

INTERMEDIATE EXAMINATION

December 2023

P-9(OSSM)
Syllabus 2016

OPERATIONS MANAGEMENT AND
STRATEGIC MANAGEMENT

Time Allowed: 3 Hours

Full Marks: 100

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

All Section are compulsory. Each section contain instruction regarding the number of questions to be answered within the section.

All working notes must form part of the answer.

Whenever necessary, candidates may make appropriate assumptions and clearly state them in the respective Answer.

Section – A

Operations Management

PART-I

Part-I contain Question No. 1. All parts of this question are compulsory.

Answer the following questions:

1. (a) **Choose the correct option from the four alternatives given: (You may present only the Roman Numeral and the alphabet chosen for your answer.)** $1 \times 10 = 10$
- (i) Out of the following recent trends in Production and Operations Management which one involves the concept of clean - state approach or starting from scratch in redesigning the business process?
- (A) Technology
(B) Re-engineering
(C) Agile Manufacturing
(D) Lean Production
- (ii) In which one of the following facility layouts, the material or major component remains in a fixed location, and tools, machinery and men as well as other pieces of material are brought to this location?
- (A) Product Layout
(B) Process Layout
(C) Hybrid Layout
(D) Static Layout

- (iii) The design activity that reduces variety among a group of products or parts is referred to as:
- (A) Reliability
 - (B) Simplification
 - (C) Standardization
 - (D) Specification
- (iv) SINC Ltd., a Copper plant has a design capacity of 40000 tons of Copper per day and an actual output of 30000 tons of Copper per day. If its effective capacity is of 37500 tons per day, its utilization will be
- (A) 80 %
 - (B) 75 %
 - (C) 70 %
 - (D) 60 %
- (v) Which one of the following standards is concerned with "Minimization of harmful effects to the environment, caused by its operations?"
- (A) ISO 9001
 - (B) ISO 9002
 - (C) ISO 14000
 - (D) ISO 9004
- (vi) The Slack Time of Tail event of Activity-G of a Project is 0 day. If the total Float and Free Float of the activity G are 8 days and 5 days respectively, the Independent Float of activity G will be :
- (A) 3 days
 - (B) 4 days
 - (C) 5 days
 - (D) 8 days
- (vii) Advantage of preventive maintenance includes
- (A) increased breakdown and downtime.
 - (B) many large scale repairs.
 - (C) decreased equipments life.
 - (D) better product quality.

- (viii) The volume of goods or services as well as varieties of product or services that can be associated with Batch processing is —
- (A) One only
(B) A few
(C) Moderate
(D) Very large
- (ix) With reference to line balancing, the interval of time between two successive products coming off the end of a production line or assembly line is referred to as —
- (A) Wait time
(B) Run time
(C) Cycle time
(D) Task time
- (x) The output of MOB Ltd., a small scale industry manufacturing hose couplings, is 18 pieces per shift of 8 hours. If the standard time per piece is 24 minutes, what will be the productivity of Small Scale Industry (MOB Ltd.)?
- (A) 60%
(B) 70%
(C) 75%
(D) 90%

(b) Match the Statement in Column I with the most appropriate statement in Column II. (You may Opt to write only the Roman numeral and the matched alphabets): 1×6=6

	Column I		Column II
(i)	Agile Manufacturing	(A)	Aim of Work Study
(ii)	Off - loading some of the jobs to outside vendors	(B)	Productivity
(iii)	The way, the production of goods or services is organized.	(C)	Sub - contracting
(iv)	Finding the best and most efficient way of using the available resources-men, materials, money and machinery.	(D)	Flexibility
(v)	The quality or state of being productive	(E)	Network
(vi)	A means of graphically depicting all the operations involved in a project.	(F)	Process Planning

- (c) State whether the following statements are 'True' or 'False'. (You may only the Roman numeral and whether 'True' or 'False' without copying the statements into the answer books):

1×6=6

(i)	Right sizing has been forces on firms to shed their obesity.
(ii)	The selection of a place for locating a plant is also called as Facility Layout.
(iii)	“Translating customer needs and wants into product and services requirements” fall under 'Marketing aspect' or 'Product design'.
(iv)	Routing and scheduling are independent of each other and can be performed in isolation.
(v)	The concept of continuous improvement (KAIZEN) falls under TQM.
(vi)	GANTT Chart gives a clear indication of the interrelationship between separate activities.

PART-II

Answer any three questions from the question nos. 2 to 5. Each question carries 16 marks.

16×3 =48

2. (a) (i) In context with today's modern operations function, **list down** various techniques which companies are employing to gain competitive advantage.

- (ii) “Three aspect of Customer Service Specification, cost and timing are described in a little more details for four functions”. **In this context summarize** the Principal Customer wants.

4+4=8

- (b) As an Analyst of POXN Ltd., you are interested in studying whether some relationship does exist between the expenditure on Advertising and the Annual Sales . Accordingly the data of expenditure on Advertising and Sales are collected for past six years as follows:

Years	2017	2018	2019	2020	2021	2022
Expenditure on Advertising (X) (₹ in Crore)	1	2	4	3	10	4
Annual Sales (Y) (₹ in Crore)	18	23	32	28	38	29

Required:

- (i) **Fit** a Linear Regression of Y on X.
(ii) **Predict** the annual sales when expenditure on Advertising is Rs 5 Crore.
(iii) **Estimate** the expenditure on Advertising for annual sales of Rs 42 Crore.

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3. (a) "Virtually every good or service is made by using some variation of one of the three process strategies". **In this context examine** each of three process strategies. $2 \times 3 = 6$
- (b) (i) Identify underlying principles in TQM. 4
- (ii) The Time remaining (number of days until due date) and the work remaining (number of days still required to finish the work) for 6 Jobs of ROBIN Ltd., which were assigned the Jobs P to T and Z as they are arrived to the shop, are shown below:

Jobs	Number of days until due date	Number of days of work remaining
P	8	4
Q	5	8
R	4	3
S	9	6
T	7	5
Z	10	10

Required:

Sequence the Jobs according to priority established by

- (i) Least Slack (LS) Rule
- (ii) Longest Processing Time (LPT) Rule
- (iii) Critical Ratio Rule $2 \times 3 = 6$
4. (a) A marketing manager of AOVN Ltd., has four salesmen and four sales districts. Considering the capabilities of the salesmen and the nature of districts, Marketing manager estimates that sales per month (in thousand rupees) for each salesman in each district would be as follows:

Salesman	DISTRICT			
	A	B	C	D
P	40	33	26	19
Q	28	23	18	13
R	28	23	18	13
S	22	18	14	10

Required:

- (i) **Suggest** a suitable allocation of salesmen with the districts so that total sales will maximum.
- (ii) **Assess** the total sales (in thousand rupees) pertaining thereto. $6 + 2 = 8$

- (b) Observations of past data show the following patterns in respect of inter-arrival duration and service duration in a single channel queuing system:

Arrival of Customers		Services	
Inter-Arrival time (Minutes)	Probability	Services time (Minutes)	Probability
2	0.20	4	0.25
4	0.24	6	0.34
6	0.28	8	0.26
8	0.18	10	0.15
10	0.10	—	

The random number are given to be used for the simulation of arrival and service patterns.

Arrival	74	22	90	05	42
Service	40	18	71	92	64

Required:

Simulate the queue for the first 5 arrives and assess the following:

- (i) Average waiting time of a customer.
 - (ii) Average idle time in the queue. 6+1+1=8
5. (a) **VITNA Ltd.**, a Manufacturing Company, from its past experience estimates that maintenance cost per year in a machine which purchase price is ₹ 150000 and the resale value of machine will be as follows:

	(₹ in Thousand)							
Years	1	2	3	4	5	6	7	8
Maintenance cost (Rs) M(t)	20	40	20	25	30	40	45	50
Resale value (Rs) S(t)	130	120	115	105	90	75	60	50

(Cost of money is zero.)

Required:

- (i) **Determine** the average cost of machine to date for each year.
- (ii) **Identify** at what age should the machine be replaced on economic consideration. Assuming the cost of money is zero. 5+2=7

- (b) HYAAN Ltd., is gearing up to its next big invitational track meet. It has listed the required activities for the same and their required times in days as follows:

Activities and Identification	A	B	C	D	P	T	Z
	1-2	1-3	1-4	2-5*	2-3	3-5	4-5
Preceding	-	-	-	A	A	B & P	C
Planning Time (Days)	15	17	11	8	7	12	13

Required:

- (i) **Develop** a Network – diagram and identify all the paths through it.
- (ii) **Identify** the critical path and completion time (days)
- (iii) **Assess** the EST, LST, Free Float and Independent Float for all activities of the project.

3+1+5=9

Section – B
Strategic Management

PART-I

Part-I contains Question No. 6 which is compulsory.

- 6. Choose the correct answer from the given alternatives. (You may write only the Roman numeral and the Alphabet chosen for your answer):**

1×6=6

- (i) Which one of the following is the advantage of Strategic Management?
 - (A) It can be expensive.
 - (B) Impedes flexibility.
 - (C) The future doesn't unfold as anticipated.
 - (D) Discharges board responsibility
- (ii) Which one of the following can be considered as 'Threat'?
 - (A) Poor product - mix
 - (B) Technology gap
 - (C) Free imports
 - (D) Demand gap
- (iii) Redesign, Re-tooling and RE-orchestrating form the key components of—
 - (A) TQM
 - (B) BPR
 - (C) SWOT
 - (D) BCG Model

- (iv) The mission of a firm
- (A) defines its reasons for existence.
 - (B) describes its future business.
 - (C) clearly provides the direction that company wants to follow.
 - (D) promotes entrepreneurship'.
- (v) The BCG growth matrix is based on the following two dimensions :
- (A) Market size and Market Growth
 - (B) Market share and Market growth
 - (C) Market size and Profit margins
 - (D) None of the above
- (vi) In which stage of BPR Implementation, the new process is monitored to examine total quality programs?
- (A) The Initiation stage
 - (B) The Diagnosis stage
 - (C) The Redesign stage
 - (D) The Evaluation stage

PART-II

Answer *any two* question from the question nos. 7 to 9

Each question carries 12 marks.

12×2=24

7. (a) "Organisation cannot declare the mission just on some great whim and fancy, its should be based on organizations' existing capabilities and achievable milestones." **In this context summarize** the guidelines for formulation of 'Mission' Statement. 6
- (b) "A systematic approach to formalizing strategic plans consists of considerable steps". According to this, **demonstrate** in brief the steps **involved** in strategic planning (Any Five). 6
8. (a) "Structural Drivers of Change are forces likely to affect the structure of an industry, Sector or market". **In this context, enumerate** the factors by which structural Drivers of change are influenced. 6
- (b) "All methodologies of a Business Process Re-engineering project implementation could be divided in general 'Model Stages'. **In this context, state** the said 'Model Stages'. 6
9. Write short notes on *any three* out of the following four questions: 4×3=12
- (a) **State** what are the various stage involved in the Strategic Management Framework (Any Four).
 - (b) **What are** the approaches in Strategic Planning?
 - (c) **Enumerate** some contingency plans commonly established by firms.
 - (d) **Bring out** the advantages and disadvantages of SBU Structure.