

UGC NET Paper 1 Jan 06, 2026 Shift 1 Memory Based Test

Q1. Assertion (A): Flipped classroom is a learner-centric effective model for ICT-enabled teaching-learning or blended learning.

Reason (R): Students learn concepts through videos and in the classroom, teacher-guided discussions and problem-solving are done in face-to-face mode.

In the light of the above statements, choose the most appropriate answer from the options given below: Given below are two statements: One is labelled as Assertion (A) and the other is labelled as Reason (R):

- (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:

A

Sol:

Both the assertion and reason are correct, and the reason explains the assertion well. A flipped classroom indeed shifts the focus from teacher-centered to learner-centered education, a key characteristic of 21st-century education. In this model, students first engage with the material (often through videos) outside of class, and class time is dedicated to interactive activities like discussions and problem-solving, guided by the teacher.

Q2. When two variables are related in such a way that when one increases, the other decreases, you can conclude that:

- (a) The relationship is not statistically significant.
- (b) The two variables are negatively associated.
- (c) There is no possibility of a confounding variable.
- (d) One variable must cause the other to change.

Answer:

B

Sol:

When one variable increases while the other decreases, it describes an inverse relationship; the correct conclusion is that the two variables are negatively associated.

Information Booster:

Definition of Negative Correlation: A negative association (or inverse correlation) occurs when the values of two variables move in opposite directions. As the independent variable (X) increases, the dependent variable (Y) decreases.

Correlation Coefficient (r): In such a relationship, the Pearson correlation coefficient (r) will be a negative value, ranging from -1.0 to 0. A value of -1.0 indicates a perfect negative linear relationship.

Visual Representation: On a scatter plot, a negative association is represented by a cluster of data points that form a downward-sloping line from left to right.

Common Examples: The more time spent watching television, the lower the exam scores.

As the temperature outside increases, the sales of winter coats decrease.

Additional Knowledge:

Statistical Significance: A negative association can be highly statistically significant. Significance refers to whether the observed relationship is likely due to chance (p-value), not the direction (positive or negative) of the relationship itself.

Confounding Variables: Even if two variables are perfectly related, there is always a possibility of a confounding (or third) variable. For example, a negative correlation between two variables might actually be caused by a third factor influencing both in different ways.

Correlation vs. Causation: This is a fundamental rule in research— correlation does not imply causation. Just because two variables move in opposite directions does not mean one *causes* the other to change. They might be related by coincidence or through a separate underlying mechanism.

Zero Correlation: If there was no relationship at all, the scatter plot would show a random cloud of points with no discernible slope, and the r value would be near 0.

Q3. Identify the correct sequence of stages in qualitative data analysis:

- (A) Data familiarization
- (B) Generating initial codes
- (C) Searching for themes
- (D) Reviewing themes
- (E) Defining and naming themes
- (F) Producing the report

Choose the correct answer from the options given below:

- (a) (A), (C), (B), (D), (E), (F)
- (b) (B), (A), (C), (E), (D), (F)
- (c) (A), (B), (C), (D), (E), (F)
- (d) (C), (B), (A), (E), (D), (F)

Answer:

C

Sol:

The process of qualitative data analysis, particularly thematic analysis, is systematic and iterative. The sequence below follows the standard stages outlined by thematic analysis experts like Virginia Braun and Victoria Clarke:

1. Data familiarization (A): The process begins with the researcher immersing themselves in the data. This involves transcribing (if necessary), reading the data repeatedly, noting initial ideas, and generally getting to know the depth and breadth of the material.
2. Generating initial codes (B): After familiarization, the researcher systematically organizes the data by identifying relevant features and assigning concise labels (codes) to sections of text. This involves segmenting the data and marking what each segment represents.
3. Searching for themes (C): The researcher begins to group the initial codes into broader, potential themes. A theme is a pattern of meaning found in the data relevant to the research question.
4. Reviewing themes (D): This involves checking whether the themes accurately reflect the coded extracts and the entire dataset. This is a two-level process:
Level 1: Reviewing coded data extracts for each theme.
Level 2: Reviewing the validity of the themes in relation to the entire dataset.
5. Defining and naming themes (E): The themes are refined and given clear, descriptive names. The researcher defines the core essence of each theme and its story, ensuring they are distinct from one another.
6. Producing the report (F): The final stage involves writing up the analysis, including the defined themes, providing compelling data examples (extracts) to support the analysis, and linking the findings back to the research questions and literature.

The correct sequence is: (A), (B), (C), (D), (E), (F).

Information Booster

Codes vs. Themes: Codes (B) are small, granular labels for specific meaning units, while Themes (C, D, E) are broader patterns that capture something significant about the data in relation to the research question.

Iterative Process: Steps (C) and (D) are highly iterative. The researcher may need to go back and forth between grouping codes and refining themes until the thematic map provides a coherent and accurate representation of the data.

Q4. Match List-I containing the type of research problem with the List-II containing the method of research.

List-I (Research Problem)	List-II (Research Method)
(a) Peer-interaction in a racially mixed classroom of an urban high school	(i) Cross-sectional survey research
(b) Developmental pattern of intelligence among middle school students	(ii) Expost-facto research
(c) Effect of watching television on science achievement of ninth grade students	(iii) Ethnographic research
(d) Impact of education on social status of marginalized groups	(iv) Experimental research

Choose the most appropriate answer from the following options:

- (a) A - iv, B - ii, C - i, D - iii
- (b) A - iii, B - i, C - iv, D - ii
- (c) A - ii, B - iii, C - i, D - iv
- (d) A - i, B - iv, C - ii, D - iii

Answer:

B

Sol:

Introduction:

Different research problems necessitate the use of specific research methods designed to address the nature of the inquiry—whether it is descriptive, exploratory, causal, or correlational.

Information Booster:

Here is the correct match:

(a) Peer-interaction in a racially mixed classroom of an urban high school - (iii) Ethnographic research
Ethnography is the in-depth, immersive study of a specific social setting or cultural group, focusing on understanding the participants' perspectives and interactions within their natural context (the classroom).

(b) Developmental pattern of intelligence among middle school students - (i) Cross-sectional survey research

Studying a developmental pattern *at a single point in time* across different age groups (middle school students) is best suited for a Cross-sectional survey, which efficiently collects data from many people simultaneously. (A longitudinal study would be developmental but is a different design).

(c) Effect of watching television on science achievement of ninth grade students - (iv) Experimental research

The problem uses the word 'Effect', implying a cause-and-effect relationship. This requires manipulation of an independent variable (watching television) and control of other variables, which is the definition of Experimental research.

(d) Impact of education on social status of marginalized groups - (ii) Expost-facto research

This research looks at the 'Impact' of education (the presumed cause) on social status (the effect) *after the fact*, as the cause (education) cannot be manipulated or assigned. Expost-facto (causal-comparative) research compares groups that already differ on a variable of interest.

Additional Knowledge:

Choosing the correct method is the first crucial step in scientific research, as an inappropriate method will yield invalid conclusions.

Q5. A major difference between ethnographic research and other qualitative methods like a case study is that ethnography specifically focuses on:

- (a) The in-depth study of a single, unique phenomenon.
- (b) The development of a theory from data.
- (c) A holistic and detailed study of a culture or social group.
- (d) The comparison of policies across nations.

Answer:

C

Sol:

Correct Option – (c)

Introduction: This question challenges you to pinpoint the unique and defining characteristic of ethnographic research when compared to other related qualitative methodologies.

Information Booster:

(c) A holistic and detailed study of a culture or social group: While a case study can also be an in-depth study, its unit of analysis can be a person, an organization, or an event. Ethnography, by definition, is focused on the cultural aspects of a group. It seeks to understand the entire way of life, including beliefs, rituals, social structures, and language, from a comprehensive, holistic perspective.

(a) The in-depth study of a single, unique phenomenon: This is the core definition of a case study, not ethnography.

(b) The development of a theory from data: This is the primary purpose of grounded theory.

(d) The comparison of policies across nations: This is the main purpose of comparative research.

Additional Knowledge:

The term "ethnography" literally means "the writing of culture" (ethnos = culture, graphein = to write). It originated in anthropology and has since been adopted by sociology and other social sciences.

Q6. Match List I with List II:

List I (Type of Hypothesis)	List II (Example)
A. Null Hypothesis (H_0)	I. There is a positive relationship between study hours and exam scores.
B. Non-directional Alternative Hypothesis	II. There is a difference in the mean scores of two groups.
C. Directional Alternative Hypothesis	III. There is no relationship between student attendance and academic performance.
D. Simple Hypothesis	IV. There is no significant difference in the average height of male and female students.

Choose the correct answer from the options given below:

- (a) . A-IV, B-II, C-I, D-III
- (b) . A-III, B-I, C-II, D-IV
- (c) . A-IV, B-II, C-III, D-I
- (d) . A-III, B-I, C-IV, D-II

Answer:

A

Sol:

Correct Option - (a)

Introduction

Hypotheses can be classified based on their specific nature. A directional hypothesis predicts the direction of the effect, while a non-directional one simply states that an effect exists. This question tests your ability to differentiate between these types and to correctly identify a simple hypothesis.

Information Booster

A. Null Hypothesis (H_0) matches with IV. The null hypothesis always states that there is no difference, no effect, or no relationship. Example IV, "There is no significant difference in the average height of male and female students," is a perfect example of a null hypothesis.

B. Non-directional Alternative Hypothesis matches with II. A non-directional hypothesis, also known as a two-tailed hypothesis, predicts that a difference or relationship exists, but does not specify the direction. Example II, "There is a difference in the mean scores of two groups," is non-directional because it doesn't state which group will have the higher score.

C. Directional Alternative Hypothesis matches with I. A directional hypothesis, or a one-tailed hypothesis, specifies the direction of the expected effect. Example I, "There is a positive relationship between study hours and exam scores," predicts that as study hours increase, exam scores will also increase.

D. Simple Hypothesis matches with III. A simple hypothesis predicts a relationship between two variables, one independent and one dependent. Example III, "There is no relationship between student attendance and academic performance," is a simple hypothesis because it links two specific variables. A complex hypothesis, in contrast, would involve more than two variables.

Additional Knowledge

The choice between a one-tailed and a two-tailed test is determined by the alternative hypothesis. A directional hypothesis leads to a one-tailed test, while a non-directional hypothesis requires a two-tailed test.

The statistical test's critical region is located in one tail (one-tailed test) or both tails (two-tailed test) of the sampling distribution, respectively, based on the type of alternative hypothesis.

Q7. Match the following environmental laws in India with the year of their enactment:

List-I (Environmental Act)	List-II (Year of Enactment)
1. Environment (Protection) Act	A. 1974
2. Water (Prevention and Control of Pollution) Act	B. 1981
3. Air (Prevention and Control of Pollution) Act	C. 1986
4. Wildlife (Protection) Act	D. 1972

Codes:

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

Answer:

A

Sol:

Correct Option – (a)

Introduction: India has a robust framework of environmental legislation. The chronology of these acts reflects the country's growing awareness and response to specific environmental crises, starting with wildlife and water pollution.

Information Booster:

1. Environment (Protection) Act (Matches with C - 1986): This is an "umbrella" legislation enacted in 1986 in the aftermath of the Bhopal Gas Tragedy (1984). It empowers the central government to coordinate environmental protection efforts, set standards, and regulate industrial and other activities.
 2. Water (Prevention and Control of Pollution) Act (Matches with A - 1974): This was one of the first specific environmental laws in India, enacted in 1974. It established the Central and State Pollution Control Boards to prevent and control water pollution.
 3. Air (Prevention and Control of Pollution) Act (Matches with B - 1981): Enacted in 1981, this act aimed to prevent, control, and abate air pollution. It was later amended in 1987 to include noise as an air pollutant.
 4. Wildlife (Protection) Act (Matches with D - 1972): Enacted in 1972, this act provides a legal framework for the protection of wild animals, birds, and plants. It established schedules of protected species and created a network of protected areas like national parks and sanctuaries.
- Additional Knowledge: Other important laws include the Forest (Conservation) Act, 1980, which restricts the use of forest land for non-forest purposes, and the Biological Diversity Act, 2002, which gives effect to the UN Convention on Biological Diversity.

Q8. Match List-I with List-II

List - I (Commission/Committee)	List - II (Chairperson)
A. Secondary Education Commission (1952-53)	I. M. S. Swaminathan
B. National Curriculum Framework Review Committee (2005)	II. D. S. Kothari
C. National Knowledge Commission (2005)	III. A. L. Mudaliar
D. Review Committee on NPE 1986 (1990)	IV. Sam Pitroda

Choose the correct answer from the options given below:

- (a) A-III, B-I, C-IV, D-II
- (b) A-I, B-II, C-III, D-IV
- (c) A-III, B-II, C-IV, D-I
- (d) A-II, B-III, C-I, D-IV

Answer: C

Sol:

Several commissions and committees in Indian education were constituted to review, reform, and strengthen the system, each headed by a notable chairperson; the correct matching is Option (c).

Information Booster:

Secondary Education Commission (1952-53) → A. L. Mudaliar

This commission is famously known as the Mudaliar Commission.

Dr. A. L. Mudaliar was its chairperson.

It focused on reforms in secondary education, curriculum diversification, and examination reforms.

Hence, A is correctly matched with III.

National Curriculum Framework Review Committee (2005) → D. S. Kothari

The National Curriculum Framework (NCF) builds upon earlier educational philosophies and reforms. Among the given options, Dr. D. S. Kothari, associated with major curriculum and educational reforms, is the best-matched answer as per options provided.

Therefore, B is matched with II (as per examination logic).

National Knowledge Commission (2005) → Sam Pitroda

The National Knowledge Commission (NKC) was constituted to transform India into a knowledge-based society.

It was chaired by Sam Pitroda, a globally known technology and knowledge policy expert.

Thus, C is correctly matched with IV.

Review Committee on NPE 1986 (1990) → M. S. Swaminathan

The Review Committee on National Policy on Education (1986) was set up in 1990. It was chaired by Dr. M. S. Swaminathan, and is popularly known as the Swaminathan Committee. Hence, D is correctly matched with I.

Q9. NEP 2020 recommends the following functioning for the General Education Council:

- (a) Academic Standard Setting
- (b) Standardize Rules and Regulation
- (c) Assessment and Accreditation
- (d) Budgeting and Funding

Answer:

A

Sol:

Introduction:

The National Education Policy (NEP) 2020 proposed the restructuring of the higher education regulatory system into four independent verticals under the overarching body, the Higher Education Commission of India (HECI). The General Education Council (GEC) is one of these four verticals.

Information Booster:

The four verticals of the HECI are:

1. National Higher Education Regulatory Council (NHERC): For Regulation (excluding medical/legal education).
2. National Accreditation Council (NAC): For Accreditation.
3. Higher Education Grants Council (HEGC): For Funding and Financing.
4. General Education Council (GEC): For Academic Standard Setting. It is tasked with framing the National Higher Education Qualification Framework (NHEQF), which involves specifying expected learning outcomes and standards.

Additional Knowledge:

The GEC will be crucial for developing a multi-disciplinary and holistic undergraduate education by defining the criteria for a Liberal Arts Education, including common core courses, elective choices, and credit transfer mechanisms. This shift is central to NEP 2020's vision.

Q10. Match the following ancient scholars with the universities they were most closely associated with:

List-I (Scholar)	List-II (University)
(A) Panini	(1) Nalanda
(B) Nagarjuna	(2) Takshashila
(C) Dharmapala	(3) Vikramashila
(D) Atisha Dipankara	(4) Kanchipuram

Codes:

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

Answer:

A

Sol:

Correct Option – (a)

Introduction: This question connects legendary scholars to their primary institutional bases, highlighting the intellectual heritage of each university.

Information Booster:

(A) Pāṇini — Takṣaśilā

- Introduction: Pāṇini was a great Sanskrit grammarian known for his work *Aṣṭādhyāyī*.
- Information Booster: He belonged to the ancient Gandhāra region and was associated with Takṣaśilā University, a renowned center of Vedic and linguistic studies.

(B) Nāgārjuna — Nālandā

- Introduction: Nāgārjuna was a famous Buddhist philosopher and founder of the *Mādhyamika* school of Mahāyāna Buddhism.
- Information Booster: He was closely linked with Nālandā University, one of the earliest centers of higher learning for Buddhist philosophy and logic.

(C) Dharmapāla — Vikramaśilā

- Introduction: Dharmapāla was a famous Buddhist scholar and successor of Śīlabhadra.
- Information Booster: He was associated with Vikramaśilā University, founded by King Dharmapāla of the Pāla dynasty in Bengal.

(D) Atiśa Dīpaṅkara — Kāñcīpuram

- Introduction: Atiśa Dīpaṅkara Śrījñāna was a great Buddhist teacher and reformer from Bengal.
- Information Booster: Before spreading Buddhism in Tibet, Atiśa studied at Kāñcīpuram University, a famous center of Buddhist and Hindu learning in South India.

Additional Knowledge: Other notable associations include Charaka with Takshashila (Medicine), Aryabhata with Kusumapura (later part of the Nalanda ecosystem), and Shankaracharya with Kanchipuram and other mathas.

Q11. Interpersonal communication is _____.

- (A) Direct face to face
- (B) With a group of people
- (C) With a large number of anonymous persons
- (D) Between two persons
- (E) Within ourselves or self-communication

Choose the correct answer from the options given below:

- (a) (A) and (D) only
- (b) (A) and (B) only
- (c) (C) and (A) only
- (d) (D) and (E) only

Answer:

A

Sol:

Interpersonal communication refers to the exchange of information, feelings, and meaning between two people, typically face-to-face. It is most accurately described as direct communication between two persons. Therefore, options (A) "Direct face to face" and (D) "Between two persons" are correct.

Information Booster:

- (a) Interpersonal communication is direct and occurs between two individuals, typically face-to-face.
 - (b) This type of communication often involves personal exchange, sharing emotions, thoughts, and ideas in real-time.
 - (c) Group communication and communication with anonymous persons (such as broadcasting) are not classified as interpersonal communication.
 - (d) Self-communication refers to internal dialogues or thoughts and is not typically categorized under interpersonal communication.
-

Q12. The chronological order of space-based communication media identified by Harold Innis is:

- A. Radio
- B. Television
- C. Papyrus
- D. Paper
- E. Newspaper

Choose the correct answer from the options given below:

- (a) A, C, D, E, B
- (b) C, D, E, A, B
- (c) D, E, B, A, C
- (d) E, B, A, D, C

Answer:

B

Sol:

Harold Innis, a communication theorist, classified communication media into time-based and space-based forms. The chronological order of space-based media can be determined as follows:

1. C. Papyrus: One of the earliest materials for writing, used in ancient Egypt around 3000 BCE, marking the beginning of written communication.
2. D. Paper: Invented in China around 105 CE, paper became a major medium for spreading information over large distances.
3. E. Newspaper: Emerging in the 17th century, newspapers became the first mass medium for public information dissemination.
4. A. Radio: Introduced in the late 19th and early 20th centuries, radio revolutionized communication by enabling real-time audio broadcasts.
5. B. Television: Television, developed in the 1920s and popularized after World War II, became a dominant visual medium for mass communication.

Thus, the chronological sequence is: C (Papyrus) → D (Paper) → E (Newspaper) → A (Radio) → B (Television).

Information Booster:

1. Space-Based Media: Focus on widespread, instantaneous communication over large areas, promoting territorial expansion and control.
2. Papyrus and Paper: Early written materials enabled the storage and distribution of information over time and space.
3. Radio and Television: Modern electronic media facilitated real-time, mass communication across geographic boundaries.

Q13. Match the following types of communication with their primary characteristics:

List I (Type of Communication)	List II (Characteristic)
1. Vertical Communication	A. Communication that flows between employees at the same hierarchical level
2. Horizontal Communication	B. Communication that is informal, unstructured, and fast
3. Diagonal Communication	C. Communication that follows the formal chain of command, flowing up or down
4. Grapevine Communication	D. Communication that cuts across different departments and levels of hierarchy

Options:

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

Answer:

A

Sol:

Correct Option – (a)

Introduction

Understanding the flow of communication within an organization is crucial for effective management. This question tests your knowledge of the different types of formal and informal communication channels and their specific characteristics, which is a fundamental concept in the UGC NET syllabus on Communication.

Information Booster

1. Vertical Communication (c): This type of communication follows the organizational hierarchy. Upward communication involves information flowing from subordinates to superiors (e.g., feedback, reports), while downward communication is from superiors to subordinates (e.g., instructions, policies). It is a core component of formal communication.
2. Horizontal Communication (b): This occurs between individuals at the same level or rank in the organizational hierarchy. Its purpose is to facilitate coordination, problem-solving, and teamwork across departments (e.g., a meeting between marketing and finance managers).
3. Diagonal Communication (d): This form of communication breaks the rigid hierarchical structure by allowing information to flow across different departments and different levels. It is often used to speed up the decision-making process by bypassing formal channels (e.g., a junior engineer directly communicating with the Head of the Sales Department).
4. Grapevine Communication (a): This is the informal, unofficial, and spontaneous network of communication within an organization. It is based on social relationships and often carries rumors and unofficial information, but it is also a vital way for employees to share information quickly.

Additional Knowledge

The distinction between formal and informal communication is key. Vertical, Horizontal, and Diagonal communication are generally considered formal, as they follow a designated organizational structure. Grapevine communication, on the other hand, is the prime example of an informal channel. While formal channels are essential for control and order, informal channels often provide a truer picture of organizational culture and employee morale.

Q14. Arrange the following events in chronological order:

- A. National Education Policy 1986
- B. Kothari Commission Report
- C. University Education Commission
- D. NEP 2020

Options:

- (a) C, A, B, D
- (b) B, C, A, D
- (c) C, B, A, D
- (d) B, A, C, D

Answer:

C

Sol:
Correct Option – (c)
Introduction: The history of education policy in India is marked by important reports and policies that shaped the system over decades.
Information Booster:
University Education Commission (1948–49) under Dr. S. Radhakrishnan focused on university reforms.
Kothari Commission Report (1964–66) laid the foundation for modern educational planning.
NEP 1986 introduced structural changes and emphasized equality.
NEP 2020 is the latest comprehensive education policy.
Additional Information:
NEP 2020 replaced the 1986 policy after 34 years.
Kothari Commission is often called the "Bible of Indian Education."

Q15. Convert the decimal number 45 into its binary equivalent.

Options:

- (a) 101011
- (b) 101101
- (c) 1011010
- (d) 1011011

Answer:

B

Sol:

Correct Option – (b)

Introduction:

The binary number system is a base-2 numeral system that uses only two digits — 0 and 1. Each binary digit (bit) represents a power of 2, starting from the rightmost bit.

Information Booster:

To convert 45 (base 10) into binary:

$$45 \div 2 = 22 \text{ remainder } 1$$

$$22 \div 2 = 11 \text{ remainder } 0$$

$$11 \div 2 = 5 \text{ remainder } 1$$

$$5 \div 2 = 2 \text{ remainder } 1$$

$$2 \div 2 = 1 \text{ remainder } 0$$

$$1 \div 2 = 0 \text{ remainder } 1$$

Now, writing the remainders from bottom to top, we get: 101101

$$\text{So, } (45)_{10} = (101101)_2$$

Additional Information:

The binary system is used in digital electronics and computer memory because computers operate using electrical signals representing 1 (ON) and 0 (OFF).

Shortcut: Use repeated division by 2 for conversion.

Q16. Which of the following statements is/are true?

- A. BIOS is an example of Application Software
- B. A utility software is an example of firmware
- C. Spyware is an example of malware

Choose the correct answer from the options given below:

- (a) A only
(b) B only
(c) C only
(d) B and C only

Answer:

C

Sol:

A. BIOS is an example of Application Software. (False): BIOS (Basic Input/Output System) is a type of firmware, not application software. It is a set of built-in software instructions stored on a motherboard chip that initializes hardware components during the boot process and provides basic input/output services to the operating system and other software. It operates at a lower level than application software and is responsible for the fundamental functions of a computer system.

B. A utility software is an example of firmware. (False): Utility software, such as antivirus programs, disk cleanup tools, and backup utilities, are examples of application software, not firmware. Application software refers to programs designed to perform specific tasks or provide specific functionality for users. Firmware, on the other hand, refers to software that is embedded into hardware devices and is responsible for controlling the device's operation.

C. Spyware is an example of malware. (True): Spyware is a type of malicious software (malware) that is designed to secretly monitor and collect information about a user's activities on a computer system without their knowledge or consent. It can track keystrokes, capture screenshots, record browsing habits, and transmit sensitive data to third parties. Spyware is considered harmful and intrusive, and its presence on a computer can compromise user privacy and security.

Q17. Match List I with List II.

List - I (File extension)	List - II (File type)
(A) mp3	(I) image
(B) xls	(II) music
(C) jpeg	(III) database
(D) mdb	(IV) spreadsheet

Choose the correct answer from the options given below:

Match the columns.

- (a) (A)-(I), (B)-(IV), (C)-(II), (D)-(III)
(b) (A)-(II), (B)-(IV), (C)-(I), (D)-(III)
(c) (A)-(II), (B)-(IV), (C)-(III), (D)-(I)
(d) (A)-(III), (B)-(II), (C)-(I), (D)-(IV)

Answer:

B

Sol:

The correct matching of the file extensions and their respective types is as follows:

1. mp3 corresponds to music (audio file format).
2. xls corresponds to a spreadsheet (Excel file format).
3. jpeg corresponds to image (a common image file format).
4. mdb corresponds to database (Microsoft Access database file).

Information Booster:

1. .mp3 (Music): MP3 is an audio format used for storing music or audio files in a compressed format. It's widely used for music distribution. It allows for efficient compression without significant loss of audio quality, making it ideal for sharing and streaming music. .mp3 is used specifically for storing music or audio files. It's not an image, spreadsheet, or database file.

2. .xls (Spreadsheet): XLS is the file extension for Microsoft Excel spreadsheet files. Used for creating tables, storing data, performing calculations, and creating graphs. The XLS format is a binary file format used in older versions of Excel; newer versions of Excel use .xlsx.

3. .jpeg (Image): JPEG (Joint Photographic Experts Group) is a commonly used format for digital images, particularly in photography and web use. It uses lossy compression to reduce file size while maintaining visual quality, though some quality may be lost in the compression process. While .jpeg is indeed an image format, it is not associated with a spreadsheet, database, or music, which is why it does not match the other options in the list.

4. .mdb (Database): MDB stands for Microsoft Database and is used by Microsoft Access to store data in a database format. MDB files store data in tables, and they can include queries, forms, and reports, making them a fully functional database format used in smaller-scale database applications. .mdb files are used for databases, specifically with Microsoft Access. They do not represent music, images, or spreadsheets.

Q18. A keylogger short for Keystroke logger, is a type of cyber threat. Keyloggers are a form of

- (a) Worm
- (b) Trojan Horse
- (c) Virus
- (d) Spyware

Answer:

D

Sol:

A keylogger is a type of spyware designed to monitor and record keystrokes made on a computer. This can lead to stolen passwords, credit card information, and other sensitive data without the user's knowledge.

Information Booster:

1. Spyware refers to software that gathers information about a user without their consent.
2. Keyloggers are commonly used in cyberattacks to steal login credentials or financial information. Keyloggers can also be used for legitimate purposes, such as parental controls, but they are often exploited for malicious intent.

Additional Knowledge:

Worms self-replicate and spread across networks, while Viruses require a host file to spread.

Trojans are malicious programs disguised as legitimate software.

Q19. In a certain coding scheme. UNIVERSITY is coded as 'EIINRSTUVY. How INSTITUTION shall be coded in the same coding scheme?

- (a) IINNOSTTTU
- (b) IININOSUTTT
- (c) INIINOSTUTT
- (d) IINNIOSTITU

Answer:

A

Sol:

Given Code:

UNIVERSITY → EIINRSTUVY

Logic: alphabetical arrangement of letters.

1	2	3	4	5	6	7	8	9	10	11	12	13
A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N
26	25	24	23	22	21	20	19	18	17	16	15	14

Let's break down UNIVERSITY:

Original letters: U, N, I, V, E, R, S, I, T, Y

In alphabetical order: E, I, I, N, R, S, T, U, V, Y

Now for INSTITUTION:

Letters in the word: I, N, S, T, I, T, U, T, I, O, N

Now arrange them in alphabetical order:

I, I, I, N, N, O, S, T, T, T, U

Thus, the code of INSTITUTION will be IINNOSTTTU.

Correct answer is (a) IINNOSTTTU.

Q20. Which of the following statements about email address spoofing are TRUE?

- A. E-mail address spoofing is copying an email to other staff.
- B. E-mail address spoofing is used for hacking.
- C. E-mail address spoofing is the forgery of an email header or sender information.
- D. E-mail address spoofing is sending a joke email to other staff.

Choose the correct answer from the options given below:

- (a) A and B only
- (b) B and C only
- (c) C and D only
- (d) A and D only

Answer:

B

Sol:

E-mail address spoofing is copying an email to other staff (A): False: Email address spoofing is not about copying emails. It involves altering the sender's information to make it appear as though the email is from a different source.

E-mail address spoofing is used for hacking (B): True: Spoofing can be a technique used in phishing attacks, which are often aimed at hacking or deceiving recipients into divulging sensitive information.

E-mail address spoofing is the forgery of an email header or sender information (C): True: This is a correct definition of email spoofing. The goal is to deceive the recipient by making the email appear to come from a trusted source.

E-mail address spoofing is sending a joke email to other staff (D): False: While joke emails might be sent internally among staff, they do not involve altering the sender's information, which is a key aspect of spoofing.

Correct Answer: (b) B and C only

B is true because email spoofing can be used for hacking.

C is true because spoofing involves forgery of the sender information.

Q21. MS Excel features help users visually differentiate between data points by changing their format based on conditions is:

- (a) Conditional Formatting
- (b) PivotTables
- (c) Data Validation

(d) Sparklines

Answer:

A

Sol:

Conditional Formatting in MS Excel allows users to apply formatting (such as colors, fonts, or icons) to cells based on specific conditions or criteria. This helps in visually highlighting trends, patterns, and outliers in data. For example, you can set a rule to change the color of a cell to green if the value is above a certain threshold and red if it's below.

Information Booster:

1. Conditional Formatting helps with data visualization, enabling quick identification of important trends, such as highest values, lowest values or values that meet specific conditions.
2. We can apply different types of rules, such as color scales, data bars or icon sets, to make the data easier to interpret.

Additional Knowledge:

Option (b) PivotTables: PivotTables are used for summarizing and aggregating data, not for conditional formatting or changing the format based on conditions.

Option (c) Data Validation: Data Validation is used to restrict the type of data entered into a cell (e.g., only allowing numbers or specific text), not for visual formatting based on conditions.

Option (d) Sparklines: Sparklines are small, in-cell charts that show data trends but do not change the format based on conditions.

Q22. Arrange the given digital initiatives of Govt. of India in chronological order as per their year of launch:

- A. e-gyankosh
- B. PM e-Vidya
- C. NPTEL
- D. e-PG Pathshala
- E. SWAYAM

Choose the correct answer from the options given below:

- (a) C, A, D, E, B
- (b) E, C, A, B, D
- (c) D, A, E, B, C
- (d) B, A, C, E, D

Answer:

A

Sol:

Introduction:

The Government of India has launched numerous digital initiatives to promote education and make learning resources accessible to all. These initiatives were introduced over a period of time.

Information Booster:

The correct chronological order of the launch years of these digital initiatives is:

- (a) C. NPTEL (National Programme on Technology Enhanced Learning): Launched in 2003. It's a joint initiative of the IITs and IISc to provide video courses and web content.
- (b) A. e-gyankosh: Launched in 2005. It's a digital repository of learning resources developed by IGNOU for its learners and the general public.
- (c) D. e-PG Pathshala: Launched in 2015. It's an initiative of the MHRD under its National Mission on Education through ICT (NME-ICT) to develop e-content in 77 subjects at the postgraduate level.

(d) E. SWAYAM: Launched in 2017. This platform hosts Massive Open Online Courses (MOOCs) covering all education streams from school to postgraduate level.

5. B. PM e-Vidya: Launched in 2020. This is a comprehensive initiative to unify all efforts related to digital/online/on-air education to ensure multi-mode access to education.

Q23. What is the difference between the number of diesel engine cars in State 'B' and the number of petrol engine cars in State 'D'?

Based on the data in table, answer the five questions that follow:

Consider the following table that shows the percentage distribution of cars and ratio between diesel and petrol engine cars in four different States (A-D). Total number of cars in all the four States is 1400. State-wise Distribution of Cars

State	Percentage Distribution of Cars	Ratio
		Diesel Engine Cars : Petrol Engine Cars
A	14%	3 : 4
B	28%	5 : 9
C	32%	5 : 3
D	26%	1 : 1

(a) 24

(b) 42

(c) 56

(d) 68

Answer:

B

Sol: Number of cars in State B = 28% of 1400 = $0.28 \times 1400 = 392$
 Number of diesel engine cars in State B = $\frac{5}{(5+9)} \times 392 = 140$
 Number of cars in State D = 26% of 1400 = $0.26 \times 1400 = 364$
 Number of petrol engine cars in State D = $\frac{1}{(1+1)} \times 364 = 182$
 Difference = $182 - 140 = 42$

Q24. Number of petrol engine cars in State 'C' is what percent more than the number of diesel engine cars in State 'A'?

Based on the data in table, answer the five questions that follow:

Consider the following table that shows the percentage distribution of cars and ratio between diesel and petrol engine cars in four different States (A-D). Total number of cars in all the four States is 1400. State-wise Distribution of Cars

State	Percentage Distribution of Cars	Ratio
		Diesel Engine Cars : Petrol Engine Cars
A	14%	3 : 4
B	28%	5 : 9
C	32%	5 : 3
D	26%	1 : 1

- (a) 100%
(b) 125%
(c) 200%
(d) 120%

Answer:

A

Sol: Number of cars in State A = 14% of 1400 = $0.14 \times 1400 = 196$

Number of diesel engine cars in State A = $\frac{3}{(3+4)} \times 196 = 84$

Number of cars in State C = 32% of 1400 = $0.32 \times 1400 = 448$

Number of petrol engine cars in State C = $\frac{3}{(5+3)} \times 448 = 168$

Percentage more = $\frac{(168 - 84)}{84} \times 100 = 100\%$

Q25. If 25% of diesel engine cars in State 'C' are Air-Conditioned (AC), then what is the number of diesel engine cars which are non-AC in State 'C'?

Based on the data in table, answer the five questions that follow:

Consider the following table that shows the percentage distribution of cars and ratio between diesel and petrol engine cars in four different States (A-D). Total number of cars in all the four States is 1400. State-wise Distribution of Cars

State	Percentage Distribution of Cars	Ratio
		Diesel Engine Cars : Petrol Engine Cars
A	14%	3 : 4
B	28%	5 : 9
C	32%	5 : 3
D	26%	1 : 1

- (a) 150
(b) 90
(c) 190
(d) 210

Answer:

D

Sol:

Number of diesel engine cars that are AC

$$= 25\% \text{ of } 280 = 0.25 \times 280 = 70$$

Number of diesel engine cars that are non-AC

$$= 75\% \text{ of } 280 = 0.75 \times 280 = 210$$

Q26. What is the difference between the total number of cars in State 'C' and the number of petrol engine cars in State 'B'?

Based on the data in table, answer the five questions that follow:

Consider the following table that shows the percentage distribution of cars and ratio between diesel and petrol engine cars in four different States (A-D). Total number of cars in all the four States is 1400.

State-wise Distribution of Cars

State	Percentage Distribution of Cars	Ratio
		Diesel Engine <u>Cars</u> : Petrol Engine Cars
A	14%	<u>3</u> : 4
B	28%	<u>5</u> : 9
C	32%	<u>5</u> : 3
D	26%	<u>1</u> : 1

(a) 212

(b) 224

(c) 204

(d) 196

Answer:

D

Sol: Number of cars in State C = 32% of 1400 = $0.32 \times 1400 = 448$

Number of cars in State B = 28% of 1400 = $0.28 \times 1400 = 392$

Number of petrol engine cars in State B = $\frac{9}{(5+9)} \times 392 = 252$

Difference = Number of cars in State C - Number of petrol engine cars in State B
= $448 - 252 = 196$

Q27. What is the sum of petrol engine cars in all the states together?

Based on the data in table, answer the five questions that follow:

Consider the following table that shows the percentage distribution of cars and ratio between diesel and petrol engine cars in four different States (A-D). Total number of cars in all the four States is 1400.

State-wise Distribution of Cars

State	Percentage Distribution of Cars	Ratio
		Diesel Engine <u>Cars</u> : Petrol Engine Cars
A	14%	<u>3</u> : 4
B	28%	<u>5</u> : 9
C	32%	<u>5</u> : 3
D	26%	<u>1</u> : 1

(a) 710

(b) 712

(c) 714

(d) 716

Answer: C

Sol: Number of cars in State A = 14% of 1400 = $0.14 \times 1400 = 196$

Number of petrol engine cars in State A = $\frac{4}{(3+4)} 196 = 112$

Number of cars in State B = 28% of 1400 = $0.28 \times 1400 = 392$

Number of petrol engine cars in State B = $\frac{9}{(5+9)} \times 392 = 252$

Number of cars in State C = 32% of 1400 = $0.32 \times 1400 = 448$

Number of petrol engine cars in State C = $\frac{3}{(5+3)} \times 448 = 168$

Number of cars in State D = 26% of 1400 = $0.26 \times 1400 = 364$

Number of petrol engine cars in State D = $\frac{1}{(1+1)} \times 364 = 182$

Sum = $112 + 252 + 168 + 182 = 714$

Q28. Nine persons went to watching a movie. Eight of them spent Rs. 72 each for their tickets and the ninth spent Rs. 8 more than the average expenditure of all the nine. What was the total money spent by all of them?

(a) Rs. 712

(b) Rs. 657

(c) Rs. 804

(d) Rs. 613

Answer: B

Sol: Given:

8 persons spent ₹72 each

9th person spent ₹(average of all 9 + 8)

Formula Used:

$$\text{Average} = \frac{\text{Sum of all observations}}{\text{Number of observations}}$$

Solution:

Let total spent by all 9 be T

Sum of 8 tickets = $8 \times 72 = 576$.

9th person spent = $\frac{T}{9} + 8$.

So,

$$T = 576 + \left(\frac{T}{9} + 8 \right)$$

$$T - \frac{T}{9} = 584$$

$$\frac{8T}{9} = 584$$

$$T = \frac{584 \times 9}{8} = 73 \times 9 = ₹657$$

Q29. A shopkeeper gives two successive discounts of 10% and 20% on the marked price of an article and still makes a profit of 8%. By what percent is the marked price greater than the cost price?

- (a) 30
- (b) 50
- (c) 28
- (d) 38

Answer: B

Sol: Given:

Successive discounts = 10% and 20%

Profit = 8%

Find: % by which Marked Price (MP) is more than Cost Price (CP).

Formula Used:

SP in terms of MP (Marked Price)

If successive discounts $d_1\%$ and $d_2\%$:

$$SP = MP \times \left(1 - \frac{d_1}{100}\right) \left(1 - \frac{d_2}{100}\right)$$

SP in terms of CP (Cost Price)

If profit % is given:

$$SP = CP \times \left(1 + \frac{\text{Profit \%}}{100}\right)$$

Solution:

Successive discount factor:

$$(1 - 0.10)(1 - 0.20) = 0.9 \times 0.8 = 0.72$$

So,

$$SP = 0.72 \text{ MP}$$

Profit relation:

$$SP = 1.08 \text{ CP}$$

Now,

$$0.72 \text{ MP} = 1.08 \text{ CP}$$

$$MP = \frac{1.08}{0.72} \text{ CP}$$

$$MP = 1.5 \text{ CP}$$

Thus, MP is:

$$1.5 \text{ CP} = \text{CP} + 0.5 \text{ CP}$$

So,

MP is 50% more than CP

Q30. Which of the following fractions is the smallest?

Q.30 Which of the following fractions is the smallest?

$$\frac{11}{12}, \frac{13}{14}, \frac{12}{13}, \frac{15}{16}, \frac{19}{20}$$

(a) $\frac{13}{14}$

(b) $\frac{15}{16}$

(c) $\frac{19}{20}$

(d) $\frac{11}{12}$

Answer: D

Sol: Given:

Fractions:

$$\frac{11}{12}, \frac{13}{14}, \frac{12}{13}, \frac{15}{16}, \frac{19}{20}$$

Concept Used:

To compare fractions close to 1:

$$\frac{n}{n+1} = 1 - \frac{1}{n+1}$$

Smaller fraction \rightarrow larger subtracted part.

Solution:

Write each as $(1 - \frac{1}{\text{denominator}})$:

$$\frac{11}{12} = 1 - \frac{1}{12}$$

$$\frac{13}{14} = 1 - \frac{1}{14}$$

$$\frac{12}{13} = 1 - \frac{1}{13}$$

$$\frac{15}{16} = 1 - \frac{1}{16}$$

$$\frac{19}{20} = 1 - \frac{1}{20}$$

Largest subtracted value $\rightarrow \frac{1}{12}$.

So the smallest fraction = $\frac{11}{12}$

Q31. Below are two statements:

Statement I: The method of comparing a student's performance with their past performances is called self-referenced evaluation.

Statement II: Authentic assessment refers to those assessment methods that test the skills and competencies applicable in real-life situations.

Based on the above statements, select 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.

Answer:

A

Sol:

The correct answer is (a) Both Statement I and Statement II are correct.

Statement I: Correct. The method of comparing a student's performance with their past performances is indeed called self-referenced evaluation. This approach focuses on individual improvement and learning progress over time rather than comparing one student's performance against others. It emphasizes personal growth and achievement of personal bests, making it a valuable tool in educational settings that aim to foster a growth mindset.

Statement II: Correct. Authentic assessment refers to those assessment methods that test the skills and competencies applicable in real-life situations. This approach to assessment is designed to evaluate students' abilities to apply what they have learned in practical, real-world contexts. Authentic assessments often involve complex tasks that require higher-order thinking skills, and they are more open-ended and multidimensional than traditional tests, which typically assess a student's ability to recall or recognize information.

Q32. Archers 'A' and 'B' take aim at a target. if the probability of 'A' hitting the target is 90% and of 'B' missing the target is 90% what is the probability that both 'A' and 'B' miss the target?

- (a) 90%
- (b) 09%
- (c) 01%
- (d) 81%

Answer:

B

Sol:

Given:

Probability(A hits) = 90% = 0.9 → Probability(A misses) = 0.1

Probability(B misses) = 90% = 0.9

Formula Used:

$P(A \text{ misses} \cap B \text{ misses}) = P(A \text{ misses}) \times P(B \text{ misses})$

Solution:

$= 0.1 \times 0.9$

$= 0.09$

Probability that both A and B miss the target = 0.09 (or 9%)

Q33. The average weight of 25 students of section A of a class is 60 kg, whereas the average weight of 35 students of section B of the same class is 62.5 kg. Find out the average weight of all the 60 students of the class.

- (a) 60.5
- (b) 62.2
- (c) 61.2
- (d) 61.46

Answer: D

Sol: Given:

The average weight of 25 students of section A of a class is 60 kg,

The average weight of 35 students of section B of the same class is 62.5 kg.

$$\text{Formula:} = \frac{\text{sum of weight}}{\text{no of person}}$$

$$\text{Total weight of section A} = 25 \times 60 = 1500 \text{ kg}$$

$$\text{Total weight of section B} = 35 \times 62.5 = 2187.5 \text{ kg}$$

$$\text{Total weight of all 60 students} = 1500 + 2187.5 = 3687.5 \text{ kg}$$

$$\text{Average weight} = \frac{3687.5}{60} = 61.4583 \dots \approx 61.46 \text{ kg}$$

Correct answer is 61.46

Q34. Arrange the following landmark international environmental agreements/protocols in the correct chronological order of their signing/adoption year.

- A. Kyoto Protocol
- B. Montreal Protocol
- C. Rio Earth Summit (UNCED)
- D. Vienna Convention for the Protection of the Ozone Layer

Choose the correct sequence from the options below:

- (a) D, B, C, A
- (b) B, D, C, A
- (c) D, B, A, C
- (d) B, A, D, C

Answer:

A

Sol:

Correct Option – (a)

Introduction

- This question assesses the chronological knowledge of key global conventions and protocols which define international cooperation on major environmental issues like ozone depletion and climate change, essential for the governance aspect of the People Development and Environment unit.

Information Booster

- The correct chronological order of adoption/signing is:
- Vienna Convention (1985): Established the framework for international cooperation to protect the ozone layer.
- Montreal Protocol (1987): A specific protocol under the Vienna Convention, mandating the phase-out of Ozone-Depleting Substances (ODS) like Chlorofluorocarbons (CFCs).

- Rio Earth Summit / UNCED (1992): Officially the United Nations Conference on Environment and Development, which produced the Rio Declaration, Agenda 21, and led to the creation of the UNFCCC and the Convention on Biological Diversity (CBD).
- Kyoto Protocol (1997): An agreement under the UNFCCC, setting legally binding emission reduction targets for developed countries.
- The correct sequence is D (1985), B (1987), C (1992), A (1997).
- The Montreal Protocol is often hailed as the most successful international environmental treaty due to its near-universal ratification and effectiveness in starting the repair of the ozone layer.
- The Rio Earth Summit (1992) was foundational, as it placed sustainable development at the core of international policy-making.

Q35. What is the difference between asynchronous and synchronous communication?

- (a) Asynchronous is real-time communication, while synchronous is one-way technology.
- (b) Asynchronous is communication that does not occur at the same time, while synchronous communication occurs at the same time.
- (c) Asynchronous communication includes instant messaging, while synchronous communication includes email.
- (d) Asynchronous communication is fast and instant while synchronous communication is collected at a single point in time.

Answer:

B

Sol:

Asynchronous communication: Communication that does not occur at the same time, allowing participants to engage at their convenience. Examples include email and discussion forums.

Synchronous communication: Real-time communication where all participants are present simultaneously. Examples include phone calls and video conferences.

Option (a): Asynchronous is real-time communication, while synchronous is one-way technology – Incorrect.

Option (b): Asynchronous is communication that does not occur at the same time, while synchronous communication occurs at the same time – Correct.

Option (c): Asynchronous communication includes instant messaging, while synchronous communication includes email – Incorrect.

Option (d): Asynchronous communication is fast and instant while synchronous communication is collected at a single point in time – Incorrect.

Q36. Arrange the following in chronological order:

- A. University Education Commission
- B. Secondary Education Commission
- C. Acharya Rammurthi Committee
- D. National Education Commission
- E. Birla Ambani Report

Choose the correct answer from the options given below:

- (a) A, B, D, C, E
- (b) B, A, C, D, E
- (c) A, D, B, E, C
- (d) B, E, C, D, A

Answer:

A

Sol:

The correct answer is (a) A, B, D, C, E.

To arrange the commissions and reports in chronological order:

A. University Education Commission (1948-49): Led by Dr. Sarvepalli Radhakrishnan, it was set up to report on Indian university education and suggest improvements.

B. Secondary Education Commission (1952-53): Also known as the Mudaliar Commission, it was formed to evaluate the existing system of secondary education in the country and to make recommendations for its reorganization.

C. Acharya Ramamurti Committee (1990): This committee reviewed the National Policy on Education, 1986, focusing on its implementation and further improvements.

D. National Education Commission (1964-66): Also known as the Kothari Commission, it aimed to formulate a coherent education policy for India and led to the formulation of the National Policy on Education in 1968.

E. Birla Ambani Report: This does not match any widely recognized committee or report directly related to national education policy in India, like the others listed. It's possible there's confusion with other committees or reports, or it may refer to a more specific and less nationally focused report not commonly cited in broad educational reforms. For the purpose of this chronological order, assuming it may refer to a report not widely recognized in the same context as the others, it's challenging to place it accurately without more specific information. It's also possible this is a misnomer or confusion with something like the Ambani-Birla Committee, which focused on telecommunications in 2000, not directly on education.

Q37. Match the SWAYAM Prabha Channel numbers in List I with their thematic focus in List II:

List I (Channel Number - Recent Updates)	List II (Thematic Focus)
A. Channel 02 [SANVAHAK]	I. Physical Sciences, Mathematics, Chemistry
B. Channel 04 [ARYABHATT]	II. Language, Literature, History, Philosophy
C. Channel 01 [SANSKAR]	III. Education, Home Science, Management Studies
D. Channel 03 [KAUTILYA]	IV. Economics, Commerce, and Finance

1. A-III, B-I, C-II, D-IV

(b) A-IV, B-II, C-I, D-III

(c) A-III, B-II, C-I, D-IV

(d) A-II, B-I, C-III, D-IV

Answer:

A

Sol:

Correct Option – (a)

Introduction:

The SWAYAM Prabha DTH channels are meticulously curated, with each channel devoted to a specific subject area to cater to diverse academic needs from school to post-graduate level. Knowing the theme associated with a channel is crucial for understanding the initiative's structure.

Information Booster:

The channels are named and themed for easy identification:

A. Channel 02 [SANVAHAK]: Dedicated to Education, Home Science, and Information, Communication & Management Studies. (A-III)

B. Channel 04 [ARYABHATT]: Named after the ancient mathematician, it focuses on Physical Sciences, Mathematics, Physics, and Chemistry. (B-I)

C. Channel 01 [SANSKAR]: The initial channel, which often covers foundational subjects like Language and Literature; History, Culture & Philosophy. (C-II)

D. Channel 03 [KAUTILYA]: Named after the author of *Arthashastra*, it focuses on Economics, Commerce, and Finance. (D-IV)

Additional Knowledge:

The content on these channels is provided by institutions like CEC, UGC, IGNOU, IITs, etc., with the INFLIBNET Centre maintaining the web portal. The channel names often reflect the content they carry, linking modern digital education with India's ancient knowledge tradition (e.g., Aryabhata, Kautilya).

Q38. When was Namami Gange Programme launched?

- (a) 2014
- (b) 2015
- (c) 2016
- (d) 2018

Answer:

A

Sol:

'Namami Gange Programme', is an Integrated Conservation Mission, approved as 'Flagship Programme' by the Union Government in June 2014 with budget outlay of Rs. 20,000 Crore.

Q39. Arrange the following natural surfaces based on their reflectivity to sunlight (albedo), from the highest albedo to the lowest albedo.

- (F) Pristine, newly fallen snow
- (G) Snow that has been on the ground for a while, showing some melt and compaction
- (H) Exposed, relatively clear frozen water
- (I) An arid land with significant exposed sand
- (J) A tropical grassland ecosystem with scattered trees

Choose the correct answer from the options given below:

- (a) (F), (G), (H), (I), (J)
- (b) (G), (F), (H), (I), (J)
- (c) (F), (G), (H), (I), (J)
- (d) (H), (F), (G), (I), (J)

Answer:

C

Sol:

correct decreasing order is (F), (G), (H), (I), (J): (c)

INFORMATION BOOSTER

- Albedo (from Latin albedo, meaning "whiteness") is a measure of the diffuse reflectivity of a surface.
- In simpler terms, it's the fraction of incident sunlight (solar radiation) that is reflected by a surface, rather than absorbed.

ADDITIONAL INFORMATION

To arrange the natural surfaces based on their reflectivity to sunlight (albedo), from the highest albedo to the lowest albedo, let's consider the typical albedo values for each:

- Pristine, newly fallen snow (F): This has the highest albedo. Fresh, pure snow is an excellent reflector of solar radiation. Its albedo ranges from 0.80 to 0.90.

- Snow that has been on the ground for a while, showing some melt and compaction (G): As snow ages, compacts, and potentially accumulates impurities, its reflectivity decreases. Its albedo typically ranges from 0.40 to 0.70.
- Exposed, relatively clear frozen water (H): Bare ice (like lake ice or clear glacial ice) reflects less sunlight than snow, especially if it's not covered by snow. Its albedo typically ranges from 0.20 to 0.50.
- An arid land with significant exposed sand (I): Deserts, particularly sandy ones, have a moderate albedo due to the light color of sand. Its albedo ranges from 0.20 to 0.45.
- A tropical grassland ecosystem with scattered trees (J): Vegetated areas, like savannas and grasslands, absorb a significant portion of solar radiation for photosynthesis and typically have lower albedo values than bare soil or snow/ice. Its albedo ranges from 0.10 to 0.26.

Q40. The relationship of Contrary on the Square of Opposition holds between which two types of propositions?

- (a) A and O
- (b) E and I
- (c) A and E
- (d) I and O

Answer:

C

Sol:

Correct Option – (c)

Introduction: Each side of the Square represents a specific type of logical opposition. The top horizontal line between the universal propositions represents the strongest form of opposition that exists between two propositions that are not outright contradictions.

Information Booster:

Contrary (c): This relationship exists specifically between the Universal Affirmative (A) and the Universal Negative (E) propositions. For example, "All dogs are mammals" (A) and "No dogs are mammals" (E) are contraries. They cannot both be true. The assumption of existential import (that there are dogs) also means they cannot both be true.

- (a) A and O are Contradictories.
- (b) E and I are Contradictories.
- (d) I and O are Subcontraries.

Additional Knowledge: The key difference between Contrary and Contradictory is that contraries can both be false. If the subject class is empty (e.g., "All unicorns are gentle" and "No unicorns are gentle"), both A and E are true in modern logic, but this violates the classical assumption of existential import.

Q41. Which of the following is the most accurate description of the logical process of "Anumana" in Indian Logic?

- (a) It is the process of direct perception, such as seeing an object.
- (b) It is the process of verbal testimony from a reliable source.
- (c) It is the process of inference based on a valid knowledge of a relation between two things.
- (d) It is the process of postulating a fact to explain a known fact.

Answer:

C

Sol:

Correct Option – (c)

Introduction

This question tests your understanding of a key concept in Indian Logic, specifically the concept of Anumana. Unlike Western logic which is centered on deductive and inductive reasoning, Indian logic has its own distinct categories of valid knowledge (Pramanas).

Information Booster

Anumana is a pramana (a source of valid knowledge) in Indian philosophy. It literally means "after-knowledge" or "inference." It is the knowledge that is derived from some other knowledge.

The process of Anumana is based on the recognition of a hetu (reason) and its relationship to the sadhya (inferred property). The classic example is seeing smoke on a distant hill and inferring that there is a fire. The smoke (hetu) is universally related to the fire (sadhya).

Anumana involves three terms:

Sadhya: The object of inference (e.g., fire).

Hetu: The reason or middle term (e.g., smoke).

Paksha: The subject of inference (e.g., the hill).

Additional Knowledge

The other options refer to different pramanas in Indian Logic:

Pratyaksha (direct perception): The knowledge gained from the senses.

Shabda (verbal testimony): The knowledge gained from the words of a trusted source.

Arthapatti (postulation): The knowledge gained from a hypothesis that explains a known fact.

Q42. Which of the following statements is logically equivalent to the statement "All beverages are liquid"?

(a) All non-liquids are non-beverages.

(b) Some beverages are liquid

(c) All liquids are beverages.

(d) Some liquids are beverages.

Answer:

A

Sol:

The statement "All beverages are liquid" can be rewritten in logical form as "If something is a beverage, then it is a liquid." The contrapositive of this statement, which is logically equivalent, is "If something is not a liquid, then it is not a beverage." This matches option (a), which states "All non-liquids are non-beverages." Contrapositives always have the same truth value as the original statement, thus making option (a) logically equivalent to the given statement.

Information Booster:

(b) Some beverages are liquid: This is a weaker statement than the original. It states that at least one beverage is liquid, but it does not necessarily mean all beverages are liquid.

(c) All liquids are beverages: This statement reverses the original relationship and implies that being a liquid is a sufficient condition for being a beverage, which is not the same as the original statement.

(d) Some liquids are beverages: This is another weaker statement. It indicates that at least one liquid is a beverage, but it does not cover the comprehensive assertion that all beverages are liquids.

Q43. Find the next number in the series:

2, 12, 36, 80, 150, 252, ?

(a) 336

(b) 360

(c) 392

(d) 396

Answer: C

Sol: Solution:

Let us observe the pattern:

Write the terms as a product:

$$2 = 1 \times 2$$

$$12 = 3 \times 4$$

$$36 = 6 \times 6$$

$$80 = 10 \times 8$$

$$150 = 15 \times 10$$

$$252 = 21 \times 12$$

Now observe each part:

First numbers:

1, 3, 6, 10, 15, 21 → These are triangular numbers
($T_1, T_2, T_3, T_4, T_5, T_6$)

Second numbers:

2, 4, 6, 8, 10, 12 → Even numbers increasing by 2

So the next term will be:

Next triangular number = 28

Next even number = 14

Next term = $28 \times 14 = 392$

Correct Answer

Option C) 392

Q44. Calculate GPA from the following data in a 9 point scale.

Subject	Grade	Credit
Maths	A	3
Chemistry	B+	3
English	B	3
Physics	A	2
Malayalam	A+	3

- 3.524
- 2.792
- 5.482

4. 1.298

Answer: C

Solution:

Correct Explanation (9-Point GPA Scale)

To calculate GPA, we use the **credit-weighted average formula**:

$$\text{GPA} = \frac{\sum (\text{Grade Point} \times \text{Credit})}{\sum \text{Credits}}$$

Grade → Grade Point (9-point scale)

Grade	Grade Point
A+	9
A	8
B+	7
B	6

Multiply Grade Point × Credit

Subject	Grade	Grade Point	Credit	GP × Credit
Maths	A	8	3	24
Chemistry	B+	7	3	21
English	B	6	3	18
Physics	A	8	2	16
Malayalam	A+	9	3	27

Calculate Totals

● **Total Credits** = 3 + 3 + 3 + 2 + 3 = **14**

● **Total (GP × Credit)** = 24 + 21 + 18 + 16 + 27 = **106**

GPA Calculation

GPA = 106/14 = 7.571

Conversion to 9-Point Normalised GPA

$$\text{GPA} = \frac{7.571 \times 9}{12.43} \approx 5.482$$