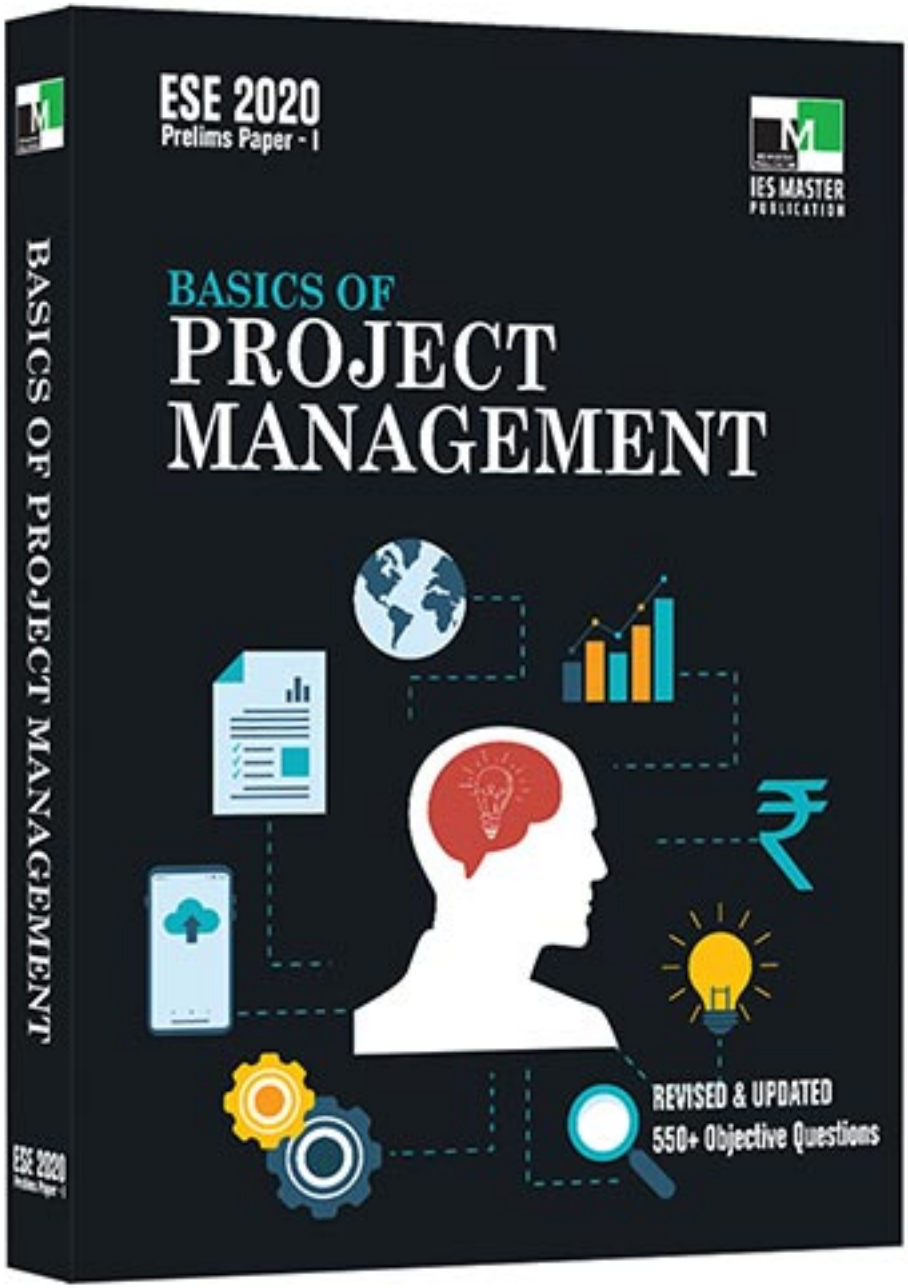
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First Edition : 2016

Second Edition : 2017

Third Edition : 2018

Fourth Edition : 2019

Typeset at : IES Master Publication, New Delhi-110016

PREFACE

As enabling technology is becoming stronger, man's desire to give shape to an idea using that technology is becoming even stronger. However, it is the marked improvement in the managerial genius of project leaders, with technical mind and artistic approach that has been an enabler in getting the desired result.

Engineering Services demand such leadership traits in executing government programmes, global projects, personal and organisational plans to be a successful techno-bureaucrat. This revised and updated edition of **Basics of Project Management** helps you comprehend various processes from project initiation, planning, management, execution, monitoring, and control to project closure, in a fast changing world.

To add to it, the variables defining project management are evolving even faster. Making sense of this changing scenario, the book helps you understand the flow of knowledge and skills through tools and techniques in carving out a unique product or service. This book gives a detailed understanding of the various stages, approaches, structures, and systems in a lucid language.

Designed with a technical approach, this fourth edition of the book incorporates all possible diagrams, flowcharts, tables, mind maps, etc. to quench your thirst to clear the UPSC Engineering Services Examination (ESE). IES Master's research and development wing has done a detailed recce, covering all possible dimensions, on which the questions can be framed. This updated edition features revised chapters, some of which include expanded discussions of fundamental concepts or alternative derivations of important formulas. To jack you up to the level of Engineering Services, a good number of questions have also been incorporated here.

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CHAPTER 1

Fundamentals of Project Management

1.1 INTRODUCTION

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- Project Management Organisations and their Books of Knowledge
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- With the evolution of mankind and radical transformation of society there emerged a need to develop new structure and technologies.
- Creating these technologies or new structures required huge amount of resources and man power.
- This has lead to development of some form of approach or methodology for better and efficient use of these resources.
- Finally a new branch of study "The project management" has emerged.
- Centuries back, so-called "projects" were finished successfully, e.g. the building of the aqueducts in Roman times or the construction of the Great Wall in China, but these projects were managed more on an adhoc basis mostly using informal techniques and tools.
- These days various businesses regularly use project management to grow (or expand) from domestic firms to nationalised companies to global or multinational enterprises, with limited resources under critical time constraints.
- Hence project management nowadays is regarded as a very high priority as all companies or organisations, whether small or large, are at one time or another involved in implementing new undertakings, Innovations and changes etc. – projects!!!.
- There are various social factors that have caused increased usage of project management.

  (i) **Rapidly changing technologies:** Technologies are changing very fast, so all manufacturing as well as service organizations have to cope up with technological changes, which provide a big scope for project management.

  (ii) **High entropy of the system:** Changes are very fast. So, energy levels are high. To adapt to the fast changing world, no organization can stick to old things or systems. Any modification or modernization leads to the need of project.

(iii) **Squeezed life cycle of products:** Project life cycle is squeezed to a great extent with innovations taking place at a very fast rate. Projects are needed for the upgradation of products.

(iv) **Globalization impact:** All producers and service providers in the present world are exposed globally. Projects need to modify their system of operations to match the global practices, thus creating opportunity for projects.

(v) **Large organizations:** Projects face problems of management of huge workforce and work division, so they divide their work in projects and create a team to accomplish the objectives in the form of projects. This has also helped the organization to develop a method for performance appraisal.

(vi) **Customer focus:** Increased customer focus has been a market trend in recent times. A few years back, cost reduction was a major formula of success for an enterprise. Thus, there was more emphasis on standardization. In recent years, customer focus has redirected market towards customization. Though it is not purely customisation, it is more of a combination of standardization and customization. All this has led to the application of project management.

- Before we understand this approach of managing projects, we shall briefly address ourselves to certain questions or fundamental concepts like
  - What is project?
  - How it is different from operations or a program?
  - What is project manager?
  - What are roles of a project manager?
  - What are different types of Organisational structures?
  - How do different Organisational structure change role and power of a project manager?
- In this chapter we will try to understand fundamentals of project management and will try to address the questions stated above.

1.2 WHAT IS PROJECT?

According to Webster's Dictionary

- "A project is a planned piece of work that has a specific purpose (such as to find information or to make something new) and that usually requires a lot of time".

or

- "A project is a task or problem in school that requires careful work over a long period of time."

According to Oxford Dictionary

- "A project is an individual or collaborative enterprise that is carefully planned to achieve a particular aim."

or

- "A project is "a piece of research work undertaken by a school or college student."

According to ISO-21500

"A project is a unique process consisting of a set of coordinated and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements including to constraints of time, cost and resources."

According to PRINCE 2

"Project is a temporary organisation that is created for the purpose of delivering one or more business products according to specified business case".

Note: Prince 2 is an acronym of "Projects IN Controlled Environments". It is an methodology for project management developed by U.K. Government.

According to IS-15883 (Part 1): 2009

"A project is a non-recurring task having a definable beginning and end, with a definite mission and has a set objectives and achievements".

According to Project Management Institutes– "A guide to the project management body of knowledge" (PMBOK guide)

- *"A project is a temporary endeavor undertaken to create a unique product, service or result."*

Note: Above definition given by PMBOK is the most acceptable and undisputed definition.

- There are two key words in above definition.
  (i) Temporary (ii) Unique
- The term *temporary* refers to the execution of the project and not to the product of the project, which is usually created to deliver a lasting or sustained outcome. Example of this kind of project could be a newly constructed highway, software, automobile, or a power station.

QUESTIONS

1. Which is true regarding projects?

(a) A project is a unique service undertaken to create a temporary product

(b) A project is a unique endeavor undertaken to create a temporary service

(c) A project is a temporary endeavor undertaken to create a unique product or service.

(d) A project is a temporary product undertaken to create a unique endeavor or service

2. At what stage in the project life cycle would costs be the lowest?

(a) Concept (b) Development

(c) Implementation (d) Close out

3. Project Managers have least power in which organization structure?

(a) Matrix (b) Functional

(c) Projectized (d) Balanced

4. In a weak matrix organisation the

(a) Most of the power belongs to functional manager

(b) Most of the power belongs to project manager

(c) Both have equal power

(d) No one have power

5. Which organisation violates the principal of unity?

(a) Projectised organisation

(b) Functional organisation

(c) Matrix organisation

(d) None

6. What is primary role of portfolio manager?

(a) To deliver unique product, service, or result of the project

(b) to provide project governance and sponsorship

(c) To directly manage people assigned to several different projects

(d) To assess all potential projects against known organizational strategic goals.

7. What is name for group of related projects managed in a coordinated way to obtain a synergy between them which is not found by managing them individually

(a) Multi project (b) Portfolio

(c) Program (d) Strategy

8. Which of following best define stakeholder?

(a) Your project team member, project sponsor and client

(b) Any person or group who can affect or be affected by your project

(c) Any person or group

(d) The client, the project sponsor and external government agencies

9. One phase is planned and then the another phase is planned, that is which type of relationship?

(a) Overlapping relationship

(b) Sequential relationship

(c) Multi-phase relationship

(d) Iterative relationship

10. Your development team is waiting for the design team to finish their work. As a Project Manager, use this approach to reduce uncertainty in the project. Which of the following relationships does this describe?

(a) Iterative relationship

(b) Sequential relationship

(c) Overlapping relationship

(d) Common relationship

11. Consider the following statements:

1. A project has a mission
2. A project has to terminate at some time or the other
3. Projects vary in terms of technology, equipment and materials, machinery and people, work ethics and organisational culture.

Amongst the above, the characteristic features for a project are

(a) 1 and 2 (b) 2 and 3

(c) 1 and 3 (d) 1, 2 and 3

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