Indian Statistical Institute
Documentation Research and Training Center

M.S. in Library and Information Science
Semester Final Exam (IV Semester) (2016-2018)

Paper–19 : KNOWLEDGE MANAGEMENT

Date: 28.04.2018

Max Marks: 60
Time: 3 hours

Please read the case study information below carefully. The questions are listed at the end. Answer any 5 questions. Each question carries 12 marks

Incense stick manufacturing

Incense is aromatic biotic material which releases fragrant smoke when burned. The term refers to the material itself, rather than to the aroma that it produces. Incense is used for aesthetic reasons, and in therapy, meditation, and ceremony. It may also be used as a simple deodorant or insectifuge (a substance that repels, but does not kill, insects).

Incense is composed of aromatic plant materials, often combined with essential oils. The forms taken by incense differ with the underlying culture and have changed with advances in technology and increasing diversity in the reasons for burning it. Incense can generally be separated into two main types: "indirect-burning" and "direct-burning". Indirect-burning incense (or "non-combustible incense") is not capable of burning on its own and requires a separate heat source. Direct-burning incense (or "combustible incense") is lit directly by a flame and then fanned or blown out, leaving a glowing ember that smoulders and releases a smoky fragrance. Direct-burning incense is either a paste formed around a bamboo stick, or a paste that is extruded into a stick or cone shape.

Incense sticks are packaged in round or flat boxes.

Incense stick manufacturing is manual in nature. Bill of Materials (BOM) used in Incense stick manufacturing includes:

- Outer cover has branding details and general / statutory information
- Inner cover which holds the Incense sticks. Should be thick enough to hold the Incense sticks and to easily push it into outer cover.
- Incense sticks either of wood or of bamboo with a coating of fragrance with binder. In India, typically a match box holds 60 sticks in a box.

A stringent Quality Control process is adopted for all inward materials. As part of the vendor approval process, visit to the supplier facility to verify Good Manufacturing Practices (GMP) adoption, sufficient quality controls and compliance management is undertaken. The vendor is on boarded into the approved vendor list after suitable assessment.

Orders are placed on approved vendor. Vendors supply material based on orders issued. Once inward materials are received from the vendor, QC tests are done before approval of the lot and issue of materials. A sampling plan as per BIS 2500 standard is adopted.

A daily plan, schedules the number of Incense boxes that need to be assembled and despatched and is released by Production Planning and Control (PPC) department. Stores department issues the required material in the following ratio: Outer cover: Inner cover: Incense sticks – 1: 1: 60.

The assembly area layout facilitates cellular manufacturing. Totally 10 cells work at any point of time. Each cell has 5 members which carry out counting of Incense sticks, aligning sticks in one direction, stuffing Incense sticks into inner cover and finally assembling the inner cover into outer cover. A study by the Industrial Engineering department has set a standard of getting 100 boxes per hour per cell. Packing of 10 Incense boxes into a paper cover is the packing standard. Such 10 Incense box units amounting to 100 are packed into a carton box which is ready for despatch.

Randomly, cartons boxes are selected for final inspection. Sampling plan BIS 2500 is used.

During the assembly process, each cell maintains logs of the activities in a pre-determined format. Each cell is expected to update the logs on an hourly basis about the volume of match boxes assembled. The QC department keeps a log of all the tests carried out both during the in-warding of materials and also during the final inspection. Stores department keeps stock book of all materials in-warded and material issued.

Here are typical logs of Incense box assembly:

Daily Assembly Log

Date of assembly	05-Apr-2017	**Cell ID**	03

Time	**# of members present**	**Count of Incense boxes assembled**	**Remarks**
9.00 AM – 10.00 AM	5	88	
10.00 AM – 11.00 AM	5	88	
11.00 AM – 12.00 PM	5	78	10 mins tea break
12.00 PM – 1.00 PM	5	102	
1.00 PM – 2.00 PM	0	0	Lunch break

2.00 PM – 3.00 PM	4	74	1 Sick leave
3.00 PM – 4.00 PM	4	101	
4.00 PM – 5.00 PM	4	95	
5.00 PM – 6.00 PM	4	75	Shortage of sticks
Total person hours	36	**Total Incense boxes assembled**	701

Daily Assembly Log

Date of assembly	05-Apr-2017	**Cell ID**	07

Time	**# of members present**	**Count of Incense boxes assembled**	**Remarks**
9.00 AM – 10.00 AM	5	98	
10.00 AM – 11.00 AM	5	89	
11.00 AM – 12.00 PM	5	72	10 mins tea break
12.00 PM – 1.00 PM	5	105	
1.00 PM – 2.00 PM	0	0	Lunch break
2.00 PM – 3.00 PM	5	99	
3.00 PM – 4.00 PM	5	101	
4.00 PM – 5.00 PM	5	98	
5.00 PM – 6.00 PM	5	99	
Total person hours	40	**Total Incense boxes assembled**	761

DATE	7	3
5/4	✓	✓
6/4	–	✓
7/4	✓	–

Daily Assembly Log

Date of assembly	06-Apr-2017	Cell ID	03

Time	# of members present	Count of Incense boxes assembled	Remarks
9.00 AM – 10.00 AM	5	98	
10.00 AM – 11.00 AM	5	87	
11.00 AM – 12.00 PM	5	78	10 mins tea break
12.00 PM – 1.00 PM	5	105	
1.00 PM – 2.00 PM	0	0	Lunch break
2.00 PM – 3.00 PM	5	100	
3.00 PM – 4.00 PM	5	104	
4.00 PM – 5.00 PM	4	97	
5.00 PM – 6.00 PM	4	69	1 Sick leave

Total person hours	38	Total Incense boxes assembled	738

Daily Assembly Log

Date of assembly	07-Apr-2017	Cell ID	07

Time	# of members present	Count of Incense boxes assembled	Remarks
9.00 AM – 10.00 AM	5	99	
10.00 AM – 11.00 AM	5	100	
11.00 AM – 12.00 PM	5	95	10 mins tea break
12.00 PM – 1.00 PM	5	98	
1.00 PM – 2.00 PM	0	0	Lunch break
2.00 PM – 3.00 PM	5	97	
3.00 PM – 4.00 PM	5	101	
4.00 PM – 5.00 PM	5	105	
5.00 PM – 6.00 PM	5	85	Shortage of sticks

Total person hours	40	Total Incense boxes assembled	780

The company does a lot of analysis on the data captured. Typical Key performance indicators (KPI) being monitored are:

1. Total Incense boxes produced for the day by individual cells
2. Hourly Productivity = Count of Incense boxes assembled / # of resources hours available
3. Daily Productivity = Total Incense boxes assembled for the day / # of resource hours available
4. Hourly % Variance = Count of Incense boxes assembled / 100 * 100

Based on the above, answer any 5 questions:

1. Define a KM strategy including People / Roles, Process and Technology for the Organization and identify sources of Knowledge

2. Document a Step by Step instruction / Standard Operating Procedure for the assembly employees to ensure standardization amongst cells

3. Being conscious about the employees being illiterate / basic literate, how will you define standards?

4. Please calculate the 4 KPIs defined for the data provided

5. Define visualization charts for depicting the 4 KPIs and describe briefly why you are selecting a particular chart (Bar charts, Pie charts, etc)

6. Can you describe how PDCA cycle be used for improvement in performance of the assembly process?

7. How would you describe Human capital of the Organization?

8. How would you use technology to automate measurement and display of KPIs onto the Web / Mobile device?