1.1 Examine the concept of information with reference to their types of sources, media, recipient, information needs and properties.

Ans: Information is any entity or form that provides the answer to a question of some kind or resolves uncertainty. It is thus related to data and knowledge, as data represents values attributed to parameters, and knowledge signifies understanding of real things or abstract concepts. As it regards data, the information’s existence is not necessarily coupled to an observer (it exists beyond an event horizon, for example), while in the case of knowledge, the information requires a cognitive observer.

Information is conveyed either as the content of a message or through direct or indirect observation. That which is perceived can be construed as a message in its own right, and in that sense, information is always conveyed as the content of a message. Information can be encoded into various forms for transmission and interpretation (for example, information may be encoded into a sequence of signs, or transmitted via a signal). It can also be encrypted for safe storage and communication. Information reduces uncertainty. The uncertainty of an event is measured by its probability of occurrence and is inversely proportional to that. The more uncertain an event, the more information is required to resolve uncertainty of that event. The bit is a typical unit of information, but other units such as the nat may be used. For example, the information encoded in one “fair” coin flip is \( \log_2(2/1) = 1 \) bit, and in two fair coin flips is \( \log_2(4/1) = 2 \) bits.

The concept that information is the message has different meanings in different contexts. Thus the concept of information becomes closely related to notions of constraint, communication, control, data, form, education, knowledge, meaning, understanding, mental stimuli, pattern, perception, representation, and entropy. Often information can be viewed as a type of input to an organism or system. Inputs are of two kinds; some inputs are important to the function of the organism (for example, food) or system (energy) by themselves. In his book Sensory Ecology Dusenbery called these causal inputs. Other inputs (information) are important only because they are associated with causal inputs and can be used to predict the occurrence of a causal input at a later time (and perhaps another place). Some information is important because of association with other information but eventually there must be a connection to a causal input. In practice, information is usually carried by weak stimuli that must be detected by specialized sensory systems and amplified by energy inputs before they can be functional to the organism or system. For example, light is mainly (but not only, e.g. plants can grow in the direction of the lightsource) a causal input to plants but for animals it only provides information. The colored light reflected from a flower is too weak to do much photosynthetic work but the visual system of the bee detects it and the bee’s nervous system uses the information to guide the bee to the flower, where the bee often finds nectar or pollen, which are causal inputs, serving a nutritional function.

The cognitive scientist and applied mathematician Ronaldo Vigo argues that information is a concept that requires at least two related entities to make quantitative sense. These are, any dimensionally defined category of objects \( S \), and any of its subsets \( R \). \( R \) in essence, is a representation of \( S \), or in other words, conveys representational (and hence, conceptual) information about \( S \). Vigo then defines the amount of information that \( R \) conveys about \( S \) as the rate of change in the complexity of \( S \) whenever the objects in \( R \) are removed from \( S \). Under “Vigo information”, pattern, invariance, complexity, representation, and information—five fundamental constructs of universal science—are unified under a novel mathematical framework. Among other things, the framework aims to overcome the limitations of Shannon-Weaver information when attempting to characterize and measure subjective information.

Information is any type of pattern that influences the formation or transformation of other patterns. In this sense, there is no need for a conscious mind to perceive, much less to appreciate, the pattern. Consider, for example, DNA. The sequence of nucleotides is a pattern that influences the formation and development of an organism without any need for a conscious mind. One might argue that for a human to consciously define a pattern, for example a nucleotide, naturally involves conscious information processing.

Systems theory at times seems to refer to information in this sense, assuming information does not necessarily involve any conscious mind, and patterns circulating (due to feedback) in the system can be called information. In other words, it can be said that information in this sense is something potentially perceived as representation, though not created or presented for that purpose. For example, Gregory Bateson defines “information” as a “difference that makes a difference”.

OR

1.2 Explain how Ranganathan’s five Laws of Library Science provide a wide canvas in the study of library and information science.

Ans: Dr. Ranganathan laws seem simple on first reading, on second thoughts and deep contemplation, the richness and import of their meaning will be revealed. The five laws provide a paradigm of how libraries function, how they grow and serve, how they live, and so provide for us a framework through which to examine our professional lives and our libraries. These laws are the lens through which practitioners can inform their decision making and set their business priorities, while staying focussed on the user. It may be emphasised that the five laws of Ranganathan continue to give us a blue print for our professional values that is as relevant today as it was in 1931. The language may be seen as restrictive, but the underlying values inherent in them mean they can be continuously reinterpreted for the future. New information and communication technologists suggest that the scope of Ranganathan’s laws may appropriately be extended to the Web. In Noruzi’s opinion “these laws are as applicable to the current practice of the Web as of tomorrow. These laws are not only applicable to the Web in general but characterise the establishment,