INTERMEDIATE EXAMINATION **SET 2**

MODEL ANSWERS **TERM – JUNE 2025**

PAPER – 9 **SYLLABUS 2022**

OPERATIONS MANAGEMENT AND STRATEGIC MANAGEMENT

Time Allowed: 3 Hours **Full Marks: 100**

The figures in the margin on the right side indicate full marks.

SECTION – A (Compulsory)

1. Choose the correct option: **[15 × 2 = 30]**

i. Efficiency of an operation facility is measured by:

a) (Effective Capacity) / (Design Capacity) × 100

b) (Actual Output) / (Design Capacity) × 100

c) (Actual output) / (Effective Capacity) × 100

d) (Design Capacity) / (Effective Capacity) × 100

ii. The desired objective of Production and Operations Management is:

a) Optimal utilisation of available resources

b) Use cheap machinery to produce

c) To train unskilled workers to manufacture goods perfectly

d) To earn good profits.

iii. One of the important basic objectives of Inventory management is:

a) To calculate EOQ for all materials in the organisation

b) To go in person to the market and purchase the materials

c) To employ the available capital efficiently so as to yield maximum results

d) Once materials are issued to the departments, personally check how they are used

iv. Cost reduction can be achieved through:

a) Work sampling

b) Value analysis

c) Quality assurance

d) Supply chain management.

v. In a linear programming model feasible solution is:

a) The basic solution to the general L.P problem

b) Any solution that also satisfies the non-negative restrictions of the general L.P problem

c) A solution which optimize (maximize or minimize) the objective function of a general L.P problem

d) A basic solution to the system of equations if one or more of the basic variables become equal to zero

vi. Gantt Chart is a principal tool used in :
- a) Scheduling
- b) Loading
- c) Planning
- d) Routing

vii. Preventive maintenance is useful in reducing:
- a) Inspection Cost
- b) Shutdown Cost
- c) Cost of pre- mature replacement
- d) Set-up cost of machine

viii. When work centers are used in optimal sequence to do the jobs, we can:
- a) Minimise the set up time
- b) Minimise the break down of machines
- c) Minimise the utility of facility.
- d) None of the above

ix. The tool used in TQM to identify root causes of problems is:
- a) Bar chart
- b) Gantt chart
- c) Fishbone diagram
- d) Flowchart

x. The _____ of a company state how managers and employees should conduct themselves.
- a) values
- b) goals
- c) objectives
- d) vison

xi. This_____ provides the broad 'data' from which to identify key drivers of change.
- a) SWOT analysis
- b) BCG matrix
- c) PESTEL analysis
- d) Critical Success Factors

xii. A _____ is a business unit in a growing market, but not yet with high market share.
- a) cash cow
- b) dog
- c) question mark
- d) star

xiii. _____is similar to referral programs

a) **Influencer Marketing**
b) **Affiliate marketing**
c) **Social Media Marketing Platforms**
d) **Content marketing**

xiv. Which among the following is not a component of a block chain?

a) **Distributed ledger technology**
b) **Immutable record**
c) **Smart contracts**
d) **Increased threat**

xv. Business Process Reengineering (BPR) primarily aims to:

a) **Increase the number of employees**
b) **Improve existing processes incrementally**
c) **Reduce the number of business processes**
d) **Radically redesign business processes to achieve significant improvements**

Answer:

i.	ii.	iii.	iv.	v.	vi.	vii.	viii.	ix.	x.	xi.	xii.	xiii.	xiv.	xv.
c	a	c	b	b	a	b	a	c	a	c	c	b	d	d

SECTION – B

(Answer any 5 questions out of 7 questions given. Each question carries 14 marks.)

[5 x 14 = 70]

2. (a) State the characteristics of modern operation functions. [7]

(b) Briefly explain the different stages of the product life cycle. [7]

Answer:

(a) The production management of today presents certain characteristics which make it look totally different from what it was during the past. Specifically, today's production system is characterised by at least four features.

1. **Manufacturing as Competitive Advantage**

In the past production was considered to be like any other function in the organisation. When demand was high and production capacities were inadequate, the concern was to somehow muster all inputs and use them to produce goods which would be grabbed by market. But today's scenario is contrasting. Plants have excess capacities, competition is mounting and firms look and gain competitive advantage to survive and succeed.Interestingly, production system offers vast scope to gain competitive edge and firms intend to exploit the potential. Total Quality Management (TQM), Time-Based Competition, Business Process Re-engineering (BPRE), Just-in-Time (JIT), Focused Factory, Flexible Manufacturing

Systems (FMS), Computer IntegratedManufacturing (CIM), and The Virtual Corporation are but only some techniques which the companies are employing to gain competitive advantage.

2. **Services Orientation**

As was stated earlier, service sector is gaining greater relevance these days. The production system, therefore,needs to be organised keeping in mind the peculiar requirements of the service component. The entire manufacturing needs to be geared to serve (i) intangible and perishable nature of the services, (ii) constant interaction with clients or customers, (iii) small volumes of production to serve local markets, and (iv) need to locate facilities to serve local markets. There is increased presence of professionals on the production, instead of technicians and engineers.

3. **Disappearance of Smokestacks**

Protective labour legislation, environmental movement and gradual emergence of knowledge based organisations have brought total transformation in the production system. Today's factories are aesthetically designed and built, environment friendly - in fact, they are homes away from homes. Going to factory everyday is no more excruciating experience, it is like holidaying at a scenic spot. A visit to ABB, L & T orSmith Kline and Beecham should convince the reader about the transformation that has taken place in the wealth creation system.

4. **Small has Become Beautiful**

It was E.F. Schumacher who, in his famous book Small is Beautiful, opposed giant organisations and increased specialisation. He advocated, instead, intermediate technology based on smaller working units, community ownership, and regional workplaces utilising local labour and resources. For him, small was beautiful. Businessmen, all over the world, did not believe in Schumacher's philosophy. Inspired by economies of scale, industrialists went in for huge organisations and mass production systems.

(b) A typical Product Life Cycle has four stages:

(a) **Introduction phase:** During this phase the product (either completely new product or a new variant of the existing product) gets introduced in the market for the first time. For the introduction of the new products in the market, at this stage, the volume stays low, sales are low and effect of learning curve is not realized. Hence, the return on investment is low. This phase is featured by higher level of expenditure in the promotional campaigns. The pricing depends on the innovativeness of the product, nature of the target customer segment and most often discounts are given to entice the potential customers.

(b) **Growth phase:** In this stage, the company focuses on rapid revenue generation and market growth. During this phase, the product sales intend to cover up the fixed cost and bring down the overhead costs while utilizing the learning in the previous stage. Promotional and advertising strategy is decided according to the level of the growths. The objective is to hold the existing customers and create new customers.

(c) **Maturity phase:** This phase is characterized by saturation in the market place. This is a critical phase for the organizations. In the earlier stage (i.e., growth) the objective of the company is to achieve fast growth while in this stage the company wants to flatten the curve to slow down the movement toward fall down. Further, at this stage the organizations infuse variety and differentiation in the products most often to start a new PLC from hereon for finding out a niche market. At this stage, organizations get engaged in aggressive promotional and pricing programs. Profit margin is comparatively lower at this stage.

(d) **Decline phase:** After maturity, the products start losing their attractiveness in the market and sales get falling down. Profit margin becomes increasingly narrower. The organizations take a call to scrap the product and focus on cost consolidation. Sometimes, organizations come up with revival planning with

product differentiation and promotional strategy to improve the sales.

3. (a) Discuss the objectives of production planning and control. **[7]**

(b) With the help of following data identify the trend of sales for the next five years:

Years	2019	2020	2021	2022	2023	2024
Sales (in lakhs)	100	110	115	120	135	140

[7]

Answer:

(a) Production planning and control fulfils these objectives by focusing on the following points:

(i) Analysing the orders to determine the raw materials and parts that will be required for their completion,

(ii) Answering questions from customers and salesmen concerning the status of their orders,

(iii) Assisting the costing department in making cost estimates of orders,

(iv) Assisting the human resource departments in the manpower planning and assignment of men to particular jobs,

(v) Controlling the stock of finished parts and products,

(vi) Determining the necessary tools required for manufacturing,

(vii) Direction and control of the movement of materials through production process,

(viii) Initiating changes in orders as requested by customers while orders are in process,

(ix) Issuing requisitions for the purchase of necessary materials,

(x) Issuing requisitions for the purchase or manufacture of necessary tools and parts,

(xi) Keeping the up-to-date records scheduled and in process,

(xii) Maintaining stocks of materials and parts,

(xiii) Notifying sales and accounting of the acceptance of orders in terms of production feasibility,

(xiv) Preparing the route sheets and schedules showing the sequence of operation required to produce particular products,

(xv) Production of work orders to initiate production activities,

(xvi) Receiving and evaluating reports of progress on particular orders and initiating corrective action, if necessary,

(xvii) Receiving orders from customers,

(xviii) Revising plans when production activities cannot confirm to original plans and when revisions in scheduled production are necessary because of rush orders.

(b) Computation of trend values of sales

Year	Time deviations from the middle of 2021 and 2022 assuming 6 months = 1 unit	Sales (in lakh ₹)	Squares of time deviation	Product of time deviation and sales
	X	**Y**	**X^2**	**XY**
2019	-5	100	25	-500
2020	-3	110	9	-330
2021	-1	115	1	-115
2022	+1	120	1	+120
2023	+3	135	9	+405
2024	+ 5	140	25	+700
n = 6	ΣX = 0	ΣY = 720	$\Sigma X^2 = 70$	ΣXY = 280

Regression equation of Y on X:

Y = a + bX

To find the values of a and b

$$a = \frac{\Sigma Y}{n} = \frac{720}{6} = 120$$

$$b = \frac{\Sigma XY}{\Sigma X^2} = \frac{280}{70} = 4$$

Hence regression equation comes to Y = 120 + 4X

Sales forecast for the next years, i.e., 2025-29

Y_{2025} = 120 + 4 (+7) = 120 + 28 = ₹148 lakhs

Y_{2026} = 120 + 4 (+9) = 120 + 36 = ₹156 lakhs

Y_{2027} = 120 + 4 (+11) = 120 + 44 = ₹164 lakhs.

Y_{2028} = 120 + 4 (+13) = 120 + 52 = ₹172 lakhs.

Y_{2029} = 120 + 4 (+15) = 120 + 60 = ₹180 lakhs.

4. (a) Four jobs can be processed on four different machines, with one job on one machine. Resulting profits vary with assignments. They are given below:

		Machines			
		A	**B**	**C**	**D**
Jobs	**I**	**42**	**35**	**28**	**21**
	II	**30**	**25**	**20**	**15**
	III	**30**	**25**	**20**	**15**
	IV	**24**	**20**	**16**	**12**

Calculate the optimum assignment of jobs to machines and the corresponding profit. **[7]**

(b) The processing times (tj) in hrs for the five jobs of a single machine scheduling is given. Find the optimal sequence which will minimise the mean flow time and find the mean flow time.

Prepare a sequence which will minimise the weighted mean flow time and also find the mean flow time

Job (j)	**1**	**2**	**3**	**4**	**5**
Processing time (tj) hrs	**30**	**8**	**10**	**28**	**16**
Weight (Wj)	**1**	**2**	**1**	**2**	**3**

[7]

Answer:

(a) As this is a problem of Maximisation, the same is converted to one of Minimisation by firming a Relative Loss Matrix where all the elements of the given matrix are subtracted from the highest element of the matrix (which is 42 in this case)

Relative Loss Matrix

M/cs / Jobs	**A**	**B**	**C**	**D**
I	0	7	14	21
II	12	17	22	27
III	12	17	22	27
IV	18	22	26	30

Matrix after Row Operation

M/cs / Jobs	**A**	**B**	**C**	**D**
I	0	7	14	21
II	0	5	10	15
III	0	5	10	15
IV	0	4	8	12

Matrix after Column Operation

M/cs / Jobs	**A**	**B**	**C**	**D**
I	~~0~~	3	6	9
II	~~0~~	1	2	3
III	~~0~~	1	2	3
IV	~~0~~	~~0~~	~~0~~	~~0~~

Here minimum no. of horizontal and vertical straight lines to cover all the zeros = 2 ≠ Order of the matrix (4).

So the solution is non optimal.

Improved Matrix (Non Optimal)

Jobs \ M/cs	A	B	C	D
I	0	2	5	8
II	0	0	1	2
III	0	0	1	2
IV	1	0	0	0

Here minimum no. of horizontal and vertical straight lines to cover all the zeros = 3 ≠ Order of the matrix (4). So the solution is non optimal.

Further Improved Matrix [Optimal Solution (i)

Jobs \ M/cs	A	B	C	D
I	[0]	2	4	7
II	0	[0]	0	1
III	0	0	[0]	1
IV	2	1	0	[0]

Here minimum no. of horizontal and vertical straight lines to cover all the zeros = 4 = Order of the matrix. So the solution is optimal.

Further Improved Matrix (Optimal Solution-ii)

Jobs \ M/cs	A	B	C	D
I	[0]	2	4	7
II	0	0	[0]	1
III	0	[0]	0	1
IV	2	1	0	[0]

Assignment as per Soution (i)			Assignment as per Soution (ii)		
Jobs	**M/cs**	**Profit (₹)**	**Jobs**	**M/cs**	**Profit (₹)**
I	A	42	I	A	42
II	B	25	II	C	20
III	C	20	III	B	25

IV	D	12	IV	D	12
Total	–	**₹99**	Total	–	**₹99**

Maximum Profit = ₹99

(b)

(a) First arrange the jobs as per the shortest processing time (SPT) sequence.

Job (j)	2	3	5	4	1
Processing time (t_j) hrs	8	10	16	28	30

Therefore, the job sequence that minimises the mean flow time is

2-3-5-4-1. Computation of minimum flow time (F min)

The flow time is the amount of time the job 'j' spends in the system. It is a measure which indicates the waiting of jobs in the system. It is the difference between the completion time (C_j) and ready time (R_j) for job j.

$F_j = C_j - R_j$

Job (j)	2	3	5	4	1
Processing time (t_j) hrs	8	10	16	28	30
Completion time (C_j)	8	18	34	62	92

Since the ready time (R_j) = 0 for all j, the flow time ($\bar{F}_j$) is equal to C_j for all j.

Mean flow time = $\left(\bar{F}\right) = \frac{1}{n}\sum_{j=1}^{n} F_j = \frac{1}{5}[8+18+34+62+92] = \frac{1}{5}[214] = 42.8$ hours

(b) The weights are given as follows:

Job (j)	1	2	3	4	5
Processing time (t_j) hrs	30	8	10	28	16
Weight (W_j)	1	2	1	2	3

The weighted processing time = **processing time (tj) / weight (Wj)**

The weighted processing time is represented as

Job (j)	1	2	3	4	5
Processing time (t_j hrs)	30	8	10	28	16

Weight (W_j)	1	2	1	2	3
Weighted Processing time (t_j/ W_j)	30	4	10	14	5.31

Thus, arranging the jobs in the increasing order of t_j/W_j (weighted shortest processing time WSPT) we

have

Job (j)	2	5	3	4	1
Weighted Processing line (t_j/W_j)	4	5.31	10	14	30

optimal sequence that minimises the weighted mean flow time is 2-5-3-4 -1.

Weighted Mean flow time $\left(\bar{F}_w\right) : \bar{F}_w = \frac{\sum_{j=1}^{n} W_j F_j}{\sum_{j=1}^{n} W_j}$

Job (j)	2	5	3	4	1
Processing time (t_j) hrs	8	16	10	28	30
$F_j = (C_j - R_j)$	8	24	34	62	92
W_j	2	3	1	2	1
$F_j \times W_j$	16	72	34	124	92

The weighted mean flow time is computed as follows for optimal

sequence. Weighted mean flow time $(\bar{F}_w)$ is computed as

$$\bar{F}_w = \frac{(16+72+34+124+92)}{(2+3+1+2+1)} = 37.55 \text{ hrs.}$$

5. (a) A Public transport system is experiencing the following number of breakdowns for months over the past 2 years in their new fleet of vehicles:

Number of breakdowns	**0**	**1**	**2**	**3**	**4**
Number of months this occurred	**2**	**8**	**10**	**3**	**1**

Each break down costs the firm an average of ₹2,800. For a cost of ₹1,500 per month, preventive maintenance can be carried out to limit the breakdowns to an average of one per month. Calculate the breakdown cost and preventive maintenance cost per month, and advise the company on which policy is more suitable. [7]

(b) The following table gives data on normal time & cost and crash time & cost for a project.

Activity	Normal		Crash	
	Time (days)	Cost (₹)	Time (days)	Cost (₹)
1—2	6	600	4	1,000
1—3	4	600	2	2,000
2—4	5	500	3	1,500
2—5	3	450	1	650
3—4	6	900	4	2,000
4—6	8	800	4	3,000
5—6	4	400	2	1,000
6—7	3	450	2	800

The indirect cost per day is ₹100.

(i) Prepare the network and identify the critical path.

(ii) Calculate the normal project duration and associated cost.

(iii) Crash the relevant activities systematically and determine the optimum project completion time and cost. **[7]**

Answer:

(a) Converting the frequencies to a probability distribution and determining the expected cost/month of breakdowns we get:

No. of breakdowns (x)	Frequency in months (f)	Probability ($p = f/\Sigma f$)	Expected no. of breakdowns (px)
0	2	0.083	0.000
1	8	0.333	0.333
2	10	0.417	0.834
3	3	0.125	0.375
4	1	0.042	0.168
	$\Sigma f = 24$	$\Sigma p = 1$	Total 1.710 = Σpx

Expected Breakdown cost per month = Expected no. of breakdowns per month × cost of each breakdown

= 1.710 × ₹2800 = ₹4788.

Preventive maintenance cost per month: -

Average cost of one breakdown/month = ₹2, 800

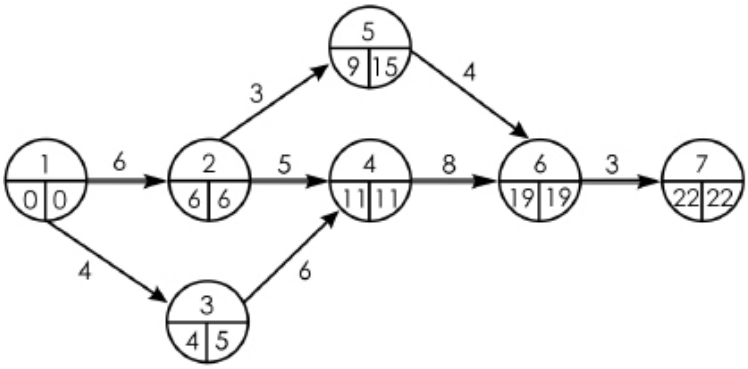
Maintenance contract cost/month = ₹1,500

Total = ₹4,300

Thus, preventive maintenance policy is suitable for the firm.

(b)

(i) The network for normal activity times indicates a project time of 22 days with the critical path 1-2-4-6-7.



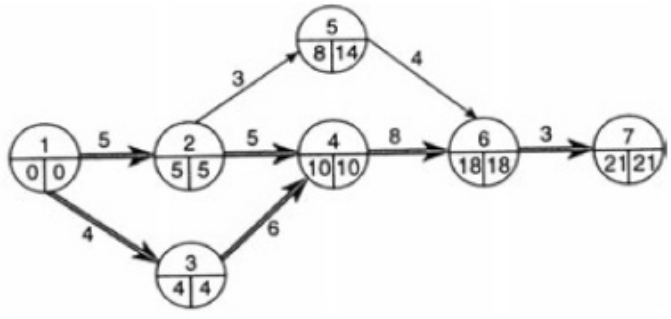
(ii) Normal project duration is 22 days and the associated cost is as follows: Total cost = Direct normal cost + Indirect cost for 22 days.
= 4,700 + 100 × 22 = ₹6,900.

(iii) For critical activities, cost - slope is given below:

Critical activity	Cost-slope* (₹/day)
1-2	$\frac{1000-600}{6-4} = 200$
2-4	$\frac{1500-500}{5-3} = 500$
4-6	$\frac{3000-800}{8-4} = 550$
6-7	$\frac{800-450}{3-2} = 350$

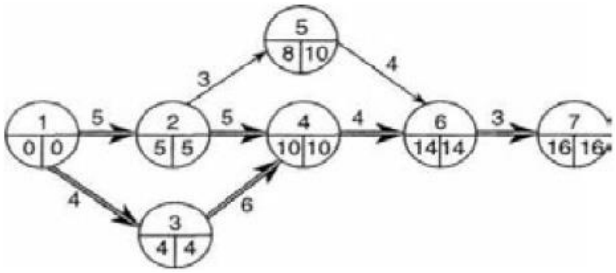
*Cost slope = $\frac{\text{Crash Cost} - \text{Normal Cost}}{\text{Normal Time} - \text{Crash Time}}$

Of the activities lying on the critical path, activity 1—2 has lowest cost slope Therefore, we shall first crash this
activity by just one day.
Duration = 21 days, and cost = 4700 + 1 × 200 + 100 × 21 = ₹7000.



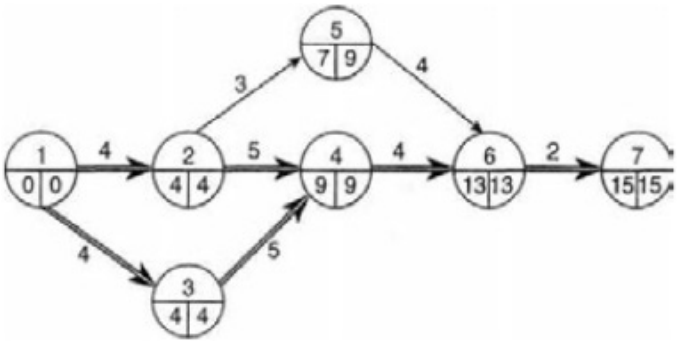
Other activities too have become critical. Now we have 2 critical paths:
1→2→4→6→7 and 1→3→4→6→7.

To reduce duration of the activity further, we shall have to reduce duration of both the paths. We have following alternatives:
Crash activity 6 — 7 by 1 day at a cost of ₹350.
Crash activity 4 — 6 by 4 days at the cost of ₹550 per day.
Crash activities 1—2 and 1 — 3 by 1 day each at a cost of ₹(200 + 700) = ₹900.
Crash activities 2 — 4 and 3 — 4 by 2 days each at a cost of ₹(500 + 550) = ₹1050/day.
Thus, we shall first crash activities 6 — 7 by 1 day and then activity 4 — 6 by 4 days.
On crashing activity 6 — 7 by 1 day, cost = 4900 + 350 × 1 + 100 × 20 = ₹7250, and duration = 20 days.
Next we crash 4—6 by 4 days.
Cost = 5250 + 550 × 4 + 100 × 16 = ₹9050. Duration = 16 days.



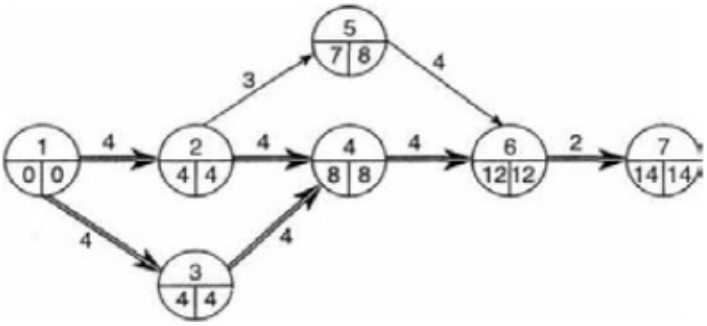
Next we crash activities 1—2 and 3—4 by 1 day each.

Cost = 7450 + 200 × 1 + 550 × 1 + 100 × 15 = ₹9700.



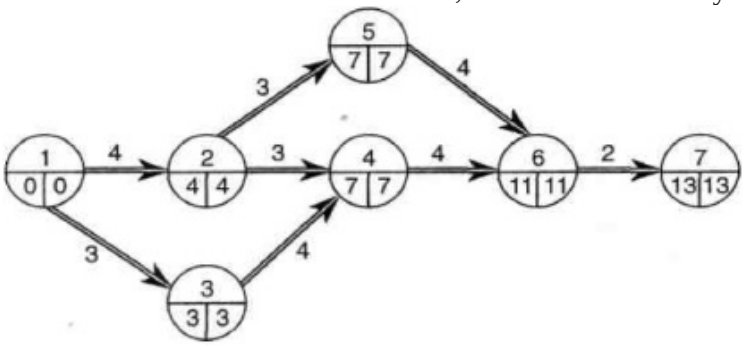
Next we crash activities 2 ⟶ 4 and 3 ⟶ 4 by 1 day each.

Cost = 8200 + 500 × 1 + 550 × 1 + 100 × 14 = ₹10,650. Duration = 14 days.



We crash activities 1—3 and 2—4 by 1 day each.

Cost = 9250 + 700 × 1 + 500 × 1 + 100 × 13 = ₹11,750 Duration = 13 days.



Now there are three critical paths:

1—2—5—6—7, 1—2—4—6—7, 1—3—4—6—7

Also, no further crashing is possible. Hence minimum duration of the project =13 days with cost ₹11,750

6. (a) Identify some issues that need to be kept in mind while setting objectives. [7]

(b) Describe the meaning of cloud computing and summarize its advantages and disadvantages. [7]

Answer:

(a) The important issues that need to be kept in mind while setting objectives are as follows:

- Specificity: Specificity is related to the organisational level for which a set of objectives have been stated. Objectives may be stated at different levels of specificity. At one extreme they might be very broadly stated goals and on the other extreme it may be translated in to performance targets. This issue of specificity may be resolved by stating specificity at different levels of the organisation and prefixing terms such as corporate, general and particular so that they serve the needs of performance and its evaluation.
- Multiplicity: The issue of multiplicity arise from the fact that it is rare for an organisation to work on a single objective or a few objectives. Since objectives deal with a large number of functional areas, a large number of them have to be formulated to cover the diverse aspects of the organisation's functioning. It may be mentioned that neither too few nor too many objectives are considered realistic. The issue of multiplicity takes into account the number and types of objectives that are being set.
- Periodicity: Objectives may be set for different time frame. It is possible to set long term, medium term and short term objectives. Normally organisations determine objectives for the long term and the short term. These different time frame of objectives need to be integrated with each other in order to achieve the desired result. Long term objectives tend to be general in nature as the outcomes tend to be less certain. On the other hand short term objectives tend to be more specific and comprehensive given the certainty involved in it.
- Verifiability: The issue of verifiability revolves around the question of deciding whether an objective has been met or not. Moreover, linked to verifiability is the concept of quantification. A definite way to measure an objective is to quantify it. In cases where objectives cannot be quantified, qualitative objectives may be set. Qualitative objectives may require some value judgements of experts from within and outside the organisation.
- Reality: It is often found that organisations have two set of objectives namely, official and operative. While the official objectives are those which the organisation professes to attain, the operative objectives are those which they seek to attain in reality. For example developing human resource is the official objective of most of the organisations. However to determine whether it is the operative objective will

depend on the amount of resource allocation that has been made towards the development of human resource.

- Quality: The capability of an objective to provide a specific direction and a tangible basis for evaluating performance determines the quality of an objective. For example stating that "to increase revenue" is considered to be a bad objective as it lacks the element of measurability. If the same objective is rephrased as "to increase the revenue by 30% in the next 6 months and thereafter increase it by 40%, maintainable for the next two years" can be considered to be a good objective.

(b) Cloud computing:

- Cloud computing is a general term for anything that involves delivering hosted services over the internet.
- These services are divided into three main categories or types of cloud computing: infrastructure as a service (IaaS), platform as a service (PaaS) and software as a service (SaaS).
  - IaaS providers, such as Amazon Web Services (AWS), supply a virtual server instance and storage, as well as application programming interfaces (APIs) that let users migrate workloads to a virtual machine (VM). Users have an allocated storage capacity and can start, stop, access and configure the VM and storage as desired.
  - In the PaaS model, cloud providers host development tools on their infrastructures. Users access these tools over the internet using APIs, web portals or gateway software. PaaS is used for general software development, and many PaaS providers host the software after it's developed.
  - SaaS is a distribution model that delivers software applications over the internet; these applications are often called web services. Users can access SaaS applications and services from any location using a computer or mobile device that has internet access. In the SaaS model, users gain access to application software and databases.
- A cloud can be private or public.
  - A public cloud sells services to anyone on the internet.
  - A private cloud is a proprietary network or a data center that supplies hosted services to a limited number of people, with certain access and permissions settings.
  - Private or public, the goal of cloud computing is to provide easy, scalable access to computing resources and IT services. Examples of cloud computing include Google Docs, Microsoft 365, Email services, Google Calendar, Skype, Wats App, Zoom, etc.

Cloud computing benefits to modern businesses including the following:

- Cost management: Cloud infrastructure can reduce capital costs, as organisations don't have to spend massive amounts of money buying and maintaining equipment. Moreover, companies don't need large IT teams to handle cloud data center operations because they can rely on the expertise of their cloud providers' teams. Cloud computing also cuts costs related to downtime
- Data and workload mobility: Cloud computing allows users to access data from anywhere with any device with just an internet connection. That means users don't have to carry around USB drives, an external hard drive or multiple CDs to access their data. Users can access corporate data through smart phones and other mobile devices, enabling remote employees to stay up to date with co-workers and customers. End users can easily process, store, retrieve and recover resources in the cloud. In addition, cloud vendors provide all the upgrades and updates automatically, saving time and effort.
- Business continuity and disaster recovery (BCDR): The biggest worry for organisations in the present

digital landscape is data loss. Storing data in the cloud guarantees that users can always access their data even if their devices, e.g., laptops or smart phones, are inoperable. With cloud-based services, organisations can quickly recover their data in the event of emergencies, such as natural disasters or power outages. This benefits BCDR and helps ensure that workloads and data are available even if the business suffers damage or disruption.

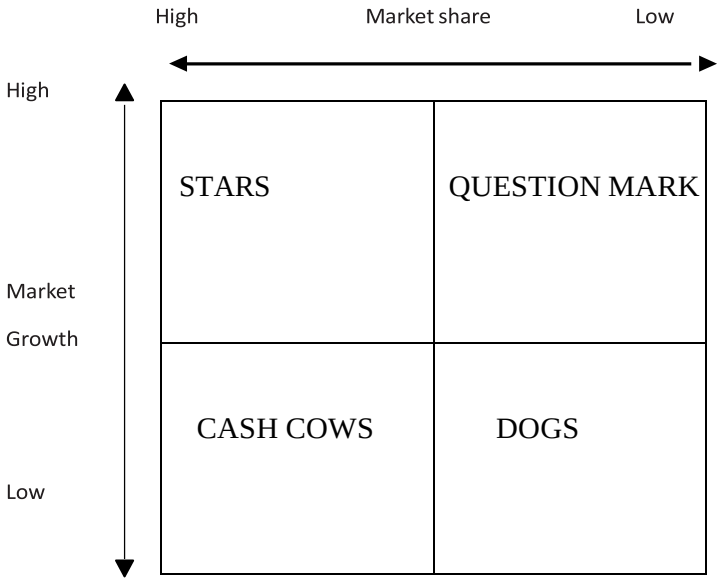
The demerits of cloud computing are:

- Cloud security: There is a clear lack of transparency regarding how and where sensitive information entrusted to the cloud provider is handled. When relying on the cloud, organisations risk data breaches, hacking of APIs and interfaces, compromised credentials and authentication issues.
- Cost unpredictability: The concept Pay-as-you-go subscription plans for cloud use, along with scaling resources to accommodate fluctuating workload demands, can make it tough to define and predict final costs.
- Lack of capability and expertise: With cloud-supporting technologies rapidly advancing, organisations are struggling to keep up with the growing demand for tools and employees with the proper skill sets and knowledge needed to architect, deploy, and manage workloads and data in a cloud.
- IT governance: The emphasis on do-it-yourself capability in cloud computing can make IT governance difficult, as there is no control over provisioning, de provisioning and management of infrastructure operations.
- Compliance with industry laws: When transferring data from on-premises local storage into cloud storage, it can be difficult to manage compliance with industry regulations through a third party.
- Management of multiple clouds: Every cloud is different, so multi-cloud deployments can disjoint efforts t address more general cloud computing challenges.
- Cloud performance: Network and provider outages can interfere with productivity and disrupt business processes if organisations are not prepared with contingency plans.
- Building a private cloud: Architecting, building and managing private clouds whether for its own purpose or for a hybrid cloud goal can be a daunting task for IT departments and staff.
- Cloud migration: The process of moving applications and other data to a cloud infrastructure often causes complications. Migration projects frequently take longer than anticipated and go over budget.
- Vendor lock-in: Switching between cloud providers can cause significant issues. This includes technical incompatibilities, legal and regulatory limitations and substantial costs incurred from sizable data migrations.

7. (a) Analyse the BCG matrix. Also discuss its advantages and disadvantages. [7]
(b) Discuss Porter's value chain of an organization. [7]

Answer:

(a) One of the most common and long-standing ways of conceiving of the balance of a portfolio of businesses is the Boston Consulting Group (BCG) matrix.



Here market share and market growth are critical variables for determining attractiveness and balance. High market share and high growth are, of course, attractive. However, the BCG matrix also warns that high growth demands heavy investment, for instance to expand capacity or develop brands. There needs to be a balance within the portfolio, so that there are some low growth businesses that are making sufficient surplus to fund the investment needs of higher growth businesses. The market growth/market share axes of the BCG matrix define four sorts of business:

- A star is a business unit which has a high market share in a growing market. The business unit may be spending heavily to keep up with growth, but high market share should yield sufficient profits to make it more or less self sufficient in terms of investment needs.
- A question mark (or problem child) is a business unit in a growing market, but not yet with high market share. Developing question marks into stars, with high market share, takes heavy investment. Many question marks fail to develop, so the BCG advises corporate parents to nurture several at a time. It is important to make sure that some question marks develop into stars, as existing stars eventually become cash cows and cash cows may decline into dogs.
- A cash cow is a business unit with a high market share in a mature market. However, because growth is low, investment needs are less, while high market share means that the business unit should be profitable. The cash cow should then be a cash provider, helping to fund investments in question marks.
- Dogs are business units with a low share in static or declining markets and are thus the worst of all combinations. They may be a cash drain and use up a disproportionate amount of company time and resources. The BCG usually recommends divestment or closure.

The BCG matrix has several advantages.

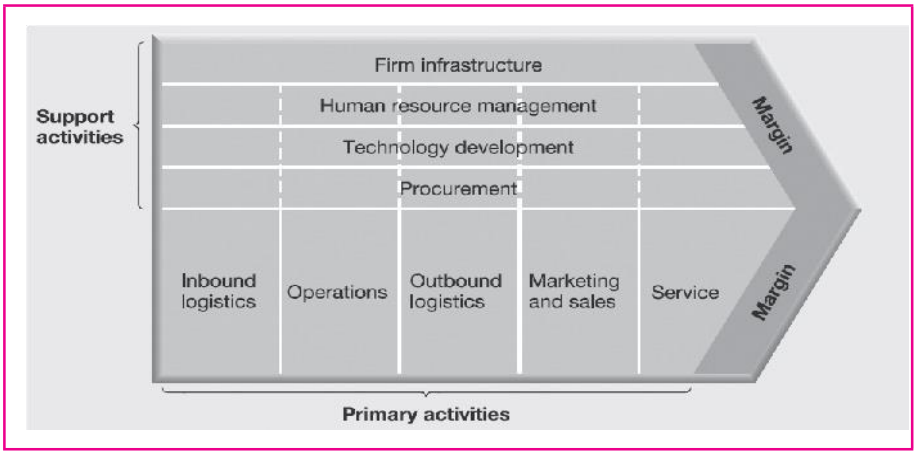
- It provides a good way of visualising the different needs and potential of all the diverse businesses within the corporate portfolio.
- It warns corporate parents of the financial demands of what might otherwise look like a desirable portfolio of high-growth businesses.
- It also reminds corporate parents that stars are likely eventually to wane.

- Finally, it provides a useful discipline to business unit managers, underlining the fact that the corporate parent ultimately owns the surplus resources they generate and can allocate them according to what is best for the corporate whole. Cash cows should not hoard their profits. Incidentally, surplus resources may not only be investment funds: the corporate parent can also reallocate business unit managers who are not fully utilised by low-growth cash cows or dogs.

However, there are at least three potential problems with the BCG matrix:

- Definitional vagueness: It can be hard to decide what high and low growth or share mean in particular situations. Managers are often keen to define themselves as 'high share' by defining their market in a particularly narrow way (for example, ignoring relevant international markets)
- **Capital market assumptions:**
  - The notion that a corporate parent needs a balanced portfolio to finance investment from internal sources (cash cows) assumes that capital cannot be raised in external markets, for instance by issuing shares or raising loans.
  - The notion of a balanced portfolio may be more relevant in countries where capital markets are underdeveloped or in private companies that wish to minimise dependence on external shareholders or banks.
- **Unkind to animals:**
  - Both cash cows and dogs receive ungenerous treatment, the first being simply milked, the second terminated or cast out of the corporate home. This treatment can cause motivation problems, as managers in these units see little point in working hard for the sake of other businesses.
  - There is also the danger of the self-fulfilling prophecy. Cash cows will become dogs even more quickly than the model expects if they are simply milked and denied adequate investment.
  - Finally, the notion that a dog can be simply sold or closed down also assumes that there are no ties to other business units in the portfolio, whose performance might depend in part on keeping the dog alive. This portfolio approach to dogs works better for conglomerate strategies, where divestments or closures are unlikely to have knock-on effects on other parts of the portfolio.

(b)



The value chain describes the categories of activities within and around an organisation, which together create a product or service. The concept was developed in relation to competitive strategy by Michael Porter. The term value chain refers to the idea that a company is a chain of activities that transforms inputs into outputs that customer's value. The transformation process involves both primary activities and support activities that add value to the product. Activities can be broadly divided into two types namely, primary activities and secondary or support activities.

Primary activities are directly concerned with the creation or delivery of a product or service. For example, for a manufacturing business the primary activists are as follows:

- Inbound logistics are activities concerned with receiving; storing and distributing inputs to the product or service including materials handling, stock control, transport, etc.
- Operations transform these inputs into the final product or service. Operations include machining, packaging, assembly, testing, etc.
- Outbound logistics collect, store and distribute the product to customers, for example warehousing, materials handling, distribution, etc.
- Marketing and sales provide the means whereby consumers/users are made aware of the product or service and are able to purchase it. This includes sales administration, advertising and selling.
- Service includes those activities that enhance or maintain the value of product or service, such as installation, repair, training and spares.

Support activities help to improve the effectiveness or efficiency of primary activities. The following are the support or secondary activities:

- Procurement: It refers to the processes that occur in many parts of the organisation for acquiring the various resource inputs to the primary activities.
- Technology development: All value activities have a 'technology', even if it is just know-how. Technologies may be concerned directly with a product or with processes or with a particular resource.
- Human resource management: This transcends all primary activities. It is concerned with those activities involved in recruiting, managing, training, developing and rewarding people within the organisation.
- Infrastructure: The formal systems of planning, finance, quality control, information management, and the structures and routines that are part of an organisation's culture.

In the value chain process the value can be added early in the value chain, i.e. upstream and later in the value chain, i.e. downstream.

8. (a) Examine various approaches to strategic control. [7]
(b) Discuss the types of strategic controls. [7]

Answer:

(a) According to Dess, Lumpkin and Taylor (2003), there are two approaches to strategic control namely, Traditional Approach and Contemporary Approach.

Traditional Approach

This approach to strategic control is sequential:

- Strategies are formulated and top management set the goals.
- Strategies are implemented.

- Performance is measured against goals.
- Corrective measures are taken, if there are deviations.

The control is based on a feedback loop from performance measurement to strategy formulation. This type of approach has its own limitations. This process typically involves lengthy time lags and often tied to a firm's annual planning cycle. This approach not being proactive is not sufficient to control a strategy. As strategy involves a long period of time for implementation and to produce results it becomes imperative that there should be continuous evaluation of the planning premises and strategy implementation in order to get the desired results.

Contemporary Approach

Under this approach, adapting to and anticipating both internal and external environment, change is an integral part odd strategic control. This approach addresses the assumptions and premises that provide the foundation for the strategy. The key question addressed here is: do the organisations goals and strategies still fit within the context of the current environment? This involves two key actions:

(a) Managers must continuously scan and monitor the external and internal environment.

(b) Managers must continuously update and challenge the assumptions underlying the strategy.

This may even need changes in the strategic direction of the firm. While strategic control requires the contemporary approach, operational control is generally done through traditional approach.

(b) There are four types of strategic controls:

- Premise Control: Strategy is built around several assumptions or predictions, which are called planning premises.
  - Premise control checks systemically and continuously whether the assumptions on which the strategy is based are still valid.
  - If a vital premise is no longer valid, the strategy may have to change. The sooner these invalid assumptions are detected and rejected, the better are the chances of changing the strategy.
  - The premise control is concerned with two types of factors namely environmental factor and industry factors.
  - A firm's performance is affected by changes in environmental factors like the rate of inflation, government regulations, social changes etc. Although the firm has little of no control over environmental factors, these factors have considerable influence over the success of the strategy because strategies are generally based on key assumptions about them.
  - Industry factors also affect the performance of a company. Competitors, suppliers, buyers, substitutes, new entrants, etc. are some of the industry factors about which assumptions are made.
  - If any of these assumptions go wrong, strategy may have to be changed.

- Strategic Surveillance: Strategic surveillance is a broad-based vigilance activity in all daily operations both inside and outside the organization. With such vigilance, the events that are likely to threaten the course of a film's strategy can be tracked. Business journals, trade conferences, conversations observations etc. are some of the information sources for strategic surveillance

- Special Alert Control: Sudden, unexpected events can drastically alter the course of the firm's strategy. Such events trigger an immediate and intense reconsideration of the firm's strategy. Generally, firms develop contingency plans along with crisis teams to respond to such sudden, unexpected events.

- Implementation Control: Strategy implementation takes place as a series of steps, programmes, investments and moves that occur over an extended period. Resources are allocated, essential people are put in place, special programmes are undertaken and functional areas initiate strategy related activities.
  - Implementation control is aimed at assessing whether the plans, programmes and policies are actually guiding the organisation towards the predetermined objectives or not.
  - Implementation control assesses whether the overall strategy should be changed in the light of the results of specific units and individuals involved in implementation of the strategy.
  - Two important methods to achieve implementation control are monitoring strategic thrusts and milestone review.
  - Monitoring Strategic Thrusts are small critical projects that need to be done if the overall strategy is to be accomplished. They are critical success factors in the success of strategy.
  - Milestones are critical events that should be reached during strategy implementation. These milestones may be fixed on the basis of critical events, major resource allocation and time frames. Network controls like PERT/CPM for project implementation are examples of milestone reviews.
  - After doing a milestone review, managers often undertake a full scale reassessment of the strategy to decide whether to continue or refocus the firm's strategy.
  - Implementation control is also done through operational control systems like budgets, schedules, key success factors etc.