PAPER 9 - OPERATIONS MANAGEMENT & INFORMATION SYSTEM

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-3hrs**

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. (a) State the need for Ergonomics.
(b) List the three Principles of Motion Economy.
(c) List the different Quality Circle techniques.
(d) Discuss about Spare Parts.
(e) An analyst wants to obtain a cycle time estimate that is within ± 5% of the true value. A preliminary run of 10 cycles took 50 minutes to complete and had a calculated standard deviation of 0.4 minutes. What is the coefficient of variation to be used for computing the sample size for the forthcoming time study?
(f) Shin's Car Wash & Dry is an automatic, five-minute operation with a single bay. On a typical Saturday morning, cars arrive at a mean rate of ten per hour, with arrivals tending to follow a poison distribution. Find the average number of cars in line.
(g) Explain the term Electronic Financial Transaction.
(h) List the General mode of configuration.
(i) State the Main inputs in a share accounting system.
(j) Write a note on Preliminary investigation in system development life cycle. [10 ×2=20]

Answer

1.

(a) Poorly designed products may cause work-related accidents resulting in injuries to users. Hence, comfort, safety and ease of use for the users are becoming more important quality dimensions that have to be considered in product design. Human Factor Engineering or Ergonomics applies knowledge of human capabilities and limitations to the design of products and processes.

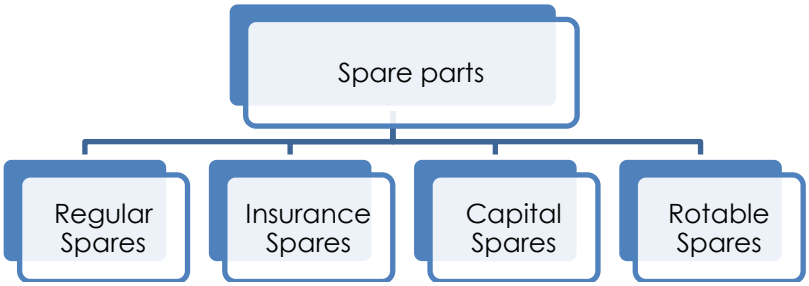
(b) The rules of motion economy and efficiency which referred to hand motions of operators were developed by Gilbreth. The principles of motion economy are divided into three groups, viz.,
(i) Effective use of the operator
(ii) Arrangement of the workplace
(iii) Tools and equipment

(c) It is necessary for QC to adopt following technique in order to smooth working of QC.

(i) Team is necessary for QC to adopt following technique in order to smooth working of QC.
(ii) Pareto Principle
(iii) Collection of Data
(iv) Analysis of Problem
(v) Problem Selection and Solution

(vi) Presentation to Management
(vii) Code of Conduct.

(d) Spare parts constitute significant portion of inventory investment and therefore, their planning and control are important. Spare parts are required for maintenance: preventive and breakdown.



(e) Standard deviation of sample (s) = 0.4 min/cycle.

Mean of sample = $x = \frac{50\text{min}}{10\text{ cycle}} = 5$ min/cycle

$$V = \frac{s}{x} = \frac{0.4}{5} = 0.08$$

(f) λ = 10 cars per hour
μ = 1 per 5 minutes, or 12 per hour

$$Lq = \frac{\lambda^2}{2\mu(\mu-\lambda)} = \frac{10^2}{2(12)(12-10)} = \frac{100}{48} = 2.08 \text{ cars}$$

(g) **Electronic Financial Transaction (EFT)** refers to a process by which money is transferred from one person's bank account to another person's account electronically rather than using a cheque or transferring cash. Of course, these electronic transfers are also available to governments and businesses.
The individuals or governments or businesses using them authorize these electronic transactions in writing. The transactions are processed through the Automated Clearing House (ACH) Network. Organizations using the network have formed an association, National Automated Clearing house Association.

(h) **General Mode of Configuration:**

(i) A function can be turned on or turned off or made optional.
(ii) XOR i.e. to choose only one flow that fulfills the specified condition.
(iii) OR where a configuration supports optional activities or flow requiring all, none or some of the activities.
(iv) AND – indicate mandatory parallel flows.

Some configuration choices are irreversible e.g. if "negative inventory allowed" option is chosen, it cannot be reversed at a later stage. Some configurations are reversible e.g. purchase order quantity may exceed blanket order quantity or not. In some case if a specific choice is not made, configurable function can be switched on or off by default.

(i) Main inputs in a share accounting system are:

- Shareholding data from a fresh issue-this is usually supplied by the issue agency on electronic media.

- Share transfer request
- Split request
- Consolidation request
- Request for bank mandate
- Tax exemption forms
- Request for duplicate certificates
- Request for duplicate dividend warrants
- Change in shareholder's address.

(j) Preliminary investigation: Users submit a format request for a new system to the MIS department, when they come across a problem. This activity consists of three parts –
(i) Request clarification
(ii) Feasibility study
(iii) Request approval

Operations Management

Answer any three questions

2. (a) (i) Calculate five yearly moving averages for the following data -

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Value	123	140	110	98	104	133	95	105	150	135

(ii) Cost per unit (₹)

	Sales – counter 1	Sales – counter 2	Sales – counter 3	Sales – counter 4	Total Supplies
Source 1	48	60	56	58	14
Source 2	45	55	53	60	26
Sources 3	51	67	60	62	36
Total Demand	20	32	25	21	

Find the initial solution by Vogel's Approximation method. Is the initial solution feasible?

(iii) Discuss the reasons for Product Design or Redesign. **[5+7+4=16]**

Answer:

2. (a)

(i)

Table: Computation of Five Yearly Moving Averages

Year	Value ('000 ₹)	5 yearly moving totals ('000 ₹)	5 yearly moving average ('000 ₹)
2004	123	-	-
2005	140	-	-
2006	110	-	-
07	98	-	-
2008	104	575	115
2009	133	585	117
2010	95	540	108
2011	105	353	107
2012	150	587	117.4
2013	135	618	123.6

(ii) Total demand 98. Total supply 76. Introduce dummy source with supply as 22 and transportation cost per unit to be zero.

	Sales – counter 1	**Sales – counter 2**	**Sales – counter 3**	**Sales – counter 4**	**Total supplies**	**D_1**	**D_2**	**D_3**	**D_4**	**D_5**
Source 1	~~48~~	60 (5)	56 (9)	~~58~~	14	8	8	8	4	4
Source 2	~~45~~	~~55~~ (26)	~~53~~	~~60~~	26	8	8	8	2	2
Source 3	~~51~~ (20)	~~67~~	~~60~~ (16)	~~62~~	36	9	9	9	7	-
Source 4	~~0~~	~~0~~ (1)	~~0~~	~~0~~ (21)	22	0	0	-	-	-
Total demand	20	32	25	21	98					
D_1	45	55	53	58						
D_2	45	55	53	-						
D_3	3	5	3	-						
D_4	-	5	3	-						
D_5	-	5	3							

Initial Solution:

From	**Source 1**	**Source 1**	**Source 2**	**Source 3**	**Source 3**	**Source 4**	**Source 4**
To	SC – 2	SC – 3	SC – 2	SC – 1	SC – 3	SC – 2	SC- 4
Units	5	9	26	20	16	1	21
Feasibility test	m +n – 1 = 7			No. of allocation = 7		The solution is feasible	

(iii) Reasons for Product Design or Redesign

The most obvious reason for product design is to offer new products to remain competitive in the market. The second most important reason is to make the business grow and increase profits. Also, when productivity gains result in reduction of workforce, developing new products can mean adding jobs and retaining surplus workforce instead of downsizing by layoffs/ retrenchment.

Sometimes product design is actually redesign or modification of existing design instead of an entirely new design. The reasons for this include customer complaints, accidents or injuries during product use, excessive warranty claims or low demand. Sometimes product redesign is initiated to achieve cost reductions in labour and material costs.

2. (b) (i) A publishing house has bought out a new monthly magazine, which sells at ₹37.5 per copy. The cost of producing it is ₹30 per copy. The sales pattern of the magazine as estimated by a newsstand is as follows:

Demand Copies	Probability
0 < 300	0.18
300 < 600	0.32
600 < 900	0.25
900 < 1200	0.15
1200 < 1500	0.06
1500 < 1800	0.04

The newsstand has contracted for 750 copies of the magazine per month from the publisher. The unsold copies are returnable to the publisher who will take them back at cost less ₹4 per copy for handling charges.

The newsstand manager wants to simulate the demand and profitability. The following random number may be used for simulation:

27, 15, 56, 17, 98, 71, 51, 32, 62, 83, 96, 69.

You are required to –

(1) Allocate random numbers to the demand pattern forecast by the newsstand.

(2) Simulate twelve months sales and calculate the monthly and annual profit/loss.

(3) Calculate the loss on lost sales.

(ii) The Mini Transport Company owns three mini buses, two of which are two years old while the third one is only a year old. Each of these buses was purchased for ₹80,000. The company contemplates replacing the three buses by two full-sized buses, each such bus containing 50% more seating capacity than a mini bus. Cost of each is ₹1,20,000. Using the following data on the running costs and the resale value of both the types of buses, state whether the mini buses be replaced by the full-sized buses. If not, state why?

Year	For a Mini Bus		For a Full-sized Bus	
	Running Cost	Resale Value	Running Cost	Resale Value
1	3,000	70,000	3,400	1,00,000
2	3,600	61,000	3,900	92,000
3	4,800	55,000	4,700	86,000
4	5,000	49,000	5,800	81,000
5	8,000	32,000	7,200	76,000
6	11,200	20,000	9,000	66,000
7	15,000	10,000	12,000	54,000
8	20,000	5,000	16,000	40,000

[(2+5+1)+8=16]

Answer:

2. (b)

(i)

(1) Allocation of Random Numbers

Monthly Demand	Probability	Cumulative Probability	Allocated RN

150	0.18	0.18	00 – 17
450	0.32	0.50	18 – 49
750	0.25	0.75	50 – 74
1050	0.15	0.90	75 – 89
1350	0.06	0.96	90 – 95
1650	0.04	1.00	96 - 99

(2) Simulation: Twelve Month's sales, Monthly and Annual Profit/Loss

Month	RN	Demand	Sold	Return	Profit on sales (₹)	Loss on Return (₹)	Net Profit (₹)	Lost Units
1	27	450	450	300	3,375 (450 Copies × ₹7.5)	1,200 (300 Copies × ₹4)	2,175	------
2	15	150	150	600	1,125 (150 Copies × ₹7.5)	2,400 (600 Copies × ₹4)	(1,275)	-------
3	56	750	750	---	5,625 (750 Copies × ₹7.5)	------	5,625	------
4	17	150	150	600	1,125 (150 Copies × ₹7.5)	2,400 (600 Copies × ₹4)	(1,275)	------
5	98	1,650	750	---	5,625 (750 Copies × ₹7.5)	-------	5,625	900
6	71	750	750	---	5,625 (750 Copies × ₹7.5)	------	5,625	----
7	51	750	750	---	5,625 (750 Copies × ₹7.5)	------	5,625	-----
8	32	450	450	300	3,375 (450 Copies × ₹7.5)	1,200 (300 Copies × ₹4)	2,175	------
9	62	750	750	---	5,625 (750 Copies × ₹7.5)	------	5,625	-------
10	83	1,050	750	---	5,625 (750 Copies × ₹7.5)	-------	5,625	300
11	96	1,650	750	---	5,625 (750 Copies × ₹7.5)	--------	5,625	900
12	69	750	750	---	5,625 (750 Copies × ₹7.5)	------	5,625	----
Total					54,000	7,200	46,800	2,100

(3) Loss on Lost sale ₹15,750 (2,100 units × 7.5)

(ii) We shall first calculate the minimum average cost for each type of the buses. This is given in tables below.

For Mini Bus: Cost of the Minibus (c) = ₹80,000

Table: Determination of Average Cost

Year	M_t	Cum M_t	Resale Value (₹)	C- S	T(n)	A (n)
1	3,000	3,000	70,000	10,000	13,000	13,000
2	3,600	6,600	61,000	19,000	25,600	12,800
3	4,800	11,400	55,000	25,000	36,400	12,133
4	5,000	16,400	49,000	31,000	47,400	11,850*
5	8,000	24,400	32,000	48,000	72,400	14,480
6	11,200	35,600	20,000	60,000	95,600	15,933

7	15,000	50,600	10,000	70,000	1,20,600	17,229
8	20,000	70,600	5,000	75,000	1,45,600	18,200

For Full sized Bus

Cost of Full Sized buses (c) = ₹1,20,000

Table: determination of Average Cost

Year	M_t	Cum M_t	Resale Value (₹)	C- S	T(n)	A (n)
1	3,400	3,400	20,000	23,400	13,000	23,400
2	3,900	7,300	28,000	35,300	25,600	17,650
3	4,700	12,000	34,000	46,000	36,400	15,333
4	5,800	17,800	39,000	56,800	47,400	14,200
5	7,200	25,000	44,000	69,000	72,400	13,800*
6	9,000	34,000	54,000	88,000	95,600	14,667
7	12,000	46,000	66,000	1,12,000	1,20,600	16,000
8	16,000	62,000	80,000	1,42,000	1,45,600	17,750

Thus, the minimum average cost for a mini bus is ₹11,850 p.a. and ₹13,800 p.a. for a full-sized bus. However, these two should not be compared directly because three mini buses are equivalent to two full-sized buses. Thus,

Average cost for all 3 mini buses = 11,850 × 3 = 35,550

Average cost for 2 large buses = 13,800 × 2 = 27,600.

Clearly, then, it is prudent to replace the mini buses by the full-sized buses.

2. (c) (i) A BPO company is taking bids for 4 routes in the city to ply pick-up and drop cabs. Four companies have made bids as detailed below –

Bids for Routes (₹)

Company/Routes	R_1	R_2	R_3	R_4
C_1	**4,000**	**5,000**	**-**	**-**
C_2	**-**	**4,000**	**-**	**4,000**
C_3	**3,000**	**-**	**2,000**	**-**
C_4	**-**	**-**	**4,000**	**5,000**

Each bidder can be assigned only one route. Determine the minimum cost that the BPO should incur.

(ii) Calculate the standard time per article produced from the following data obtained by a work sampling study.

Total no. of observations = 2,500 **No. of working observations = 2,100**

No. of units produced in 100 hours duration = 6,000 numbers

Proportion of manual labour = 2/3

Proportion of machine time = 1/3

Observed rating factor = 115%

Total allowances = 12% of normal time **[9+7=16]**

Answer:

2. (c)

(i)

Step 1:

Reducing minimum from each column element (figure in '000s)-

	R_1	R_2	R_3	R_4
C_1	1	1	-	-
C_2	-	0	-	0
C_3	0	-	0	-
C_4	-	-	2	1

Step 2:

Reducing minimum from each row element (figure in '000s) –

	R_1	R_2	R_3	R_4
C_1	(0)	0	-	-
C_2	-	(0)	-	0
C_3	0	-	(0)	-
C_4	-	-	1	(0)

Number of lines to connect all zeros nos. is 4 which is optimal.
All diagonal elements are zeros and are chosen.

Company	Route	(₹)
C_1	R_1	4,000
C_2	R_2	4,000
C_3	R_3	2,000
C_4	R_4	5,000
		15,000

The minimum cost is ₹15,000

(ii)

Actual working time in the duration of 100 hours } $= 100 \times \frac{2,100}{2,500} = 84$ hours

Time taken per article $= \frac{84 \times 60}{6,000} = 0.84$ minutes

Observed manual labour time per article } $= 0.84 \times \frac{2}{3} = 0.56$ minute

Observed machine time per article } $= 0.84 \times \frac{1}{3} = 0.28$ minute

Normal labour time per unit = observed time/unit × Rating factor

$= 0.56 \times 1.15 = 0.644$ minute

Standard labour time per unit $= 0.644 + \frac{12}{100} \times 0.644 = 0.721$ minute

Standard time per unit of article produced = 0.721+0.28=1.0 minute.

2. (d) (i) The time schedule for different activities of a project is given below:

Activity (i-j)	Time (in days)
1-2	8
1-3	10
1-4	8
2-3	10
2-6	16
3-5	17
4-5	18
4-6	14
5-6	9

(1) Draw the arrow diagram.

(2) Identify critical path and total project duration.

(3) Determine total, free and independent floats.

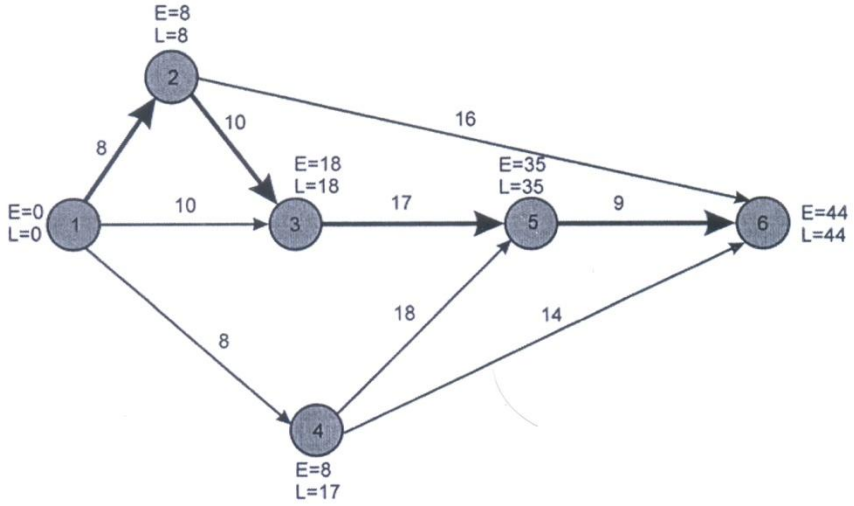
(ii) Describe Six Sigma as a key concept of Management. [(4+1+5)+6=16]

Answer:

2. (d)

(i)

(1) The Arrow Diagram for the given data:



(2) The Critical Path is 1-2-3-5-6.

Total Project duration is 44 days.

(3) The Total, Free and Independent Floats are computed in the following table:

	Duration	EST	EFT	LST	LFT	Slack of Tail Event	Slack of Head event	Total Float	Free Float	Independent Float
	Dij	Ei	Ei + Dij	Lj - Dij	Lj	Li - Ei	Lj - Ej	LST - EST	Total Float - Slack of Head Event	Free Float - Slack of Tail Event
1-2	8	0	8	0	8	0	0	0	0	0
1-3	10	0	10	8	18	0	0	8	8	8
1-4	8	0	8	9	17	0	9	9	0	0
2-3	10	8	18	8	18	0	0	0	0	0
2-6	16	8	24	28	44	0	0	20	20	20
3-5	17	18	35	18	35	0	0	0	0	0
4-5	18	8	26	17	35	9	0	9	9	0
4-6	14	8	22	30	44	9	0	22	22	13
5-6	9	35	44	35	44	0	0	0	0	0

(ii) The core objective of Six Sigma is to improve the performance of processes. By improving processes, it attempts to achieve three things: the first is to reduce costs, the second is to improve customer satisfaction, and the third is to increase revenue, thereby, increasing profits.

Six Sigma was started by Motorola as a way of reducing defects in the manufacturing process. Six Sigma represents a statistical measurement of variation from a specific attribute or characteristic desired by the end-user. It is expressed over six exponential layers:

Sigma	Defects per million	Remarks
One sigma	6,90,000 defects per million	
Two Sigma	3,08,000 defects per million	
Three Sigma	66,800 defects per million	
Four Sigma	6,210 defects per million	(relatively efficient)
Five Sigma	230 defects per million	(World class efficiency)
Six sigma	3.4 defects per million	(Perfection)

It provides a universal measurement standard for all processes throughout the organization. Sigma layers give an indication of how much failure is occurring within a process. It is estimated that a company operating between the third and fourth sigma can expect about a 10% loss in revenues from inefficiency. Moving from one sigma to the next is a major undertaking. A 30-fold improvement in quality is required to get from Four Sigma to Five Sigma.

Six Sigma is a very rigorous approach to improving quality within your products and services. Processes that are critical to products and services must be analyzed in detail. Techniques like process mapping and pareto charts are often used to understand the details within a process. Generally, six sigma will follow a four phase approach:

1. Measure - Determine the error or defect rate
2. Analyze **-** Understand the Process
3. Improve - Reach for a higher Sigma
4. Control **-** Monitor through measurement

Few companies have made it to the Six Sigma (3.4 errors per one million). However, where defect rates are extremely costly, reaching for the Sixth Sigma is now a given expectation. It is worth noting that Six Sigma requires formal training in the statistical methods that are used.

One reason Six Sigma has become so popular is because companies want to eliminate non value added activities as quickly as possible. Other approaches to process improvement, such as Activity Based Management, can take considerable time with marginal improvements.

Information System

Answer any two questions.

3. (a) (i) Discuss the different angles through which the feasibility study of the system is conducted.

(ii) Explain the important symbols used in Flowchart.

(iii) Discuss the areas which would help in analyzing/investing the Present System.

[6+4+6=16]

Answer

3. (a)

(i) Feasibility Study

It is essential to carry out the feasibility study of the project before its implementation. Feasibility Study refers to a process of evaluating alternative systems through cost/benefit analysis so that the most feasible and desirable system can be selected for development.

Different angles through which the feasibility study of the system is to be conducted:

(I) Technical Feasibility: In this study an analyst ascertains whether the proposed system is feasible with existing or expected computer hardware and software technology. The technical issues include the following:-

- Does the proposed equipment have the technical capacity to hold the data required to use the new system?
- Can the proposed application be implemented with existing technology?
- Can the system be expanded in future?
- Are there technical guarantees of accuracy, reliability, ease of access, and data security?

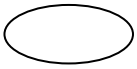
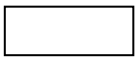
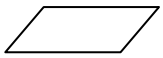
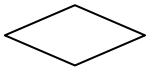
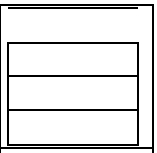
(II) Economic Feasibility/Cost-Benefit Analysis: It includes an evaluation of all the incremental costs and benefits expected if the proposed system is implemented. The financial and economic questions raised by analysts during the preliminary investigation for estimating the following:

- The cost of conducting a full systems investigation.
- The cost of hardware and software for the class of applications being considered.
- The benefits in the form of reduced costs.
- The cost if the proposed system is not developed.

(III) Operational Feasibility: 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?

(ii) Symbols used in Flowcharts: Some important symbols used in flowchart are: -

						
Start/Stop	Assignment/ Calculation	Input/ Output	Decision making	Connector	Flow Lines	Subroutine

(iii)

The following areas would help in analyzing/investing the Present System:

(a) Review historical aspects: A review of annual reports and organization chart can identify the hierarchy of management levels. The historical facts should identify the major turning points that have influenced its growth; the system analyst should also investigate what system changes have occurred in the past.

(b) Analyze inputs: Source documents are used to capture the originating data. The system analyst should study in depth various sources from where the data are initially captured to understand the existing system. The system analyst must understand the nature of each form, the distribution of the form.

(c) Review data files maintained: The analyst should investigate the data files maintained by each department and should know where they are located, who uses them. System and procedural manual should also be checked.

(d) Review methods, procedures and data communications : System analyst must review the types of data communication equipments including data interface, data links, modems, dial-up and leased lines and multiplexers to understand how the data communication network is used in the present system. A procedure's review is an intensive survey of the methods by which each job is accomplished, the equipment utilized and the actual location of the operations.

(e) Analyze outputs: The outputs or reports should be scrutinized carefully by the system analysts in order to determine whether they meet the organization's needs.

(f) Review internal controls: A review of the present system of internal controls may indicate weaknesses that should be removed in the new system. Locating the control points helps the analyst to visualize the essential parts and framework of a system.

(g) Undertake overall analysis of present system: Based upon the aforesaid investigation of the present information system, the final phase of the detailed investigation includes the analysis of the present work volume, the current personnel requirements, the present benefits and costs and each of these must be investigated completely.

3. (b) (i) "End users are the people whose jobs require access to the database for querying, updating and generating reports; the database primarily exists for their use." Explain the different categories of end users.

(ii) Discuss the effects of using computer for MIS.

(iii) Write a note on Payroll accounting. **[6+5+5=16]**

Answer:

3. (b)

(i) The following are the different categories of database end users:

1. Casual end users occasionally access the database, but they may need different information each time, they use a sophisticated database query language to specify their requests and are typically middle- or high-level managers or other occasional browsers.
2. Naive or parametric end users make up a sizable portion of database end users; their main job function revolves around constantly querying and updating the database, using standard types of queries and updates—called canned transactions—that have been carefully programmed and tested. The tasks that such users perform are varied:
   - Bank tellers check account balances and post withdrawals and deposits.
   - Reservation clerks for airlines, hotels, and car rental companies check availability for a given request and make reservations.
   - Clerks at receiving stations for courier mail enter package identifications via bar codes and descriptive information through buttons to update a central database of received and in-transit packages.
3. Sophisticated end users include engineers, scientists, business analysts, and others who thoroughly familiarize themselves with the facilities of the DBMs so as to implement their applications to meet their complex requirements.
4. Stand-alone users maintain personal databases by using ready-made program packages that provide easy-to-use menu- or graphics-based interfaces; an example is the user of a tax package that stores a variety of personal financial data for tax purposes.

   A typical DBMS provides multiple facilities to access a database. Naive end users need to learn very little about the facilities provided by the DBMS; they have to understand only the types of standard transactions designed and implemented for their use. Casual users learn only a few facilities that they may use repeatedly. Sophisticated users try to learn most of the DBMs facilities in order to achieve their complex requirements. Standalone users typically become very proficient in using a specific software package.

(ii) Effects of using computer for MIS:

The effects of applying computer technology to Information System are as discussed below:

(a) Increase in speed of processing and retrieval of data: Computer with its fast computational capability and systematic storage of information with random access facility has emerged as an answer to the problems faced in modern days management.

(b) Expansion in the scope of use of information system: System experts in business organizations developed the areas and functions, where computerized MIS could be used to improve the working of the concern. These types of applications are not feasible under the manual system.

(c) Scope of analysis widened: The use of computer can provide multiple type of information accurately and which makes the decision fast.

(d) Complexity of system design and operation increased: The computer manufacturers have developed some important programs software to help the users, which are self explanatory and require minimum system experts.

(e) Integrates the working of different information subsystem: There are number of subsystems like production, material, marketing, finance, engineering and personnel which are integrated only due to applying computer technology to MIS.

(f) Increases the effectiveness of information systems: Before the existence of computer technology, it was difficult to provide the relevant information to business executives in time even after incurring huge expenses. The use of computer technology has overcome this problem, by providing timely, accurate and desired information for the purpose of decision-making.

(g) More comprehensive information: The use of computer for MIS enabled system expert to provide more comprehensive information to executives on business matters.

(iii) Payroll Accounting

Payroll is one of the oldest and most common business computer applications. A decade or two ago, company payroll were frequently computed using calculators and then printed by tabulating machines. The basic purpose of the payroll system is to produce pay slips and pay cheques for the employees every month. In spite of the modern high speed computers, the processing of payroll remains fundamentally the same as in the past. Preparing a payroll requires collecting employee work hours through their attendance cards, converting hours to gross earnings, and computing deductions and net pay. Of course, there are other activities to be performed as byproducts of payroll operations. These includes accumulating summary data for general ledger reports, printing quarterly and year-end reporting statements, and making labour distribution and job costing or job performance measurements and reporting them. In addition to accounting activities, a payroll system commonly performs activities that might be viewed as personnel operations: sick leave and earned leave accrual and usage, and home address maintenance. While these activities enlarge the size of computer records retained for payroll operation, they do not significantly increase the complexity of managing the overall operation.

3. (c) (i) Discuss the features of Inventory Management in SAP.

(ii) 'There are several kinds of legal problems or disputes in E-Commerce specially in B2C Model covered under Law of Contract.'- Discuss.

(iii) Write a note on online banking or internet banking or e-banking. [6+6+4=16]

Answer:

3. (c)

(i) Features of Inventory Management in SAP:

- Entry of goods movements (receipt, issue, transfer posting etc.) are on real time basis. Goods movements include both "external" movements (e.g. goods receipts from external procurement, goods issues for sales orders) and "internal" movements (e.g. goods receipts from production, withdrawals of material for internal purposes, stock transfers, and transfer postings)
- Creation of a document for every goods movement
- Automatic updating of quantity & value for inventory management and creation of accounting documents (Cost Accounting and Financial Accounting).
- Division of the stocks into different categories (such as Unrestricted-use stock, stock in quality inspection or blocked stock)
- Batch management

- Management of special stocks (e.g. Vendor consignments, material provided to vendor etc.)
- Physical Inventory (Stock verification)
- Various analyses (such as the stock overview, age analysis etc.)

(ii) Liability under law of contract and internet:

There are several kinds of legal problems or disputes in E-Commerce specially in B2C Model covered under Law of Contract such as:

- The e-merchant delivers, but the customer does not admit that he or she ever received the merchandise.
- The e-merchant delivers, but the customer refuses to pay. His or her 14-year old ordered the product using a parent's VISA card without authorization. The customer pays for the goods and the e-merchant fails to deliver.
- The customer pays in full, but receives either the wrong merchandise or a partial order.
- The customer does not like the goods, but the e-merchant has no procedure for accepting returned goods.
- The customer does not like the goods but the e-merchant refuses to accept returned goods or give credit to settle the dispute.
- The customer receives the goods, but it arrives damaged. The carrier denies responsibility, the e-merchant claims it is the carrier's responsibility, and the vendor is located overseas.
- The customer receives the goods but it does not operate properly. The e-merchant asks the customer to ship the product to the manufacturer at the customer's expense. The manufacturer has no in-house service center.

(iii) Online banking or internet banking or e-banking allows customers of a financial institution to conduct financial transactions on a secure website operated by the institution, which can be a retail or virtual bank, credit union or building society. It may include any transactions related to online usage.

To access a financial institution's online banking facility, a customer having personal Internet access must register with the institution for the service, and set up some password (under various names) for customer verification. The password for online banking is normally not the same as for telephone banking. Financial institutions now routinely allocate customer numbers (also under various names), whether or not customers intend to access their online banking facility. Customer numbers are normally not the same as account numbers, because a number of accounts can be linked to the one customer number. The customer will link to the customer number any of those accounts which the customer controls, which may be cheque, savings, loan, credit card and other accounts.

To access online banking, the customer would go to the financial institution's website, and enter the online banking facility using the customer number and password. Some financial institutions have set up additional security steps for access, but there is no consistency to the approach adopted.