Graduateship Examination

On the recommendations of the Board of Assessment for Educational Qualifications, the Government of India (in their Office Memorandum No. F.18-38/71/T.2/T.7 (Vol.II) Government of India, Ministry of Education and Social Welfare (Dept. of Education) New Delhi dated the 20th April 1978) have recognized a pass in the Graduateship Examination of the Indian Institution of Industrial Engineering at par with a Bachelor's Degree in Industrial Engineering from a recognized Indian University for the purposes of requirement to superior posts and services under the Central Government.

General

A. 1. The Examination consists of

   i) Preliminary Written papers Six papers
   ii) Section - A Written papers Eight papers
   iii) Section - B Written papers Six compulsory and two Elective papers
   iv) Project Work to be carried out by the student through an approved Project.

   2. The student must keep his Student Membership current through the completion of all the above four stages.

B. 1. The details of syllabus for the written papers of Preliminary, Section A and Section B are as given in our Brochure on Graduateship Examination in Industrial Engineering dated 1st January 2004.

   2. The stages in Project Work are given below:

   a) The student has to select a project in an organisation with the help of a guide and submit a Project Proposal to the Institution (see also Project work Requirements which follows).

   b) After obtaining the approval from the Institution, the student has to personally carry out the project work under the guidance and supervision of his guide.

   c) The Project Work carried out should be in accordance with the approved project proposal.

   d) He should prepare a Project Report at the end of his work, which his guide would certify and approve for submission (the Project Report should conform to Standard Format laid down for Project Report).

   e) The student should submit the Project Report to the Institution. The Institution will communicate to him the result of the evaluation of the Project Report.

   f) The acceptance of the Project Report by the Institution completes the requirement of Project work by the student.

The completion of the requirement of the Project work also complete all the requirements for the completion of the Graduate Examination of IIIE.

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PROJECT WORK

A. The details of Project work Requirements are given below:

1. The Project Proposal submitted by the student has to be approved by the Institution before the student can start on his Project work.

2. The Project Work, as approved, should be carried out in an organization and under the guidance and supervision of the Project Guide.

3. The Project Work should be carried out Individually and personally by the student.

4. The Project Work should demonstrate the ability of the student to apply the techniques of Industrial Engineering to a specific situation or in any functional area.

5. The Project Work, through the Project Report, should demonstrate the ability of the student for Data Collection, Analysis of Data, Formulation of Recommendations and for suggesting a viable scheme for implementation of the recommendations.

6. The Data should be collected either by own observations and measurements or gathered from generally accepted first sources like Balance Sheets, Control figures used by the organisation, Performance Reports from Departments etc. If general data on industrywise or a national basis are used, the source shall be quoted and should be a generally accepted source like Industry Publications, Government Statistical Data etc.

7. The area/s chosen may be one or more of the areas in which the compulsory papers are prescribed for Section B Examination or the areas from which the student has chosen his Elective papers for Section B Examination.

The student must have appeared for all these papers before he can submit his Project Proposal.

8. The student must make sure for himself that the Project Work proposed to be undertaken can be conducted in the organisation and the Project Report, fully meeting the requirements of the Institution can be submitted to the Institution.

9. Following are some of the typical areas chosen by students for Project work.

1. Application of Statistical Techniques, Forecasting, Design of Experiments
2. Optimization and Appreciation of O.R. Techniques
3. Marketing - Production Coordination, Inventory Levels, Introduction / Phasing out of Products.
6. Operations Planning and Control. Scheduling, In process Inventory, JIT
7. Cost Management, Activity Based Costing, Budgetary Controls
8. Manufacturing Technology, CAD, CAM
10. Project Management, Application of Networks
11. Value Engineering, Innovation
12. TQM, Quality Circles, Kaizen etc.
13. Maintenance Management, TPM
14. Ergonomic Analysis and Design, Environment
16. Supplies Management, Vendor Development, Purchasing
17. Inventory Management, Physical Control, Marketing Coordination

Last updated February 2004
18. MIS - Computerization, Extending Computer Applications, Networking, Communications
19. Technology Forecasting, Introduction of Technology, Change Over of Technology
22. Motivation, Incentive Systems, Employee Development, Training / Retraining
23. Education, Organization and Methodology, etc.

B. Submission of Project Proposal.

1. The student should select a Project Guide who will give his consent to guide the student in his Project Work. The Guide should be a competent Industrial Engineer or a senior officer with a Degree in Engineering serving in the organization in which the Project work will be carried out. (A corporate Member of the Institution can also act as a Guide).

A certificate from the Project Guide is required to be submitted along with the Project Proposal as well as the final Project Report.

2. The guide should be made familiar with the requirements of the Project Work when seeking his consent to act as Project Guide.

3. A write up on the Proposed Project should be prepared separately and enclosed along with the application. The write up will be about six to eight pages in length. The salient features to be included in this write up are:

   a. Title

   b. Preamble and salient features of the organisation and precise definition of the problem to be studied.

   c. Salient points concerning data collection and analysis, the techniques to be used and the methodology to be followed.

      Key reference (from about 4-5 books and 5-7 key articles in Journals including Industrial Engineering Journal) in these areas.

   d. The nature of recommendations and the areas they will cover, an estimation of benefits that may be expected and a review of the feasibility of implementation.

   e. The format prescribed for the final Project Report can be used as a guidance for the format to be used.

4. The Application Form to be submitted is titled APPLICATION FOR APPROVAL - PROJECT PROPOSAL and can be downloaded from the web site. (and the same is available at end of this document (4 pages))

5. The completed first two pages of the application form along with letter of consent from the Project Guide and the write up of the Proposed Project should be sent to the Institution for Approval.

6. The application should be accompanied by a processing Fee of Rs. 75/- (Rupees Seventy Five only) in the form of a crossed Demand Draft drawn in favour of Indian Institution of Industrial Engineering, payable at Mumbai.

Last updated February 2004
C. **Submission of Project Report.**

1. The Project Report cannot be submitted until the student has passed all the papers (both Compulsory and Elective) of Section B.

2. The Project Work should be done personally by the student under the guidance of the project guide and in conformity with the approved Project Proposal.

3. A certificate from the Guide should also be enclosed in the Project Report as provided in the Format for Project Report. The Project Report should be in the Format prescribed for Project Report (See next section).

4. The Collection of Data, Analysis of Data and application of techniques for the formulation of recommendation should be clearly described in the Report. All steps in the analysis of the relevant theory shall be presented in the Report. While formulating the Recommendation the expected costs and benefits, the advantages and limitations of the recommendations should be clearly discussed.

The suggested scheme for implementation of the recommendations should be clearly and logically laid out with details of steps involved, time schedule of implementation, monitoring, precautions to be observed etc.

5. A separate Synopsis has also to be submitted alongwith the Project Report.

6. The student should submit two hard bound copies of the Project Report (alongwith the synopsis) None of copies of the Project Report will be returned to the student.

7. The Project Report should be submitted to the Institution within a period of two years from the date of completion of all papers in Section B.

8. All submission of Project Reports should be accompanied with an Examination Fee of Rs. 1000/- (Rupees Thousand only) in the form of crossed Demand Draft.

9. If the Report is not submitted within the period of two years, late fee will be charged. Additional course of study may also be prescribed.


   a). The Project Report shall not be published before the decision of the Board of Examinations of its acceptance or otherwise.

   b). The Institution will have he right to use the Project Report in any manner that may be deemed as expedient.

   c). In case the author wishes to publish the Report, due acknowledgement to the Institution that it was a Project Report prepared for the Graduateship Examination of the Institution has to be made by him/her.

11. The Format for the Project Report follows:

D. **FORMAT OF THE PROJECT REPORT**

The format to be followed for the Report is as follows:

1. **PAPER**

   1.1 The Report shall be typed on white paper, size 210 X 297 mm, 7 Kg, bond, for the original typescript and the first carbon copy. Other carbon copies may be any other bond paper.

Last updated February 2004
2. **TYPING**
   2.1 The typing shall be in standard letter size, double spaced on one side of the paper only, using black ribbon and black carbons.

3. **MARGIN**
   3.1 The typed sheet shall have the margins: Left 35 mm, Right 20 mm, Bottom 20 mm.

4. **BINDING**
   4.1 The report shall be rexin bound on black.

5. **LETTERING**
   5.1 The lettering shall be inscribed, on the bound back and the front cover.
   5.2 The bound back shall contain the title and the name of the student in 3 mm size letters.

6. **FRONT COVER**
   6.1 The front cover shall contain the following details:
   
   a) Top: The title in block capitals of 6 mm size letters, properly centered.
   b) Centre: Full name of the candidate in block capitals of 3 mm size letters, properly centered.
   c) Bottom: Name of the Institution, year of submission - all in block capitals of 3 mm size letters in separate lines with spacing and properly centered.

   (This is a standard format)

7. **BLANK SHEET**
   7.1 At the beginning and the end of the report two white blank sheets of 7 kg. bond paper shall be provided one for the purpose of binding and another to be left blank.

8. **TITLE SHEET**
   8.1 The title sheet shall be the first typed sheet and shall follow immediately the blank sheet.

9. **CERTIFICATE FROM GUIDE**
   9.1 The porforma of certificate will be as follows:-

   This is to certify that the project work titled ..................................................(title) is a bonafide work carried out by ..................................................(name of the student) a student for the Graduateship Examination of Indian Institution of Industrial Engineering under my guidance and direction.

   Signature of Guide: ........................................

   Name:
   Designation:
   Address:
   Membership No. (In case of corporate members of the Institution):
   Date:
   Place:.

   (This is a standard format)
10. **ABSTRACT**

10.1 Every report shall have an abstract following the title sheet. The abstract shall lead the reader by highlighting the important features of the material contained in the individual chapters. The abstract shall not exceed 500 words.

11. **CONTENTS**

11.1 The contents shall follow the abstract indicating the title of Chapters, Setoin and sub-sections etc., using the decimal notation with corresponding page numbers against them.

12. **LIST OF TABLES**

12.1 The 'contents' shall be followed by a 'List of Tables' indicating the Table number, Table title and the corresponding page number. The Table number shall be in decimal notation indicating the Chapter number and the Table number in that Chapter.

12.2 Any reference within the text shall be given by quoting the relevant number, e.g. Table 2.2.

13. **LIST OF FIGURES**

13.1 The 'List of Figures' shall follow the 'List of Tables' indicating the Figure numbers, Figure titles and the corresponding page numbers. The Figure shall be in decimal notation indicating the Chapter number and the figure number in that Chapter. For e.g., 6.4 refers to Fig.4 in Chapter 6.

13.2 Any reference within the text shall be given by quoting the relevant number, e.g. 'Fig. 6.4.'

14. **NOMENCLATURE**

14.1 The 'Nomenclature' follows the 'List of Figures' and contains the list of symbols used. They shall be arranged alphabetically in order of Latin letters, Greek letters, superscripts and subscripts. As far as possible generally accepted symbols shall be used. Symbols not available in typewriters shall be written in permanent black ink.

15. **PAGE NUMBERING**

15.1 For items (8) to (14) the page number shall be in small Roman at 15 mm from the bottom of the page centrally located.

15.2 Page number in Arabic numerals shall start with 2 on the second page of the introduction chapter. There shall be no numbering of pages on which new chapters begin. The number shall be at 15 mm from the top, centrally located. All pages including those containing Figures and Tables must have page numbers.

16. **CHAPTER NUMBERING**

16.1 The Chapter shall be numbered in Arabic numerals, Section and sub-section of any chapter shall be in decimal notation. All chapters shall begin on a new page. The titles for chapters, sections, and sub-sections shall be in block capitals. The chapter number and title shall be properly centered at the top of the page and have three spaces between them.

The Chapter will be constructed as Follows.
17. INTRODUCTION TO THE PROJECT

17.1 The first chapters will be introductory Chapters. These chapters shall highlight the importance of the investigation and also define the topic and scope of the work envisaged. A typical format for the first three chapters are shown later in the Standard Format for Report Preparation.

18. REVIEW OF LITERATURE

18.1 This shall form Chapter 4. It shall present a critical appraisal of the previous work done on the topic. The extend of and emphasis on this chapter shall depend on nature of Investigation.

19. WORK DONE

19.1 The work carried out by the student shall be presented in one or more chapters depending on the nature of Investigation. A typical format will be a chapter each on Data Collection, Analysis of Data Formations of Recommendation and typical format of these chapters have shown later in the specimen format for Report Preparation (say chapter 5-7).

19.2 Each chapter may have several sections and sub-sections with suitable titles.

19.3 Important and short derivations, and representative data in tables and Figures, shall be presented in these chapters. Information such as lengthy derivations, voluminous tables and large number of figures shall be presented in the Appendix.

19.4 Figures and tables shall be on separate sheets and not inserted on the papers with running text. Figures shall be in ammonia print. Depending on the size, figures and table shall be accommodated on sheets of size 210 x 297 mm or 197 x 450 or 297 x 625 mm. If there are longer tables that cannot be accommodated on these sheets, there shall be a continuation table. Very large figures shall be placed in a pouch at end of the report. All figures and table included in the Appendices shall be accordingly mentioned in the text, Lettering on figures shall be uniform either in engineering letters or typed. Each figure should be self-sufficient to provide all the information. There must be a title for every figure and table.

19.5 Mathematical portions of the text shall preferably typed. Where it is not possible, ample space shall be left, and equations and symbols shall be inserted clearly in permanent black ink.

20. CONCLUDING CHAPTERS

20.1 DISCUSSION AND CONCLUSION

This chapter should include a thorough evaluation of the investigation carried out and shall bring out the contribution, if any. The discussion shall logically lead to certain conclusions and inferences. A suggested scheme of implementation should also be included. Precautions necessary while implementation should also be given.

20.2 CONCLUDING REMARKS

This may also include limitations of the present study and scope for further work.
21. REFERENCES

21.1 Bibliography shall follow the last chapter. If shall give a list of works (papers, books, etc.) referred to in the body of the text and they shall be arranged in the order they are first cited in the text. The numbering shall be in an Arabic numeral indicated as superscript along with the author’s name in the text. For any paper in information shall contain the names of the authors the title of the journal, the volume number underscored, the page number and the year of publication in parenthesis. In the case of references from journals and books in languages other than English the titles of the journals or books should be transliterated into latin script and not translated. For any book the information shall contain the names of the authors, the title of the book, the name of the publisher, the edition, and year of publication in the parenthesis. For papers and books with joint authorship, the name of all the authors shall be reproduced in the same order. The author’s name shall begin with the name followed by initials.

For example: Journal

Journal


Books


22. APPENDICES

22.1 Appendices shall follow item (21) and will be numbered in Roman capitals. The appendices shall normally contain detailed or lengthy derivations, sample calculations, voluminous, large figures and calculations.

23. ACKNOWLEDGEMENTS

23.1 Acknowledgements shall follow (22) on a separate sheet. Acknowledgement shall indicate the extent to whose assistance has been received by the student in his/her work from various sources.

24. SYNOPSIS (This should be separate from the Report)

24.1 Synopsis has to be typed in loose sheets, stapled and submitted along with the project report. This should give information about the project in a nutshell and should not exceed seven pages.

24.2 Four typed copies of the project report as well as of the synopsis are to be prepared and two copies of each are to be submitted to the Institution. The student will hand over one of each to the Guide and retain one copy of each for himself / herself.

25. SPECIMEN FORMAT

A specimen format for Report Preparation is also given next.
E. SPECIMEN FORMAT FOR REPORT PREPARATION

1. TITLE PAGE (use Standard Format)

2. CERTIFICATE FROM GUIDE (use Standard Format)

3. ABSTRACT

4. CONTENTS

5. LIST OF TABLES

6. LIST OF FIGURES

Chapter 1 PREAMBLE

1.1 INTRODUCTION
1.2 PROBLEM ON HAND
1.3 IMPORTANCE OF THE PROBLEM
1.4 SCOPE OF THE PROJECT

Chapter 2 DETAILS OF THE ORGANIZATION

2.1 INTRODUCTION
2.2 THE ORGANIZATION

2.2.1 PRODUCTS
2.2.2 PROCESSES
2.2.3 FACILITIES
2.2.4 ORGANIZATION STRUCTURE

2.3 ORGANIZATIONAL BUSINESS PROFILE
2.4 OTHER RELEVANT INFORMATION
2.5 CONCLUSION

Chapter 3 THE PROBLEM ON HAND

3.1 INTRODUCTION
3.2 DESCRIPTION OF THE PROBLEM
3.3 DETAILS OF PROBLEM

3.3.1 HISTORICAL PERSPECTIVE
3.3.2 CAUSE AND EFFECT RELATIONSHIPS
3.3.3 CRITICALITY OF THE PROBLEM

3.4 CONCLUSION

Chapter 4 RELEVANT LITERATURE REVIEW

4.1 INTRODUCTION

4.2 (Presentation of material collected through review of relevant literature quoting the sources of each material)

-- Say upto section 4.6

--

4.7 CONCLUSION
EVALUATION OF THE PROJECT REPORT

A. The Examiner may report the Result as

1) Accepted
2) Revision, Additions, Explanations necessary
3) Additional work required
4) Rejected

B. When the Examiner requires revisions, additions, explanations the same will be conveyed to the student who will have to comply with the Examiner's requirements by submitting the requirements.

C. The Examiner may find the Report falls short of the full requirements for the Project Work. The student will then be required to carry out another smaller project in which the student can meet the short fall. This additional Report will have to be submitted along with an examination fee of Rs. 600/- (Rupees Six hundred only).

If satisfactory, the Examiner may recommend acceptance or he may recommend rejection.

D. In case of Rejection, the student may opt for a reference to a second Examiner with a fresh payment of the stipulated examination fee. If the second Examiner also reject Report, the Report will be finally rejected.

If the two Examiners differ, then the case will be referred to the Board of Examinations, whose decision will be final.

E. If the Report is finally rejected, the student will have to undertake the Project Work a fresh and follow the same procedure as for the first project, beginning from making a fresh Project Proposal.

RESERVATION OF RIGHTS

The Board of Examinations reserves the right to amend the Regulations (including the syllabus) as necessary.

INDUSTRIAL ENGINEERING SERVES THE NATION
promoting
PROSPERITY THROUGH QUALITY AND PRODUCTIVITY
and gearing for
CHALLENGES OF GLOBALISATION
by working for
EFFECTIVE STRATEGIES AND EFFICIENT MEANS