UNIT 19   STANDARDISATION, CODIFICATION AND VARIETY REDUCTION

Objectives

After completion of this unit, you should be able to:
- familiarise with the need and role of classification, codification and standardisation in the context of materials management from the viewpoint of planning, control, purchase, inventory, stores, and so on
- appreciate the importance of standardisation in variety reduction
- design and implement codification system for situation other than materials
- design and implement standardisation for procedures, forms etc. in information system design
- introduce computerisation of data system for materials using codification and standardisation.

Structure

19.1   INTRODUCTION

Almost all organisations use and store a large number of items. Some of these have relatively longer life, for example, buildings, plants, equipments, machines, furnitures etc. while others, in a rather large number, running into lakhs, spend shorter time with the organisation, for example, materials, components, tools, stationeries, etc. We shall concentrate mainly on materials and parts.

Several departments of the organisation require the information about the materials and their requirements are usually different from each other. For example, it is easy to visualise how the information requirements may have quite a wide spectrum by departments such as receipt, storage, inspection, design, engineering inventory, accounts, marketing etc. about a given material. Some departments are interested in the size, volume, shape, some in engineering properties, some in financial aspects while some in the commercial value of the material. It is quite likely and perhaps sometimes purposeful for an item to get identified by different names by different departments of the organisation. A dustbin may be known as refuse container, rubbish-box, etc. An electric company in UK had as many as 118 names, for a simple screw with a width of 3/8 in. and length of 6 in., depending on type of usage and the department using the screw. These may, however, result in confusion and tend to duplicate ordering or overstocking. The problem could really explode beyond dimension when the number of items is very large (as usually it is) and there are several external organisations, suppliers, wholesalers, retailers, customers etc. who prefer to call an item by different names: some by brand name, some by manufacturer reference number, some by engineering name, and some by serial number.

Quite often, a good number of products or parts may differ very marginally or insignificantly from each other in dimensional or some similar characteristics. The functional requirements will be equally well served if all such parts are made to the same common specifications. This is called standardisation. The process of standardisation logically leads to reduction in the number of part, variety that an organisation handles.

For the purpose of convenient understanding of the topic, we shall discuss classification, codification, standardisation, and variety reduction in that order.

19.2 CLASSIFICATION OF MATERIALS

When there are numerous items handled by an organisation, their planning and coordination becomes extremely. difficult, if not impossible, if each one of them is handled separately. Classification of materials involves grouping of items according to some criteria. We are quite familiar with classifying our domestic articles into clothes, kitchenware, electric appliances, electronic gadgets, furniture, professional articles, entertainment articles, groceries, consumables, non-consumables etc. It is easy to see that an item may belong to more than one class depending on the criteria used. For example, a radio set is an electronic gadget as well as a non-consumable and entertainment article.

What is the purpose of classification? Following are the major objectives of classification:

  i).   To devise procedures of planning and control for materials in a class.
  ii).   To devise purchase procedures, inspection methods, and storing and issuing procedures, common to all materials in a class.
  iii). To devise accounting and evaluation procedures common to all materials in a class.

Obviously; the concentration of effort according to class system would be more efficient and effective as compared to diluted effort corresponding to each individual item.

Following are the major classification systems.

On the Basis of Nature of Materials

  a)   **Raw Materials:** Raw materials include all those materials which are purchased from the original producer or other manufacturers and are used directly in producing. the firm's product. For example, cotton and yarn are raw materials for cotton textile mills for they help in producing the final product-cloth. Cotton is purchased from the original producer, i.e., cotton grower, whereas yarn is procured from other manufacturers, i.e., spinners. The product in one trade may become the raw material for the other trade.

  b)   **Machinery and Equipment:** All the machinery, both power and hand-driven, such as, presses, lathe machines, typewriters, electric motors, fans, and other machines used in the production and other departments, is classified as such. Tools also come under this category, and they are issued on loan basis to the various departments for a definite period, generally till their life-time.

  c)   **Consumable Items:** Those materials used in the manufacturing process which cannot be used for the second time for the same purpose since their utility for the purpose in question has ceased and the shape changed are referred to as consumable items. Coal, coke, mineral oil, lubricants, cotton waste, paints, varnishes, oxygen, stationery items like pencil, paper, carbon papers, ink, etc., are a few examples of the consumable items.

  d)   **Chemicals:** Substances obtained after undergoing certain processes in chemistry according to a formula devised for the purpose may be known as chemicals. They should be stored, preserved and issued very cautiously after a careful scrutiny and proper analysis since their use involves risk even to life. Items like carbide, acids, etc., can be classified under the head.

e)   **Inflammable Items:** Items highly susceptible to fire, such as petrol, kerosene, films, dopes and paints, fall under the category. Due to their hazardous nature, they aregenerally stored as far away as possible from the main building with complete fire-fighting arrangements standing by.

f)   **Fuel Stock:** These are also consumable items. But there is a slight difference between the two in respect of their uses. When an item is directly used for production and is a fuel for the furnace, oven, etc., it is classed as fuel stock. It is a necessary item for completing, rather starting, the manufacturing process and of course one of the important items in a manufacturing unit, but it can never constitute the finished product. However, sometimes it may rightly be taken as a raw material. Coal is a fuel stock but is also a raw material for an iron and steel industry.

g)   **Furniture:** Movable contents of a house or a room like chairs, tables, almirahs, benches, stools, etc., are furniture items. Their repairs, renewals and replacements also require proper maintenance of records since they are issued temporarily on loan basis.

h)   **Scrap Materials:** On the expiry of life of a particular item, the residue is called the scrap. Such material as is left over as waste in the process of production is also known as scrap. The scrap is sold out in the market so as to fetch some value out of it. Kabadis are the best purchasers of scrap in this country.

i)   **Packaging Materials:** These include all kinds of wrapping materials, such as paper wood carvings, sawdust, straw, etc., containers like boxes, crates, drums and bottles, protective coatings, such as, wax, grease, as also plastic cans, bags, etc.

j)   **General Items:** This category include all those items which do not fall under any of the above categories of items. In a large undertaking, general stores section is separated from other stores under an independent incharge since they cover a large number of items,.which, although not directly linked with the production processes, are required for day-to-day smooth and efficient running of the enterprise. Cleaning materials like soap, brasso, brooms, uniforms for the staff, stationery and all other items of general use are handled in the general stores department.

On the Basis of Usability of Materials

a)   **Serviceable, Unserviceable and Obsolete Items:** Serviceable items are those items which go temporarily out of order. After repairing and replacement they may become serviceable again and their usable life may thus be extended for some more time. Unserviceable items are those items which have outlived their life. No amount of repairs, renewals or replacements can bring them back to their usable life. They are thus fit only for disposal as scrap. Obsolete items are those items which have gone out of date because of new inventions in design, use, etc., and which cannot profitably be used again.

b)   **Finished and Semi-finished Items:** Finished items are those goods which have been manufactured in complete form by the production department and are ready for sale. On the other hand, semi-finished items are those which have not yet been manufactured completely and need some further processing before they can be put to sale in the market. They are thus taken back by the production department for turning them into a final product.

c)   **Dead Stock Items:** This term is generally used in government departments. Furniture, equipments, machinery and other items which have some definite life and which cannot be written off before the expiry date of their life are classed as dead stock items. They are issued temporarily on loan basis to their users.

d)   **Unused Items:** These are not stock items in the real sense of the term. These cannot be used in the production unit, because, being defective, damaged beyond use, or because of some other reason they have been rendered unusable. Sometimes unused stocks are mistaken for scrap and unserviceable materials. But this is not the real position. Scraps are generally left out items from the production unit. They cannot be used, as either they are less in quantity or less in measurement, weight, etc. But unserviceable items are movable items which have been rendered unserviceable by constant use and are now beyond repair.

Activity A

Classify all the items used in the house on the basis of nature of materials and on the basis of the usability. How many groups do you find? Regroup them if possible.

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Activity B

Consider an officer dealing with personnel administration. Classify all the various files into some reasonable groups. State the criteria of classification.

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19.3 CODIFICATION

From the above, it is clear that there must be some means of identifying the items accurately, uniquely, and adequately. These identification attributes are achievable by appropriate classification and codification. We are familiar with the PIN Codes used by Post and Telegraph Department to uniquely and concisely identify various regions of the country. Codification is a process of representing each item by a group of numbers and alphabets indicating the group, The subgroup, the type and the dimensions of the item. Many organisations in the private and public sectors, railways and DGS & D, have their own system of codification. The number of digits in a lode may typically be somewhere between eight and thirteen. The role of these digits and some fundamental principle of codification can be understood from the following example:

digits　1-2　　major group (raw materials, spare parts, subcontracted items, hardware items, packing material, tools, oil, stationery, etc.),

　　　　3-4　　subgroup (ferrous, non-ferrous, etc.),

　　　　5-7　　dimensional characteristics (length, width, head diameter, etc.),

　　　　8　　　minor variations,

　　　　9　　　location of storage

　　　　10-11　user departments of the organisation,

　　　　12　　products or product lines requiring the item,

　　　　13　　any other information (related to inventory accounting, purchasing etc.).,

This is merely an illustration of codification, process. The codification process can be based on other aspects also. (i) The codes could be obtained by the nature of items in grouping all items. of the same metal content, say ferrous, non-ferrous etc. (ii) The system could be built sometimes on the basis of the end-use of items, say

maintenance, spinning, foundry, welding, packing, machine shop, etc. (iii) The codification could be thought of on the basis of source of purchasing where items obtained from one source are grouped together. (iv) The codification could also be built on the basis of alphabetical listing.

Objectives of Codification

In order to identify the items correctly and logically for processing the transactions, and to facilitate easy location in stores, a codification system should be evolved with the following objectives:

a) Accurate and Logical Identification: A separate code is allotted to each of the items available in the storehouse indicating the size, quality, price, usability, special characteristics, specification, etc. This distinguishes one item from the other, even if nomenclature is the same, helps in accurate identification and eliminates any possibility of confusion. For example, a lead pencil of black colour, HB quality, for writing purpose and within a price range of Rs. 1.00-1.50 may have its code as

      07.39.1236

where   07 indicates the group (viz. stationery items)

      3 indicates pencil,

      9 indicates lead pencil,

      1 indicates lead colour (viz. black)

      2 indicates quality (viz. HB)

      3 indicates use (viz. writing)

      6 indicates price range (viz. Rs. 1.00-1.50).

b) Prevention of Duplication: All items are separately codified and are arranged in a logical order. Similar materials are grouped together (such as stationery items) and given a code (e.g., 07). Once a code is allotted to a particular group, it is a decision on a organisational level and in no case it is changed. Since each item has a different code number and various items are kept in different bins at different places, there can be no duplication in placing the orders, and no piling up of the materials will take place in the storehouse.

c) Standardisation and Reduction in Varieties: For codification, grouping of identical items is done and it enables the stores to examine the entire range of items. It facilitates the elimination of those varieties in place of which other varieties of the like quality can be used; this reduces the number of varieties to the minimum. If proper standardisation is achieved and the number of items is kept at the minimum, it will considerably reduce investment in various items as well as the cost of inventory carrying.

d) Efficient Purchasing: The filling up of purchase requisition, and preparation of purchase orders are simplified by the use of codes which easily indicate the materials required. Buying instructions to the suppliers become easy and quick if there is proper understanding of codification by the supplier. The entire operation of the purchase department can be organised according to grouping of items. In centralised purchasing such a system serves well in dealing with the purchase orders and in taking advantage of bulk purchasing.

e) Efficient Recording and Accounting: Codes lead to effective stock control, efficient recording and result-yielding accounting. Chances of mistakes are minimised. Pricing and valuation also become more accurate and reliable.

f) Easy Locating, Indexing and Inspection: The materials in the store have to be kept in an order which may facilitate their placement and location. For making it less time and energy consuming, items may be arranged according to the codes allotted to 1 them. This would also facilitate a quick and efficient inspection.

g) Easy Computerisation: Small size computers such as Personal Computers (PC) are finding their wide applications in materials management. The computers work better with codes than with long description of materials.

Essential Features of Codification System

There could be many possible arrangements of coding symbols (numbers, alphabets,

etc.) which can be used to design a code. However, a great deal of thought must go into the coding scheme if it is to satisfy a variety of users. The following considerations must be kept in mind when designing codes.

a) **Brevity:** The codification system should avoid long and unwieldy description. This implies that the codes should consist minimum possible number of digits. The size of the code would normally be dictated by the number and range of items and the number and types of applications of the data pertaining to the item. For example, for the pencil code 07.39.1236, the last digit representing the price range may be deleted if such information is not needed.

b) **Logical:** The coding system should be logically fit for the needs of the users and the methods of data processing employed. For the example of pencil code, the last digit representing price range should have an increasing price range with the value of the digit increasing, that is, a value of digit as 8 may indicate a higher price range of say Rs. 2.00-2.25.

c) **Flexibility:** The code design should be flexible to accommodate changes without disturbing existing codes. We are familiar with the library coding system in which codes do never get disturbed by addition of new books and all books to come in future are easily accommodated by the existing code structure.

d) **Uniqueness:** Each code must be a unique representation for the item it identifies. For example, an inventory item number or employee identification code must identify one and only one inventory item or employee.

e) **Easy Understandability:** The code structure must be easily understood by various users. It should be as simple, practical and meaningful as possible.

f) **Proper Choice of the Coding Symbols:** While a code may have numbers, alphabets or a mixture of both, certain precautions should be taken in selection of the symbols. Characters with similar appearances should be eliminated. For example, the letters 0, Z, I, S and V may be confused with the numbers O(zero), 2, 1, 5 and U, respectively. Where possible, letters that sound the same should be avoided (for example, B, C, D, G, P and T or M and N).

g) **Layout of Codes:** The layout of code should be equal in length. For example a code 001-199 should be preferred over 1-199. Codes longer than four alphabetic or five numeric characters should be divided into smaller segments for human judgements.

h) **Capacity of a System:** When calculating the capacity of a given code for covering all situations while still maintaining code uniqueness, the following formula applies: $C=S^P$, where C is total available code combinations possible, S is the number of unique characters in the set, and p is the number of code positions. For example a 3-digit code with numbers 0 to 9 will have $10^3=1,000$ unique code combinations. The size of code structure, therefore, should be decided before hand by anticipating the requirements of the unique combinations.

Codification Systems

There are several systems possible for codification of materials depending on the choice of coding symbols-alphabets, numbers, or a combination of alphabets and numbers (alphanumeric). Two popular and fundamental systems-Brisch and Kodak-are described here.

Brisch System: The Brisch system is based on numbers from 0 to 9 and consists of blocks (typically three) separated by decimal points. The blocks are assigned specific classification of the materials. The first (left most) block represents the major classification (such as raw materials, packing materials, finished materials, etc.), the second block represents the next level classification (such as nature, use, quality, characteristics, etc.) while the third block represents the lowest level classification (such as quality of the material, its components; its facial appearance, price, availability, source of supply, marketability, frequency of use, etc.). The following example for stationery items explains the Brisch system. The major item stationery is classified into four groups based on the nature of each item and each group in turn is divided into further subgroups.

Item Particulars	CODES			
	Main	**Subcode I**	**Subcode II**	**Full Code**
Stationery	63			
Pencil		01		63.01
Pen		02		63.02
Paper		03		63.03
Ink	..	04	..	63,04
Pencil	..	..	..	
Black	..	..	41	63.01.41
Blue			42	63.01.42
Red			43	63.01.43
Blue Red			44	63.01.44
Pen				
Ball-point			51	63.02.51
Fountain			52	63.02.52
Holder			53	63.02.53
Inkstand			54	63.02.54
Paper				
White			35	63.03.35
Brown			36	63.03.36
Typing			38	63.03.38
Duplicating			39	63.03.39
Ink				
Blue		..	12	63.04.12
Black			14	63.04.14
Red			15	63.04.15
Duplicating		..	17	63.04.17

The system proceeds in the following steps:

a) The materials to be coded are grouped together so as to form a major group. The grouping should be accurate and unambiguous, and should not overlap. It is based on the classification system described in the previous section,

b) After the classification or preliminary grouping, the materials are further divided and sub-divided as explained earlier. The basis of these division and sub-division is described the materials in as great detail as possible and simultaneously making them relevant to the users.

c) The codes are assigned in three blocks separated by decimal points. Total number of digit could be any as per convenience but a general figure is 7 (seven).

Kodak System: The Kodak system has been developed by Eastman Kodak Co. of New York, USA and is supposed to be a very comprehensive system. It consists of 10 digits of numerical code. The basis of the major or first level grouping is source of supply. All materials are divided into 100 basic classifications based on purchase and procurement considerations. For instance, a bolt is listed as hardware item if this is listed in hardware catalogues and available with hardware suppliers. If this bolt, however, is available only as part of the machine, it will be available under maintenance. Each class is divided into 10 sub-classes. For example, if class 20 represents cutting tool, then 200 represents drills, reamers, counter bars, etc. The steps of classification can be understood by the following example:

Step I: Major (First Level) Classification (based on purchase and procurement consideration)

First Two Digits class code	Materials
00-20	Raw Materials
21-35	Machine and Mechanical Equipments
36-40	Mechanical Products and Loose Tools
41-49	Electrical Products and Electrical Equipments
50-52	Laboratory Equipments
53-68	Chemicals, Equipments, and Miscellaneous Chemical Products
69-78	Office Equipments and Other Misc. items.
79-83	Furniture and Fixtures
84-87	Fuel Stock
88-93	Semi-finished and Finished Product Miscellaneous
94-99	Miscellaneous

Step II: Sub (Detailed) Classification of materials in class code say 53-68
(Chemicals, Equipments and Miscellaneous Chemical products).

Second two Digits Sub-class code	Materials
53	Tanks
54	Pumps
55	Mixers
56	Packaging Machines
57	Plastic Materials
58	Paints
59	Lubricants
60	Acids
61	Solvents
62	Phosphorus
63	Sulphur

Step III: Further Sub-classification indicating kinds in a particular sub-class of
materials say 60 (acids).

Third Digit (0-9) Sub-sub-class code	Materials
600	Carbonic Acid
601	Sulphuric Acid
602	Sulphurous Acid
603	
604	
605	
606	Unassigned
607	
608	
609	

Step IV: The kind of the materials may further be divided into different types. For
example 601 indicating sulphuric acid may further be classified indicating the type of
the sulphuric acid. For example, one may classify the types of sulphuric acid as,

86	Type	A
87		B
88		C
89		D
90		E
91		F

This level has two digits while the previous level had only one digit. This is possible.
There is no strict pattern to be followed about the number of digits and the level of
the classification. The two digit code in Step IV indicates suitably the percentage of
acid content.

The process of classification and sub-classification may continue to accommodate
subsequent levels of variations. The code may have some digits left unutilised for
future expansion. For example a code 601-87-XX XXX indicates chemical product
(53-68 group) and in that acid (60), and in that sulphuric acid (1) and in that Type B
(87). The digits XX-XXX are left for future expansion.

Colour Coding Systems: Sometime colour codes are used to identify the items.
Common instances are, red, blue and green in an electric cable, red and green in
electric switches, and so on. Some organisation use the codes locally such as to
identify the steam, water and other pipes while there exist some national or
international colour coding system. The limited number of colours available narrows
the scope. Nevertheless, this is quite an effective system providing easy
identification.

Activity C

Study the codification system of Library of Congress popularly used in libraries.

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Activity D

Devise the codification system for the domestic articles classified in Activity 1. How does it help to organise the management of articles for the housewife?

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19.4   STANDARDISATION AND. VARIETY REDUCTION

A standard is defined as a model or general‚ agreement of a rule established by authority, consensus, or custom, created and used by various levels of interest. For instance, an individual may be the starting point of using standard and then his department will use the.sarne standard to suit its needs. The firm may similarly • prepare, by consulting different departments. a standard for guiding the activities. Related industries in. the industry group may also prepare industrial standards. At the national level, by consulting manufacturers, scientists users and government departments, national standards are evolved. Such national standards lead to the evolution of international standards. The standards could cover a variety of industries, such as engineering, textile, chemical, pharmaceutical, agricultural as also education. The topics covered under standards can include purchase contracts, forms, sampling, testing; safety measures, etc. Thus, standardisation can be conceived on a three dimensional plane of levels, industries and topics.

In the context of materials, we are already aware of. use of standards for specifying the items, especially for purchase• purposes. Market grades, commercial standards, performance specifications are the popular examples of wide range applications of standardisation.

Standardisation enables the materials manager to achieve. overall economy and ensures inter-changeability of parts. With standardisation more than one manufacturer can supply and this will imply better availability, better price and better delivery. Standardisation also implies routinising purchase efforts, less stock and hence less obsolete items. It also Means less inspection efforts; as a matter of fact, many organisations do not check routine items bearing ISI marks in a very.detailed mariner. but resort to inspection of only a˙ small fraction of items. It is also possible to enter into rate/running contract with standard items. This facilitates the production planning and economic lot-sizing at the supplier's end.

The process of standardisation logically leads to simplification or variety reduction. This implies reducing unnecessary'varieties and standardising to the most economical sizes, grades, shapes, , colours, types of parts and so on. In large organisations handling lakhs of item, it is quite possible that there are several items having very little variation in quality, dimension or functional effectiveness. The items can be analysed for their frequency of usage over the past few years. Such frequency or movement analysis would bring out items which are seldom used or not.used at all. On the basis of this analysis, the organisation could get the standards to replace these items. The process of standardisation and variety reduction can be summarised as foollows:

1. Prepare the list of all items used to make the final product. The list can be made out of the design blue-print in case the product design is just over but production has

not started, or from the actual record of consumption in case the product is in production.

2. Classify the items according to their performance (or functional) and dimensional characteristics.

3. Group thee items with similar functional characteristics and then subgroup according to major dimensional values. For example, all bushes around 5 cm dia will be in one group while all around 3 cm dia will be in other group and so on.

4. For a group of items with similar functional characteristics, study the dimensional features. In case of large number of items, several item with the same or similar functional requirements, are likely to show the dimensions clustered in a very closed vicinity. Analyse the effect on performance of items if all items are made to the most representative (mean or mode of the frequency distribution) value of the dimension. If the performance characteristics are within satisfactory zone, these items are produced of the same dimension. It may be noted that this is a very important step in variety reduction.

5. Check from the national or international standards if there is already a dimension existing equal to the most representative dimension found after analysis in the previous step. If such a dimension is found, the items can be deemed as standardised. If an exact dimension is not found, select the closest dimension and study again the performance of all items in the group around this dimension. If performance is acceptable, the item has been standardised according to national or international standards. If the performance is not satisfactory, organisation will adapt a local standard, the dimension being of the representative value.

In addition to the dimensional and performance characteristics of materials, standardisation concepts are equally meaningful for the forms, procedures, reports etc. in relation to purchase, stores, and even planning activities.

Benefits of Standardisation

The important benefits are summarised as follows:

1. Standardisation helps reduce inventory items,

2. It helps in evolving better means of communication about an item in the company,

3. It forms a base for further inventory analysis,

4. The specification of items can be more clearly spelt out, making quality control firm, and

5. In a developing economy like ours, where the need is to promote exports, insistence on standards helps in creating confidence in the international market.

By using national standards, it is easier to locate sources of supplies and in the case of machine parts, the replacements can be obtained easily. It could also be used in advertising for the products as well as spare parts.

Effective steps have been taken in a number of organisations in India for cost reduction in the number of stores items. The aim of standardisation should be to have uniform standards for similar items, and the standards evolved should take cognizance of the indigenous availability of the materials to the maximum extent possible. With these broad national objectives in view, the Indian Standards Institution (ISI) has developed and promoted over 13,000 standards covering raw materials, components, and finished products.

19.5 SUMMARY

Organisations deal with a large number of materials with varying degree of characteristics in terms of size, shape, price, physical and chemical properties, sources of supply, modes of handling, user departments (destinations) accounting procedures, etc. In addition, there are several departments of the organisation which require only the information about the materials, e.g. design, engineering, production scheduling etc. In order to meet these complex requirements the items need to be classified properly. The classification system is a major decision for the organisation in the sense that once introduced it might be difficult to alter in future. The purpose of this unit has been to expose the readers to popular classification systems.

Often, an item would require a very long description to get uniquely and adequately identified. Using number and alphabets with appropriate meanings, the description can be reduced to six to thirteen digits. This helps in easy retrieval of information and data processing. Several aspects of the codification have been discussed for the readers and users to follow a standard system or to enable to design own system.

Several items with similar functional and dimensional characteristics can be grouped to a single dimension and other technical characteristics with negligible loss of functional requirements through the standardisation. This helps in reduction of variety of items in the stores. This concept of standardisation is well suited for standardisation of things beyond materials such as processes, inspection, procedures, forms, charts, reports etc. The standardisation also makes the users aware of the performance expected from the product.

19.6 KEY WORDS

Brisch System: A codification system using numbers in blocks separated by decimal points. Usually it consists of 7 digits.

Classification: Grouping of items with similar attributes.

Codification: Condensing the long information with the help of few digits comprising alphabets and numbers. The location of digits and their values suggest the meaning of the information.

Kodak System: A codification system consisting of 10 digits of numeric characters.

Standardisation: Process of grouping of items to conform to widely acceptable representative features and characteristics.

Variety Reduction: Process of reducing a large variety of items with close characteristics to fewer items (through standardisation).

19.7 SELF-ASSESSMENT EXERCISES

I   Review Questions

1.   What are reasons for classifications, codifications, and standardisation of materials?
2.   What are the common classification systems?
3.   What are the advantages of codification?
4.   What are the possible disadvantages of the codification?
5.   What are the essential requirements that a coding system should satisfy?
6.   What are the differences between Brisch and Kodak systems?
7.   How does standardisation help in variety reduction?
8.   What are the steps in variety reduction programme?
9.   What are the roles of Indian Standard Institution (ISI)?
10. How standardisation would help consumerism?

II   Design Exercises

1.   You are the incharge of the purchase department of an organisation. The department is responsible for receiving the requisition form from various departments, processing them, selecting the supplier, determining the price, time, and quantity of purchase. The department as usual would prepare various reports for the management. The organisation would also be interested in vendor development arid evaluation.

     You are to design a suitable coding system for identification of files of correspondence externally as well as outside the organisation.

2.   Consider the following data pertaining to a shirt company.

Sleeve length	Price
Neck Size	Market region
Colour	Sales person
Style	
Material	

Design. a suitable coding system with appropriate selection of the coding symbols.

19.8   FURTHER READINGS

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