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 System

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.

1. Answer all questions: **[10×2 = 20]**

(a) Calculate EBQ from the details: Monthly demand -8000 units, setting up costs per batch - ₹400, cost of manufacture per unit - ₹60, rate of interest – 10% p.a.

(b) Define Total Productivity.

(c) Explain Line of Balance technique.

(d) Explain Flow Process Chart.

(e) Explain Delayed Differentiation.

(f) List the disadvantages of Vertical Integration.

(g) Explain regressing testing.

(h) Define Iconic scale model.

(i) State the important networking issues relating to ERP Implementation.

(j) State the meaning of the term 'Key pair'.

Answer:

(a) $$EBQ = \sqrt{\frac{2 \times Annual\,Demand \times Set\text{-}up\,Cost}{Unit\,Cost \times Inventory\,Carrying\,Cost\,per\,unit\,per\,year}}$$

$$EBQ = \sqrt{\frac{2 \times 8000 \times 12 \times 400}{60 \times 10\%}}$$

= 3578 units

(b) Total Productivity:

Here, productivity is calculated with respect to the total cost or the total finances committed, instead of one input, as given below:

$$Productivity = \frac{Value\,added}{Total\,factor\,cost} = \frac{Value\,of\,gross\,output}{Total\,value\,of\,inputs.}$$

The total factor productivity (TFP) is a measure of the overall changes in production efficiency.

(c) The Line of Balance technique is used in production scheduling and control to determine, at a review date, not only how many (quantity) of an item should have been completed by that date, but also how many should have passed through the previous (upstream) operation stages (processing steps) by that time so as to ensure the completion of the required delivery schedule.

LOB is a charting and computational technique for monitoring and controlling products and services that are made to meet specific delivery schedules.

(d) Flow process charts are graphic representations of the sequence of all operations, transportation, inspections, delays and storages occurring during a process or a procedure and include information considered desirable for analysis such as time required and distance moved.

The flow process chart could be of three types, viz., (i) Flow process chart material or product type. (ii) Flow process chart-man type. (iii) Flow process chart machine type or equipment type.

(e) Delayed Differentiation is the process of producing but not quite completing, a product, postponing completion until customer preferences or specifications are known. Modular design is a form of standardisation in which component parts are grouped into modules that are easily replaced or interchanged to produce varieties of the same basic product. One example is a computer system in which a customer can choose a particular configuration depending on the computing, capability desired by the customer. Modular design helps mass customisation.

(f) Disadvantages of vertical integration are:

- Not attractive for low volumes.

- High capital investment and operating costs.

- Less ability to react more quickly to changes in customer demands, competitive actions and new techniques.

(g) Regression Testing: As the software change, each time a new module is added as part of integration testing, the software changes. In the context of the integration testing, the regression tests ensure that changes or corrections have not introduced new errors.

(h) Iconic scale model is physical replica of the system based on different scale from original. Iconic models may appear to scale in three dimensions - such as model of a production process, building, car or an aircraft.

(i) Important networking issues relating to ERP implementation are network topology, detailed networking design, networking printers etc. Setting up new or leveraging existing Local Area Networking (LAN) and Wide Area Networking (WAN), constitute an important part of pre implementation/implementation process. This includes cabling to planned workstations, laying fiber optic backbone, provision for sufficient bandwidth to remote sites (particularly hosting distributed application/database). Mode of sharing networked printers in various functional divisions such as warehouses, accounting offices and sales units need to be planned beforehand.

(j) "Key pair", in an asymmetric crypto system, means a private key and its mathematically related public key, which are so related that the public key can verify a digital signature created by the private key.

Operations Management

2. Answer any three questions :

(a) (i) List the basic steps in Strategic Bench trending. **[6]**

(ii) At a small store of readymade garments, there is one clerk at the counter who is to check bills, receive payments and place the packed garments into fancy bags. The arrival of customer at the store is random and service time varies from one minute to six minutes, the frequency distribution for which is given below:

Time between Arrivals (minutes)	Frequency	Service Time (minutes)	Frequency
1	5	1	1
2	20	2	2
3	35	3	4
4	25	4	2
5	10	5	1
6	5	6	0

The store starts work at 11 a.m. and closes at 12 noon for lunch and the customers are served on the "first came first served basis". Using Monte Carlo simulation technique, find average length of waiting line, average waiting time, average service time and total time spent by a customer in system.

You are given the following set of random numbers, first twenty for arrivals and last twenty for service:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
64	04	02	70	03	60	16	18	36	38	07	08	59	53	01	62	36	27	97	86
30	75	38	24	57	09	12	18	65	25	11	79	61	77	10	16	55	52	59	63

[10]

Answer:

(i) The Steps in strategic bench trending are as follows:

(i) Firstly the market is defined by determining its size, customer preferences, competitors and relative business position of the company within the market.

(ii) The industry direction, technology shifts, geopolitical changes, customer changes and potential threats from outside sources are assessed.

(iii) The strongest current and potential competitors are then determined by evaluating the trends in industry.

(iv) Data on preference of competitors is gathered and the current and future performance of the unit is compared with that of its competitor.

(v) A performance baseline for the business units is then established and the relative performance of current and projected competition is estimated.

(vi) A set of initiatives which form the basis of an improvement plan are identified to maintain strengths while reducing projected gaps.

(ii) Probability Distribution (Arrival)

Time	Probability	Cum. Probability	Range	Range for simulation
1m	0.05	0.05	0 – 0.05	0 – 0.04
2m	0.20	0.25	0.05 – 0.25	0.05 – 0.24
3m	0.35	0.60	0.25 – 0.60	0.25 – 0.59
4m	0.25	0.85	0.60 – 0.85	0.60 – 0.84
5m	0.10	0.95	0.85 – 0.95	0.85 – 0.94
6m	0.05	1.00	0.95 – 1.00	0.95 – 0.99

Probability Distribution (Service Time)

Time	Probability	Cum. Probability	Range	Range for simulation
1m	0.10	0.10	0 – 0.10	0 – 0.09
2m	0.20	0.30	0.10 – 0.30	0.10 – 0.29
3m	0.40	0.70	0.30 – 0.70	0.30 – 0.69
4m	0.20	0.90	0.70 – 0.90	0.70 – 0.89
5m	0.10	1.00	0.90 – 1.00	0.90 – 0.99

Customer S. No.	Arrival time	Service begins	Service time	Service Completes	Waiting time	No. of persons in queue	Total time in system
1	11.04	11.04	3m	11.07	Nil		3m
2	11.05	11.07	4m	11.11	2m	1	6m
3	11.06	11.11	3m	11.14	5m	2	8m
4	11.10	11.14	2m	11.16	4m	2	6m
5	11.11	11.16	3m	11.19	5m	2	8m
6	11.15	11.19	1m	11.20	4m	2	5m
7	11.17	11.20	2m	11.22	3m	2	5m
8	11.19	11.22	2m	11.24	3m	2	5m
9	11.22	11.24	3m	11.27	2m	1	5m
10	11.25	11.27	2m	11.29	2m	1	4m
11	11.27	11.29	2m	11.31	2m	1	4m
12	11.29	11.31	4m	11.35	2m	1	6m
13	11.32	11.35	3m	11.38	3m	1	6m
14	11.35	11.38	4m	11.42	3m	1	7m
15	11.36	11.42	2m	11.44	6m	2	8m
16	11.40	11.44	2m	11.46	4m	2	6m
17	11.43	11.46	3m	11.49	3m	2	6m
18	11.46	11.49	3m	11.52	3m	1	6m
19	11.52	11.52	3m	11.55	Nil	Nil	3m
20	11.57	11.57	3m	12.00	Nil	Nil	3m
Total			54m		56m	26	110m
Average			54/20 = 2.7		56/20 = 2.8	26/20 = 1.3	110/20 = 5.5m

(b) (i) **The owner of Modern Goods Shop is interested to determine,how many advertisements to release in the selected three magazines A,B and C. His main purpose is to advertise in such a way that total exposure to principal buyers of his goods is maximized. Percentages of readers for each magazine are known. Exposure in any particular magazine is the number of advertisements released multiplied by the number of principal buyers. The following data are available:**

Particulars	A	B	C
Readers	1.0 lakhs	0.6 lakhs	0.4 lakhs
Principal buyers	20%	15%	8%
Cost per advertisement	₹8,000	₹6,000	₹5,000

The budgeted amount is at the most ₹1.0 lakh for the advertisements. The owner has already decided that magazine A should have no more than 15 advertisements and that B and C each gets at least 8 Advertisements. Formulate a Linear Programming model for this problem. **[8]**

(ii) **List the activities and responsibilities of product design.** **[4]**

(iii) **State the actions by which maximum capacity can be increased.** **[4]**

Answer:

(i) Let's x_1, x_2 and x_3 denote the number of advertisements to be released in three magazines A, B and C respectively. Let Z denote the total exposure to the principal buyers of the goods.

Objective Function:

Since the exposure in any magazine is the number of advertisements multiplied by the number of principal buyers, therefore, the value of Z is given by:

$Z = (0.20 \times 1,00,000) x_1 + (0.15 \times 60,000) x_2 + (0.08 \times 40,000) x_3$

$= 20,000 x_1 + 9,000 x_2 + 3,200 x_3$

Constraints:

The budgeted amount for the advertisements is at most ₹1,00,000

Hence, $8,000 x_1 + 6,000 x_2 + 5,000 x_3 \leq 1,00,000$

Also, the magazine A should have no more than 15 advertisements, B and C each should get at least 8 advertisements.

Hence, $x_1 \leq 15$

$x_2 \geq 8$ and

$x_3 \geq 8$

The linear programming model for the problem:

Maximise $Z = 20,000 x_1 + 9,000 x_2 + 3,200 x_3$

Subject to constraints:

$8,000 x_1 + 6,000 x_2 + 5,000 x_3 \leq 1,00,000$

$x_1 \leq 15$

$x_2 \geq 8$

$x_3 \geq 8$

Where x_1, x_2 and $x_3 \geq 0$

(ii) The activities and responsibilities of product design include the following:

(a) Translating customer needs and wants into product and service requirements (marketing).

(b) Refining existing products (marketing).

(c) Developing new products (marketing, product design and production).

(d) Formulating quality goals (quality assurance, production).

(e) Formulating cost targets (accounting).

(f) Constructing and testing prototype (marketing, production).

(g) Documenting specifications (product design).

(iii) The maximum capacity is increased by the following actions:

- Increase the number of machines

- Increase the number of operating hours in the shift

- Increase the number of shifts, if possible

- Deploy trained manpower

- Avoid loss due to scrap or damages

- Control waste of time by workers

- Give incentives to workers to perform at a higher rate

- Outsource part of the workload.

(c) (i) The following list of activities must be accomplished in order to complete a construction project: (Duration in weeks)

Activity	A	B	C	D	E	F	G	H	I	J	K
Time	3	8	9	6	10	14	11	10	5	4	1
Predecessors	—	—	A	B	C	C	CD	FG	E	I	H

Draw network. Determine the critical path and duration of the project. Calculate EST, EFT, LST and LFT. Also find total float of each activity. **[8]**

(ii) Well-done Company has taken the third floor of a multistoried building for rent with a view to locate one of their zonal offices. There are five main rooms in this floor to be assigned to five managers. Each room has its own advantages and disadvantages. Some have windows; some are closer to the washrooms or to the canteen or secretarial pool. The rooms are of different sizes and shapes. Each of the five managers was asked to rank their room preferences among the rooms 201, 202, 203, 204, and 205. Their preferences were recorded in a table as indicated below:

Manager				
M1	M2	M3	M4	M5
202	202	203	202	201
203	204	201	205	202
204	205	204	204	204
	201	205	203	
		202		

Most of the managers did not list all the five rooms since they were not satisfied with some of these rooms and they have left off these from the list. Assuming that their preferences can be quantified by numbers, find out as to which manager should be assigned to which rooms so that their total preferences ranking is a minimum. **[8]**

Answer:

(i)
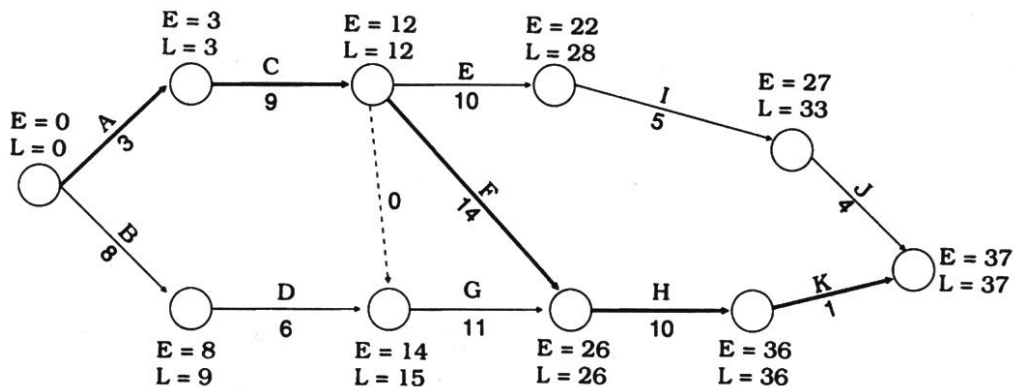
Paths	Duration (weeks)
ACEIJ	3+9+10+5+4 = 31
ACGHK	3+9+11 + 10+1=34
ACFHK	3+9+14+10+1 = 37 **Critical Path**
BDGHK	8+6+11+10+1=36

Activity	Duration	EST	EFT	LST	LFT	Total float
A	3	0	3	0	3	0
B	8	0	8	1	9	1
C	9	3	12	3	12	0
D	6	8	14	9	15	1
E	10	12	22	18	28	6
F	14	12	26	12	26	0
G	11	14	25	15	26	1
H	10	26	36	26	36	0
I	5	22	27	28	33	6
J	4	27	31	33	37	6
K	1	36	37	36	37	0

(ii)

	Managers				
Room No.	M1	M2	M3	M4	M5
201		4	2		1
202	1	1	5	1	2
203	2		1	4	
204	3	2	3	3	3
205		3	4	2	

Row subtraction

Room No.	M1	M2	M3	M4	M5
201		3	1		0
202	0	0	4	0	1
203	1		0	3	
204	1	0	1	1	1
205		1	2	0	

Column subtraction

Room No.	M1	M2	M3	M4	M5
201		3	1		0
202	0	0	4	0	1
203	1		0	3	
204	1	0	1	1	1
205		1	2	0	

Minimum No. of lines

Room No.	M1	M2	M3	M4	M5
201		3	1		0
202	0	0	4	0	1
203	1		0	3	
204	1	0	1	1	1
205		1	2	0	

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

Optimal Assignment

Room No.	M1	M2	M3	M4	M5
201		3	1		0
202	0	0	4	0	1
203	1		0	3	
204	1	0	1	1	1
205		1	2	0	

Room No.	Manager	Rank
201	M5	1
202	M1	1
203	M3	1
204	M2	2
205	M4	2
Total		7

(d) (i) The demand for computers has been rising rapidly since 2005. The following data are for one of the metropolitan cities. Fit a quadratic curve to the data and forecast the demand during years 2014, 2015, 2016, 2017 and 2018.

Year	Demand ('000)
2005	25
2006	35
2007	50
2008	65
2009	85
2010	115
2011	150
2012	205
2013	285

[8]

(ii) An electric company which generates and distributes electricity conducted a study on the life of poles. The repatriate life data are given in the following table:

Life data of electric poles

Year after installation:	1	2	3	4	5	6	7	8	9	10
Percentage poles failing:	1	2	3	5	7	12	20	30	16	4

1. **If the company now installs 5,000 poles and follows a policy of replacing poles only when they fail, how many poles are expected to be replaced each year during the next ten years?**

   To simplify the computation assume that failures occur and replacements are made only at the end of a year.

2. **If the cost of replacing individually is ₹ 160 per pole and if we have a common group replacement policy it costs ₹ 80 per pole, find out the optimal period for group replacement.** **[8]**

Answer:

(i) Let us call demand as Y and years as X. Let us arrange X so that the middle year is zero so that $\Sigma X = 0$.

With this we have $\Sigma X = 0$ and $\Sigma X^3 = 0$

The normal equations for the quadratic curve are

$\Sigma Y = a_0 N + a_2 \Sigma X^2$ (1)

$\Sigma XY = a_1 \Sigma X^2$ (2)

$\Sigma X^2 Y = a_0 \Sigma X^2 + a_2 \Sigma X^4$ (3)

In order to solve these, the following table is constructed:

Year	X	Y	X^2	X^4	XY	$X^2 Y$
2005	-4	25	16	256	-100	400
2006	-3	35	9	81	-105	315
2007	-2	50	4	16	-100	200
2008	-1	65	1	1	-65	65
2009	0	85	0	0	0	0
2010	1	115	1	1	115	115
2011	2	150	4	16	300	600
2012	3	205	9	81	615	1845
2013	4	285	16	256	1140	4560
	0	1015	60	708	1800	8100

Therefore from Eq. (2)

$1800 = a_1 (60)$ or $a_1 = \dfrac{1800}{60} = 30$

From Eq. (1) and (3)

$1015 = a_0 (9) + a_2 (60)$ and $8100 = a_0 (60) + a_2 (708)$

Solving these equations, we get

$A_0 = 83.92$ and $a_2 = 4.33$

The equation for the parabolic (quadratic) curve is therefore

$Y = 83.92 + 30 X + 4.33 X^2$

Using the above equation, the forecast for 2014 is

$Y = 83.92 + 30(5) + 4.33 (5)^2 = 342.17$

The similarly, forecasts for years 2015, 2016, 2017 and 2018 are

$Y_{2015} = 83.92 + 30 (6) + 4.33 (6)^2 = 419.80$

$Y_{2016} = 83.92 + 30 (7) + 4.33 (7)^2 = 506.09$

$Y_{2017} = 83.92 + 30 (8) + 4.33 (8)^2 = 601.04$

$Y_{2018} = 83.92 + 30 (9) + 4.33 (9)^2 = 704.65$

(ii) Chart showing Optimal Replacement Period

Average life of the pole - 1 x 0.01 + 2 x 0.02 + 3 x 0.03 + 4 x 0.05 + 5 x 0.07 + 6 x 0.12 + 7 x 0.20 + 8 x 0.3 + 9 x 0.16 + 10 x 0.04 = 7.05

No. of poles to be replaced every year = $\dfrac{5000}{7.05}$ = 709

Average yearly cost on individual replacement = 709 x ₹160 = ₹ 1,13,440.

Group Replacement: Initial Cost = 5,000 x ₹80 = ₹4,00,000.

Year	No. of poles to be replaced	Yearly cost (₹)	Cumulative Cost (₹)	Total cost (₹)	Average Annual Cost (₹)
1	5,000 x 0.01 = 50	8,000	8,000	4,08,000	4,08,000
2	5,000 x 0.02 + 50 x .01 = 101	16,160	24,160	4,24,160	2,12,080
3	5,000 x 0.03 + 50 x 0.02 + 101 x 0.01 = 152	24,320	48,480	4,48,480	1,49,493
4	5,000 x 0.05 + 50 x 0.03 + 101 x 0.02 + 152 x 0.01 = 256	40,960	89,440	4,89,440	1,22,360
5	5,000 x 0.07 + 50 x 0.05 + 101 x 0.03 + 152 x 0.02 + 256 x 0.01 = 362	57,920	1,47,360	5,47,360	1,09,472
6	5,000 x 1.2 + 50 x 0.07 + 101 x 0.05 + 152 x 0.03 + 256 x 0.02 + 362 x 0.01 = 6023	9,63,680	11,11,040	15,11,040	2,51,840

Optimal replacement at the end of the 5th year.

Information System

3. Answer any two questions:

(a) (i) **Describe the different Dynamic Analysis Testing.** **[5]**

(ii) **Discuss the importance of Marketing Information System.** **[7]**

(iii) **List the policy and procedure to be followed for effective management of human resources.** **[4]**

Answer:

(i) Dynamic Analysis Testing

- Black Box Testing: The test designer selects valid and invalid inputs and determines the correct output. If a module performs a function which is not supposed to, the black box test does not identify it as it is not concerned with the internal structure. Thus in black box testing, it has no relation with the internal functioning of a system.

- White Box Testing: White box testing uses an internal perspective of the system to design test cases based on internal structure. It requires programming skills to identify all paths through the software. After obtaining a clear picture of the internal workings of a product, tests can be conducted to ensure that the internal operation of the product conforms to specifications and all the internal components are adequately exercised.

- Gray Box Testing: Gray box testing is a software testing technique that uses a combination of black box testing and white box testing. In gray box testing, the tester applies a limited number of test cases to the internal workings of the software under test. In the remaining part of the gray box testing, one takes a black box approach in applying inputs to the software under test and observing the outputs.

(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.

(iii) For effective management of human resources, the following policy and procedure must be followed:

1. Job description for different positions should be clearly spelt out to avoid conflict and confusion.

2. Job responsibility for each position should be clearly defined.

3. Recruitment policy must be well defined one to hire right quality personnel.

4. Training programs should aim at skill improvement of the personnel in line with technological change and organization's requirement.

5. Regular screening of security check must be followed to plug all possible motive for fraudulent activities and to avoid risk of any damage.

6. Performance evaluation should be rational, scientific and unbiased to motivate the employees.

(b) (i)   **Describe the two main types of Data Manipulation Languages(DMLs).**   **[4]**

   (ii)   **Describe the payroll master file update.**   **[8]**

   (iii) **Write a note on detailed system process tools.**   **[4]**

Answer:

(i)   A high-level or nonprocedural DML can be used on its own to specify complex database operations in a concise manner. Many DBMSs allow high-level DML statements either to be entered interactively from a terminal (or monitor) or to be embedded in a general-purpose programming language. In the latter case, DML statements must be identified within the program so that they can be extracted by a pre-compiler and processed by the DBMS. A low-level or procedural DML must be embedded in a general-purpose programming language. This type of DML typically retrieves individual records or objects from the database and processes each separately.

(ii) Before time cards are submitted at the end of a pay period, the accounting department obtains data on new employees and on recent changes to existing employees such as correct spelling of name, change in address, marital status, pay scale, overtime rate, rates of sick leave and earned leave, change in department employed by, and an employee number.

New employee information is submitted to the data entry department on a payroll change input form. These forms contain space for all vital data to be entered into the system. Fig. below shows the preliminary master files update procedure. Keyed employee additions and changes update the most recent version of the payroll master file. It can be seen in the system flowchart that the master file which is stored on a hard disk is randomly updated with the input change transactions. It may be noted here that copies of master file should be retained before and after updating. Thus, if an error is found, it can be corrected and updating can be repeated. An employee change report is also printed as a result of this update run. It is convenient if the change report is printed in the same sequence as the input documents, since the report can then be edited manually without searching for the corresponding change input form.
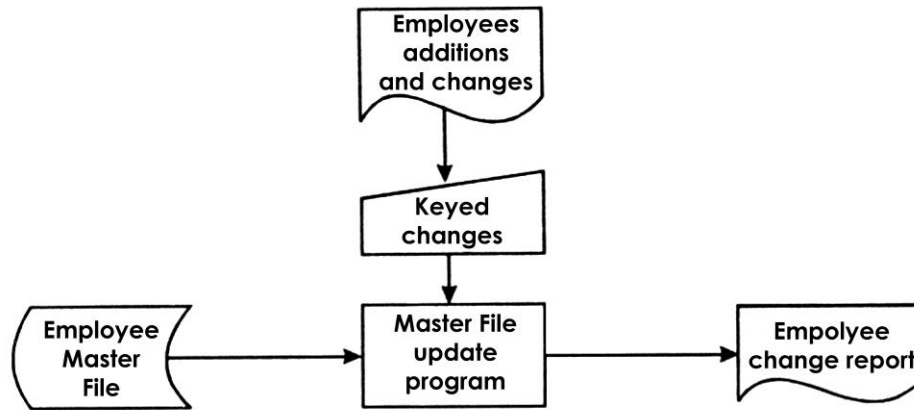
Preliminary master payroll file update flowchart

(iii) Detailed system process: These tools are used to help the programmer to develop detailed procedures and processes required in the design of a computer program. Decision trees and decision tables use a tabular form to document the complex conditional logic.

	Granting Credit Facility	R1	R2	R3
A1	Credit Limit Accepted	Y	N	N
A2	Pay Experience Favourable	-	Y	N
B1	Allow Credit Facility		X	X
B2	Reject Order			X

(c) (i) **Write a note on E-commerce Jurisdiction.** **[4]**

(ii) **Describe Electronic Data Interchange.** **[7]**

(ii) **'Selection process of ERP packages constitutes various stages' – List them.** **[5]**

Answer:

(i) In E-commerce the legal issue of jurisdiction, meaning the legitimate scope of government power, still remains a major legal aspect that is yet to be sorted out satisfactorily. A court must have jurisdiction over the litigants and the claims before it entertains a lawsuit. In the context of e-commerce, this issue arises when there is a dispute between business houses from different states in a country. For example, in India, a customer in New Delhi may be required to travel to Bangalore to defend against a Company that is suing him for breaking a sales agreement.

Generally, under the present law of physical jurisdiction, the Court will have jurisdiction over commercial litigant if his business is located in that area. However, in the cyber space the place where the Web server or the business is located would determine the rights of the customer to file a suit. Unfortunately, it is not always clear where the server is located, especially when the e-merchant has multiple Web servers in different countries. Perhaps, the only thing that counts is the country where the e-merchant is located and the location determines the jurisdiction on the Internet.

(ii) Electronic Data Interchange

EDI is the system where data is transferred electronically in machine readable or processable form. Here, any message is sent through EDI then it would be immediately processed by receiving computer without any human intervention or interpretation or rekeying.

Before EDI following steps were involved in commerce:

Step I: Creation of purchase order (PO) by the customer.

Step II: PO is sent by the customer (sender of the message) using post office, fax, telex and so on.

Step III: PO is received by the supplier (receiver of the message).

Step IV: PO is interpreted by the supplier (receiver).

After EDI following steps were involved in commerce:

Step I: Customer's computer system creates and sends the electronic PO.

Step II: PO is received by the supplier (receiver of the message) and places the order directly into his system and he acts accordingly.

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.

EDI has following benefits:

1. The use of EDI eliminated many problems associated with traditional information flow such as the delay associated with making of documents.

2. As data is not repeatedly keyed (typed) therefore the chances of error are reduced.

3. Time required to re-enter data is saved.

4. As data is not re-entered at each step in the process, therefore labour costs are reduced.

5. As time delays are reduced therefore more certainty in information flow is there.

6. EDI generates functional acknowledgement that the EDI message has been received by the recipient and is electronically transferred to sender. Therefore this acknowledgement which is sent electronically by the recipient to sender, states that the message has been received.

Drawback of EDI

Initially EDI was very costly and only big business houses could adopt it. However, Internet removed this drawback by adopting different versions of EDI so that it could be used by middle or small business houses also.

(iii) Selection process constitutes various stages as mentioned below:

1. Short listing of vendors: Hundreds of ERP packages are available in the market, which have different concept, architecture and sets of functionalities. Analyzing all the packages is not feasible. Organization need to identify a few best suited packages by looking at product literatures of vendor, finding out which product is being used by their peer organizations and getting help from external consultants. Once a few packages are short listed, respective vendors should be asked to respond to the RFP, as per its format.

2. Demo and Presentation: Responses from shortlisted vendors are evaluated by the selection committee after collating scores obtained by them and a consensus is reached about their final ranking. Anyone not fulfilling a predetermined vital requirement is eliminated at this stage. Top two or three vendors, are then invited for demo and presentation. Mode of presentation should be carefully scripted and send to the vendors in advance. They should be asked to walkthrough a particular business cycle through their vanilla software. They should be specifically asked to clarify any area of concern about their proposal, which may expose weak/ problem area of their offer.

3. Site visit and contract negotiations: After the committee has reached a decision on best suited package, visits to reference sites are imperative. The vendor should provide reference sites of similar size and industry, identical version and belonging to same geographical location. Team members should have look and feel of the systems operating at reference sites and ask pertinent questions covering overall satisfaction, functionality, cost/ time over run, support concerns etc. After site visit, if the committee members feel that their selection is right, they proceed with final negotiation and procurement. Negotiations are normally held on license and annual maintenance cost, payment plan including a leasing option, support issues and other commercial and legal terms.