PAPER – 9 – OPERATIONS MANAGEMENT & INFORMATION SYSTEMS

The following table lists the learning objectives and the verbs that appear in the syllabus learning aims and examination questions:

	Learning objectives	Verbs used	Definition
LEVEL B	KNOWLEDGE What you are expected to know	List	Make a list of
		State	Express, fully or clearly, the details/facts
		Define	Give the exact meaning of
	COMPREHENSION What you are expected to understand	Describe	Communicate the key features of
		Distinguish	Highlight the differences between
		Explain	Make clear or intelligible/ state the meaning or purpose of
		Identity	Recognize, establish or select after consideration
		Illustrate	Use an example to describe or explain something
	APPLICATION How you are expected to apply your knowledge	Apply	Put to practical use
		Calculate	Ascertain or reckon mathematically
		Demonstrate	Prove with certainty or exhibit by practical means
		Prepare	Make or get ready for use
		Reconcile	Make or prove consistent/ compatible
		Solve	Find an answer to
		Tabulate	Arrange in a table
	ANALYSIS How you are expected to analyse the detail of what you have learned	Analyse	Examine in detail the structure of
		Categorise	Place into a defined class or division
		Compare and contrast	Show the similarities and/or differences between
		Construct	Build up or compile
		Prioritise	Place in order of priority or sequence for action
		Produce	Create or bring into existence

Paper – 9 – Operations Management & Information Systems

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

This paper contains 3 questions. All questions are compulsory, subject to instruction provided against each question. All workings must form part of your answer. Assumptions, if any, must be clearly indicted.

Question No. 1 : Answer all questions. [20 marks]

1. (i) State the objectives of Product Design.
(ii) List the advantages of Vertical Integration.
(iii) State the meaning of Routing.
(iv) A firm operates 6 days a week on single shift of 8 hours per day basis. There are 20 machines of the same capacity in the firm. If the machines are utilized for 75 per cent of the time at a system efficiency of 80 per cent, what is the rated output in terms of standard hours per week?
(v) Firm uses ₹50,00,000 in capital and 50,000 labour hours per year to produce ₹ 5,00,00,000 in product. What is the Partial Productivity of labour and partial productivity of capital?
(vi) Write the meaning of Total in 'Total Production Maintenance.'
(vii) List the two types of user acceptance testing.
(viii) 'Coding has negative effects.' – List them.
(ix) Write a note on Legacy Data.
(x) List the two distinct steps of Digital Signature.

[10×2=20]

Answer:

1. (i) Objectives of Product Design
(a) The overall objective is profit generation in the long run.
(b) To achieve the desired product quality.
(c) To reduce the development time and cost to the minimum.
(d) To reduce the cost of the product.
(e) To ensure producibility or manufacturability (design for manufacturing and assembly).

(ii) Advantages of vertical integration are:
(a) Can sometimes increase market share and allow the firm enter foreign markets more easily.
(b) Can achieve savings in production cost and produce higher quality goods.
(c) Can achieve more timely delivery.
(d) Better utilization of all types of resources.

(iii) Routing is the process of determining the sequence of operations to be performed in the production process. Routing also determines what work must be done, where and how.

Routing information is provided by product or process engineering function and it is useful to prepare machine loading charts and schedules.

(iv) Maximum number of hours of work possible per week

= (Number of machines) × (Machine hours worked per week)
= 20 × 6 × 8 = 960 hours.

If the utilization is 75% then number of hours worked = 480 × 0.75 = 720 hours.
Rated output = Utilised hours × system efficiency = 360 × 0.8 = 576 standard hours.

(v) (a) Partial Productivity of labour = ₹ 5,00,00,000/50,000 = ₹ 1,000
(b) Partial Productivity of capital = ₹ 5,00,00,000/₹ 50,00,000 = 10

(vi) Total in "Total Production Maintenance" means:
(a) Total employee involvement,
(b) Total equipment effectiveness (i.e., Zero breakdown) and
(c) Total maintenance delivery system.

(vii) There are two types of the user acceptance testing.
(a) Alpha Testing: It means the system testing which is often performed by the users within the organization.
(b) Beta Testing: This is the second stage, generally performed by the external users such as by expert's data entry operators.

(viii) Coding has some negative effects:
(a) Information is coarsened by forcing it all into categories – there might not be a category that matches what you want to record – e.g., hair colour.
(b) The same can be true of rounding numbers – the intervals or numbers of categories is called the granularity – this needs to be chosen carefully to maintain the quality of the information.

(ix) Legacy data are stored manually, in excel files or in legacy system. Collection of legacy data is needed to be planned carefully to avoid the syndrome known as "garbage in and garbage out" which will undermine the confidence on the system after implementation. Cleaning of data should be done by removing duplicate and unnecessary information, before importing to ERP system.

(x) The digital signature is created in two distinct steps. First the electronic record is converted into a message digest by using a mathematical function known as "hash function" which digitally freezes the electronic record thus ensuring the integrity of the content of the intended communication contained in the electronic record. Any tempering of the contents of the electronic record will immediately invalidate the digital signature. Secondly, the identification of the person affixing the digital signature is authenticated through the use of the private key which attaches itself to the message digest and which can be verified by anybody who has the public key corresponding to such private key.

Operations Management

Answer any three questions

2. (a) (i) State the causes of low productivity. 6

(ii) A process involves the production of a particular component which is then installed into an end product. Past observation has indicated that the average production time for the component is 4 minutes but fluctuations about the average do occur and the following probability distribution has been derived from past observations:

Minutes	Probability
2	0.10
3	0.25

4	**0.40**
5	**0.10**
6	**0.10**
7	**0.05**

The average time taken to install a component is 3 minutes but this also fluctuates and the following probability distribution has been derived:

Minutes	Probability
2	**0.30**
3	**0.45**
4	**0.15**
5	**0.10**

The current system uses one operative for installation but the company is considering employing another operative on the installation process.

We will simulate 10 arrivals on the current system, using the following 2 digit random numbers 20, 74, 94, 22, 93, 45, 44, 16, 04, 32, 03, 62, 61, 89, 01, 27, 49, 50, 90, 98. 10

Answer:

2. (a) (i) For evolving specific measures for improving productivity it will help the management to analyse on continuing basis, the causes of low productivity and, the same time to keep abreast with the latest management and productivity techniques.

In the Indian context, the causes of low productivity have their origin in two distinct sources. The first category consists of the exogenous or external factors like shortages of essential inputs-power, raw materials, transport facilities etc. – over which the management of an enterprise has little or no control. The second basket contains the endogenous of internal factors mainly in the form of system deficiencies preventing the optimum utilisation of resources.

Since the management can do practically nothing to control the external factors and their adverse effect on productivity, it will be fruitless to discuss them. The challenge before the Indian managers lies in overcoming the internal causes of low productivity. It is towards helping the management and workers in identifying these internal factors.

2. (a) (ii) Step 1: Random numbers are allocated to the events in the same proportions as indicated by the probabilities.

Table 1 : Random Number Coding

Arrivals			Installations		
Minutes	Prob.	RN. Internal	Minutes	Prob.	RN. Internal
2	0.10	00-09	2	0.30	00-29
3	0.25	10-34	3	0.45	30-74
4	0.40	35-74	4	0.15	75-89
5	0.10	75-84	5	0.10	90-99
6	0.10	85-94			
7	0.05	95-99			

The random numbers are generated and linked to the appropriate events, the first 10 random numbers simulating arrivals, the second 10 simulating installation times. The results are being incorporated into the following table:

Table 2 : Simulation Worksheet

Arrival No.	Random No.	Arrival Time (Cumulative)	Installation				Minutes	
			Random No.	Time	Start	End	Idle Time	Queue Time
1	20	3	03	2	3	5	3	--
2	74	7	62	3	7	10	2	--
3	94	13	61	3	13	16	3	--
4	22	16	89	4	16	20	--	--
5	93	22	01	2	22	24	2	--
6	45	26	27	2	26	28	2	--
7	44	30	49	3	30	33	2	--
8	16	33	50	3	33	36	--	--
9	04	35	90	5	36	41	--	1
10	32	38	98	5	41	46	--	3
Total							14	4

Notes:

1. The cumulative arrival times are obtained by accumulating the arrival times indicated by the random numbers e.g., Random No. 20 gives arrival time of 3 minutes, Random No. 74 gives arrival time of 4 minutes, therefore, cumulative arrival time for component 2 is 7 minutes.
2. The installation start times are the greater of arrival time and installation end time, as the next component cannot be installed until the previous one has been dealt with.
3. Idle time arises where the end time for the previous component is before the arrival of the next component, except for component one where it is assumed that installation runs from the same start point zero as the arrivals.
4. Queue time arises where an arrival has to wait for the previous component to be installed.

2. (b) (i) Fleet cars have increased their costs as they continue in service due to increased direct operating cost (gas and oil) and increased maintenance (repairs, tyres batteries etc.) The initial cost is ₹ 35,000, and the trade in value drops as time passes until it reaches as constant value of ₹ 5,000.

Given the cost of operating, maintaining and the trade-in-value determine the proper length of service before cars should be replaced.

Years of service	**1**	**2**	**3**	**4**	**5**
Years and trade-in value	**19,000**	**10,500**	**6,000**	**5,000**	**5,000**
Annual operating cost	**15,000**	**18,000**	**21,000**	**24,000**	**27,000**
Annual maintaining cost	**3,000**	**4,000**	**6,000**	**8,000**	**10,000**

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(ii) AB corporation has decided to carry out repairs on 4 main roads in the city. The government has agreed to make a special grant of ₹ 50 Lakhs towards the cost with the condition that the repairs should be carried out at the lowest cost. Five contractors have sent the bids. Only one road will be awarded to one contractor. The bids are given below:

		Cost of repairs (₹ Lakhs)			
	Road	**R_1**	**R_2**	**R_3**	**R_4**

Contractors	**C_1**	**9**	**14**	**19**	**15**
	C_2	**7**	**17**	**20**	**19**
	C_3	**9**	**18**	**21**	**18**
	C_4	**10**	**12**	**18**	**19**
	C_5	**10**	**15**	**21**	**16**

You are informed that C_2 should get R_1 and C_4 should get R_2 to minimize the costs.

(i) What is the minimum cost allocation?

(ii) How much is the minimum discount that the eliminated contractor should offer for meriting a contract?

(iii) Independent of (ii) above, if the corporation can negotiate to get a uniform discount rate from each contractor, what is the minimum rate of discount so that the cost is within the grant amount? 9

Answer:

2. (b) (i)

Determination of Optimal Replacement Period

Year (n)	Operating + Maintenance Cost, f(t)	Σf(t)	Trade in value (S_n)	Capital Cost (C – S_n)	Total Cost TC_n	Average annual cost ATC_n
(1)	(2)	(3)	(4)	(5)	(6)=(3)+(5)	(7)
1	18,000	18,000	19,000	16,000	34,000	34,000
2	22,000	40,000	10,500	24,500	64,500	32,250
3	27,000	67,000	6,000	29,000	96,000	32,000
4	32,000	99,000	5,000	30,000	1,29,000	32,250
5	37,000	1,36,000	5,000	30,000	1,66,000	33,200

Since the average cost per year is least in the 3rd year, the company should replace the car after every third year and the corresponding minimum annual cost of replacement is ₹ 32,000.

2. (b) (ii)

	Road	R_3	R_4	R_5
Contractors	C_1	19	15	0
	C_3	21	18	0
	C_5	21	16	0

Row minimum operation is not required as there is zero in each row.
Column operations

Road	R_3	R_4	R_5
C_1	0	0	0
C_3	2	3	0
C_5	2	1	0

Minimum number of lines

Road	R_3	R_4	R_5
C_1	0	0	0
C_3	2	3	0
C_5	2	1	0

As the minimum number of lines is not equal to order of matrix, let's take step to increase the number of zeros.

Road	R_3	R_4	R_5

C_1	0	0	1
C_3	1	2	0
C_5	1	0	0

Minimum number of lines

Road	R_3	R_4	R_5
C_1	0	0	1
C_3	1	2	0
C_5	1	0	0

As the minimum number of lines are equal to order of matrix, optimal assignment should be made.

Road	R_3	R_4	R_5
C_1	[0]	0	1
C_3	1	2	[0]
C_5	1	[0]	0

C_1	R_3	19L
C_2	R_1	7L
C_3	Nil	Nil
C_4	R_2	12L
C_5	R_4	16L
Total Cost		54L

(ii)

	Required decrease
C_3 Could have competed for R_3 if the bid would have been 19L	₹ 2L
C_3 Could have competed for R_1 if the bid would have been 7L	₹ 2L
C_3 Could have competed for R_2 if the bid would have been 12L	₹ 6L
C_3 Could have competed for R_4 if the bid would have been 16L	₹ 2L

C_3 Could have competed if he would have reduced the bid by ₹ 2L for any one of R_1, R_3 or R_4.

(iii) Minimum cost ₹ 54L Grant ₹ 50L
Discount = (4/54) × 100 = 7.41%.

2. (c) (i) Compute the production cost per piece from the following data,

- **Direct material per piece – ₹ 2**
- **Wage rate ₹ 2,000 per month consisting of 25 working days and 8 hours per day.**
- **Overheads expressed as a percentage of direct labour cost – 200%.**
- **The time for manufacture of 4 pieces of the time was observed during time study. The manufacture of the item consists of 4 elements a, b, c and d. The data collected during the time study are as under. Time observed (in minutes) during the various cycles are as below:**

Element	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Element rating on B. S. Scale (0 – 100)
a	1.2	1.3	1.3	1.4	85
b	0.7	0.6	0.65	0.75	120
c	1.4	1.3	1.3	1.2	90
d	0.5	0.5	0.6	0.4	70

The personal, fatigue and delay allowance may be taken as 25%. 8

2. (c) (ii) A company had planned its operations as follows: (Duration in days)

Activity	1-2	2-4	1-3	3-4	1-4	2-5	4-7	3-6	5-7	6-8	7-8
Duration	7	8	8	6	6	16	19	24	9	7	8

(I) Draw the network and find the critical paths

(II) After 15 days of working, the following progress in noted:

(a) Activities 1-2, 1-3, and 1-4 completed as per original schedule

(b) Activity 2-4 is in progress and will be completed in 4 more days.

(c) Activity 3-6 is in progress and will be completed in 17 more days.

(d) The staff members for activity 3-6 are specialized. They are directed to complete 3-6 and undertake an activity 6-7 which will require 7 days. This re-arrangement arose due to a modification in specialization.

(e) Activity 6-8 will be completed in 4 days instead of originally planned 7 days.

(f) There is no change in other activities.

Update the net work diagram after 15 days of start of work based on the facts given above. Indicate the revised critical path along with duration. 8

Answer:

2. (c) (i) Step No. 1 Calculation of Standard Time

Element	Average observed time (O.T.) (minutes)	Normal time (minutes) = $\left(\frac{\text{O.T.} \times \text{Observed Rating}}{\text{Standard Rating}}\right)$
a	$\frac{1.2+1.3+1.3+1.4}{4}=1.3$	$\frac{1.3\times85}{100}=1.105$
b	$\frac{0.7+0.6+0.65+0.75}{4}=0.675$	$\frac{0.675\times120}{100}=0.81$
c	$\frac{1.4+1.3+1.3+1.2}{4}=1.3$	$\frac{1.3\times90}{100}=1.17$
d	$\frac{0.5+0.5+0.6+0.4}{4}=0.5$	$\frac{0.5\times70}{100}=0.35$
Normal time for the job = 3.435 minutes		

Standard time for the job = Normal time + Allowances

$= 3.435 + \frac{25}{100} \times 3.435$

= 3.435 + 0.858 = 4.29 = 4.3 minutes

As this time is the time taken for producing 4 pieces.

Standard time per piece = $\frac{4.3}{4}$ = 1.075 minutes

Step No. 2: Calculation of costs

Direct labour cost of the job = Standard time/job in hour × Labour rate/hour

Labour rate per hour = $\frac{2,000}{25\times8}$ = ₹ 10

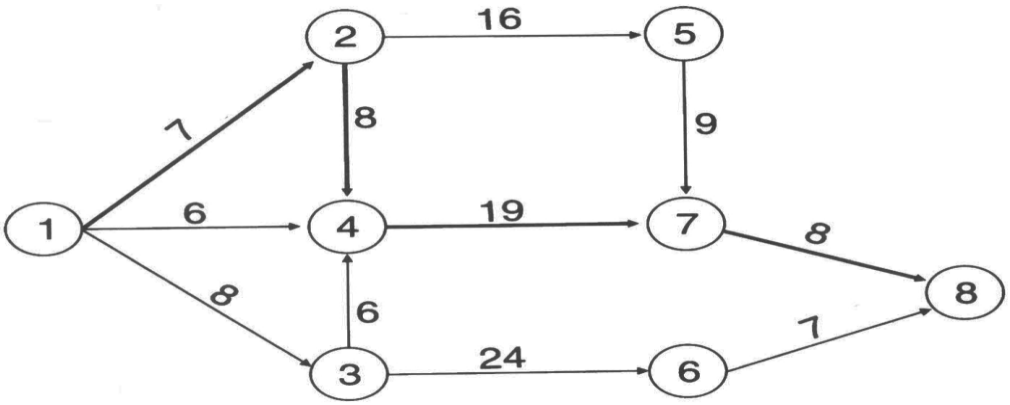
Direct labour cost for the job = $\frac{1.075}{60}$ = ₹ 0.18

Direct material cost per piece = ₹ 2

Overhead cost 200% of labour cost = $\frac{200}{100} \times 0.18$ = ₹ 0.36

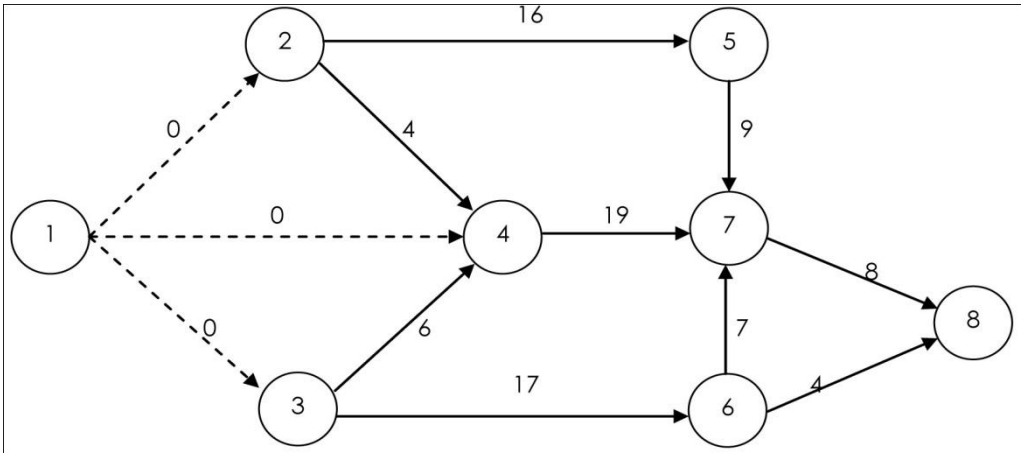
Total production cost per piece = 0.18 + 2.0 + 0.36 = ₹ 2.54

2. (c) (ii) (I)



Paths	Duration (weeks)	Paths	Duration (weeks)
1-2-5-7-8	40	1-3-4-7-8	41
1-2-4-7-8 Critical path	42	1-3-6-8	39
1-4-7-8	33		

(II)



Paths	Duration (weeks)	Paths	Duration (weeks)
1-2-5-7-8	0+16+9+8=33	1-3-6-8	0+17+4=21
1-2-4-7-8	0+4+19+8=31	1-3-6-7-8	0+17+7+8=32
1-3-4-7-8	0+6+19+8=33		

There are two critical paths: 1-2-5-7-8 and 1-3-4-7-8. Duration 33 weeks.

2. (d) (i) Write a note on Insurance Spares. 3

(ii) State the eight most common benchmarking errors. 8

(iii) The XYZ Company's Quality Control Deptt. is managed by a single clerk, who takes on an average 5 minutes in checking parts of each of the machine coming for inspection. The machines arrive once in every 8 minutes on the average. One hour of the machine is valued at ₹ 15 and a clerk's time is valued at ₹ 4 per hour. What are the average hourly queuing system costs associated with the quality control department? 5

Answer:

2. (d) (i) Spares of this class have a very high reliability and are required rarely, if ever, during the life time of an equipment besides being a high cost item. Thus, a company or organisation which decides to buy such a spare does so only to keep it for the life time of the equipment. Now if the spare was not expensive the decision is simple: buy a spare along with the equipment. Also if the down-time costs of these spares were low it would be easy to decide in favour of procuring them when, if at all, required. But out insurance spare is also a critical item whose non-availability has a very heavy down-time cost, and hence the question: should the spare be purchased along with the equipment required or not? The answer is: If (Probability of Failure) × (Downtime Cost) ≥ Purchase Price of a Spare the decision should be to buy and keep the spare and vice versa.

2. (d) (ii) The Eight Most Common Benchmarking Errors

(1) Lack of Self-Knowledge, unless you've thoroughly analysed your own operations, your benchmarking efforts will not pay off. You have to know how things work in your company, how effective your current processes are, and what factors are critical. That's why internal benchmarking is an important first step.

(2) Benchmarking everything. Be selective. Benchmarking another company's employee food service will usually not be worth the time, energy, and cost. Your TQM effort as a whole will point out the areas where benchmarking is most likely to pay off.

(3) Benchmarking projects are broad instead of focused. The more specific the project, the easier it is and the more likely it will generate useful ideas. Benchmark a successful company's hiring procedures, not their entire human resources operations. Focus on accounts receivable handling, not the accounting department as a whole.

(4) Benchmarking produces reports, not action. Studies have indicated that 50% of benchmarking projects result in no specific changes. The process is not an academic exercise. It should be geared toward generating and implementing actual changes.

(5) Benchmarking is not continuous. Benchmarking is a process. Even before you reach the benchmark you've set, you should take another look at your partner's performance, or at other companies. New goals should be established and new techniques adopted. The process never ends.

(6) Looking at the numbers, not the issues. While the measures are important, they are not the heart of the process. At some companies, benchmarking is used to set goals, but not to generate the important changes needed to meet them.

(7) Participants are not motivated. Make sure benchmarking team members have the time to do the job. Even if the project is simply added on their regular jobs, make sure each has a stake in the success of the project. Don't consider benchmarking as "busy work" to be assigned to a group of low-level employees.

(8) Too much data. Action are what's important, not information for its own sake. Don't measure benchmarking success by quantity of information. Always focus on key issues.

2. (d) (iii) Mean arrival rate, $\lambda = \frac{1}{8}$ per min. = (60/8) per hour

Mean service rate, $\mu = \frac{1}{5}$ per min. = 12 per hour

Average time spent by a machine in the system = $\frac{1}{\mu - \lambda} = \frac{2}{9}$ hour,

Average queuing cost per machine is $\frac{15 \times 2}{9} = ₹ \frac{10}{3}$

An average arrival of 60/8 machines per hour costs $\frac{10}{3} \times \frac{60}{8}$ or ₹ 25 hour.

Average hourly queuing cost = ₹ 25.
Average hourly cost for the clerk = ₹ 4
Hence, total cost = ₹ 29 per hour.

Information System

Answer any two questions.

3. (a) (i) Describe the linking of corporate strategy with information system strategy. 5
(ii) List the steps of Prototyping Model and state its advantages. 8
(iii) Write a note on Operational Feasibility. 3

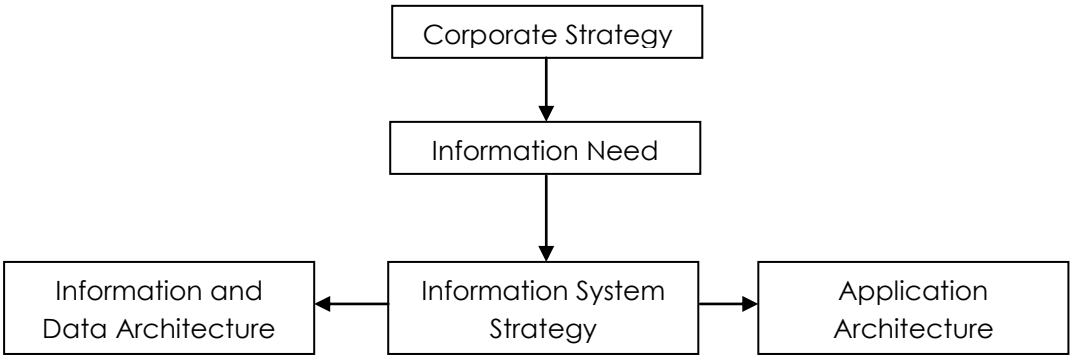
Answer:

3. (a) (i) The basic objective of information system strategy is to exploit IT to provide best advantage for the organization.

The following points are to be clearly understood before venturing into designing an information system:
(1) Identification of sub-systems involved and their interactions;
(2) Level of Management;
(3) Decision making process

Today, success of corporate strategy depends on decision making skill. The support of efficient information system needs no clarification. The decisions at different levels of management vary. A standard decision making pattern is shown below:

Level of Management	Decision making on	Information Support from
Lower Level	Operational Control	Transaction Processing
Middle Level	Planning & Control	Management Information System
Top Level	Strategic Planning and Implementation	Executive System, Expert System



3. (a) (ii) The Prototyping Model:
Organizations are increasingly using prototyping techniques to develop smaller/pivot/part of a total system such as DSS, MIS and Expert systems. A prototype is an usable system or system component that is built quickly and at a lesser cost, and with the intention of being modifying or replacing it by a full

scale and fully operational system. Prototyping can be viewed as a series of four steps:

Step 1 - Identify Information System Requirements: Under prototype approach, the design team needs only fundamental system requirements to build the initial prototype.

Step 2 - Develop the Initial Prototype: In this step, the designers create an initial base model and emphasize on system characteristics such as simplicity, flexibility, and ease of use.

Step 3 - Test and Revise: Using the feedback from the users, the design team modifies the prototype.Thus iterative process of modification and reevaluation continues until the users are satisfied.

Step 4 - Obtain User Signoff of the Approved Prototype: As users work with the prototype, they make suggestions about the ways to improve it. Users finally approve the final version of the prototype which commits them to the current design.

Strengths/Advantages:

(1) It provides quick implementation of an incomplete, but functional, application.
(2) Prototyping requires intensive involvement by the system users.
(3) A very short time period is normally required to develop and start experimenting with a prototype.
(4) Since system users experiment with each version of the prototype through an interactive process, errors are hopefully detected and eliminated early in the developmental process.
(5) It reduces the cost of user training.
(6) It improves the fact finding process.
(7) It helps to identify confusing or difficult functions and missing functionality.
(8) Prototyping model encourages innovation and flexible designs.

3. (a) (iii) It is concerned with ascertaining the views of workers, employees, customers and suppliers about the use of computer facility. Some of the questions which help in testing the operational feasibility of a project are stated below:

- Is there sufficient support for the system from management and from users?
- Are current business methods acceptable to users?
- Are the users been involved in planning and development of the project?
- Will individual performance be poorer after implementation than before?

3. (b) (i) 'Most DBMSs have database utilities that help the DBA in managing the database system.' – Discuss. 6

(ii) Explain the importance of Marketing Information System. 7

(iii) List a typical set of issues for the Business Intelligence governance team to address. 3

Answer:

3. (b) (i) Database System Utilities

In addition to possessing the software modules,most DBMSs have database utilities that help the DBA in managing the database system. Common utilities have the following types of functions:

1. Loading: A loading utility is used to load existing data files—such as text files or

sequential files—into the database. Usually, the current (source) format of the data file and the desired (target) database file structure are specified to the utility, which then automatically reformats the data and stores it in the database. With the proliferation of DBMSs, transferring data from one DBMS to another is becoming common in many organizations. Some vendors are offering products that generate the appropriate loading programs, given the existing source and target database storage descriptions (internal schemas). Such tools are also called conversion tools.

2. Backup: A backup utility creates a backup copy of the database, usually by dumping the entire database onto tape. The backup copy can be used to restore the database in case of catastrophic failure. Incremental backups are also often used, where only changes since the previous backup are recorded. Incremental backup is more complex but it saves space.
3. File reorganization: This utility can be used to reorganize a database file into a different file organization to improve performance.
4. Performance monitoring: Such a utility monitors database usage and provides statistics to the DBA. The DBA uses the statistics in making decisions such as whether or not to reorganize files to improve performance.

3. (b) (ii) Importance of Marketing Information System

- Anticipation of Customer Demand - Every marketer needs up-to-date knowledge about consumer needs and wants.
- Systematic Approach - Expanding markets and competitive marketing environment require adequate market intelligence system.
- Economic indicator - Marketers must have latest information on the changing trends of supply, demand and prices
- Significance of Analysing Competition - Marketer cannot survive without having information regarding nature, character and size of competition to be met.
- Development of Technology - Marketers must have latest information regarding technological development.
- Understanding the Consumer - Information system can establish proper two way flow of information and understanding between marketers and consumer.
- Marketing Planning - Marketing plans and programmes are based upon information supplied by economic forecasts and market research.

3. (b) (iii) A typical set of issues for the BI governance team is to address

- Creating categories of projects (investment, business opportunity, strategic, mandatory, etc.)
- Defining criteria for project selection
- Determining and setting a framework for managing project risk
- Managing and leveraging project interdependencies
- Continually monitoring and adjusting the composition of the portfolio

3. (c) (i) Explain the important functionalities of Asset Management in an ERP system. 8
(ii) List the notable features of the Information Technology Amendment Act, 2008. 6
(iii) State the uses of EDI. 2

Answer:

3. (c) (i) Asset Management - Some of the important functionalities are:

(1) Investment and disposal method.
(2) Users' defined depreciation method.
(3) Periodic revaluation of fixed assets.
(4) Business and insurance information.

This module is linked to general ledger to post depreciation result as well as to accounts payable and accounts receivable for buying and disposing assets. A few important master data parameters for Asset Management are:

(1) Defining of a schedule of Chart of Account which is needed for linking to general ledger.
(2) Depreciation method.
(3) Remainder value or percentage.

- Investment and Disposal Method: This procedure is applicable when a new asset is acquired by the organization. While payment is made through accounts payable for asset acquisition, an investment transaction is generated, and the result is posted to general ledger. The asset is registered in asset management and is linked to a depreciation method. The asset is then ready for periodic depreciation and revaluation. Similarly, when an asset is sold/discarded, a disposal transaction is created in this module which generates a sales invoice in accounts receivable and post relevant transactions in general ledger.
- Users' Defined Depreciation Method: This functionality provides a flexible way of maintaining depreciation cost. The system allows a depreciation method which determines how the system calculate depreciation such as by a fixed amount, by a percentage of purchase price/ book value or an amount on the basis of number of years in operation. The system also allows accounting for remainder value. The depreciation method may be applicable globally for the entire organization or specific for one or more groups of assets.
- Periodic Revaluation of Fixed Asset: This functionality enables periodic revaluation, which is a positive correction of book value of the asset, to account for market price changes. Revaluation of asset is linked to some user defined indices which are integrated in the system. Revaluation amount is, normally, calculated by the system during fiscal year closing and result is posted at year end transaction in general ledger.
- Business and Insurance Information: Under this functionality, additional information regarding fixed assets which are non-financial in nature, are stored in a users' defined manner. Information is stored after classifying assets under various groups and sub groups. Details of insurance policies are also maintained and are linked to fixed assets.

3. (c) (ii) Some of the notable features of the Information Technology Amendment Act 2008 are as follows:

- Focusing on data privacy
- Focusing on Information Security
- Defining cyber cafe
- Making digital signature technology neutral
- Defining reasonable security practices to be followed by corporate
- Redefining the role of intermediaries
- Recognizing the role of Indian Computer Emergency Response Team
- Inclusion of some additional cyber crimes like child pornography and cyber terrorism
- Authorizing an Inspector to investigate cyber offences (as against the DSP earlier)

3. (c) (iii) EDI is used in following ways:

(1) EDI is used to electronically transfer documents such as purchase order, invoices, shipping notices, receiving advises and other standard business correspondence between the trading partners.
(2) EDI can also be used to transmit financial information and payment in

electronic form. However, where EDI is used for effecting payment it is commonly known as financial EDI or electronic funds transfer.