Rajasthan Institute of Engineering & Technology, Jaipur

University Roll No. \_\_\_\_\_\_\_\_\_\_\_\_\_\_

1 st Year MBA 2 nd Semester II Mid-Term Examination, Feb – 2019

Subject: - operation and supply management SET- C

Time: - 2 Hrs. [Maximum Marks: -20]

[Min. Passing Marks: 08]

Instructions to the Candidates:

Attempt any 4 questions from Section A and Section B is Compulsory.

Section A

**1. What is operations management? (3)**

Operations management is the administration of business practices to create the highest level of

efficiency possible within an organization. It is concerned with converting materials and labor into goods

and services as efficiently as possible to maximize the profit of an organization. Operations management

teams attempt to balance costs with revenue to achieve the highest net operating profit possible.

Operations management is chiefly concerned with planning, organizing and supervising in the contexts

of production, manufacturing or the provision of services. As such, it is delivery-focused, ensuring that

an organization successfully turns inputs to outputs in an efficient manner. The inputs themselves could

represent anything from materials, equipment and technology to human resources such as staff or

workers.

**2. What is productivity and competitiveness? (3)**

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represent anything from materials, equipment and technology to human resources such as staff or

workers.

**3. Write importance and factors affecting the plant location? (3)**

Importance of Plant Location:

Plant location with thorough analysis leads the organization towards success. The basic

objective of organization is to maximize the profit level. Hence, it will be beneficial for both i.e.

newly established business &amp; already established business. The profit maximization can be done

by increasing sales price, increasing sales with reduced production cost, by analyzing market

trend, nature &amp; level of competition etc. Production cost can also be reduced, if firm is located

at a place where all the basic requirements (that fulfill input needs) will be available easily.

Selection of appropriate location is necessary due to following reasons:

 Plant location partially determines operating and capital cost. It determines the nature of

investment.

 Each plant location requires some basic facilities like transportation, availability of water,

electricity, fuel, cheap labors etc.

 Each prospective location implies a new allocation of capacity to respective market area.

 Government plays an important role in the choice of the location keeping in view the

national benefits.

Factors Affecting the Plant Location:

Many factors are considered while selecting a site. According to their importance these are

classified as primary factors &amp; secondary factors.

Primary factors:

 Raw material supply: Production process will continue properly when adequate supply

of raw material is there. Raw material cost is a part of total production cost. Inadequate

supply of raw material will result in the reduction in production. It will increase

downtime &amp; hence reduce efficiency of industry. Due to this inadequacy, profit

maximization may not be obtained. The time to transport &amp; cost of transportation is also

important. Hence, industries are situated where raw material is available easily.

 Nearness to market: This factor will produce the product to customer in short time

period and hence it will be less damage to the product. It also reduces transportation cost.

Also it will help the supplier to know the requirement of customers.

 Transportation Facility: While selecting a site one thing has to be considered that is

transportation of any raw material, semi- finished &amp; finished goods should be as less as

possible. By this factor material will be transported less, which will affect the material

quality, cost of transportation, time to transport etc. Hence for all above reasons producer

has to select cheap &amp; speedy transportation with various sources like road, airways,

railways, waterways etc.

 Labor Supply: Labor is most effective part of the industry, who produces the product.

The producer has to choose the site in such a way that labor should present in adequate

quantity with low cost and labor would be skilled or unskilled. If labors are not present in

sufficient numbers it will increase downtime of production and decrease plant efficiency.

 Power Supply: Electrical, diesel, automatic etc. energies are required to produce the

product and also required for transportation. For continuous production process regular

and sufficient supply is necessary. Many companies follow the industrial area because of

availability of regular &amp; sufficient power supply.

 Supply of Capital: Capital is required for the industries for production, day to day

working, expansion, marketing etc. Large scale production require large amount of

capital which may be raised by shares, debentures etc.

Secondary factors:

 Natural factors: Factors like land, water, climate etc. are very important for industries.

 Government Policy: in particular area new plant can not be started due to some rules

and regulations made by government. Also, there are some subsidies and other facilities

to support small scale industries to grow up.

 Availability: Availability of housing, hospitality, entertainment, education facilities also

helps in deciding plant location.

 Miscellaneous factors:

           1. Sufficient water supply

           2. Danger of attack during war

           3. Personal factors

**4. What is break even analysis? (3)**

Break-even analysis is a technique widely used by production management and management

accountants. It is based on categorising production costs between those which are &quot;variable&quot;

(costs that change when the production output changes) and those that are &quot;fixed&quot; (costs not

directly related to the volume of production).

Total variable and fixed costs are compared with sales revenue in order to determine the level of

sales volume, sales value or production at which the business makes neither a profit nor a

loss (the &quot;break-even point&quot;).

**5. What is six sigma quality? (3)**

Six Sigma is a disciplined, statistical-based, data-driven approach and continuous improvement

methodology for eliminating defects in a product, process or service. It was developed by

Motorola and Bill Smith in the early 1980’s based on quality management fundamentals, then

became a popular management approach at General Electric (GE) with Jack Welch in the early

1990’s. The approach was based on the methods taught by W. Edwards Deming, Walter

Shewhart and Ronald Fisher among many others. Hundreds of companies around the world have

adopted Six Sigma as a way of doing business.

Sigma represents the population standard deviation, which is a measure of the variation in a data

set collected about the process. If a defect is defined by specification limits separating good from

bad outcomes of a process, then a six sigma process has a process mean (average) that is six

standard deviations from the nearest specification limit. This provides enough buffer between the

process natural variation and the specification limits.

**6. What is process planning and process analysis? (3)**

Process planning is concerned with planning the conversion or transformation processes needed to

convert the materials into finished products .A production process is a series of manufacturing

operations performed at workstations to achieve the design specifications of the planned output .A vast

number of different operations and various kinds of equipments and machines may be required to

produce a complex product (for e.g. an aircraft or a ship). Simpler parts may require fewer operations

(for e.g. a bolt and a nut).

Process Analysis deals with the break up of entire production cycle into phases or activities in a

step-by-step manner from inputs, operations to outputs. This will make it easy for the

management to take control of the overall process.

The latter could identify the deficiencies in a targeted activity or phase thereby identifying the

bottleneck for the entire process. After the identification of bottleneck, it is the duty of the

management to reduce the time taken for the bottleneck by improving the efficiency of that

bottleneck.

**Section B**

**1. Write short note on capacity planning? (4)**

Capacity is defined as the ability to achieve, store or produce. For an organization, capacity

would be the ability of a given system to produce output within the specific time period.

In operations, management capacity is referred as an amount of the input resources available

to produce relative output over period of time.

in general, terms capacity is referred as maximum production capacity, which can be attained

within a normal working schedule.

Capacity planning is essential to be determining optimum utilization of resource and plays an

important role decision-making process, for example, extension of existing operations,

modification to product lines, starting new products, etc.

1. Strategic Capacity Planning

A technique used to identify and measure overall capacity of production is referred to as

strategic capacity planning. Strategic capacity planning is utilized for capital intensive

resource like plant, machinery, labor, etc.

Strategic capacity planning is essential as it helps the organization in meeting the future

requirements of the organization. Planning ensures that operating cost are maintained at a

minimum possible level without affecting the quality. It ensures the organization remain

competitive and can achieve the long-term growth plan.

Capacity Planning Classification

Capacity planning based on the timeline is classified into three main categories long range,

medium range and short range.

Long Term Capacity: Long range capacity of an organization is dependent on various other

capacities like design capacity, production capacity, sustainable capacity and effective

capacity. Design capacity is the maximum output possible as indicated by equipment

manufacturer under ideal working condition.

Production capacity is the maximum output possible from equipment under normal working

condition or day.

Sustainable capacity is the maximum production level achievable in realistic work condition

and considering normal machine breakdown, maintenance, etc.

Effective capacity is the optimum production level under pre-defined job and work-

schedules, normal machine breakdown, maintenance, etc.

Medium Term Capacity: The strategic capacity planning undertaken by organization for 2

to 3 years of a time frame is referred to as medium term capacity planning.

Short Term Capacity: The strategic planning undertaken by organization for a daily

weekly or quarterly time frame is referred to as short term capacity planning.

Goal of Capacity Planning

The ultimate goal of capacity planning is to meet the current and future level of the

requirement at a minimal wastage. The three types of capacity planning based on goal are

lead capacity planning, lag strategy planning and match strategy planning.

Factors Affecting Capacity Planning

Effective capacity planning is dependent upon factors like production facility (layout,

design, and location), product line or matrix, production technology, human capital (job

design, compensation), operational structure (scheduling, quality assurance) and external

structure ( policy, safety regulations)

**2. Write short note on (4)**

**a) Behavioural consideration in job design**

The effectiveness of jobs depends on the behavior of employees toward that job. Behavioral

approach is concerned with behavioral factors such as autonomy, variety, task identity, task

significance, feedback mechanism etc. The job itself should be sufficient to motivate employees.

It means the above mentioned behavioral factors are analyzed and considered while designing

the jobs under this approach. This approach of job design is called behavioral approach. This

means the behavioral approach to job design analyzes the considers some behavioral aspects of

employees like autonomy, variety, task identity, task significance, feedback mechanism, etc.

So, the behavioral aspects of the employees should be included while designing jobs. The

different behavioral methods are as follows:

 Job Enrichment: It is concerned with the process of putting specialized tasks together so

that the individual who is assigned with the task is responsible to perform the whole task.

 Job Characteristics: This method states that job characteristics affect the job designing

process. It focuses on job redesign, work structuring, job enrichment, and so on to

improve organizational productivity and quality of work life of employees.

 Autonomous Team: It is a group of workers in which they solve problems, implement the

solution and take full responsibility for outcomes. They are self-directed and self-

managed work groups who perform related or interdependent tasks.

Modified Work Schedule: It is a technique of job design through which the working

schedules, timing, work week etc. are rescheduled as per the convenience of the workers.

**b) ISO 14000**

ISO 14000 is a series of environmental management standards developed and published by the

International Organization for Standardization ( ISO ) for organizations. The ISO 14000

standards provide a guideline or framework for organizations that need to systematize and

improve their environmental management efforts. The ISO 14000 standards are not designed to

aid the enforcement of environmental laws and do not regulate the environmental activities of

organizations. Adherence to these standards is voluntary.

The ISO 14001 standard is the most important standard within the ISO 14000 series. ISO 14001

specifies the requirements of an environmental management system (EMS) for small to large

organizations. An EMS is a systemic approach to handling environmental issues within an

organization. The ISO 14001 standard is based on the Plan-Check-Do-Review-Improve cycle.

The Plan cycle deals with the beginning stages of an organization becoming ISO 14001-

compliant. The Check cycle deals with checking and correcting errors. The Do cycle is the

implementation and operation of the ISO 14001 standard within an organization. The Review

cycle is a review of the entire process by the organization&#39;s top management. And the Improve

cycle is a cycle that never ends as an organization continually finds ways to improve their EMS.

The entire process can take several months to several years depending on the size of the

organization. If an organization is already ISO 9000-certified, the implementation of ISO 14001

does not take as long. When an organization is compliant, they can either register with a third-

party registrar or self-declare their compliance. The ISO 14001 standard is the only ISO 14000