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## Sixth Semester B.E. Degree Examination, June/July 2018 Construction Management and Entrepreneurship

Time: 3 hrs.

Max. Marks: 80

*Note: Answer any FIVE full questions, choosing one full question from each module.*

### Module-1

- 1 a. Define Construction management. Explain the objectives of construction management. (08 Marks)
- b. What are the functions of management? Explain any two of them. (08 Marks)

OR

- 2 a. What is construction planning? List the objectives of construction planning. (06 Marks)
- b. Explain Bar chart or Gantt chart. Write its limitations. (04 Marks)
- c. Draw the network for the project based on the following data of events:  
Find Early start time, Early finish time, Late finish time, and determine the least number of days required to complete the work. Draw the critical path.

Event	Duration (Days)	Preceders
A	2	-
B	4	-
C	1	A
D	6	B
E	7	C, D

(06 Marks)

### Module-2

- 3 a. Explain the importance of resource management in the construction of a project. (08 Marks)
- b. Explain (i) Minimum wages act 1948 (ii) Labour production rate of productivity. (08 Marks)

OR

- 4 a. Explain the advantages of utilization of construction equipments in construction field. List the various classifications of equipments. (08 Marks)
- b. Describe material management and objectives of material management. (08 Marks)

### Module-3

- 5 a. Define quality. Describe quality control and quality assurance. (08 Marks)
- b. Explain the importance of safety in construction. Explain the safety measures during (i) Excavation (ii) Drilling and blasting (08 Marks)

OR

- 6 a. Describe the safety insurance. Explain constructors all risk insurance. (08 Marks)
- b. Differentiate between morals and values. (04 Marks)
- c. List the professional rights. (04 Marks)

### Module-4

- 7 a. What is economics? List the goals of economics. (08 Marks)
- b. Differentiate between Microeconomics and Macroeconomics. (08 Marks)

**Important Note :** 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written e.g. 42+8 = 50, will be treated as malpractices.

OR

- 8 a. Explain : (i) Time value of money (ii) Simple interest (iii) Compound interest. (10 Marks)  
b. Mr. X is planning to build his own house. He plans to deposit Rs. 40,000/- every year for next 10 years in a bank. The bank gives 12% interest rate compound annually. Find the maturity value of his account after 10 year. (06 Marks)

**Module-5**

- 9 a. Explain in brief the role of entrepreneurship in economic development. (08 Marks)  
b. What do you mean by small-scale industry? List the characteristics of small scale industries. (08 Marks)

OR

- 10 a. What is business plan? Explain the importance of business plan. (08 Marks)  
b. Explain in detail the contents of a good project report. (08 Marks)

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# Construction Management and Entrepreneurship. (17CV61/15CV61)

## Solution and Scheme.

### Module 01

1. a. Define construction management. Explain the objectives of construction management.

Ans: Construction management comprises of systematic approaches to manage cost, time and quality of a construction project based on recorded research and experience. Construction management deals with economical consumption of the resources available in the least possible time for successful completion of construction project. Men, materials, machinery and money are termed as resources in construction management.

#### Objectives of construction management:

- 1) The work should be properly planned and organised.
- 2) The work should be executed as per specifications.
- 3) The work should be completed within the specified time and estimated cost.
- 4) The work should be properly supervised by qualified and trained staff.
- 5) The workmanship and quality of the work should be good.
- 6) The work should be executed economically.



b) What are the functions of management? Explain any two of them.

Ans. Management functions:

1) Planning

2) Organising

3) Staffing

4) Directing

5) Controlling

→ 1) Planning

Planning is a primary function of management. It is thinking process. It determines the future course of action by deciding what to do, why to do, and who is to do.

The process of planning consists of the following steps:

1) Analysis of business environment

2) Establishing objectives

3) Setting planning premises.

4) Identifying alternatives

5) Evaluating alternatives.

6) Selecting best alternative.

7) Formulating secondary plans

8) Implementation of plan

9) Review of results

→ 2> Organising:

It is dependent on the type of plan. It is aimed at preparing a formal structure or design of the organisation, consisting of people, tasks, responsibility, authority, communication network and a scheme for arranging all these aspects.

The process of organising includes,

- 1> Determining activities necessary for achieving objectives.
- 2> Classifying and grouping of activities into units.
- 3> Assigning tasks or duties.
- 4> Delegating authority
- 5> Establishing relationships among several position holders.
- 6> Preparing organisation chart and manual.

2 a. What is construction planning? List the objectives of construction planning.

Planning in construction is necessary to ensure proper utilisation of human and material resources to achieve the objectives of the project.

Objectives of planning

- 1> To execute work in an organized and structured manner.

- 2> Proper design of each element of the project
- 3> To reduce rework.
- 4> To establish quality standards.
- 5> To provide basis for monitoring & control of project work.
- 6> To know duration of each activity.
- 7> To know cost associated with each activity.
- 8> To know responsibility and authority of people involved in the project.
- 9> Proper selection of equipment and machinery.
- 10> Proper management of repair of equipment and machinery near the site of work to keep them ready to work.
- 11> Procurement of material well in advance.
- 12> To provide welfare schemes for the staff and workers such as medical & recreational facilities.

2 b. Explain Bar chart or Gantt chart. Write its limitations.

Gantt charts provide visual clarity. They are very good schedules for presenting the project timeline to the owner, end users groups, & the public. They are primarily concerned with when the job will be done.



A bar chart consists of two ordinate axes. one representing the jobs or activities to be performed and the other representing the time elapsed. Each bar represents one specific job or activities of the project.

### Limitations :

- 1> They can be used only for small projects.
- 2> It does not show the inter dependence between the various activities in the projects.
- 3> The progress of the works in the project cannot be monitored scientifically.
- 4> Delays in the works cannot be detected.
- 5> It does not indicate the critical activities of the project.

Q7. Draw the network dia. for the project based on the following data of events.

Find early start time, early finish time, late finish time, and determine the least number of days required to complete the work. Draw the critical path.

Event	Duration (days)	Predecesses.
A	2.	-
B	4	-
C	1	A
D	6	B
E	7.	C, D

## Module 02

3. a. Explain the importance of resource management in the construction of a project.

Ans: Importance of resource management.

The completion of a construction project at maximum efficiency of time and cost requires the judicious scheduling and allocation of available resources.

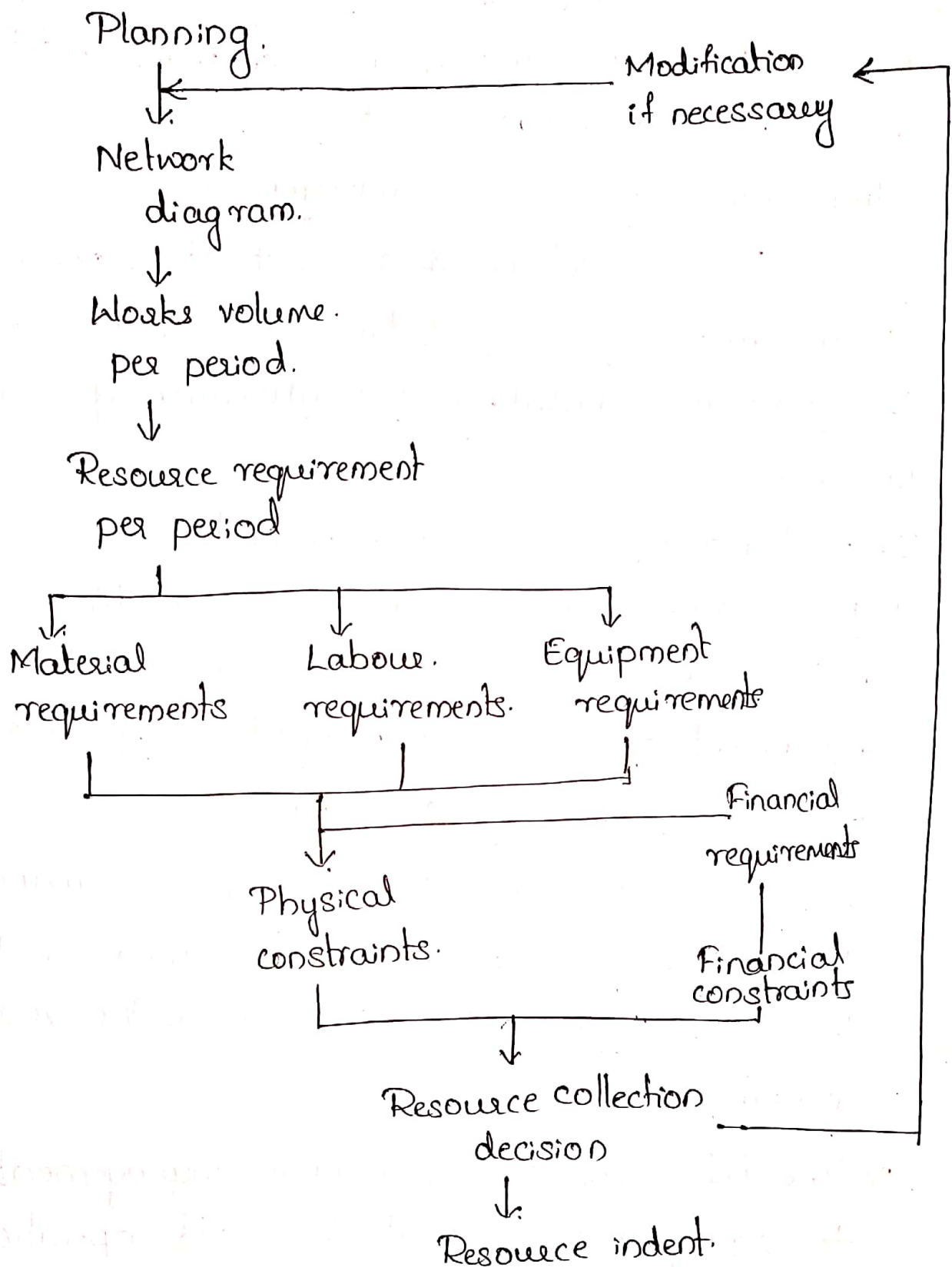
Importance of resource management

1. Field supervisors can achieve favourable production rates and get the most from their workers and equipment only when the requisite ways and means are optimally available.

2. It is the responsibility of the project manager to identify & schedule future job needs so that the most efficient use is made of the resources available.

3. The basic objective of resource management is to supply and support the field operations so that established time objectives can be met and costs can be kept within the construction budget.





- 3.b. Explain i) Minimum wages act 1948  
ii) Labour production rate of productivity.

Ans: Minimum wages act 1948

Minimum wages act, 1948 provides for fixation / periodic revision of minimum wages in employments where labour is vulnerable to exploitation.

The minimum wages system has the foll. provisions.

i) Different minimum rates of wages may be fixed for different classes of work in the same scheduled employment, adults, children & apprentices.

2) The appropriate govt may employ suitable persons as inspectors for the purpose of this act.

3) The wages of an employee should be paid without any deductions except for the following.

i) Absence from duty

ii) loss of goods / money directly related to neglect of the employee.

iii) house rent, water & electricity charges

iv) Recovery of advances

v) deductions ordered by court

vi) fines for acts of omission

## Labour production rate of productivity:

Productivity may be defined as the rate of transformation of inputs into outputs in a productive operation.

The input of labour may be taken as number of workers or man-hours worked during the period. This ratio may be computed for one worker or group of workers in a unit of work or for the plant as a whole depending on the need.

For a given worker or group of workers doing a job, the enterprise fixes certain target volume of output in a given day or period. The actual volume of output produced by the workers during that period is compared with the target or standard volume of output for assessing labour productivity. This is a simple way to measure labour productivity, but it is not conforming with the definition of labour productivity.



4 a. Explain the advantages of utilization of construction equipment in construction field. List the various classifications of equipments.

Ans. Construction equipments are one of the very important resources of modern construction, especially in infrastructure projects. Such projects utilize equipments for most of the works including earthmoving operations, aggregate production, concrete production and its placement, and so on. In fact these are different types of construction equipments suitable for different activities in a construction project.

### Classifications of equipments:

- 1) Earthwork equipment
  - i) Earth cutting and moving equipment
  - ii) Excavation & lifting equipment
  - iii) Loading equipment
  - iv) Transportation equipment
  - v) Compacting equipment
- 2) Concreting plant & equipments
  - i) Production equipment
  - ii) Transportation equipment
  - iii) Placing equipment
  - iv) Concrete vibrating equipment

3> Material hoisting equipment

i> Hoists

ii> Mobile cranes

iii> Tower cranes

4> Support & Utility service equipment

i> Pumping & Dewatering equipment

ii> Pipe laying equipment

iii> Generators

iv> Welding equipment

4. b. Describe material management and objectives of material management.

Ans: Material management is the management system for planning and controlling all efforts necessary to ensure that the correct quality and quantity of materials are specified in a timely manner, obtained at a reasonable cost, and available at the point of use when required.

Aim of material management

- To get
- 1> The right quality
  - 2> Right quantity of supplies.
  - 3> At the right time.
  - 4> At the right place
  - 5> For the right cost.

Primary objectives :

- 1) Efficient materials planning.
- 2) Buying or purchasing.
- 3) Procuring & received
- 4) Storing & inventory control
- 5) Supply and distribution of materials
- 6) Quality assurance.

Secondary objectives.

- 1) Efficient production scheduling.
- 2) To take make or buy decisions.
- 3) Prepare specifications and standardization of materials
- 4) To assist in product design & development
- 5) Forecasting demand & quantity of materials equipment
- 6) Quality control of materials purchased.
- 7) Material handling

### Module 03

5a. Define quality. Describe quality control & quality assurance.

Ans: The term quality implies that a product or deliverable is fit for the intended purpose. Fitness normally involves a wide range of criteria, such as performance, safety, reliability, ease of handling, maintainability and no harmful environmental impacts.



## Quality assurance

Project quality assurance relates to the execution of the project quality management plan. It reduces the risks related to not meeting desired features or performance requirements of deliverables. Quality assurance covers the following.

- Activities performed in a specific project to ensure that requirements are being met and that the project is being executed according to the quality plan.
- Activities that contribute to the continuous improvement of current & future projects.

## Quality control:

Quality control addresses quality at the project level & is implemented on the job site. Quality control is the ongoing process of monitoring and appraisal work, and taking corrective action so as to achieve the planned quality outcomes. The process also verifies that quality assurance activities are being performed according to the quality plan, and that project requirements and specifications are being met.

5.b. Explain the importance of safety in construction.  
Explain the safety measures during i) Excavation  
ii) Drilling & Blasting.

Ans: Importance of safety in construction:

- To help increase in speed in construction
- To increase the standard of living.
- To reduce the cost of construction
- To conserve the availability of labour force by minimizing the idle time
- To reduce human suffering

Safety during excavation:

- 1) Before doing the excavation work, a complete knowledge of underground structures is essential.
- 2) Safety helmets should be worn by all persons entering a trench where hazards from falling stones, timber or other materials exist.
- 3) Whenever workmen have to excavate in trenches in soil, soft or fissured rock or hard soil exceeding 2m in depth, the trenches should be properly shored & timbered.
- 4) In special cases where disposal area is limited, the minimum beam width should not be less than 1m.

## Drilling & Blasting

- 1) Care should be taken in loading & unloading of explosives. The shield containers shall not be handled roughly.
- 2) Explosives shall be stored only in a magazine which is clean, dry, well ventilated
- 3) Smoking shall not be permitted nor matches, open lights, fire, flame
- 4) All the materials, tools and equipment used for blasting operations shall be of approved type.
- 5) No drilling shall be started until previous holes in the blasted area are flushed with air and filter.
- 6) The blaster shall be in good physical condition and not be under influence of drugs, alcohol etc.

Q. a. Describe the safety insurance. Explain constraints all risk insurance.

Ans: Safety insurance:

→ Insurance laws are applicable for regular employees

→ In construction industry most of the labourers are of casual nature & insurance laws are not applicable to them.



→ Keeping in mind the intensity of a probable losses in case of mishaps/unpleasant accidents in construction activities, different insurance covers are available.

### All risk insurance:

This is a comprehensive insurance cover & provides adequate protection against loss of damages in respect to contract works, as well as third party claims towards property damage or severe injuries to workers/general public.

The items covered under insurance.

- 1) Fire accidents and explosives.
- 2) Theft.
- 3) Bad workmanship, unintentional negligence
- 4) Natural calamities

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6.b. Differentiate between morals & values.

Ans: Morals:

Morals are the standards, norms and principles for right and wrong concepts. They are standards that help to guide our behaviour.

Morals includes.

- respecting others & ourselves.
- respecting the rights of others
- keeping promises
- showing gratitude to others.

Values

The sense of value is an essential attribute of the human consciousness. Value expresses the qualitative significance we assign to ideas, feeling activities & experiences.

Values serve the process of becoming in the sense of transformation of the level of consciousness to pure, higher levels. Values are subjective while skills are objectives.

6.c. List the professional rights.

Ans: These rights are possessed by virtue of being professionals having special moral responsibilities.

- Right to form & express professional judgement without any obstacles.

→ Right to deny participating in unethical activities

→ Right to express professional judgement, including the right to disagree.

→ Right to ex warn the public about dangers.

→ Right to talk freely about the work.

#### Module 4

7a. What is economics? List the goals of economics:

Economics is the science that deals with the production & consumption of goods and services and the distribution & re-rendering of these for human welfare.

List of economic goals:

→ A high level of employment

→ Price stability.

→ Efficiency

→ An equitable distribution of income

→ Growth

Some of these goals are interdependent.

The economic goals are not always complementary. In many cases they are in conflict. For ex.

any move to have a significant reduction in unemployment will lead to an increase in inflation.



7. b. Differentiate between microeconomics & macroeconomics.

Ans: Micro economics :

Micro economics deals with the analysis of individual units & small groups of individually units such as individual income, price and demand for a product, supply of a goods etc.

Goals: — Efficiency  
Equity.

Macro economics :

Macro economics is the study of economics system as a whole. It deals with the study of aggregates covering the entire economy such as national income, national product, general price level, employment, aggregate demand, and so on.

Goals — Full employment  
— Stability.  
— Economic growth

8. a. Explain i) ~~Time~~ value of money ii) Simple interest  
iii) Compound interest.

Ans: i) Time value of money.

Time value of money is important when one is interested either in investing or borrowing the money. If a person invests his money today in bank savings, by the next year he will definitely

accumulate more money than his investment. This accumulation of money over a specified time period is called as time value of money.

ii) Simple interest

The interest is said to be simple, when the interest is charged only on the principal amount for the interest period.

$$I_T = \frac{P \times n \times i}{100}$$

$I_T$  = Total amount of interest

$P$  = Principal amount

$n$  = No. of interest periods.

$i$  = rate of interest (%)

iii) Compound interest

The interest is said to be compound, when the interest for any interest period is charged on principal amount plus the interest amount accrued in all the previous interest periods.

$$I_T = P \left(1 + \frac{i}{100}\right)^n$$

8.b. Mr. X is planning to build his own house. He plans to deposit Rs. 40,000/- every year for next 10 years. The bank gives 12% interest rate compounded annually. Find the maturity value of his account after 10 years.

$$A = 40000 \text{ /-}$$

$$n = 10 \text{ years}$$

$$i = 12 \%$$

$$F = A \cdot \frac{(1+i)^n - 1}{i}$$

$$= 7,01,949.4 \text{ Rs.}$$

### Module 5

9.a. Explain in brief the role of entrepreneurship in economic development.

Ans: 1) High contribution to domestic production:

The MSME play an imp role in the nation development through high contribution to the gross domestic production.

2) Large employment opportunities:

The MSME sector, in terms of per unit of business employment figure may not appear to be a big employer.

3) Meet local requirements of larger business:

The MSM businesses are complementing to larger industries as ancillary units.

4) Driving innovation & competition

5) Low investment requirement.

6) Environment friendly approach

7) Export earnings & import substitution.



9b. What do you mean by small-scale industry?  
List the characteristics of small scale industries.

MSME are engaged in varied business sectors ranging from retailing, wholesale, trading, manufacturing & construction to services. The majority of these business, tend to concentrate in services & retailing.

MSME may be established in rural or urban areas. Urban enterprises are set up & operate mainly in urban areas.

The enterprises may be organised or unorganised. The organized one have registered offices and have paid owners.

These are managed by their owners. The owners also engage their family members in running the business.

These are relatively inefficient because they are labour based. Their owners lack appropriate managerial skills & usually do not possess state of art technology.

10. a. What is business plan? Explain the importance of business plan.

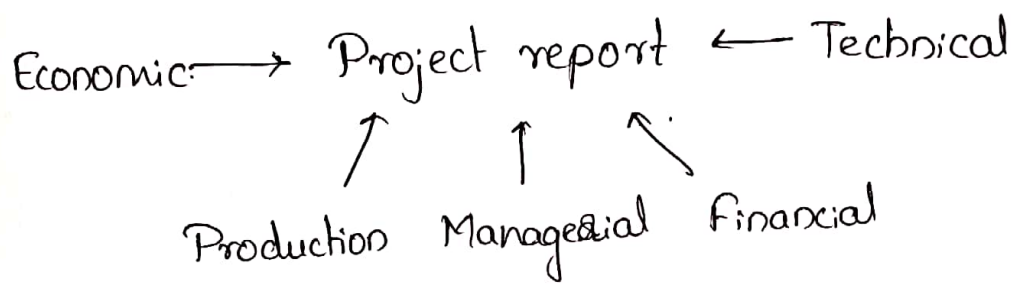
Ans: A business plan is a road map for starting & running a business. It is the blueprint of the step by step procedure that would be followed to convert a business idea into a successful business venture.

The importance of business plan

- 1) Give directions to the vision formulated by entrepreneur.
- 2) Provides self assessment of the business by the entrepreneurs.
- 3) Monitor the progress after implementing the plan.
- 4) Persuade others to join the business
- 5) Seek loans from financial institutions.
- 6) Guide the entrepreneur in the actual implementation of the plan
- 7) Identify the strength & weakness of the plan.
- 8) Identify the resources that would be required to implement the plan.

10.b Explain in detail the contents of a good project report.

Ans: Project report is a document which describes the progress at every stage of the project.



The project report covers.

- 1) The composition & organisation of the enterprise
- 2) Introduction to promoters & key personell
- 3) Description of the product with details
- 4) Details of production process.
- 5) Requirements of machinery & equipment with price & technical details.
- 6) Quantity & quality of required factors of production
- 7) Names & addresses of these suppliers.
- 8) Price factors of production