

Learn... Unlearn... Relearn...


NTA-UGC NET/SET
Fourth Edition 2023

NTA- UGC NET/SET

Equip for Learning... Prepare for Unlearning... Practice for Relearning...



General Paper

As per the Revised & Updated Syllabus of NTA UGC -NET

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Unique Features of
SAAI UGC NET Paper 1
4th Edition
Compiled by the Experts
Crispy text
Unit wise Gist

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Foreword

Dear Friends,

Greeting from SAAI Academy!

This is the **Fifth Book on the series for NTA-UGC NET/SET Exams**. This is **Fourth Edition**. It contains the General Paper such as Teaching Aptitude, Research Aptitude, Comprehension, Communication, Mathematical Reasoning and Aptitude, Logical Reasoning, Data Interpretation, ICT, People, Development and Environment and Higher Education System. This study material is **common for all subjects** irrespective of the master graduation of the candidates. **Each unit has covered extensive study materials along with Gist and the previous year's questions for your exploration.**

It is systematically compiled in a student-friendly manner and updated by keeping in mind on the present trends in NTA UGC-NET/SET Exam patterns.

Unit 1, 2, 4, 8, 9 and 10 are study oriented. The candidates need to go through the entire study material and explore different types of questions to the real life situation in each and every aspect. However, *Unit 3, 5, 6 and 7 are practical oriented.* The candidates are expected to have more practice under these units.

Self-Confidence with Systematic and SMART preparation would definitely make you a frontrunner.

Kindly refer previous years questions (*unit-wise*), which is provided at the end of this text book to understand the pattern and type of questions asked and perform the class test and online tests regularly. **As soon as you complete the answers for the questions provided at the end of each unit, the answer key will be released through email, on request.**

Wish you all the best for your NET / SET exam. For further details please contact saaistudies@gmail.com or call +91-9382132593.

Regards

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UNIVERSITY GRANTS COMMISSION

NET BUREAU

SYLLABUS

Subject: GENERAL PAPER ON TEACHING & RESEARCH APTITUDE

Code No. : 00

PAPER-I

The main objective is to assess the teaching and research capabilities of the candidates. The test aims at assessing the teaching and research aptitude as well. Candidates are expected to possess and exhibit cognitive abilities, which include comprehension, analysis, evaluation, understanding the structure of arguments, deductive and inductive reasoning. The candidates are also expected to have a general awareness about teaching and learning processes in higher education system. Further, they should be aware of interaction between people, environment, natural resources and their impact on the quality of life.

The details of syllabi are as follows:

Unit-I Teaching Aptitude

- Teaching: Concept, Objectives, Levels of teaching (Memory, Understanding and Reflective), Characteristics and basic requirements.
- Learner's characteristics: Characteristics of adolescent and adult learners (Academic, Social, Emotional and Cognitive), Individual differences.
- Factors affecting teaching related to: Teacher, Learner, Support material, Instructional facilities, Learning environment and Institution.
- Methods of teaching in Institutions of higher learning: Teacher centred vs. Learner centred methods; Off-line vs. On-line methods (Swayam, Swayamprabha, MOOCs etc.).

- Teaching Support System: Traditional, Modern and ICT based.
- Evaluation Systems: Elements and Types of evaluation, Evaluation in Choice Based Credit System in Higher education, Computer based testing, Innovations in evaluation systems.

Unit-II Research Aptitude

- Research: Meaning, Types, and Characteristics, Positivism and Post-positivistic approach to research.
- Methods of Research: Experimental, Descriptive, Historical, Qualitative and Quantitative methods.
- Steps of Research.
- Thesis and Article writing: Format and styles of referencing.
- Application of ICT in research.
- Research ethics.

Unit-III Comprehension

- A passage of text be given. Questions be asked from the passage to be answered.

Unit-IV Communication

- Communication: Meaning, types and characteristics of communication.
- Effective communication: Verbal and Non-verbal, Inter-Cultural and group communications, Classroom communication.
- Barriers to effective communication.
- Mass-Media and Society.

Unit-V Mathematical Reasoning and Aptitude

- Types of reasoning.
- Number series, Letter series, Codes and Relationships.
- Mathematical Aptitude (Fraction, Time & Distance, Ratio, Proportion and Percentage, Profit and Loss, Interest and Discounting, Averages etc.).

Unit-VI Logical Reasoning

- Understanding the structure of arguments: argument forms, structure of categorical propositions, Mood and Figure, Formal and Informal fallacies, Uses of language, Connotations and denotations of terms, Classical square of opposition.
- Evaluating and distinguishing deductive and inductive reasoning.
- Analogies.
- Venn diagram: Simple and multiple use for establishing validity of arguments.
- Indian Logic: Means of knowledge.
- Pramanas: Pratyaksha (Perception), Anumana (Inference), Upamana (Comparison), Shabda (Verbal testimony), Arthapatti (Implication) and Anupalabddhi (Non-apprehension).
- Structure and kinds of Anumana (inference), Vyapti (invariable relation), Hetvabhasas (fallacies of inference).

Unit-VII Data Interpretation

- Sources, acquisition and classification of Data.
- Quantitative and Qualitative Data.
- Graphical representation (Bar-chart, Histograms, Pie-chart, Table-chart and Line-chart) and mapping of Data.
- Data Interpretation.
- Data and Governance.

Unit-VIII Information and Communication Technology (ICT)

- ICT: General abbreviations and terminology.
- Basics of Internet, Intranet, E-mail, Audio and Video-conferencing.
- Digital initiatives in higher education.
- ICT and Governance.

Unit-IX People, Development and Environment

- Development and environment: Millennium development and Sustainable development goals.
- Human and environment interaction: Anthropogenic activities and their impacts on environment.
- Environmental issues: Local, Regional and Global; Air pollution, Water pollution, Soil pollution, Noise pollution, Waste (solid, liquid, biomedical, hazardous, electronic), Climate change and its Socio-Economic and Political dimensions.
- Impacts of pollutants on human health.
- Natural and energy resources: Solar, Wind, Soil, Hydro, Geothermal, Biomass, Nuclear and Forests.
- Natural hazards and disasters: Mitigation strategies.
- Environmental Protection Act (1986), National Action Plan on Climate Change, International agreements/efforts -Montreal Protocol, Rio Summit, Convention on Biodiversity, Kyoto Protocol, Paris Agreement, International Solar Alliance.

Unit-X Higher Education System

- Institutions of higher learning and education in ancient India.
- Evolution of higher learning and research in Post Independence India.
- Oriental, Conventional and Non-conventional learning programmes in India.
- Professional, Technical and Skill Based education.
- Value education and environmental education.
- Policies, Governance, and Administration.

NOTE:

- (i) Five questions each carrying 2 marks are to be set from each Module.
- (ii) Whenever graphical/pictorial question(s) are set for sighted candidates, a passage followed by equal number of questions and weightage be set for visually impaired candidates.

General paper on Teaching & Research Aptitude

Unit – I Teaching Aptitude

1.0. Concept of Teaching

Preparation for vocation is taken by many as the fundamental aim of education. Earning of livelihood has become completely dependent upon education. Therefore, education is a complex social, cultural and ethical process designed in a social or cultural context. In brief a proper definition of teaching should,

- (i) Identify whether teaching is a process or product
- (ii) Clearly indicate its constitutional factors
- (iii) Reveal objectives, and
- (iv) Say something about its organizational and structural aspect.

1.1. Definitions

1. Morrison, teaching is a disciplined social process in which teacher influences the behaviour of the less experienced pupil and helps him develop according to the needs and ideas of the society.

2. Smith - teaching is an organized system of specific activities aimed to help the learner learn something. Teaching may be carried out in the absence of the teacher. He considered teaching as a tripolar process involving,

- (i) Agent or source producing learning which may be human or material,
- (ii) A goal or target to be achieved, and
- (iii) The intervening variables consisting of learning or teaching situation involving human or physical conditions and instructional methods.

3. Brubacher - teaching to where the pupils play the central role and the teacher arranges and creates situations for learning.

4. Gage - teaching as personal relationship between the teacher and the taught causing behaviour modification.

5. Amidon - teaching as a process of interaction between the teacher and the taught as a cooperative enterprise, a two-way traffic. Teaching as a set of properly planned and clearly defined activities undertaken for the achievement of certain objectives.

6. Clarke - scope of teaching and included all those organised activities that may result in modifying the behaviour of the learner

7. Green - it a profession and said that teaching is what a teacher does for the development of a child.

1.2. Nature and Characteristics of Teaching

1.2.1. Nature of teaching may be described as

- Dynamic, Social and Humane. Teaching is not a fundamental concept.
- Teaching is both art and science. It calls for exercise of talent and creativity making it an art and involving repertoire of techniques, procedures and skills which can be

1.17.5. Methods of Teaching as recommended by Secondary Education Commission (1952-53)

- Methods of teaching should provide ample opportunities for students to develop clear thinking and clear expression.
- Individual - centred methods and opportunities for practical

application of knowledge should be adopted.

- Activity method and project method should be used in school practice.
- Establishing of Experimental and Demonstration schools and training in activities such as scout movement, N.C.C., first aid should be encouraged.

1.18. Some Specific Methods of Teaching

1.18.1. Inferential Problem Solving Technique

Inductive and deductive are two important procedures of systematic approaches to problem solving.

Steps in Inductive Method

- | | |
|--------------------------------|----------------------------------|
| (i) Recognition of the problem | (iv) Framing tentative solutions |
| (ii) Searching for data | (v) Elimination |
| (iii) Organisation of data | (vi) Verification |

Steps in Deductive Method

- | | |
|----------------------------|--------------------------------|
| (i) Recognition of problem | (iv) Formulation of inferences |
| (ii) Searching for data | (v) Verification |
| (iii) Reviewing | |

1.18.2. Team-Teaching - is called co-operative teaching. This is a recent idea in the field of education. M.B. Naik said, "In a team - teaching method, two or more teachers make a plan of the subjects cooperatively, carry it out, and evaluate its effects on students periodically." In team teaching, subject teachers give lectures to a big class. On every working, all the members of the team have a common assembly. Here they discuss the methods used by the fellow-teachers.

a new development in the field of teaching. The term micro-teaching was first coined by Dwight Allen of the Stanford University in 1963.

Features of micro - teaching

- It is a teacher training technique.
- It focuses on developing teaching & training skills.
- It reduces the classes' size in 5-10 students.
- The size of the topic is also reduced.
- It provides feedback for trainee's performance.
- It is an effective device to prepare competent teachers.

1.18.3. Micro - Teaching - is an innovative teaching technique. It is

Steps in Micro - teaching

- | | |
|------------------------|------------------------------|
| (i) Defining the skill | (ii) Demonstrating the skill |
|------------------------|------------------------------|

87. The teacher has been glorified by the phrase "Friend, philosopher and guide" because :
 (A) He has to play all vital roles in the context of society (B) He transmits the high value of humanity to students (C) He is the great reformer of the society (D) He is a great patriot
88. The most important cause of failure for teacher lies in the area of:
 (A) inter personal relationship (B) lack of command over the knowledge of the subject
 (C) verbal ability (D) strict handling of the students
89. A teacher can establish rapport with his students by:
 (A) becoming a figure of authority (B) impressing students with knowledge and skill
 (C) playing the role of a guide (D) becoming a friend to the students
90. Education is a powerful instrument of:
 (A) Social transformation (B) Personal transformation (C) Cultural transformation (D) All the above
91. A teacher's major contribution towards the maximum self-realization of the student is affected through :
 (A) Constant fulfillment of the students' needs (B) Strict control of class-room activities
 (C) Sensitivity to students' needs, goals and purposes (D) Strict reinforcement of academic standards
92. Verbal guidance is least effective in the learning of:
 (A) Aptitudes (B) Skills (C) Attitudes (D) Relationship
93. Which is the most important aspect of the teacher's role in learning?
 (A) The development of insight into what constitutes an adequate performance
 (B) The development of insight into what constitutes the pitfalls and dangers to be avoided
 (C) The provision of encouragement and moral support
 (D) The provision of continuous diagnostic and remedial help
94. The most appropriate purpose of learning is:
 (A) personal adjustment (B) modification of behaviour
 (C) social and political awareness (D) preparing oneself for employment
95. The students who keep on asking questions in the class should be :
 (A) encouraged to find answer independently (B) advised to meet the teacher after the class
 (C) encouraged to continue questioning (D) advised not to disturb during the lecture
96. Maximum participation of students is possible in teaching through:
 (A) discussion method (B) lecture method (C) audio-visual aids (D) text book method
97. Teacher uses visual-aids to make learning:
 (A) simple (B) more knowledgeable (C) quicker (D) interesting
98. The teacher's role at the higher educational level is to :
 (A) provide information to students (B) promote self-learning in students
 (C) encourage healthy competition among students (D) help students to solve their personal problems
99. Which one of the following teachers would you like the most?
 (A) Punctual (C) loving and having high idealistic philosophy
 (B) having research aptitude (D) who often amuses his students
100. Micro teaching is most effective for the student-teacher:

Unit – II Research Aptitude

2.0. Meaning of Research

This word is made up by adding 'Re' as a prefix to the word 'search'. Search is to make known of an existent unknown thing.

Research is generally oriented towards looking into 5 Ws and 1H of a problem that Who, What, Where, When, Why and How. As said by Bernard Baruch, 'Millions saw the apple fall, but Newton was the one who asked Why'. It was this Why which lead to the discovery of the Law of Gravitation. We can summarize the modern meaning of research in following points - Research is

- An attitude of inquiry,
- An attempt to elicit facts
- A systematic and scholarly application of the scientific method.
- Essentially a state of mind – a friendly, welcoming attitude towards change.

2.1. Definition

Research is systematic, controlled, empirical and critical investigation of hypothetical propositions about the presumed relations among natural phenomenon.

Research may be defined as the systematic method of discovering new facts or verifying old facts, their sequences, interrelationships, casual explanations and the natural laws which govern them.

- Young PV

Research comprises defining and redefining problems, formulating hypothesis or suggested, solutions, collecting, organizing and evaluating data, making deductions and reaching conclusions and at last carefully listing the conclusions to determine whether they fit the formulating hypothesis.

- Clifford Woody

Research is the systematic and objective analysis and recording of controlled observations that may leave to development of generalizations, principles or theories result in prediction and possibly ultimate control of events.

- John W. Best

Research is systematized effort to gain new knowledge.

- Redman and Mary

Research is the manipulation of things concepts or symbols for the purpose of generalizing to extend correct or verify knowledge. whether that knowledge ends

parts, known as blocks, and then each such block is divided into parts equal to the number of treatments. Then the treatments are randomly assigned to

2.15.1.3.1. Informal experimental designs:

- i. Before-and-after without control design.
- ii. After-only with control design.

2.15.1.3.2. Formal experimental designs:

- i. Completely randomized design (C.R. Design).
- ii. Randomized block design (R.B. Design).

the framework or structure of an experiment and as such there are several experimental designs.

- iii. Before-and-after with control design (Two way control design)

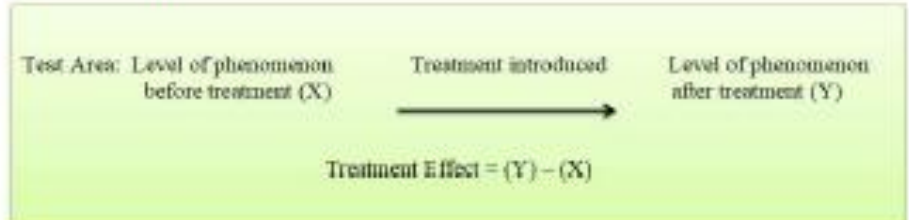
- iii. Latin square design (L.S. Design).
- iv. Factorial designs.

2.15.1.3.1. Informal Experimental research design

Informal experimental designs are those designs that normally use a less sophisticated form of analysis based on differences in magnitudes.

i. Before-and-after without control design:

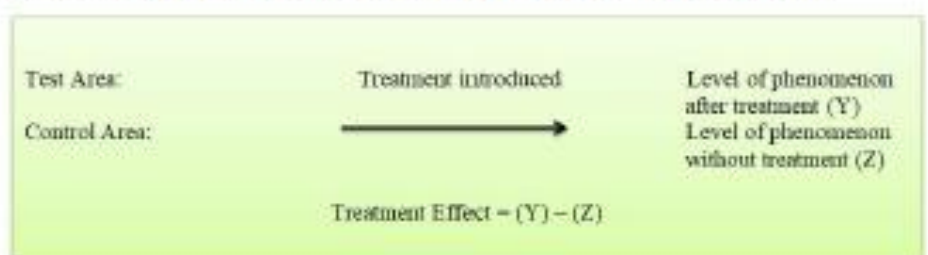
In such a design a single test group or area is selected and the dependent variable is measured before the introduction of the treatment. Treatment is then introduced and the dependent variable is measured again after the treatment has been introduced.



ii. After-only with control design :

The basic assumption in such a design is that the two areas are identical with respect to

their behaviour towards the phenomenon considered. If this assumption is not true, there is the possibility of extraneous variation entering into the treatment effect. However, data can



67. The main characteristic of scientific research is :
(A) empirical (B) theoretical (C) experimental (D) all of the above
68. Authenticity of a research finding is its :
(A) Originality (B) Validity (C) Objectivity (D) All of the above
69. Which technique is generally followed when the population is finite ?
(A) Area Sampling Technique (B) Purposive Sampling Technique
(C) Systematic Sampling Technique (D) None of the above
70. To test null hypothesis, a researcher uses :
(A) t test (B) ANOVA (C) X^2 (D) factorial analysis
71. A research problem is feasible only when : (A) it has utility and relevance
(B) it is researchable (C) it is new and adds something to knowledge (D) all the above
72. Bibliography given in a research report : (A) shows vast knowledge of the researcher
(B) helps those interested in further research (C) has no relevance to research
(D) all the above
73. Fundamental research reflects the ability to :
(A) Synthesize new ideals concerning research
(B) Expound new principles (D) Study the existing literature regarding
(C) Evaluate the existing material various topics
74. The study in which the investigators attempt to trace an effect is known as :
(A) Survey Research (C) Historical Research
(B) 'Ex-post Facto' Research (D) Summative Research
75. Research can be conducted by a person who :
(A) has studied research methodology (B) holds a postgraduate degree
(C) possesses thinking and reasoning ability (D) is a hard worker
76. Which of the following statements is correct?
(A) Objectives of research are stated in first chapter of the thesis (B) Researcher must possess analytical ability (C) Variability is the source of problem (D) All the above
77. Which of the following is not the Method of Research ?
(A) Observation (B) Historical (C) Survey (D) Philosophical- all are research methods
78. Research can be classified as :
(A) Basic, Applied and Action Research (B) Quantitative and Qualitative Research
(C) Philosophical, Historical, Survey and Experimental Research (D) All the above
79. The first step of research is : (A) Selecting a problem (B) Searching a problem
(C) Finding a problem (D) Identifying a problem
80. Which of the following options are the main tasks of research in modern society ?

Unit – III Comprehension

3.0. Approaches to Solve Reading Comprehension Questions

It is very important to have a proper approach to solve UGC NET Paper 1 Topic – Reading Comprehension passages as to answer them correctly and on time. And for that, one should have the knowledge of all the methods that can be adopted to solve the Reading Comprehension.

3.1. PQ (Paragraph First & Questions Later)

A) One of the most common methods to solve reading comprehension for UGC NET is by reading the entire passage first and then the questions. In this case, you can write down or mark the points you think are important. Try to find the information provided in the passage. This will help you in understanding the passage in a good way.

Try to identify the following:

- Subject of the passage: what is the author talking about?
- Main idea of the passage: what is he saying about the subject?
- Tone of the passage: what is the message that he wants to convey?

Once you figure out these things, you will

B) Another method of solving UGC NET passage is through skimming it. That means going back and forth with the questions and paragraph. Here:

1. You first read a few lines of the passage and then look for the related questions.
2. Then again go through next few lines and look for the questions related to that.
3. Now you continue the same method until you answer all the questions.

But this process can be time consuming as there is lot of reading.

C) Another way of solving is read the first 2 paragraphs of UGC NET reading comprehension, and scans through all the questions, and sees if you can answer any of them. Now read Para 3 and 4, scan the questions again for the ones you can answer now. Continue this process till you read all the paras and answer all the questions.

Again, this process can also be time consuming, as you might spend extra time by reading the questions again and again.

3.2. QP (Questions First & Paragraph Later)

are dead. Paper is dead. Handwriting is a relic. "Handwriting is one of the most creative outlets we have and should be given the same importance as other art forms such as sketching, painting or photography." Answer the following questions:

1. When confronted with signing a big card, the author felt like "a rabbit in the headlight". What does this phrase mean?

(1) A state of confusion (2) A state of pleasure (3) A state of anxiety (4) A state of pain

2. According to the author, which one is not the most creative outlet of pursuit?

(1) Handwriting (2) Photography (3) Sketching (4) Reading

3. The entire existence of the author revolves round:

(a) Computer (b) Mobile phone (c) Typewriter

Identify the correct answer from the codes given below:

(1) (b) only (2) (a) and (b) only (3) (a), (b) and (c) (4) (b) and (c) only

4. How many teens, as per the Bic survey, do not own a pen?

(1) 800 (2) 560 (3) 500 (4) 100

5. What is the main concern of the author?

(1) That the teens use social networks for communication.

(2) That the teens use mobile phones.

(3) That the teens use computer.

(4) That the teens have forgotten the art of handwriting.

3. Story telling is not in our genes. Neither is it an evolutionary history. It is the essence of what makes us Human. Human beings progress by telling stories. One event can result in a great variety of stories being told about it. Sometimes those stories differ greatly. Which stories are picked up and repeated and which ones are dropped and forgotten often determines how we progress.

Our history, knowledge and understanding are all the collections of the few stories that survive. This includes the stories that we tell each other about the future. And how the future will turn out depends partly, possibly largely, on which stories we collectively choose to believe. Some stories are designed to spread fear and concern. This is because some story-tellers feel that there is a need to raise some tensions. Some stories are frightening, they are



5. The spiraling corruption can only be contained by promoting: (A) Private profit (B) Anti-corruption campaign (C) Good governance (D) Pay-offs and kick backs

19. After almost three decades of contemplating Swarovski-encrusted navels on increasing flat abs, the Mumbai film industry is on a discovery of India and itself. With budgets of over 30 crore each, four soon to be released movies by premier directors are exploring the idea of who we are and redefining who the other is. It is a fundamental question which the bling-bling, glam-sham and disham-disham tends to avoid. It is also a question which binds an audience when the lights go dim and the projector rolls : as a nation, who are we ? As a people, where are we going ? The Germans coined a word for it, zeitgeist, which perhaps Yash Chopra would not care to pronounce. But at 72, he remains the person who can best capture it. After being the first to project the diasporic Indian on screen in Lamhe in 1991, he has returned to his roots in a new movie.

Veer Zaara, set in 1986, where Pakistan, the traditional other, the part that got away, is the lover and the saviour. In Subhas Ghai's Kisna, set in 1947, the other is the English woman. She is not a memsahib, but a mehbooba. In Ketan Mehta's The Rising, the East India Englishman is not the evil oppressor of countless cardboard characterisations, which span the spectrum from Jewel in the Crown to Kranti, but an honourable friend. This is Manoj Kumar's Desh Ki dharti with a difference : there is culture, not contentious politics; balle balle, not bombs : no dooriyan (distance), only nazdeekiyan (closeness). All four films are heralding a new hero and heroine. The new hero is fallible and vulnerable, committed to his dharma, but also not afraid of failure – less of a boy and more of a man.

He even has a grown up name : Veer Pratap Singh in Veer-Zaara and Mohan Bhargav in Swades. New heroine is not a babe, but often a bebe, dressed in traditional Punjabi clothes, often with the stereotypical body type as well, as in Bride & Prejudice of Gurinder Chadha.

1. Which word Yash Chopra would not be able to pronounce ?

(A) Bling + bling (B) Zeitgeist (C) Montaz (D) Dooriyan

2. Who made Lamhe in 1991? (A) Subhash Ghai (B) Yash Chopra

(C) Aditya Chopra (D) Sakti Samanta

3. Which movie is associated with Manoj Kumar ?

(A) Jewel in the Crown (B) Kisna (C) Zaara (D) Desh Ki dharti

4. Which is the latest film by Yash Chopra ?

(A) Deewar (B) Kabhi Kabhi (C) Dilwale Dulhaniva Le Javende (D) Veer Zaara

Feedback is the response or message that the recipient (decoder) returns to the sender (encoder).

- The sender has an idea
- Sender encodes the idea
- The sender transmits the message through a medium
- The receiver gets the message
- The receiver decodes the message
- Receiver sends feedback

Feedback in the communication process is the response that gives us some indication of how effectively we communicate. It is the gauge of efficiency in communication

4.1. Types of Communication

Types of communication, based on the communication channels used are:

1. Verbal Communication
2. Nonverbal Communication

4.1.1. Verbal Communication: Verbal communication refers to the form of communication in which the message is transmitted verbally. Communication is done by word of mouth and a piece of writing. Verbal Communication is further divided into:

- Oral Communication
- Written Communication

Oral Communication: Spoken words are electronic mail are the types of written

- 100. Which one of the following can be termed as verbal communication?**
 (A) Prof. Sharma delivered the lecture in the class room.
 (B) Signal at the cross-road changed from green to orange.
 (C) The child was crying to attract the attention of the mother.
 (D) Dipak wrote a letter for leave application.
- 101. Which is the 24 hours English Business news channel in India?**
 (A) Zee News (B) NDTV 24x7 (C) CNBC (D) India News
- 102. Consider the following statements in communication:**
 (i) Hema Malini is the Chairperson of the Children's Film Society, India.
 (ii) Yash Chopra is the Chairman of the Central Board of Film Certification of India.
 (iii) Sharmila Tagore is the Chairperson of National Film Development Corporation.
 (iv) Dilip Kumar, Raj Kapoor and Preeti Zinta have all been recipients of Dada Saheb Phalke Award.
Which of the statements given above is/are correct?
 (A) (i) and (iii) (B) (ii) and (iii) (C) (iv) only (D) (iii) only
- 103. Which of the following pair is not correctly matched?**
 (A) N. Ram : The Hindu (C) Pranay Roy : NDTV 24x7
 (B) Barkha Dutt : Zee News (D) Prabhu Chawla : Aajtaak
- 104. "Because you deserve to know" is the punch line used by :**
 (A) The Times of India (B) The Hindu (C) Indian Express (D) Hindustan Times
- 105. The function of mass communication of supplying information regarding the processes, issues, events and societal developments is known as :**
 (A) content supply (B) surveillance (C) gratification (D) correlation
- 106. The science of the study of feedback systems in humans, animals and machines is known as:**
 (A) cybernetics (B) reverse communication (C) selectivity study (D) response analysis

Unit – V Mathematical Reasoning and Aptitude

5.0. Definition:

Mathematical reasoning is the critical skill that enables a student to make use of all other mathematical skills. With the development of mathematical reasoning, students recognize that mathematics makes sense and can be understood. They learn how to evaluate situations, select problem-solving strategies, draw logical conclusions, develop and describe solutions, and recognize how those solutions can be applied. Mathematical reasoners are able to reflect on solutions to problems and determine whether or not they make sense. They appreciate the pervasive use and power of reasoning as a part of mathematics.

5.1. Types of reasoning

Reasoning is the process of thinking about things in a logical, rational way. It is considered an innate human ability that has been formalized by fields such as logic, mathematics and artificial intelligence.

The process of reasoning is used to make decisions, solve problems and evaluate things. It can be formal or informal, top-down or bottom-up and differs in terms of handling of uncertainty and partial truths. The following are a few major types of reasoning.

1. Deductive Reasoning: Deductive reasoning is a formal method of top-down logic that seeks to find observations to prove a theory. It uses formal logic and produces logically results.

2. Inductive Reasoning: Inductive reasoning is bottom-up logic that seeks theories to explain observations. It is exploratory in nature and allows for uncertain but likely results.

3. Abductive Reasoning: Like induction, abductive reasoning seeks theories to explain observations. It is less rigorous and allows for best guesses. Abductive Reasoning is typically used in the context of uncertainty. It is associated with decision making and troubleshooting.

4. Backward Induction: Backward Induction is a top-down approach that starts with theories or end-states and works backwards to explain them. It allows for uncertainty and is commonly used in artificial intelligence. For example, it's a classic way for a computer to play chess by considering game end-states and working backwards to evaluate moves.

5. Critical Thinking: Critical Thinking is a process of rational thought that seeks to draw conclusions in an objective, thorough and informed manner. It's a product of human thought

90. Find out the wrong number in the sequence: 125, 127, 130, 135, 142, 153, 165
(A) 130 (B) 142 (C) 153 (D) 165
91. If January 1st, 2007 is Monday, what was the day on 1st January 1995?
(A) Sunday (B) Monday (C) Friday (D) Saturday
92. Insert the missing number in the following series: 4 16 8 64 ? 256 (A) 16 (B) 24 (C) 32 (D) 20
93. If an article is sold for Rs. 178 at a loss of 11%; what would be its selling price in order to earn a profit of 11%? (A) Rs. 222.50 (B) Rs. 267 (C) Rs. 222 (D) Rs. 220
94. Find out the number which should come at the place of question mark which will complete the following series: 5, 4, 9, 17, 35, ? = 139 (A) 149 (B) 79 (C) 49 (D) 69

Questions 95 to 97 are based on the following diagram in which there are three interlocking circles I, S and P, where circle I stands for Indians, circle S for Scientists and circle P for Politicians. Different regions in the figure are lettered from a to f

95. The region which represents Non-Indian Scientists who are Politicians: (A) f (B) d (C) a (D) c
96. The region which represents Indians who are neither Scientists nor Politicians: (A) g (B) c (C) f (D) a
97. The region which represents Politicians who are Indians as well as Scientists: (A) b (B) c (C) a (D) d
98. Which number is missing in the following series? 2, 5, 10, 17, 26, 37, 50, ?
(A) 63 (B) 65 (C) 67 (D) 69
99. Which is the number that comes next in the sequence? 9, 8, 8, 8, 7, 8, 6, (A) 5 (B) 6 (C) 8 (D) 4
100. If in a certain language TRIVANDRUM is coded as 2 5 9 5 3 5 4 7 5 8, how would MADRAS be coded? (A) 834536 (B) 834538 (C) 834530 (D) 834539
Hint: Ans (A) or (C) is correct. May be question or ans key is wrong. Explanation: only last digit differs in all answers, since 8 = M & 9 = I as per the question, either 0 or 6 = S
101. The question to be answered by factorial analysis of the quantitative data does not explain one of the following: (A) Is 'X' related to 'Y'? (B) How is 'X' related to 'Y'? (C) How does 'X' affect the dependent variable 'Y' at different levels of another independent variable 'K' or 'M'? (D) How is 'X' by 'K' related to 'M'?

Unit – VI Logical Reasoning

6.0. Argument

An argument is a claim defended with reasons. It is composed of a group of statements with one or more statements (premises) supporting another statement (conclusion).

An argument is an act of presenting reasons to support an individual's position /point of view.

It is not quarrel or dispute. Or simply, as Bassham's definition of an argument: A claim defended with reasons.

Arguments are the basis of persuasive communication. They are combinations of statements made that are intended to change the minds of other people.

All arguments have structure, which can be either deliberately designed or maybe discovered through analysis. At its simplest, an argument has premises and a conclusion.

6.1. Main components in argument.

(a) Premises, (b) Conclusion:

A simple argument must have a conclusion and at least two premises. Premises or propositions are statements that directly support the conclusion. Conclusion is what an author or an individual wants me to believe, accept or do.

Premise

It is hot in here.

The new housing should be sited elsewhere.

Inference – Between the conclusion and the premises are further statements which translate the premises into the conclusion.

An implicit conclusion is when the conclusion is not stated outright and the arguer assumes that you will know it.

An implicit premise is when the premise is not stated outright and the arguer assumes that you will know it.

Statement & Assumption Test

In each question below is given a statement followed by two assumptions numbered I and II. You have to consider the statement and the following assumptions and decide which of the assumptions is implicit in the statement. Give answer

- (A) If only assumption I am implicit
- (B) If only assumption II is implicit
- (C) If either I or II is implicit
- (D) If neither I nor II is implicit
- (E) If both I and II are implicit.

Statement: The GOI has decided to pay compensation to the tune of Rs. 10 lakh to the family members of those who are killed in major railway accidents.

Assumptions: The government has enough funds to meet the expenses due

Choose the correct answer from the code given below :

(A) (i) and (ii) (B) (ii), (iii), (iv) and (v) (C) (ii) and (vi) (D) (v) and (vi)

112. Which of the following are correct ways of arguing?

- (i) There can be no second husband without a second wife.
- (ii) Anil is a friend of Bob, Bob is a friend of Raj, hence Anil is a friend of Raj.
- (iii) A is equal to B, B is equal to C, hence A is equal to C.
- (iv) If everyone is a liar, then we cannot prove it.

Choose the correct answer from the code given below : Code :

(A) (iii) and (iv) (B) (i), (iii) and (iv) (C) (ii), (iii) and (iv) (D) (i), (ii), (iii) and (iv)

113. Which of the following statement/s are ALWAYS FALSE?

- (i) The sun will not rise in the East some day. (ii) A wooden table is not a table.
- (iii) Delhi city will be drowned under water. (iv) Cars run on water as fuel.

Choose the correct answer from the code given below :

Code : (A) (i), (iii) and (iv) (B) Only (iii) (C) (i), (ii) and (iii) (D) (ii) alone

114. Which of the following conclusions is logically valid based on statement given below? Statement: Most teachers are hard working. Conclusions: (I) some teachers are hard working. (II) Some teachers are not hard working.

- (A) Only (I) is implied (B) Only (II) is implied
- (C) Both (I) and (II) are implied (D) Neither (I) nor (II) is implied

115. Who among the following can be asked to make a statement in Indian Parliament?

(A) Any MLA (B) Chief of Army Staff (C) Solicitor General of India (D) Mayor of Delhi

116. Which of the following conclusions is logically valid based on statement given below?

Statement: Most of the Indian states existed before independence.

Conclusions: (I) Some Indian States existed before independence.

(II) All Indian States did not exist before independence.

(A) only (I) is implied (B) only (II) is implied (C) Both (I) and (II) are implied (D) Neither (I) nor (II) is implied

117. Water is always involved with landslides. This is because it:

- (A) reduces the shear strength of rocks (B) increases the weight of the overburden
- (C) enhances chemical weathering (D) is a universal solvent

118. Direction for this question:

Given below are two statements (a) and (b) followed by two conclusions (i) and (ii).

Considering the statements to be true, indicate which of the following conclusions logically follow from the given statements by selecting one of the four response alternatives given below the conclusion :

also referred to as “data mining.”

7.3.2.1. Methods of secondary data collection:

1. Official publications such as the Ministry of Finance, Statistical Departments of the government, Federal Bureaus, Agricultural Statistical boards, etc. Semi-official sources include State Bank, Boards of Economic Enquiry, etc.
2. Data published by Chambers of Commerce and trade associations and boards.
3. Articles in the newspaper, from journals and technical publications.

Data acquisition

Survey is the most commonly used method in social sciences, management, marketing and psychology to some extent. Surveys can be conducted in different methods.

Questionnaire is the most commonly used method in the survey. Questionnaires are a list of questions either an open-ended or close-ended for which the respondent give answers. A questionnaire can be conducted via telephone, mail, live in a public area, or in an institute, through electronic mail or through fax and other methods.

Interview is face-to-face conversation with respondent. It is slow, expensive, & they take people away from their regular jobs, but they allow in depth questioning & follow-up questions.

the observing person know that he is being observed or without letting him know. Observations can also be made in natural settings as well as in the artificially created environment

Published Printed Sources: There are varieties of published printed sources. Their credibility depends on many factors.

Books are available today on any topic that you want to research. The uses of books start before even one have selected topic. After selection of topics books provide insight on how much work has already been done on same topic & can prepare your literature review. Books are a secondary source but most authentic one in secondary sources.

Journals/periodicals are becoming more important as far as data collection is concerned. The reason is that journals provide up-to-date information which at times books cannot and secondly, journals can give information on the very specific topic on which you are researching rather talking about more general topics.

Magazines/Newspapers Magazines are also effective but not very reliable. Newspaper, on the other hand, is more reliable and in some cases, the information can only be obtained from newspapers as in the case of some political studies.

Published Electronic Sources As internet is becoming more advance, fast & reachable to masses; it has been seen that much information that is not available

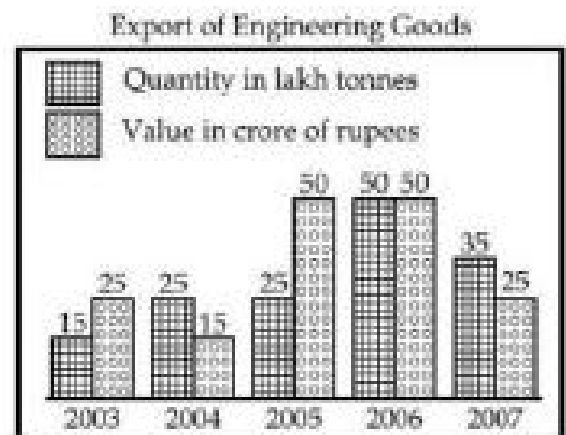
working as teachers. Different regions so obtained in the figure are marked as a, b, c, d, e, f and g.



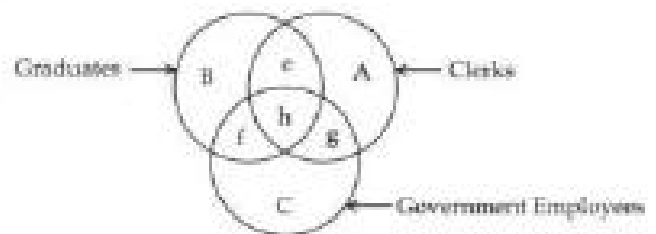
1. If you want to select Hindi and English knowing teachers, which of the following is to be selected? (A) a (B) b (C) c (D) e
2. If you want to select persons, who do not know English and are not teachers, which of the region is to be selected? (A) e (B) g (C) b (D) a

22. Study the following graph carefully and answer questions.

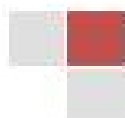
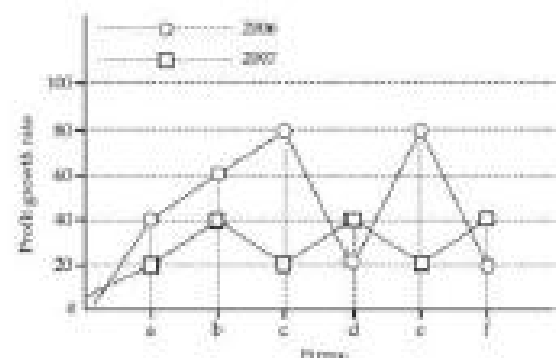
1. In which year the quantity of engineering goods' exports was maximum? (A) 2005 (B) 2006 (C) 2004 (D) 2007
2. In which year the value of engineering goods decreased by 50 percent compared to the previous year? (A) 2004 (B) 2007 (C) 2005 (D) 2006
3. In which year the quantity of exports was 100 percent higher than the quantity of previous year? (A) 2004 (B) 2005 (C) 2006 (D) 2007



23. Study the following Venn diagram and answer questions. Three circles representing GRADUATES, CLERKS and GOVERNMENT EMPLOYEES are intersecting. The intersections are marked A, B, C, e, f, g and h. Which part best represents the statements in questions?



1. Some Graduates are Government employees but not as Clerks. (A) h (B) a (C) f (D) e
 2. Clerks who are graduates as well as government employees: (A) e (B) f (C) a (D) h
 3. Some graduates are Clerks but not Government employees. (A) f (B) a (C) h (D) e
24. Study the following graph and answer questions:



computer screen. It is used for making drawing, graphics and for menu selection.

6. **Touch Screen** - Touch screen is the most simple, intuitive, and easiest to use of all input devices. A touch; screen enables a user to choose from available options by simply touching the desired icon or menu item displayed on a computer's screen with his/her finger. For example, information kiosks may be located:

- i. At an airport or a railway station to provide information to arriving passengers about hotels, restaurants, tourist spots, etc. in a city.
- ii. In large museums or zoos to guide the visitors to the locations of various attractions and facilities, and to caution them against things they are not supposed to do while
- iii. In large bank, post office, or insurance company to introduce various types of-offered services to customers, & to guide them to appropriate counters for their specific jobs.

7. **Digitizer** - A digitizer / graphic tablet is similar to a light pen. It is used to create drawings & pictures. Digitizers are found in CAD terminals / engineering workstations.

applications.

9. **Bar code reader** - Data coded in the form of small lines (known as bars) are known as bar code). *Bar codes* represent alphanumeric data by a combination of adjacent vertical lines (bars) by varying their width and the spacing between them.

10. **MICR Device** - MICR technology is being widely used in the field of banking. MICR device is used to recognize the magnetically charged characters (printed with special ink containing particles of iron oxide) given at the bottom of cheque.

11. **Optical Character Reader** - OCR is a special kind of optical device, which is used to input the printed matter on a paper or any object. The text, which is to be scanned, is illuminated by a low frequency light source.

12. **Optical Mark Reader (OMR)** - These scanners are capable of recognizing a pre-specified type of mark made by pencil or pen. For example, in objective type tests applicants mark their choices of correct answers on a special pre-printed test scoring sheet by

photographs is involved in

(A) Deck Top Publishing (B) Desk Top Printing (C) Desk Top Publishing (D) Deck Top Printing

104. Transfer of data from one application to another line is known as :

(A) Dynamic Disk Exchange (B) Dodygy Data Exchange
(C) Dogmatic Data Exchange (D) Dynamic Data Exchange

105. LAN stands for:

(A) Local And National (B) Local Area Network (C) Large Area Network (D) Live Area Network

106. Which of the following statement is correct? (A) Modem is a software

(B) Modem helps in stabilizing the voltage
(C) Modem is the operating system
(D) Modem converts the analog signal into digital signal and vice-versa

107. Which of the following is the appropriate definition of a computer?

(A) Computer is a machine that can process information.
(B) Computer is an electronic device that can store, retrieve and process both qualitative and quantitative data quickly and accurately.
(C) Computer is an electronic device that can store, retrieve and quickly process only quantitative data.
(D) Computer is a machine that can store, retrieve and process quickly and accurately only qualitative information

108. Information and Communication Technology includes: (A) On line learning

(B) Learning through the use of EDUSAT (C) Web Based Learning (D) All the above

109. Which of the following is the appropriate format of URL of e-mail?

(A) www_mail.com (B) www@mail.com (C) WWW@mail.com (D) www.mail.com

110. Using websites to pour out one's grievances is called:

(A) cyber venting (B) cyber ranting (C) web hate (D) web plea

111. In web search, finding a large number of documents with very little relevant information is termed:

(A) poor recall (B) web crawl (C) poor precision rate (D) poor web response

112. The concept of connect intelligence is derived from :

(A) virtual reality (B) fuzzy logic (C) Bluetooth technology (D) value added networks

113. Use of an ordinary telephone as an Internet appliance is called:

(A) voice net (B) voice telephone (C) voice line (D) voice portal

114. Video transmission over the Internet that looks like delayed live casting is called:

(A) virtual video (B) direct broadcast (C) video shift (D) real-time video

115. Which was the first company to launch mobile phone services in India?

(A) Essar (B) BPL (C) Hutchison (D) Airtel

Unit – IX People, Development and Environment

Census

- The first population Census in India was conducted in 1872
- 1872 - The first census was conducted in India non-synchronously in different parts.
- The first complete Census was conducted only in 1881.
- Theme of Census 2021 is *Janganana se Jan Kalyan*
- Henry Welter – Father of Indian Census
- Census 2011 will be the 15th National Census of the Country.
- **Some crucial facts about the census 2011 are as follows:**

1. No of states/UTs	35
2. No of districts	640 (47 increased from 2001)
3. No of towns	7,933 (2772 increased from 2001)
4. No of villages	6,40,930 (2342 increased from 2001)
5. Total population	1,21,05,69,573 (68.8% urban & 31.2% rural)
6. Child Sex Ratio (0- 6 year)	919 (Rural- 923 & Urban-905)
7. Sex Ratio	940 females/1000 males
8. Density of population	382 Person/ KM ²
9. Decadal population growth from 2001 to 2011	17.64%
10. Literacy rate	74.04% of total population
11. India have total population of the world	17.5%
12. India's population is now bigger than the combined population of	USA, Indonesia, Brazil, Pakistan and Bangladesh.
13. The Union Territory of Lakshadweep is the least populated	64,429 persons
14. Top five literate states are...	1. Kerala - 94.00 % 2. Lakshadweep - 91.85 % 3. Mizoram - 91.33 % 4. Goa - 88.70 % 5. Tripura - 87.22 %
15. Highest sex ratio _ Top five states	1. Kerala - 1084 2. Puducherry - 1037 3. Tamil Nadu - 996 4. Andhra Pradesh - 993 5. Chhattisgarh - 991
16. Lowest sex ratio _ Top five	1. Daman and Diu - 618

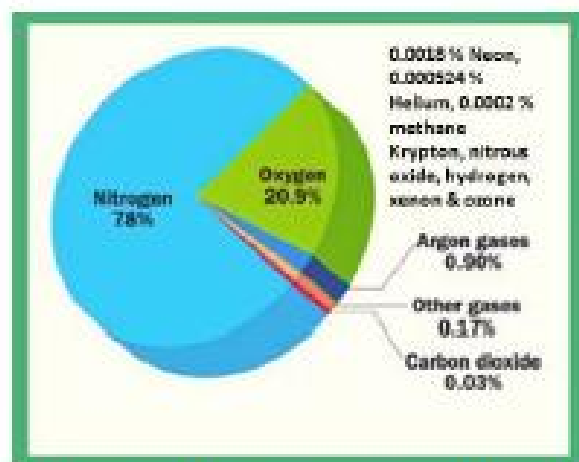


It is the representation of physical components of the earth wherein man is the important factor influencing his environment. Components/Segments of Environment

1. Atmosphere
2. Hydrosphere
3. Lithosphere
4. Biosphere

1. Atmosphere

- It is the blanket of gases surrounding the earth.
- It extends to a height of about 2000 kilometers from earth's surface.
- The major components of atmosphere are nitrogen and oxygen, while minor components are argon, carbon dioxide and some trace gases.
- Structure of Atmosphere i. Troposphere ii. Stratosphere iii. Mesosphere
iv. Thermosphere



i. **Troposphere:** 70% of atmosphere mass. It lies from the surface of the earth to an altitude of 10 kilometers. Density decreases with altitude. The cold layer (56 degree C) at the top of troposphere, which shows a temperature inversion, that is a negative to positive lapse rate, is known as tropopause. Lowest layer of atmosphere in which living organisms operate. Strong air movements and cloud formations. Consists of 78% nitrogen, 21 % oxygen, 1 % Argon, 0.03 % carbon dioxide,

0.0018 % Neon and 0.000524 % Helium, 0.0002 % methane and other gases such as

compared to that of pre-industrial times by

- A) 1.5°C to 2°C (B) 2.0 °C to 3.5 °C (C) 0.5°C to 1.0°C (D) 0.25 °C to 0.5 °C

96. The National Disaster Management Authority functions under the Union Ministry of

- (A) Environment (B) Water Resources (C) Home Affairs (D) Defense

97. Match List – I and List – II and select the correct answer from the codes given below:

List -I

List – II

- a. Flood 1. Lack of rainfall of sufficient duration
b. Drought 2. Tremors produced by the passage of vibratory waves through rocks of earth
c. Earthquake 3. A vent through which molten substances come out
d. Volcano 4. Excess rain and uneven distribution of water

Codes: a b c d

a b c d

a b c d

a b c d

(A) 4 1 2 3

(B) 2 3 4 1

(C) 3 4 2 1

(D) 4 3 1 2

98. In terms of total CO₂ emissions from a country, identify the correct sequence

- (A) U.S.A. > China > India > Russia (B) China > U.S.A. > India > Russia
(C) China > U.S.A. > Russia > India (D) U.S.A. > China > Russia > India

99. Match List – I and List – II and identify the correct code:

List – I

List-II

- a. World Health Day i. 16th September
b. World Population Day ii. 1st December
c. World Ozone Day iii. 1st July
d. World AIDS Day iv. 7th April

Codes: a b c d

(A) i ii iii iv

(B) iv iii i ii

(C) ii iii iv i

(D) iii iv ii i

100. Which of the anthropogenic activity accounts for more than ~2/3rd of global water consumption? (A) Agriculture (B) Hydropower generation (C) Industry (D) Domestic and Municipal usage

101. One of the anthropogenic sources of gaseous pollutants chlorofluorocarbons (CFCs) in air is

- (A) Cement industry (B) Fertiliser industry (C) Foam industry (D) Pesticide industry

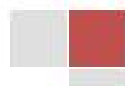
102. In which of the countries per capita use of water is maximum?

- (1) USA (2) European Union (3) China (4) India

103. India's contribution to total global carbon dioxide emissions is about:

- (1) -3% (2) -6% (3) -10% (4) -15%

104. Two earthquakes A and B happen to be of magnitude 5 and 6 respectively on Richter Scale. The ratio of the energies released EB/EA will be approximately: (1) ~8 (2) ~16 (3) ~32 (4) ~64



Unit – X Higher Education System

10.0. Objectives of Higher Education

Education Commission of 1964-66 enumerated many objectives of higher education. They are:

1. To seek and cultivate new knowledge, to engage vigorously and fearlessly in the pursuit of truth and to interpret old knowledge and beliefs in the light of new needs and discoveries.
2. To provide the right kind of leadership. To identify gifted youth and help them develop their potential to the full by cultivating physical fitness, developing the powers of the mind and cultivating right interests, attitudes and moral and intellectual values.
3. To provide competent men and women, trained in agriculture, arts, medicine, science and technology and various other professions, who will also be cultivated individuals, imbued with a sense of social purpose.
4. To strive to promote equality and social and cultural differences through diffusion of education and
5. To foster in the teachers and students and through them in a society generally, the attitudes and values needed for developing the 'good life' in individuals and society.

'The Principle object is to deepen man's understanding of the Universe and of himself in body, mind and spirit and to disseminate this understanding throughout society and so apply it in the service of mankind.'

-The education Commission

'A university stands for humanism, for tolerance, for reason, for adventure of ideas and for the search of truth. It stands for the onward march of the human race towards even higher objectives. If the Universities discharge their duties adequately, then it is well with the nation and the people.'

-Pandit Jawaharlal Nehru

10.1. Development of Higher Education in India

Introduction to education in ancient India

The history of education in ancient India is fascinating and is recorded and can be tracked to the ancient era. Education in ancient India began around the 3rd century B.C with elements of religious training and impart of traditional knowledge.

Sages and scholars imparted education orally. Palm leaves and barks of trees were used for writing. In ancient India, both formal and informal ways of education system existed. Indigenous education was imparted at home, in temples, pathshalas, tols, chatuspadis and

- (b) C & A.G. (ii) Enactment of Budget
 (c) Ministry of Finance (iii) Implementation of Budget
 (d) Executing Departments (iv) Legality of expenditure
 (v) Justification of Income

(a) (b) (c) (d)

(a) (b) (c) (d)

(A) (iii) (iv) (ii) (i)

(B) (ii) (iv)(i) (iii)

(C) (v) (iii) (iv) (ii)

(D) (iv) (ii) (iii) (v)

118. Foundation training to the newly recruited IAS (Probationers) is imparted by :
 (A) Indian Institute of Public Administration (B) Administrative Staff College of India
 (C) L.B.S. National Academy of Administration (D) Centre for Advanced Studies

119. Electoral disputes arising out of Presidential and Vice-Presidential Elections are settled by : (A) Election Commission of India (B) Joint Committee of Parliament (C) Supreme Court of India (D) Central Election Tribunal

120. Which of the following institutions in the field of education is set up by the MHRD Government of India? (A) Indian council of world Affairs, New Delhi
 (B) Mythic Society, Bangalore (C) National Bal Bhawan, New Delhi (D) India International Centre, New Delhi

121. Assertion (A) : Aerosols have potential for modifying climate
 Reason (R) : Aerosols interact with both short waves and radiation

- (A) Both (A) and (R) are true, and (R) is the correct explanation of (A)
 (B) Both (A) and (R) are true, but (R) is not the correct explanation of (A)
 (C) (A) is true, but (R) is false (D) (A) is false, but (R) is true

122. 'SITE' stands for: (A) System for International technology and Engineering
 (B) Satellite Instructional Television Experiment (C) South Indian Trade Estate (D) State Institute of Technology and Engineering

123. What is the name of the Research station established by the Indian Government for 'Conducting Research at Antarctic?'

- (A) Dakshin Gangotri (B) Yamunotri (C) Uttari Gangotri (D) None of the above

124. Ministry of Human Resource Development (HRD) includes :

- (A) Department of Elementary Education and Literacy
 (B) Department of Secondary Education and Higher Education
 (C) Department of Women and Child Development (D) All the above

125. Parliament can legislate on matters listed in the State list:

- (A) With the prior permission of the President. (B) Only after the constitution is amended suitably. (C) In case of inconsistency among State legislatures. (D) At the request of two or more States.