

# UGC NET PAPER-1

## GENERAL APTITUDE

# SOLVED PAPER MARCH 2023

Time Allotted: 1 Hour and 15 Minutes

Maximum Marks: 100

### Important Instructions:-

1. Each question carries 2 marks.
2. This paper consists of fifty (50) multiple-choice type of questions.
3. Each item has four alternative options marked (a), (b), (c) and (d). You have to select the correct option.  
**Example:** where (c) is the correct option then you will select it like this (a)  (b)  (c)  (d) .
4. Use of any calculator or log table etc., is prohibited.
5. There is no negative marking for incorrect answers.

### Direction for Questions (1 -5):

The following table shows the distribution of male (M) and female (F) athletes who participated in an Annual Sports Event from five different countries A-E over the years 2016 to 2021. Based on the data in the table, answer the question.

Year-wise Country-wise Distribution of Athletes.

Countries → Years ↓	A		B		C		D		E	
	M	F	M	F	M	F	M	F	M	F
2016	220	165	315	210	225	155	280	205	235	105
2017	330	210	420	310	345	165	420	315	390	260
2018	230	90	370	240	240	140	465	365	435	325
2019	480	245	570	420	330	210	630	470	445	290
2020	590	320	530	260	390	315	720	510	590	460
2021	410	260	320	360	540	345	780	605	680	490

- Q.1.** The difference between the number of male and female athletes from country C was the second highest in the year \_\_\_\_\_.  
a. 2016  
b. 2017  
c. 2019  
d. 2021
- Q.2.** The average number of female athletes who participated from Country B over the years together was \_\_\_\_\_.  
a. 300  
b. 275  
c. 310  
d. 280
- Q.3.** The approximate percentage decrease in the number of male athletes who participated from Country C in the year 2018 as compared to the previous year was \_\_\_\_\_.  
a. 21%  
b. 25%  
c. 30%  
d. 35%
- Q.4.** The number of female athletes who participated from Country E in the year 2020 was \_\_\_\_\_% of the total number of athletes who participated from Country B in the year 2019.  
a. 60  
b. 56  
c. 50  
d. 46
- Q.5.** In the year 2017, the total number of athletes who participated in the event was the second highest from country \_\_\_\_\_.  
a. A  
b. B  
c. D  
d. E
- Q.6.** The quality of one's memory can generally be judged on the basis of his/her  
a. Power of retention  
b. Analytical ability  
c. Communication skills  
d. Mathematical numeracy
- Q.7.** Given below are two statements:  
**Statement I:** Padlet is a game-based platform used in educational institutions to create quizzes, conversions and surveys.  
**Statement II:** Seasaw is an app-based platform that allows students to work together on texts, PDFs drawings and videos etc.

In the light of the above statements, choose the most appropriate answer from the options given below:

- a. Both Statement I and Statement II are correct.
- b. Both Statement I and Statement II are incorrect.
- c. Statement I is correct but Statement II is incorrect.
- d. Statement I is incorrect but Statement II is correct.

**Q.8.** Given below are two statements:

**Statement I:** Vygotsky emphasized the significant role played by adults and more able peers in children's learning.

**Statement II:** The zone of proximal development is the area, where the child solves a problem alone without the help of others.

In the light of the above statements, choose the most appropriate answer from the options given below:

- a. Both Statement I and Statement II are correct.
- b. Both Statement I and Statement II are incorrect.
- c. Statement I is correct but Statement II is incorrect.
- d. Statement I is incorrect but Statement II is correct.

**Q.9.** According to David and Johnson, which of the following are the basic elements of cooperative learning groups?

1. Self conceptualisation
2. Individual accountability
3. Skill development
4. Positive interdependence
5. Promotive interaction

Choose the correct answer from the options given below:

- a. 1, 3 and 4 only
- b. 1, 2 and 5 only
- c. 2, 4 and 5 only
- d. 1, 2, 4 and 5 only

**Q.10.** According to Kohlberg's theory the conventional level of moral development includes the following stages:

1. Obedience orientation
2. Being Nice/Relationships orientation
3. Social contract orientation
4. Law and Order orientation
5. Universal Ethical Principles orientation.

Choose the correct answer from the options given below:

- a. 1 and 5 only
- b. 3 and 4 only
- c. 2 and 4 only
- d. 2, 3 and 5 only

**Q.11.** The tendency of researchers to subtly and inadvertently affect the behaviours of participants in a study, obscuring the true effect of the independent variable, is called

- a. Placebo effect
- b. Experimenter Bias effect
- c. The Hawthorne effect
- d. Evaluation Apprehension effect

**Q.12.** Arrange the following components of a research paper written in APA style, in the correct order

1. Figures
2. Methods
3. Introduction
4. Tables
5. Results

Choose the correct answer from the options given below:

- a. 3, 5, 2, 4, 1
- b. 3, 2, 5, 4, 1
- c. 3, 2, 1, 4, 5
- d. 3, 2, 5, 1, 4

**Q.13.** The extent to which a measure yields the same scores across different times, groups of people, or versions of the instrument, is called:

- a. Reliability
- b. Content validity
- c. Construct validity
- d. Predictive validity

**Q.14.** Given below are two statements:

**Statement I:** Snowball sampling is a type of random sampling.

**Statement II:** Snowball sampling is helpful when participants belong to hard-to-reach groups.

In the light of the above statements, choose the most appropriate answer from the options given below:

- a. Both Statement I and Statement II are correct.
- b. Both Statement I and Statement II are incorrect.
- c. Statement I is correct but Statement II is incorrect.
- d. Statement I is incorrect but Statement II is correct.

**Q.15.** In the case of negatively skewed distribution

- a. Mean < Mode < Median
- b. Mean > Mode > Median
- c. Mean > Median > Mode
- d. Mean < Median < Mode

**Q.16.** One of the cool media of communication is:

- a. Print
- b. Television
- c. Photograph
- d. Radio

**Q.17.** In mass communication print is considered as a/an

- a. Folk medium
- b. Electronic medium
- c. Mechanical medium
- d. Ordinary medium

**Q.18.** Which of the following are the characteristics of interactive communication?

1. It is decentralised.
2. It is state controlled.
3. It is highly centralized.
4. It is a two-way communication.
5. It provides universal citizenship.

Choose the correct answer from the options given below:

- a. 1, 2, 3 only
- b. 2, 3, 4 only
- c. 3, 4, 5 only
- d. 1, 4, 5 only

**Q.19.** Which of the following make classroom communication interesting?

1. Many asides while speaking
2. Fruitful discussions
3. Use of relevant transitions
4. Finding out the correct context
5. Pressurising the students with authoritarian commands.

Choose the correct answer from the options given below:

- a. 1, 2 and 3 only
- b. 2, 3 and 4 only
- c. 3, 4 and 5 only
- d. 1, 4 and 5 only

**Q.20.** Given below are two statements:

**Statement I:** The new technologies have brought in 'Market Specific Communication'.

**Statement II:** The second media age has made the interactive technologies of communication to change the mediascape.

In the light of the above statements, choose the most appropriate answer from the options given below:

- a. Both Statement I and Statement II are true.
- b. Both Statement I and Statement II are false.
- c. Statement I is true but Statement II is false.
- d. Statement I is false but Statement II is true.

**Q.21.** In a certain coding language:

1. 'odo pado fao' means 'order packed food'
2. 'pado fao sa digo' means 'packed food is good'
3. 'digo yao mao' means 'good young man'
4. 'Yao mao sa sito' mean 'young man is strong'

Which of the following means 'order' and 'strong', respectively in that language?

- a. 'yao' and 'mao'
- b. 'digo' and 'mao'
- c. 'pado' and 'sito'
- d. 'odo' and 'sito'

**Q.22.** In a competitive examination held in the year 2000, a total of 6,00,000 (6.0 lakh) students appeared and 40% passed the examination. Forty percent (40%) of the total students were females and the rest were males. The pass percentage among the males was 50%. Find the pass percentage among the females.

- a. 25%
- b. 30%
- c. 35%
- d. 40%

**Q.23.** What number should replace the question mark (?) in the following series: 450, 473, 519, 588, 680, 795?

- a. 933
- b. 950
- c. 138
- d. 82

**Q.24.** A businessman buys a house for ₹ 9.0 lakhs. He puts the house on rent and keeps 15% of each month's rent Separately for repairs. After paying ₹ 2106 as annual taxes on the rent, he realizes 10% annually on his investment. Find the monthly rent of the house.

- a. ₹ 10,000
- b. ₹ 9,080
- c. ₹ 9,030
- d. ₹ 9,500

**Q.25.** Sum of 3 consecutive odd numbers and 3 consecutive even numbers together is 231. Also the smallest odd number is 11 less than the smallest even number. What is the sum of the largest odd number and the largest even number?

- a. 81
- b. 73
- c. 77
- d. 79

**Q.26.** "First it is staying out late, then it is not calling home, then wild parties, and before you know it, your life will be completely out of control. Someday you will be glad that you had a lockdown." Which informal fallacy is committed in the above argument?

- a. Red herring
- b. Slippery slope
- c. Strawman
- d. Appeal to authority

**Q.27.** Which of the following statements are logically equivalent?

1. No philosophers are industrialists.
2. No industrialists are philosophers.
3. All non-industrialists are non-philosophers.
4. All philosophers are non-industrialists.

Choose the most appropriate answer from the options given below:

- a. 1, 2 and 3 only
- b. 1, 2 and 4 only
- c. 1, 3 and 4 only
- d. 2, 3 and 4 only

**Q.28.** Which of the following statements are logically contradictory to each other?

1. All philosophers are industrialists.
2. Some philosophers are not industrialists.

3. No philosophers are industrialists.
4. No industrialists are philosophers.

Choose the most appropriate answer from the options given below:

- a. 1 and 2 only
- b. 1, 3 and 4 only
- c. 1 and 3 only
- d. 3 and 4 only

**Q.29.** If the statement 'No philosophers are industrialists' is given as true, which of the following statements can be immediately inferred from it to be true?

- a. No philosophers are rich persons.
- b. All industrialists are philosophers.
- c. Some philosophers are industrialists.
- d. Some philosophers are not industrialists.

**Q.30.** According to Nyaya (Classical Indian school of Logic) which means of knowledge (pramana) is used in the following argument - "The world is an effect and hence it must have an efficient cause like all objects e.g. pots, cloth etc. do. That efficient cause is God".

- a. Postulation (arthapatti)
- b. Inference (anumana)
- c. Comparison (Upamana)
- d. Verbal Testimony (Sabda)

**Q.31.** Which one of the following acronyms matches incorrectly with their full form?

- a. ATM - Automatic Teller Machine
- b. SIM - Subscriber Identity Module
- c. GPS - Global Positioning Sensor
- d. GIS - Geographic Information System

**Q.32.** Identify the correct order of the following terms A-E to complete the paragraph given below that explains how data is sent securely over the Internet using the Transport Layer Security (TLS) protocol:

'The browser requests to the \_\_\_\_ to identify itself by providing its \_\_\_\_\_. This is sent and a check is performed to see if it is \_\_\_\_\_. If it is, the \_\_\_\_\_ sends a \_\_\_\_\_ back to the web server and data transmission begins.'

Choose the correct answer from the options given below:

1. authentic
2. browser
3. certificate
4. signal
5. web server

Choose the most answer from the options given below:

- a. 3, 2, 4, 1, 5
- b. 5, 3, 1, 2, 4
- c. 4, 3, 1, 2, 5
- d. 2, 3, 1, 5, 4

**Q.33.** Given below are two statements:

**Statement I:** AI is an artificially created environment used to give a feeling of being there,

whereas virtual reality learns from changing circumstances.

**Statement II:** Unlike dot matrix and inkjet printers, laser printers don't use ink when producing documents.

In the light of the above statements, choose the correct answer from the options given below:

- a. Both Statement I and Statement II are true.
- b. Both Statement I and Statement II are false.
- c. Statement I is true but Statement II is false.
- d. Statement I is false but Statement II is true.

**Q.34.** Which of the following are the main benefits of networking computers and devices rather than using a number of standalone computers?

1. Devices, such as printers, can be shared, thus reducing costs.
2. Licenses to run software on networks are often far cheaper than buying licenses for an equivalent number of standalone computers.
3. Users cannot share files and data.
4. Access to reliable data that comes from a central source, such as file server.

Choose the correct answer from the options given below:

- a. 1 and 3 only
- b. 2, 3 and 4 only
- c. 1, 2, 3 and 4
- d. 1, 2 and 4 only

**Q.35.** What is the average expenditure on tennis, hockey and cricket together?

LIST I (Computer Term)	LIST II (Description)
A. Disk defragmenter	1. Utility that prepares a disk to allow that files to be stored and retrieved.
B. Disk formatter	2. Storage media with no moving parts.
C. Device driver	3. Utility that reorganises the sectors on a hard disk so that files can be stored in contiguous data blocks
D. Solid state drive	4. Software that communicates with the OS and translates data into a format understood by the device.

Choose the correct code from the below:

- a. A-2, B-1, C-3, D-4
- b. A-3, B-1, C-4, D-2
- c. A-1, B-3, C-2, D-4
- d. A-4, B-2, C-1, D-3

- Q.36.** Which of the following is measured in Dobson Units?
- Chloro Fluoro Carbon (CFC)
  - Stratospheric Ozone
  - Ultraviolet Rays
  - Solar Radiation

- Q.37.** Photo Electro Chemical (PEC) solar cells are based on
- Only inorganic semiconductors
  - Only organic semiconductors
  - Only crystal silicon semiconductor
  - Hybrid structure of inorganic semiconductors and an electrolyte

- Q.38.** Match List I with List II

LIST I (Summit/Protocol)	LIST II (Year)
A. Montreal Protocol	1. 1992
B. Rio Summit	2. 2015
C. Kyoto Protocol	3. 1987
D. Paris Agreement	4. 1997

Choose the correct answer from the options given below:

- A-3, B-1, C-4, D-2
  - A-3, B-1, C-2, D-4
  - A-1, B-3, C-2, D-4
  - A-4, B-2, C-1, D-3
- Q.39.** Thermal expansion of oceans may lead to
- Global warming
  - Ozone depletion
  - Melting of glaciers
  - Sea level rise
- Q.40.** Waste stabilization ponds are:
- Mainly oxidation ponds
  - Used to remove pathogen and organic contents
  - Natural treatment systems
  - Extremely quick
  - Most efficient in extremely cold weather.
- Choose the correct answer from the options given below:
- 1, 2 and 3 only
  - 2, 3 and 4 only
  - 1, 2 and 5 only
  - 3, 4 and 5 only

- Q.41.** Given below are two statements:

**Statement I:** The Governor of the State is the Chancellor of deemed universities.

**Statement II:** Deemed universities can design their own syllabus and course work.

In the light of the above statements, choose the correct answer from the options given below:

- Both Statement I and Statement II are true.
- Both Statement I and Statement II are false.
- Statement I is true but Statement II is false.
- Statement I is false but Statement II is true.

- Q.42.** What is the full form of 'DIKSHA'?

- Digital Infrastructure for Knowledge Sharing
- District Institute for Knowledge Sharing
- Data Information and Knowledge Sharing
- Digital Institution for Knowledge Sharing

- Q.43.** Which of the following are the key ingredients of quality in-service teacher training?

- Preparation of training material
- Assessment of training needs
- Development of appropriate curriculum/ Modules
- Assessment of the impact and outcome of the training.

Choose the most appropriate answer from the options given below:

- 1 and 4 only
- 2 and 3 only
- 1, 3 and 4 only
- 1, 2, 3, and 4

- Q.44.** According to NEP 2020 more HEIs shall be established and developed in underserved regions to ensure full

- Access, Equity and Inclusion
- Accountability, Equality and Integration
- Assessment, Equivalence and Identity
- Autonomy, Effectiveness and Implication

- Q.45.** Which of the following recommendations were put forward by the University Education Commission appointed after independence by the Indian Government concerning medical education in India?

- Medical colleges should admit a maximum number of hundred students.
- History of medicine with special reference to Indian systems should be taught in the first degree course in medicine.
- More importance should be attached to Public health, Engineering and Nursing.
- There should be provision of ten beds per student admitted in the medical college.

Choose the correct answer from the options given below:

- 1 and 2 only
- 2 and 3 only
- 2, 3 and 4 only
- 1, 2, 3, and 4

### Direction for Questions (46 -50):

Read the following passage and answer the question.

It was in this atmosphere of intense antagonism and hostility that Gokhale introduced his Elementary Education Bill in 1910. He called it 'a small humble attempt to suggest the first steps of a journey, which is bound to prove long and tedious, but which must be performed, if the mass of our people are to emerge from their present condition.' Gokhale argued:

Free and compulsory education is the first remedy of all the remedies to be applied...without compulsion the educational developments in the last 60 years have been hopelessly slow. The only way that the world has

discovered to secure universal education in a country has been making it compulsory and free. Compulsion would operate harshly on the poorer classes of the community if it is not made free.

He suggested that only those students whose family income was 25 rupees and above per month should pay fees; for the rest, education was to be free. Out of the total expenditure required for it, two-thirds should be borne by the state and one-third by the local bodies. He suggested imposing an additional 8-anna tax on salt on the grounds that 'my countrymen should eat less salt than that their children should continue to grow up in ignorance and darkness'.

**Q.46.** According to Gokhale, what percentage of the total expenditure on education should be borne by the state?

- a. ~ 25%
- b. ~ 33%
- c. ~ 66%
- d. ~ 75%

**Q.47.** Given below are two statements:

**Statement I:** Gokhale believed that education was necessary for the Indian masses to be liberated from their miserable condition.

**Statement II:** Gokhale faced little resistance in the introduction of his bill on elementary education.

In the light of the above statements, choose the most appropriate answer from the options given below:

- a. Both Statement I and Statement II are correct.
- b. Both Statement I and Statement II are incorrect.
- c. Statement I is correct but Statement II is incorrect.
- d. Statement I is incorrect but Statement II is correct.

**Q.48.** Which of the following can be inferred from the passage?

- 1. The growth of education in India was very slow prior to 1910.
- 2. There was a need to make education compulsory for all according to Gokhale.
- 3. Gokhale believed that achieving education for all Indians was a distant dream.

4. Gokhale suggested that the majority of expenditure for education should be met by local bodies.

Choose the correct answer from the options given below:

- a. 1, 2 and 3 only
- b. 2, 3 and 4 only
- c. 1, 2 and 4 only
- d. 1, 3, and 4 only

**Q.49.** Given below are two statements:

**Statement I:** Gokhale believed that education should be made free for the poor people.

**Statement II:** Gokhale suggested that an additional tax of 8-anna should be imposed on salt.

In the light of the above statements, choose the most appropriate answer from the options given below:

- a. Both Statement I and Statement II are correct.
- b. Both Statement I and Statement II are incorrect.
- c. Statement I is correct but Statement II is incorrect.
- d. Statement I is incorrect but Statement II is correct.

**Q.50.** Given below are two statements: One is labelled as Assertion A and the other is labelled as Reason R:

**Assertion A:** Gokhale was not in favour of free education for the poor.

**Reason R:** He suggested that those students whose family income was Rs. 25 per month or more, should pay the education fees.

In the light of the above statements, choose the most appropriate answer from the options given below:

- a. Both A and R are correct and R is the correct explanation of A.
- b. Both A and R are correct but R is NOT the correct explanation of A.
- c. A is correct but R is not correct.
- d. A is not correct but R is correct.



Answer Key			
Ques.	Ans.	Topic's Name	Chapter's Name
1	b	Data Interpretation	Data Interpretation
2	a	Data Interpretation	Data Interpretation
3	c	Data Interpretation	Data Interpretation
4	d	Data Interpretation	Data Interpretation
5	b	Data Interpretation	Data Interpretation
6	a	Method of learning	Teaching Aptitude
7	d	Levels of Teaching	Teaching Aptitude
8	d	Theories of learning	Teaching Aptitude
9	c	Methods of learning	Teaching Aptitude
10	c	Theories of learning	Teaching Aptitude
11	b	Terminology	Research Aptitude
12	b	Styles of report wrting	Research Aptitude
13	a	validity and reliability	Research Aptitude
14	d	Sampling	Research Aptitude
15	d	Analyzing the data	Research Aptitude
16	b	General Aptitude	Communication
17	c	General Aptitude	Communication
18	d	Types of Communication	Communication
19	b	Classroom communication	Communication
20	a	ICT in communication	Communication
21	d	Coding decoding	Mathematical Reasoning
22	a	Percentage	Mathematical Reasoning
23	a	Number series	Mathematical Reasoning
24	c	Percentage	Mathematical Reasoning
25	a	Fallacies	Mathematical Reasoning
26	b	General Aptitude	Logical Reasoning
27	d	Square of opposition	Logical Reasoning
28	a	Square of opposition	Logical Reasoning
29	a	Square of opposition	Logical Reasoning
30	b	Indian logic	Logical Reasoning
31	c	Terminology	ICT
32	b	Terminology	ICT
33	b	Artificial Intelligence	ICT
34	d	Networking	ICT
35	b	Hardware	ICT
36	b	General Aptitude	People and Environment
37	d	General Aptitude	People and Environment
38	a	International Conventions	People and Environment
39	d	Natural Hazards	People and Environment

40	a	Terminology	People and Environment
41	d	Universities	Higher Education
42	a	Government initiativea	Higher Education
43	a	Teachers education	Higher Education
44	a	NEP 2020	Higher Education
45	d	Committies on education after independence	Higher Education
46	c	Reading Comprehension	Reading Comprehension
47	c	Reading Comprehension	Reading Comprehension
48	a	Reading Comprehension	Reading Comprehension
49	a	Reading Comprehension	Reading Comprehension
50	d	Reading Comprehension	Reading Comprehension



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## GENERAL APTITUDE

### SOLVED PAPER MARCH 2023

#### Answers with Explanations

1. **Option (b) is correct.**

Years	Male in Country C	Female in Country C	Difference
2016	225	155	70
2017	345	165	180
2019	330	210	120
2021	540	345	195

Highest difference in 2021.

Second highest is in 2017.

2. **Option (a) is correct.**

Average of female athletes from country B = Sum of female participants / no. of years

$$= (210 + 310 + 240 + 420 + 260 + 360) / 6$$

$$= 1800 / 6 = 300$$

3. **Option (c) is correct.**

Male participants from country C in 2018 = 240

Male participants from country C in 2017 (Previous year) = 345

Decrease = 105

Decrease percentage =  $(105 \times 100) / 345 = 30.43\%$  or 30% approximate.

4. **Option (d) is correct.**

Female participants from country E in 2020 = 460

Total participants from country B in 2019 = 570 + 420 = 990

Percentage =  $460 \times 100 / 990 = 46.46\%$  or 46% Approximately.

5. **Option (b) is correct.**

Athletes participated in 2017 from country,

Countries	Male	Female	Total
A	330	210	540
B	420	310	730
D	420	315	735
E	390	260	650

Highest = country D

Second highest = Country B

6. **Option (a) is correct.**

Power of retention is a quality of memory power. And a characteristic of the memory level of learning.

There are three levels of learning

- A. Memory level - lowest level of teaching where learning is focused on remembering, retention and route of information and facts. This is a thoughtless level.
- B. Understanding level - This level is associated with understanding the concepts and analyzing. This is a thoughtful level.
- C. Reflective level: This is the highest thoughtful level. Here, learners learn skills of problem solving and concept building.

7. **Option (d) is correct.**

Padlet is an online tool used as a notice board and used by teachers and students both to post notes on a common area which can include images, links, videos, text etc.

Seasaw is a mobile application platform that allows students to work with their imagination and creativity. Everyone works together on this platform on text, PDF, drawings, videos etc.

8. **Option (d) is correct.**

Vygotski gave the socio-cultural theory of cognitive development. According to his theory, society and culture affects the cognitive development of a child.

The performance that a child can perform on their own is termed as actual development.

The performance that a child can perform with help of any adult or more skilled person is termed as expected development.

Difference between actual and expected development is called the Zone of Proximal Development or ZPD.

9. **Option (c) is correct.**

According to David and Johnson, Five elements are essential for cooperative learning group:

1. Positive interdependence
2. Group and individual accountability

3. Promotive interaction
4. Appreciate use of social skills
5. Group processing

**10. Option (c) is correct.**

According to the theory of moral development of Kohlberg, there are three stages of Moral Development and five stages of it. They are:

1. Preconventional morality: this level is from 0 to 9 years of age. In this stage, a child tries to be nice to everyone and moral values are dependent on the environment of home and peer group.  
Child follows moral values due to fear of punishment or to get an award or reward. Stage 1 and 2 are included in this stage.
2. Conventional morality: From early adolescence to adulthood. In this level of moral development, the child is focused on developing good interpersonal relationships and maintaining social relationships and order. In Other words, a child performs the moral values with the motive of getting social recognition and respect. Stage 3 and 4 are included in this level.
3. Postconventional morality: This level is rare and found in some adults. In this stage a person performs moral values as universal application of principles and social contracts.

**11. Option (b) is correct.**

When the personal biases or perception of the researcher or experimental affects the behaviors of participants in the study is called an experimental bias effect.

- The Hawthorne effect is when a person changes behavior because all other people are changing or the response is changed after observing that the behavior is being observed. In other words, when a person changes his behavior because he is being observed or the behavior is modified by the participants is called hawthorne effects.
- A placebo effect is when there is no scientific or logical method behind improvement. Only the thinking of participants affects the improvement.
- The effect of fear of negative criticism from the external members is called the evaluation apprehension effect.

**12. Option (b) is correct.**

APA of American Psychological Association format is a very commonly used format for research writing or thesis writing. This format is used for psychology, business nursing, sociology, linguistic Research and economics.

Correct order of report writing in this format is:

- Introduction
- Methods
- Result
- Tables
- Figures

**13. Option (a) is correct.**

Reliability is associated with consistency of results. When a test is providing the same results after measuring different points of times, it can be called a reliable test.

Validity is associated with correct or right results.

A valid test is always reliable but a reliable test is not always valid.

Content validity of a test is associated with content of the test as it is able to test for which it was constructed.

Construct validity of a test is when construction or the format of a test is correctly done.

**14. Option (d) is correct.**

Non probability sampling the type of sampling in which every unit of population does not have an equal chance to be selected in the sample size. This sampling method is commonly used in qualitative research from the given options phenomenology based Research and action research are some examples in which non probability sampling works properly.

Types of non probability sampling:

1. Quota sampling
2. Judgemental sampling
3. Convenience sampling
4. Purposive sampling
5. Snowball sampling
6. Accidental sampling

Probability sampling or random sampling is the method of sampling in which every unit of population has an equal chance to be selected and that sample size or sample is collected on a random basis from the population.

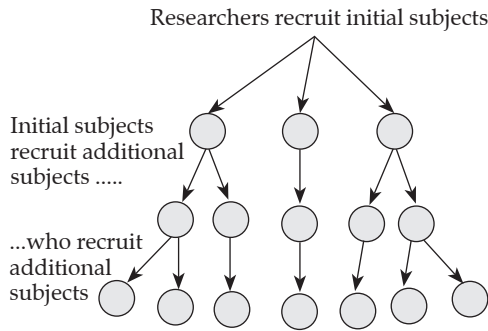
Types of random sampling:

1. Simple random sampling
2. Systematic sampling
3. Stratified sampling
4. Cluster sampling
5. Multistage sampling

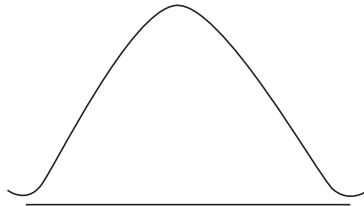
Systematic and multistage sampling are also called Quasi random sampling.

Snowball sampling is a type of non random or non probability sampling which is done in a field that is less explored or the participants are not easily convinced to participate or hard to reach group topics. It is also called reference sampling in which a small sample is selected and the people in that

sample are asked to refer to other people or to collect data from other people.

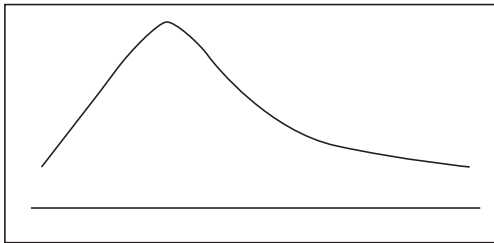


15. **Option (d) is correct.**



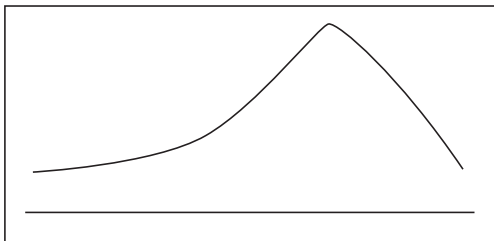
Bell shaped curve in the case of symmetrical data. In this case, Mean, median and mode are equal or Mean = Median = Mode.

In case of asymmetrical data, the curve is bended or skewed. It can be positively or negatively skewed.



This given curve is a positively skewed curve. In this case, Mean is highest and mode is lowest or Mean > Median > Mode.

(Note: This can be learned by remembering "Positive people are always right and mean." This shows that positively skewed curve is bend from right side and mean has highest value in it. )



This given curve is a negatively skewed curve. In this case, Mode is highest and mean is lowest or Mode > Median > Mean.

16. **Option (b) is correct.**

One of the cool media of communication is television among the given options as it

includes various communication methods or Mass Communication methods with different attractions, formats and audio visual aids.

17. **Option (c) is correct.**

Print in mass media is considered as a mechanical medium of communication.

18. **Option (d) is correct.**

Interactive communication is a communication in which both parties are sender and receiver also or it is a two way communication. It is dialogue communication.

19. **Option (b) is correct.**

Following are the ways by which a teacher can make a classroom communication interesting and attractive:

- A. Using teaching learning aids
- B. Pre planning of classroom teaching
- C. Fruitful discussion
- D. Inviting doubts and questions
- E. Learning by doing or connecting the classroom content with real life
- F. Finding out the correct context
- G. Participation of students for active learning
- H. Use of relevant real life examples

20. **Option (a) is correct.**

Both of the given statements are correct as with development of new technology's Market specific communication is being introduced to wider areas. Market specific communication refers to the mass communication which is mainly focused on advertisement and promotion in the target Market by the producers or the sellers.

The communication as mediascape refers to the communication as a whole. The interactive technology or modern technology of communication has changed the medium of communication To integrated, modern and whole developed communication.

21. **Option (d) is correct.**

1. odo pado fao = order packed food
2. Pado fao sa digo = packed food is good  
By comparing both code 1 and 2,  
Common code word - pado fao  
Common word = packed food  
Hence, = pado fao = packed food
3. Digo yao mao = good young man  
By comparing codes 2 and 3,  
Digo = good
4. Yao mao sa sito = young man is strong.  
By comparing codes 3 and 4,  
Yao = young.

By comparing all the codes,  
 Order = odo  
 As in the first code, pado fao = packed food.  
 Hence, order = odo  
 Strong = sito

22. **Option (a) is correct.**

Total students = 6 lakhs  
 Students passed the examination =  $(40/100) \times 600000$  or 2,40,000  
 Total female students =  $(40/100) \times 600000$  or 2,40,000  
 Male students =  $6,00,000 - 2,40,000 = 3,60,000$   
 Pass percent among the male students = 50%  
 Male Students passed = 50% of 3,60,000 or 1,80,000  
 Number of female students in passed students = total students passed - male students passed  
 $= 2,40,000 - 1,80,000$   
 $= 60,000$   
 Pass percent of female students = females passed the examination  $\times 100/\text{total female students}$   
 $= 60,000 \times 100/2,40,000$   
 $= 25\%$

23. **Option (a) is correct.**

Multiples of 23 are added to form the given series  
 $450 + (23 \times 1) = 473$   
 $473 + (23 \times 2) = 473 + 46 = 519$   
 $519 + (23 \times 3) = 588$   
 $588 + (23 \times 4) = 680$   
 $680 + (23 \times 5) = 795$   
 $795 + (23 \times 6) = 933$

24. **Option (c) is correct.**

Realization over investment = 10%  
 Or 10% of 9 lakhs or 90,000 rs.  
 Annual tax = 2106 rs.  
 Annual rent = 90,000 + 2,106 + 15% of the rent  
 If annual rent is 100%  
 Here, it can be like -  
 $90,000 + 2106 = 85\%$  of rent  
 Annual rent =  $92,106 \times 100/85$   
 $= 1,08,360$   
 Or monthly rent =  $1,08,360/12 = 9,030$

25. **Option (a) is correct.**

Difference between smallest odd and smallest even number = 11  
 Let the smallest odd number =  $x$   
 Then, the smallest even number =  $x + 11$   
 Three odd numbers =  $x, x + 2, x + 4$   
 Three even numbers will be =  $x + 11, x + 13, x + 15$   
 Sum of all these 6 numbers = 231  
 $6x + 45 = 231$   
 $6x = 231 - 45 = 186$

$x = 186 \div 6 = 31$   
 Smallest odd number = 31  
 Three odd digits = 31, 33, 35  
 Smallest even number =  $31 + 11 = 42$   
 Three even numbers = 42, 44, 46  
 Sum of largest odd and largest even number =  $35 + 46 = 81$

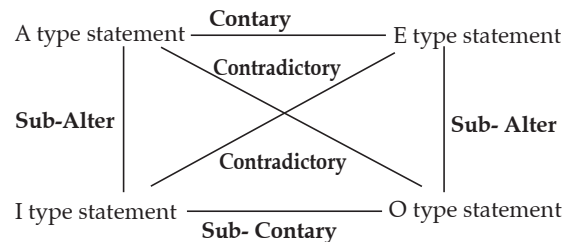
26. **Option (b) is correct.**

The fallacy when arguments are connected with a flow and series of irrelevant arguments is called a slippery slope.  
 Straw Man fallacy: this is a miss presentation by someone to make it easier to attack if a mother says that you have to finish the veggies if you want dessert and the son replies you love me only when I eat food.  
 Appeal to authority is a fallacy where an argument is considered valid as it is delivered by some authorized person or text.

27. **Option (d) is correct.**

All the given statements are equivalent except statement 1 which can not be defined.

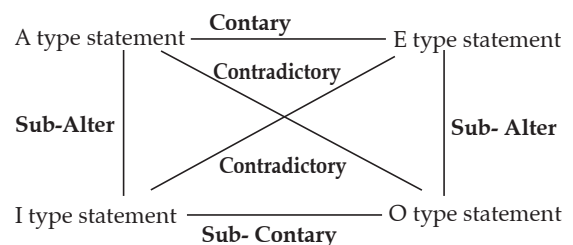
28. **Option (a) is correct.**



- A type statement- Universal positive statements where all or almost or most of words are used. Example- All philosophers are industrialists.
- E type statements- Universal negative statements. For example- All philosophers are not industrialists.
- I type statements. Particular positive statements. Where some or few are used. Example- Some philosophers are industrialists.
- O type statements- Particular negative statements. For example- some philosophers are not industrialists.

A and O type statements or E and I type of statements are logically contradictory to each other.

29. **Option (a) is correct.**



- Contradictory statements are A and O, E and I. If one statement is true the another will be false and the one statement is false the another will be true.
- Contrary statements are A and E. These statements cannot be true at the same time but can be False at the same time. If one is false the another will be immediately true but the one is true then the other is doubtful or undetermined.
- Sub country statements are I and O. Both cannot be false together but can be true together. If one is false the another will be true immediately but if the one is true the other will be undetermined.
- Sab alteration statements are A and I, E and O. If the universal statement is true the particular statement will be false.
- If the universal statement is false the particular will be undetermined.
- If particular opposition is false Universal preposition will be false.
- If a particular statement is true the universal statement will be doubtful or undetermined.

**30. Option (b) is correct.**

The Nyaya school of logic has considered only four pramanas as valid sources of knowledge among the six pramanas. They are:

1. Pratyaksh or perception: This is the direct means of knowledge by sense organs for example gaining knowledge by seeing, by smell, by hearing etc.
2. Comparison or upmana: This is the means of knowledge with the help of previous knowledge for example if a boy sees smoke on Hill and inferences that there must be a fire on the basis of knowledge that he had seen fire in the kitchen that has smoke. This way of gaining knowledge or getting known is comparison or upamana.
3. Shabd or verbal testimony: When a person gets knowledge or learning with the verbal means either written or spoken by some authority person is the way of getting knowledge by shabd Pramana.
4. Anumana or inference: Another way of gaining knowledge or means of knowledge is anumana in which a conclusion is inferred on the basis of premises or prior knowledge.

Anupalabdhi and Arthapatti are two other Pramas but not considered as valid sources of knowledge according to Nyaya school of logic.

**31. Option (c) is correct.**

GPS stands for Global Positioning System.

**32. Option (b) is correct.**

In the process of data transmission the web requests the web server to identify itself by providing its certificate. This is sent and a check is performed to see if it is authentic or not. If it is authentic, the browser sends a signal back to the web server and data transmission begins.

**33. Option (b) is correct.**

AI or artificial intelligence is the latest or modern technology in which the intelligence is demonstrated by machines like robots, Alexa, Siri etc. Artificially created environment that is used to give a feeling of being there whereas virtual reality Learns from changing circumstances is a use of artificial intelligence.

**34. Option (d) is correct.**

All the given statements are benefits of connecting computers and devices rather than using a number of stand alone computers except the statement number three as users can share files and data from this type of networking computers.

**35. Option (b) is correct.**

Whenever a new hardware is connected to the computer the driver has to be installed in the computer for smooth and non restricted functioning of that hardware. Hence, device drivers are the softwares that communicates with the operating system and translates data into a format understood by the device.

Solid state drive or SSD is a storage hardware with no moving parts. SSD is the modern technology which replaces the hard disc drive with new functioning, more storage and smooth operations. Disc formatter is a utility that prepares the disc to allow files to be stored and retrieved.

**36. Option (b) is correct.**

	Units
1. CFCs	Picomoles
2. Stratospheric ozone	Dobson
3. Ultraviolet rays	Milliwatts per square meter
4. Solar radiations	Watts per square meter

**37. Option (d) is correct.**

Photo Electro Chemical or PEC solar cells are based on hybrid structure of inorganic semiconductors and an electrolyte.

This is a method from which hydrogen is produced from water.



38. **Option (a) is correct.**

International Convention	Year
Montreal Protocol	1987
Paris Agreement	2015
Kyoto Protocol	1997
Rio Summit	1992

**Montreal Protocol:**

- Related to Ozone depletion substances.
- Held on 16th September, 1987.
- It was stated that all nations should not be treated equally.
- Target was to Eliminate 98% of controlled ODS.
- Equal but different responsibilities were decided by countries.
- MOP or meeting of parties is the governance body of this protocol.
- Chlorofluorocarbons were considered the most bounded ozone depletion substance.
- Multilateral fund was set up in 1991 to help developing countries. It was set up by 4 organizations.
- This is the world's most successful international convention.

**Kyoto Protocol:**

- The Kyoto Protocol of 1997 is one of the landmark agreements of Earth Summit 1992.

**Rio Summit:**

- It was held in Rio de Janeiro in Brazil in 1992.
- It is famously called Earth Summit 1992.
- Held by the United Nation conference on environment and development or UNCED.
- It had three non binding documents named as declaration on environment and development, agenda 21 and forest principles.
- Rio has 27 total principals.
- Agenda 21 was replaced by "Agenda 2030" in 2015.
- Some legally binding agreements delivered from the Rio summit.

**Paris Agreement:**

- The Paris agreement is the Cop (conference of parties) 21 of the United Nations Framework convention on climate change.
- It was held in 2015, enforced from 2016 And started in 2020.
- It has legally binding agreements
- It deals with greenhouse gasses emission, mitigation, adoption and Finance.
- 20 20 20 formula or mechanism would be held every 5 years.

- 20% reduction of greenhouse gasses, 20% savings of energy and 20% increase of Renewable Energy share.

39. **Option (d) is correct.**

Thermal expansion of the ocean leads to an increase in the level of water or can cause sea level rise.

40. **Option (a) is correct.**

Waste stabilization Ponds are natural treatment systems that are used to remove pathogens and organic contents from wastewater with the help of oxidation.

41. **Option (d) is correct.**

- The Governor of the state is the official chancellor of State Universities.
- The President is the chancellor of all Central Universities.
- Deemed universities can assign degrees, define and construct syllabus on their own.

42. **Option (a) is correct.**

DIKSHA Stands for Digital Infrastructure for Knowledge Sharing.

According to the official website of DIKSHA (diksha.gov.in):

"DIKSHA (Digital Infrastructure for Knowledge Sharing) is a national platform for school education, an initiative of National Council for Educational Research and Training (NCERT), under the aegis of the Ministry of Education (MoE), GoI. Launched in 2017 by Honourable Vice President of India – Shri M. Venkaiah Naidu, DIKSHA has been adopted by almost all the States, Union Territories, central autonomous bodies/boards including CBSE."

- This is an initiative under the ministry of education with the motive of promoting e-learning and teaching.
- It helps to develop a strategy and helps in planning for the Teachers for better professional performance.
- Digital education report is launched under this program every year to measure the growth of digital education in the country.
- DIKSHA has been adopted by almost all the states and union territories.
- Currently it is available in 36 languages.

43. **Option (a) is correct.**

University Education Commission was set up under the chairmanship of Sarvepalli Radhakrishnan hence, it is also called Radhakrishnan Commission. It was set up in 1948.

About the medical education in India this Commission recommended the following:

- Medical College should admit a maximum number of 100 students who want to get admission and have skills.
- History of medicine with special reference to the Indian system should be taught in the first degree course in medicine as India has a rich history of knowledge of medicines.
- More important should be attached to public health, Engineering and Nursing.
- Bed per Student ratio should be 1:10.

**44. Option (a) is correct.**

According to the New Education Policy 2020 more higher educational institutions shall be established and developed in underserved regions to ensure full Access, Equity and inclusion in higher education.

**45. Option (d) is correct.**

Institutions or related organizations like NCERT, NCET etc arrange the in-service teacher training with adequate resources and in the proper gap of time.

All the given options are the key ingredients for quality in service training of teachers which includes preparation, execution, evaluation and assessment.

**46. Option (c) is correct.**

As given in the passage, from all the expenses on education of poor people, two third should be borne by the state which is equivalent to 66.667% and one third should be borne by local bodies which is equal to 33.33%.

**47. Option (c) is correct.**

Gokhale believed that education was necessary for the Indian masses to be liberated from their miserable condition but he did not face any resistance in the introduction of his bill on elementary education as the bill was introduced in 1910 and he called it small humble attempt to suggest the first step of journey which is found to prove long and tedious but which must be performed.

**48. Option (a) is correct.**

All the given statements are true as per the given passage but not statements for as the Gokhale suggested that majority of Expenditure for education should be met by State and the lesser should be made by local bodies.

**49. Option (a) is correct.**

In the given passage Gokhale suggested that only those students whose family income was 25 rupees and above per month should pay fees for the rest, education was to be free.

**50. Option (d) is correct.**

Assertion is not correct as the Gokhale was in favor of free education for the poor and he suggested that those students whose family income was rupees 25 per month or more should pay fees and the other should not.