1. What is educational technology? Discuss the scope of educational technology.

Ans: MEANING OF EDUCATIONAL TECHNOLOGY:

Educational technology is the development, application and evaluation of systems, techniques and aids to improve the process of human learning. It is the effective use of technological .tools in learning. Educational technology is based on theoritical knowledge drawn from different disciplines (communication, education, psychology, sociology, philosophy, computer science etc) along with experimental knowledge drawn from educational practice. It is a systematic, interactive process of designing instruction or training used to improve performance.

Educational technology is that science of strategies and techniques which leads to the educational goals. It is a systematic integration of materials, communication system and psychology of learning. Educational technology forces the designers to think, analyse and evaluate all instructional activities. It demands a functional and purposive utilisation of all resources available and of the instructional time. Educational technology implies the use of all educational resources-Men, Materials, Methods and Techniques, Means and Media in a integrated and systematic manner for optimized learning. It is

systematic way of designing, carrying out and evaluation of the total process of learning and teaching in terms of specific objectives based on research in human learning and communication.

SCOPE OF EDUCATIONAL TECHNOLOGY :

Educational technology is not limited to teaching - learning process and theories. Some of the aspects and areas that cover under educational technology are described in below.

a) Analysis of the process of teaching and learning : Educational technology *ties* to discuss the concept of teaching, analysis of the teaching process, variables of teaching, phases of teaching, levels of teaching, theories of teaching, principles and maxims of teaching, the concept of learning, the relevance of the theories of learning, the relationship between teaching and learning, the integration of the theories and principles of teaching as well as learning for attaining optimum educational purposes.

b) Determining educational goals or objectives : Educational technology tries to discuss the topics such as identification of educational needs and aspirations of the community, survey of the resources available for the satisfaction of these needs and aspirations, spelling out the broad educational objectives, analysis of the broad objectives in terms of the specific classroom objectives of teaching and learning, specifications of these objectives in behavioural terms etc.

c) Designing of the curriculum : This aspect of educational technology is Concerned with the designing of a suitable curriculum for the achievement of the stipulated objectives. It

may describe the ways and means for the selection of suitable learning experiences or contents, organization of these contents in a suitable framework in order *to* bring out more effective instruction and thus analyse the suitability of the curriculum in relation to the objectives, means and materials, and devices of evaluation.

d) Innovation of teaching-learning material: This area of educational technology is concerned with the production and development of the suitable teaching-learning material in view of the stipulated objectives, designed curriculum and available resource Here educational technology tries to discuss the essential techniques of developing software and instructional material like programmed learning material, computer assisted learning material, mass media instruction material, personalized system of instructional planning for teaching and learning and preparation of lesson plans, etc.

e) Teacher preparation or teacher-learning material: Teacher is a key figure in any process of teaching and learning. Educational technology, therefore, takes care of the proper preparation of teachers for exercising their complex responsibilities. For this purpose, educational technology includes topics like models of student teaching micro-teaching, stimulated teaching, team-teaching, teacher effectiveness, modification of teacher-behaviour, classroom interaction, T-group training and interaction analysis.

f) Deciding and selection of the teaching-learning strategies and tactics: Educational technology tries to describe the ways and means of discovering selecting and development suitable strategies and tactics of teaching in terms

of the optimum learning and available teaching-learning resources the availability of the different types of teaching methods, devices and models of teaching along with-their appropriate selection and use for the optimum results.

g) Selection and use of the appropriate audio-visual aids : Teaching-learning is greatly influenced and benefitted by the use of appropriate audio-visual aid Educational technology covers this aspect by discussing various types of audio-visual aids used for the educational purpose, their proper selection suiting to a particular teaching-learning situation, their development and production in view of the available resources.It also helps in presentation and dissemination of information, their proper storage and retrieval, and consideration about their cost-effectiveness and effective utilization.

2. **Discuss the different types of educational technology.**

Ans: TYPES OF EDUCATIONAL TECHNOLOGY :

The types of educational Technology can be categorised into two major approaches like-

1. Three-tier Approach to Educational Technology.
2. Types Approach to Educational Technology.

According to A. A. Lumsdeine (1964), there are three distinct types or approaches of educational Technology. These are-

a) Educational Technology I or Hardware Approach
b) Educational Technology II or Software Approach
c) Educational Technology III or System Approach.

a) Educational Technology I or Hardware Approach : Direct application o machines in the teaching-learning process or education is called hardware technology, like-audio-visual

aids, tape-recorder, films, television, computers, video, tape-recorder etc. This approach also utilize the gadgets or the illustrative aids such as Map, charts Models, drawing, painting etc. It is nothing but mechanization of education to make the process easy, interesting, speedy, accurate and extensive.

The origin of this Educational Technology was in physical sciences and engineering sciences. It implies the use of mechanical material and equipment in the field of education. This approach has brought about a mechanical and technical revolution in the field of education. According to Davis, the hardware approach was based on the application, of physical sciences to education and training system which mechanizes the process: of teaching generally so that teachers would be able to deal with more students, resulting lowering in the costs by effective economics of scale. This approach of educational; technology is a bi-product of the scientific and technological developments of the 20th century. This Technology is called "Technology in Education."

b) Educational Technology II or Software Approach : This approach lies in the use of behavioural sciences in teaching and learning. Arthur Melton has opined that software teaching technology is directly related to the psychology of learning. Psychology of learning provides solid technology for bringing desirable behavioural changes in the students. As a result, theories and laws of learning are applied in the field of education. Techniques of motivation and reinforcement are used to make teaching effective and learning more meaningful. This technology tries to adopt a process-oriented technique for the production and utilization of software techniques and

material in terms of learning material, teaching-learning strategies, tools of evaluation and other devices. It is the application of behavioural science or principles of psychology, philosophy and sociology compled with the general laws and principles of natural science. Thus, this technology Js related to the mental aspect of the task and it deals with writing educational objectives in behavioural terms, selecting suitable strategies for the presentation of subject matter, proper use of reinforcement devices and evaluation of educational outcomes,

c) **Educational Technology III or System Approach :** This approach is known is Management Technology. It was developed after World War II. System approach if educational technology stands for a systematic way to design, carry out and evaluated he total process of education in terms of specific objectives. It is the latest approach in technology of education. It has provided a scientific basis to the decision-making regarding the problems associated with administration, management, commerce, industry etc. It also help to study the problems of educational administration and management in a scientific and systematic way.

3. **What is hardware and software approach? Distinguish between hardware and software.**

Ans: The hardware approach is based on the application of engineering principles for developing electro-mechanical equipment for instructional purpose. Motion picture, tape rtf recorders, television, teaching, machines, computers are called educational hardware. Hardware approach mechanises the process of teaching so that teachers would be able to deal with more students with less expenditures in educating them.

The Software approach used the principles of psychology for building in the learners complex repertory of knowledge or modifying his behaviour. It originates from behavioural science and their applied aspects concerning psychology of learning, psychology of learning provides solid technology for bringing desirable behavioural changes in the pupils and thus serves the cause of education of laying down definite instructional procedure, teaching behaviour and behaviour modification devices,

There are some differences between hardware and software approach of educational technology and these are stated in below-

Hardware Approach	Software Approach
1) Hardware approach has physical science and applied engineering as its basis.	1) In software approach, the basis of all thinking and working is behavioural is science and psychology of learning.
2) Hardware approach have been developed which are used for instructional purposes.	2) Software approach uses the principles of psychology for the purpose of behaviour modification.
3) This approach is based on the principles for developing electromechanical equipments.	3) This approach is originated from the behavioural sciences and their applied aspects concerned psychology of learning.
4) This approach of educational technology is a by-product of the scientific and technological developments of the 20th century.	4) It originated from the pioneering efforts of Skinner and other behaviourists.

5) Audio-visual aids like charts, models, film-strips, slides, sophisticated equipments and gadgets like films, projectors, radio, tape recorder, television, computer etc come under the category of hardware.	5) Likewise in software we try to make us« of psychology of learning, teaching-learning strategies, learning materials, tools of evaluation, task analysis, reinforcement etc.
6) It is a product-oriented approach.	6) It is a process oriented approach:
7) Hardware technology utilizes the products of software tech. for its functioning.	7) Software technology does not require an; aid from the hardware technology for its delivery.
8) Hardware technology has the potential to hand over the educational benefits to the mass with greater case and economy.	8) Software technology does not have mass appeal as compared to Hardware technology.
9) Here we are more concerned with the production and utilization of audio Visual aid material and so-phisticated instruments and mass media for helping teacher and learners in their task.	9) Here we try to make use of psychology of learning for the production and utilization of software techniques and materials in terms of learning strategies and other devices for smoothening the task of teaching learning.

4. **Mention the objectives of educational technology. Discuss the nature of educational technology.**

Ans: R. A. Sharma has presented the following objectives of the educational technology:

  a) To determine the goals and formulate the objectives in behavioural terms.

  b) To analyse the characteristics of the learner.

c) To organize the content in logical sequence.
d) To evaluate the learners performance in terms of achieving educational objectives.
e) To mediate between content and resource of presentation
d) To provide feedback among other components for the modification of learner. According to **Y. K. Sharma,** the main objectives of educational technology are as follows-
a) To modernize the learning methods and techniques after systemetising them so that these may be turned effective according to the needs of the changing era for the unknown future.
b) To bring desirable modifications in the behaviours of the teachers and pupils by improving the teaching, teaming and evaluation conditions.
c) To make the classrooms teaching easy, clear, interesting, effective, understandable, objective and scientific.
   To help in increasing various facilities by solving the most complicated problems of human life so that the human life may carry on its progress continuously.

NATURE OF EDUCATION TECHNOLOGY :
Educational Technology widely accepted as the application of system approach in the systematic design of a learning system to bring about improvement in teaching learning evaluation process. Hence, there are some significant nature of it and it can be state as -
1. Educational Technology is based on the application of the scientific knowledge
2. Educational Technology is a continuous, dynamic, progressive and effect producing process.

3. It lay emphasises on the organization of learning situations for the effective realization of the goals of education.

4. It involves input, output and process aspect of education.

5. Educational Technology encourages learning by controlling the environment.

6. Educational Technology defines educational objectives in terms of behavioural objectives.

7. It tries to make the whole teaching learning process more and more meaningful for both the teachers and the learners.

8. It modifies teacher's method of teaching and learners behaviour for the their own, betterment and for the betterment of the mankind.

9. Educational Technology is seen both as a means as well as service to effect and facilitate better and more productive learning systems.

10. It is a communication process resulting from the adaptation of the scientific method to the behavioural science of teaching / learning.

11. New concepts are possible only due to educational technology. Such as
   programmed learning, micro-,teaching, simulated teaching, interaction analysis, projector, computer etc.'

12. Educational Technology is more a practical discipline and less a theoritical one.

13. It is a fast growing modem discipline.

14. It brings learners, teachers and technical means together in an effective way.

15. Education Technology cannot solve each and every problem of education. It can be used successfully in teaching and instructional system only.