75** (supple 1).

Secondary source (original not available)

Bashir R, Norman R J, Bacon R K and Wells B R (1997) Accumulation and redistribution of fertilizer nitrogen-15 in soft red winter wheat. *Soil Sci Soc Amer J* **61**:1387-92 (Original not seen. Abstr in Biological Abstracts, **104** :Entry No. 166249, 1997).

Brown W and Nicolai T (1993) Dynamic properties of polymer solutions. Pp. 272-319. In: Brown W (ed) *Dynamic Light Scattering. The Methods and some Applications*. Clarendon Press, Oxford (Original not seen. Cited by Bellow-Perez L A, Colnna P, Roger P and Parades-Lopez O, 1998. *Cereal Chem* **75**:395-402).

Anonymous publications

Anonymous (1998) *Package of Practices for Rabi Crops.* Pp 20-25. Punjab Agricultural University, Ludhiana.

Translated titles (in parenthsis)

Tharaldsen J (1982) (Gastro-intestinal parasites in swine in some relatively large breeding herds). *Nord Vet Ned* **24**:427-32.

Books

Elliot W H and Elliot D C (1997) *Biochemistry and Molecular Biolog*. Pp. 274-79. Oxford University Press Inc, New York.

Books in series

White B A (ed) (1997) *Methods in Molecular Biology*. Vol 67, pp 63-69. Humana Press, New Jersey.

Edited books

Amsterdam D, Cunningham R K and Van Oss C J (ed) (1996). *Immunological and Molecular Diagnosis of Infections Diseases.* pp 91-101. Marcel Dekker Inc, New York.

Chapter in an edited book

Close W H (1998) the role of trace mineral proteinates in pig nutrition. In: Lyons T P and Jacques K A (ed) *Biotechnology in the Feed Industry*. Pp 469-84. Nottingham University Press, Loughborough, Leies, U.K.

Books with translator(s) name

Klinchin A K (1957) *Mathematical Foundations of Information Theory*. Silverman R A and Friedman M D (tr). Pp 100-20. Dover, New York.

Symposium/Conference proceedings

Domon E (1996) Polymorphisms within waxy gene in indigenous barley cultivars revealed by the polymerase chain reaction. *Proc 7th Barley Genetics Symp*.pp 60-61. University of Saskatchewan, Saskatoon.

Khush G S (1997) Challenges and Opportunities for sustainable agriculture. I:Bajwa M S, Dhillon J S, Dilawari V K and Chahal S S (ed) *Proc 3rd Agricultural Science Congr*. Vol 1, pp 1-9, Punjab Agricultural University, Ludhiana, India.

Technical bulletins and theses

Sen K C and Ray S N (1987) *Nutritive Value of Indian Cattle Feeds and Feeding of Animals:* Tech Bull 25, 6th edn. Pp 1-133. Indian Council of Agricultural Research, New Delhi.

Sharma N (1997) *Effect of exogenous growth regulators on carbohydrate metabolism in potato.* Ph.D. dissertatioin. Punjab Agricultural University, Ludhiana, India

Bhardwaj S (1998) *Biochemical Constraints in synthesis and accumulation of sucrose in sugarcane under subtropical conditions.* M.Sc. thesis, Punjab Agricultural University, Ludhiana, India

Patents

Hagner M B and Wondt K L (1977) Methods of sorting seeds. U.K. Patent, 1470133

ANNEXURE III (a)

MANAGEMENT OF TOBACCO LEAF CURL VIRUS (TLCV) IN TOMATO

Thesis

**Submitted to the Punjab Agricultural University
in partial fulfillment of the requirements
for the degree of**

**MASTER OF SCIENCE
in
PLANT PATHOLOGY
(Minor Subject: Entomology)**

By

**Pritpal Kaur
(L-2006-A-102-M)**

**Department of Plant Pathology
College of Agriculture**

LUDHIANA-141004

2008

ANNEXURE III(b)

SELECTION AGAINST *Xanthomonas oryzae pv. oryzae* AT CELLULAR LEVEL OF RICE (*Oryza sativa* L.)

Dissertation

Submitted to the Punjab Agricultural University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY
in
PLANT PATHOLOGY
(Minor Subject: Plant Breeding)

By

Ravinder Kaur
(L-2005-A-24-D)

Department of Plant Pathology
College of Agriculture

LUDHIANA-141 004

2008

ANNEXURE IV (a)

CERTIFICATE I

This is to certify that the thesis/dissertation entitled, ñ_____ò submitted for the degree of M.Sc./M.Tech./Ph.D., in the subject of _____ (Minor subject:_____) of the Punjab Agricultural University, Ludhiana, is a bonafide research work carried out by _____ under my supervision and that no part of this thesis/dissertation has been submitted for any other degree.

The assistance and help received during the course of investigation have been fully acknowledged.

Major Advisor

ANNEXURE IV (b)

CERTIFICATE II

For Master's students

This is to certify that the thesis/project report entitled, ñ_____ò submitted by _____ (Admn No._____) to the Punjab Agricultural University, Ludhiana, in partial fulfillment of the requirements for the degree of é é é é é é ., in the subject of _____(Minor subject:_____) has been approved by the Studentôs Advisory Committee after an oral examination on the same.

Major Advisor External Examiner

Head of the Department

Dean Postgraduate Studies

For Ph.D students

This is to certify that the dissertation entitled, ñ_____ò submitted by _____ (Admn No._____) to the Punjab Agricultural University, Ludhiana, in partial fulfillment of the requirements for the degree of Ph.D, in the subject of _____(Minor subject:_____) has been approved by the Studentôs Advisory Committee after an oral examination on the same.

Major Advisor External Examiner

Head of the Department

Dean Postgraduate Studies

P.S. Print the names of Major advisor, Head of the Department, Dean Postgraduate Studies and name and address of the External Examiner (where applicable)

ANNEXURE V

Title of the Thesis/Dissertation	:	
Name of the Student and Admission No.	:	
Major Subject	:	
Minor Subject	:	
Name and Designation of Major Advisor	:	
Degree to be Awarded	:	
Year of award of Degree	:	
Total Pages in Thesis/ Dissertation	:	
Name of University	:	

ABSTRACT
(Not exceeding 250 words)

Keywords:

_____ _____

Signature of Major Advisor Signature of the Student

ANNEXURE VI

CONTENTS

Subdivision/Sub-topics, if any, should also be given under each chapter.

ANNEXURE VII

VITA

Name of the student
Fatherôs name
Motherôs name
Nationality
Date of birth
Permanent home address

EDUCATIONAL QUALIFICATIOIN

For Masterôs degree students

Bachelor degree
University and year of award
OGPA/OCPA/% marks
Masterôs degree
OCPA

For Ph.D. students
Bachelor degree
University and year of award
OGPA/OCPA/% marks
Masterôs degree
University and year of award
OGPA/OCPA/% marks

Ph.D.

OCPA

Title of Masterôs Thesis:

Awards/Distinctions/Fellowships/Scholarships

ANNEXURE VIII
Punctuation marks and proof reading symbols

,	comma	;	semicolon
:	colon	.	full stop
-	dash	!	exclamation mark
?	interrogation or doubt	-	hyphen; as in knick-knack
,	apostrophe; as in Peterôs pence	( )	parenthesis or circular brackets
[ ]	brackets or square brackets	}	brace, to enclose two or more lines
ñ ò	quotation marks		
#	paragraph	+	plus, the sign of addition
-	minus, the sign of subtraction	x	the sign of multiplication
÷	sign of division	∵	because
∴	therefore	=	equal, the sign of equality
>	greater than		
<	less than		
√	square root		

* asterism, used to call attention to a particular passage

or

*

..or.. ellipsis to indicate a Break in a narrative, or an omission

ñôôò quotation marks, when used within a quotation; as in ñHe said, óI will go at once, and jumped into the carò

* star, asterisk; (1) a reference mark; (2) used in philology to denote forms assumed to have existed though not recorded.

Abbreviations for SI and Non-SI units	
SI Unit	**Non-SI Unit**
Length	
Kilometer, km (10^3 m)	yard, yd
meter, m	foot, ft
Micrometer, μm (10^{-6} m)	micron, μ
millimeter, mm (10^{-3} m)	inch, in
nanometer, nm (10^{-9} m)	Angstrom, A
mile, mi	
Area	
hectare, ha	Acre, ac
square kilometer, km^2 $(10^3m)^2$	square mile, mi^2
square meter, m^2	square foot, ft^2
square millimeter, mm^2 $(10^{-3}m)^2$	square inch, in^2
Volume	
cubic meter, m^3	quart (liquid), qt
liter, l ($10^{-3}m^3$)	cubic, foot, ft^3
acre-inch	Gallon
cubic foot, ft^3	ounce (fluid), oz
cubic inch, in^3	pint (fluid), pt
bushel, bu	
Mass	
gram, g (10^{-3} kg)	ounce (avdp), oz
kilogram, kg	pound, lb
megagram, Mg (tonne)	quintal (metric), q
tonne, t	ton (2000 lb), ton
pound, lb	ton (U.S.), ton
Yield and Rate	
kilogram per hectare, kg ha^{-1}	pound per bushel, bu^{-1}
kilogram per cubic meter, kg m^{-3}	bushel per acre, 60 lb
liter per hectare, L ha^{-1}	bushel per acre, 56 lb
tonnes per hectare, t ha^{-1}	bushel pr acre, 48 lb
megagram per hectare, Mg ha^{-1}	gallon per acre
meter per second, m s^{-1}	ton (2000 lb) per acre, ton $acre^{-1}$
pound per acre, lb $acre^{-1}$	mile per hour
Specific Surface	
square meter per kilogram, m^2kg^{-1}	square millimeter per gram, mm^2g^{-1}
square centimeter per gram, cm^2g^{-1}	
Density	
megagram per cubic meter, Mg m^{-3}	gram per cubic centimeter, g cm^{-3}
Pressure	
Megapascal, Mpa (10^6 Pa)	Bar
pascal, Pa	pound per square foot, lb ft^{-2}
Atmosphere	pound per square inch, lb in^{-2}

Temperature	
Kelvin, K	Fahrenheit, ^{o}F
Celsius, ^{o}C	
Energy, Work, Quantity of Heat	
joule, J	Erg
joule per square meter, J m^{-2}	foot-pound
newton, N	calorie per square centimeter (Langley)
watt per square meter, W m^{-2}	Dyne
British thermal unit, Btu	calorie per square centimeter minute (irradiance), cal cm^{-2} min^{-1}
calorie, cal	
Transpiration and Photosynthesis	
milligram per square meter second, mg $m^{-2}s^{-1}$	micromole (H_2O) per square centimeter second, μmol $cm^{-2}s^{-1}$
milligram (H_2O) per square meter second, mg $m^{-2}s^{-1}$	milligram per square centimeter second, mg $cm^{-2}s^{-1}$
gram per square decimeter hour, g $dm^{-2}h^{-1}$	milligram per square decimeter hour, mg $dm^{-2}h^{-1}$
Plane Angle	
radian, rad	degrees (angle), ^{o}
Electrical Conductivity, Electricity, and Magnetism	
siemen per meter, S m^{-1}	millimho per centimeter, mmho cm^{-1}
tesla, T	gauss, G
Water Measurement	
cubic meter, m^3	cubic feet per second, ft^3s^{-1}
cubic meter per hour, m^3h^{-1}	U.S. gallons per minute, gal min^{-1}
hectare-meters, ha-m	acre-feet, acre-ft
hectare-centimeters, ha-cm	acre-inches, acre-in
acre-inches, acre-in	
Concentrations	
centimol pr kilogram, cmol kg^{-1}	milliequivalents per 100 grams, meq 100 g^{-1}
gram per kilogram, g kg^{-1}	percent, %
Milligram per kilogram, mg kg^{-1}	parts per million, ppm
Radioactivity	
Becquerel, Bq	curie, Ci
Becquerel per kilogram, Bq kg^{-1}	Picocurie per gram, pCi g^{-1}
gray, Gy (absorbed dose)	rad, rd
sievert, Sv (equivalent dose)	rem (roentgen equivalent man)
Plant Nutrient Conversion	
Elemental	*Oxide*
P	P_2O_5
K	K_2O
Ca	CaO
Mg	MgO

Standard abbreviations relating to weights, Measures and calendar

Weights and Measures

b	billion
C	Celsius
cc	cubic centimeter
cm	centimeter(s)
cu	cubic
cwt	hundred weight
f	foot (feet)
ft	-do- (part of the body)
gal	gallon(s)
g	gram(s)
gr	grain(s)
ha	hectare
kg	kilogram
km	kilometre(s)
l	litre(s)
m	metre/mile/million(s)
mg	milligram(s)
mm	millimetre(s)
mt	metric tonne
q	quintal(s)
sq	square
t	tonne(s)
temp	temperature
µg	microgram
µl	microlitre

Calendar

AD	Anno Domini
am	ante meridiem
Apr	April
Aug	August
BC	Before Christ
cal	Calendar
cent	Century
d	Date
Dec	December
Feb	February
Fri	Friday
hr(s)	hour(s)
Jan	January
Jul	July
June	June
m	minute(s)
Mar	March
May	May
Mon	Monday
Nov	November
Oct	October
pa	per annum
pm	post meridiem
s	second
Sat	Saturday
September	September
Sun	Sunday
Thursday	Thursday
Tues	Tuesday
Wed	Wednesday
Yr(s)	year(s)