

UGC NET Paper- 1 Memory Based Question -7 JAN 2026 SHIFT -1

Q1. Which of the following tools can be used for ICT enabled teaching?

- A. Paper charts
- B. Physical models
- C. Projector
- D. Black Board

Answer:

C

Sol: ICT (Information and Communication Technology)-enabled teaching involves the use of digital and electronic technologies to facilitate and enhance the learning process. A projector is an ICT tool because it allows teachers to display digital content, such as slides or videos, in a classroom setting.

Information and Communication Technology (ICT) tools include projectors, smartboards, and digital resources.

2. Benefits of ICT-enabled teaching include enhanced student engagement, access to digital resources, and remote learning capabilities.

3. Examples of ICT tools used in teaching include:

- Projectors: Display digital content in a classroom.
- Smartboards: Interactive digital displays for real-time collaboration.
- LMS: Platforms like Moodle, Blackboard, and Canvas for course management.
- Tablets/Computers: Facilitate personalized learning.

Additional Key Points:

- Physical Models: Useful for non-digital content.
- Blackboard: Traditional tool, not considered ICT.

Q2. Which of the following maxims of teaching focuses on the progression from specific cases or examples to general principles?

- A. From General to Specific
- B. From Specific to General
- C. From Logical to Psychological
- D. From Psychological to Logical

Answer:

C

Sol: Introduction

Maxims of teaching are guiding principles derived from educational psychology and experience, offering general rules for effective presentation of content and management of the learning process.

Information Booster

- Induction: The process of reasoning that moves from specific examples/observations to a general conclusion/rule. In teaching, this means presenting several examples first and then helping students derive the rule (e.g., showing 5 examples of the 'Present Perfect Tense' before teaching the formula).

- **Deduction:** The process of reasoning that starts with a general rule/principle and applies it to specific instances. In teaching, this means stating the rule first and then illustrating it with examples.
- **From Induction to Deduction:** This maxim suggests that instruction should first involve students in inductive reasoning to discover the principle, which makes the learning active and meaningful, and then use deductive reasoning to apply and practice the principle.

Additional Knowledge

Other important maxims include:

- **From Concrete to Abstract:** Begin teaching with tangible objects or real-life experiences before moving to theoretical ideas.
- **From Known to Unknown:** Link new knowledge to what the student already knows. This is vital for assimilation and meaningful learning.

Q3. Which of the following is a research method?

- A. Dissemination
- B. Creative
- C. Research
- D. Participation

Answer:

B

Sol: Research is a systematic and intentional process used to generate new knowledge, especially in the context of education. It involves the collection, analysis, and interpretation of data to understand educational phenomena, the context of learning, and the effectiveness of various educational practices. Research is often used on the dissemination of knowledge, and participation in research activities, such as Faculty Development Programs (FDPs) and seminars, is encouraged to promote research and publication.

Q4. Which of the following electronic technologies is the third generation technology for microelectronics? The first generation electronic computers used vacuum tubes, the second generation used transistors, and the third generation used integrated circuits (ICs).

- A. Transistor-based
- B. Integrated Circuit (IC)
- C. Vacuum tube
- D. Microprocessor

Answer:

B

Sol: Integrated Circuit (IC) based technology: The third generation of computers used integrated circuits (ICs) as their key technology. ICs allowed multiple transistors to be placed on a single silicon chip, significantly improving processing speed and efficiency while reducing the size and cost of computers.

Information Booster:

Generations of Computers:

First Generation: Used vacuum tubes for circuitry and magnetic drums for memory.

Second Generation: Replaced vacuum tubes with transistors.

Third Generation: Introduced Integrated Circuits (ICs), which combined transistors and other electronic components into a single chip.

Fourth Generation: Brought microprocessors, which integrated the entire central processing unit (CPU) onto a single chip.

Advantages of ICs in the Third Generation:

Smaller in size, faster processing speeds, and more reliable than previous generations.

Additional Knowledge:

Key Inventors: Jack Kilby and Robert Noyce are credited with independently inventing the integrated circuit in the late 1950s.

Q5. In the publication of a research paper, if an author is found to commit plagiarism of level 2 as per UGC Regulations 2018 on Plagiarism. The following penalty will be imposed:

A. Author shall be debarred from publishing in any journal for a period of 6 months

B. Author

C. Author

D. Author

Answer:

C

Sol: According to UGC Regulations 2018 on Plagiarism, if an author is found to commit plagiarism of level 2 (above 40% to 60%) results in the penalty of withdrawal of the manuscript and debarment from publishing for one year.

Information on plagiarism is available on the UGC website. The University of Delhi (UD) also has a 1-year suspension from publishing.

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• Withdrawal of manuscript: The author is asked to withdraw the manuscript and submit a revised version.

• Debarment from publishing: The author is debarred from publishing any work in any journal for a specific period. As per UGC 2018 rules for research papers, this debarment is for one year.

• Institutional notification: The head of the Department/Institution is notified of the violation for further administrative action.

Additional Knowledge: The UGC Regulations 2018 on Plagiarism define the following levels for Research Papers:

Summary of the UGC Regulations 2018 on Plagiarism (in Higher Educational Institutions) define the following levels for Research Papers:

Level	Similarity Percentage	Penalty Imposed
Level 0	Up to 10%	No Penalty. Minor similarities are accepted.
Level 1	Above 10% to 40%	Author is asked to withdraw the manuscript and submit a revised version.
Level 2	Above 40% to 60%	Withdrawal of manuscript + Author debarred from publishing for one year.
Level 3	Above 60%	Withdrawal of manuscript + Author debarred from publishing for two years.

Self-Plagiarism: It is important to note that these regulations also apply to "self-plagiarism" (recycling one's own previous work without citation).

- Theses and Dissertations: The penalties for Level 2 in a Thesis/Dissertation are even stricter: the student is debarred from submitting a revised script for a period of one year, and for Level 3, the registration for the program is cancelled.

Q6. Match the following sampling techniques with their appropriate descriptions and applications.

List-I (Sampling Technique)	List-II (Description & Application)
A. Stratified Random Sampling	1. Selecting every nth element from sampling frame - Efficient for large populations
B. Cluster Sampling	2. Selecting a few large units from a population - Efficient for heterogeneous populations
C. Systematic Sampling	3. Selecting a few small units from a population - Efficient for homogeneous populations
D. Purposive Sampling	4. Selecting participants based on specific characteristics or knowledge - Efficient for qualitative studies

Codes:

- A. A-2, B-1, C-3, D-4
- B. A-4, B-2, C-1, D-3
- C. A-2, B-1, C-3, D-4
- D. A-3, B-2, C-1, D-4

Answer:

A

Sol: Introduction to sampling techniques is essential for understanding the efficiency of data collection methods. Different sampling techniques have different research purposes and constraints.

Information required:

- A. Stratified Random Sampling (Matches with 2): Involves dividing a population into homogeneous subgroups (clusters) and randomly selecting from each. Efficient for heterogeneous populations (e.g., studying all schools in a district).
- B. Cluster Sampling (Matches with 3): Involves selecting a few large units from a population randomly and studying all units within those clusters. Efficient for heterogeneous populations (e.g., selecting schools rather than individual students).
- C. Systematic Sampling (Matches with 1): Involves selecting every nth element from a sampling frame after random start. Efficient for large populations but risks periodicity bias if patterns exist in the frame.
- D. Purposive Sampling (Matches with 4): A non-probability technique involving selecting participants based on specific characteristics or knowledge. Prone to bias but useful for qualitative studies seeking information-rich cases.

Additional Knowledge:

- Snowball sampling is another non-probability technique where existing participants recruit future participants, particularly useful for studying hidden populations. The sampling method choice depends on research objectives, resources, and required generalizability.

Q7. Triangulation is a method of research adopted by:

- A. Qualitative Research
- B. Quantitative Research
- C. Applied Research
- D. Both A and B

Answer:

D

Sol: Triangulation is a technique used in both qualitative research and quantitative research. In qualitative research, triangulation is used to increase the credibility and validity of the findings by using multiple data sources, methods, or researchers. In quantitative research, triangulation can be used to enhance the reliability of the findings by using multiple methods or measurement tools.

Information:

1. Qualitative research: Triangulation involves using multiple sources, such as interviews, focus groups, and document analysis, to gather data.
2. Quantitative research: Triangulation involves using multiple methods, such as surveys, experiments, and statistical analysis, to measure the same phenomenon.
3. Triangulation helps to identify and reduce biases and errors that may arise from using a single method or source.
4. In both qualitative and quantitative research, triangulation increases the reliability, validity, and depth of the findings.
5. Triangulation can be used in a variety of ways, including methodological triangulation (using multiple methods), data source triangulation (using multiple sources), and researcher triangulation (using multiple researchers).

Additional Knowledge:

- ☐ Applied research: Focuses on practical applications of knowledge. While triangulation can be used in applied research, it is more widely associated with qualitative and quantitative research methods.

Q8. Arrange the following steps in the correct order for conducting a research study:

1. Identifying the research problem
 2. Framing research questions
 3. Selecting a suitable design (e.g., experimental, survey, etc.)
 4. Operationalizing variables
- A. 2 – 1 – 4 – 3
 - B. 1 – 2 – 4 – 3
 - C. 2 – 1 – 3 – 4
 - D. 1 – 4 – 2 – 3

Answer:

C

Sol: The correct order is:

-
1. Framing research questions (2) – to define what the research intends to investigate.
 2. Identifying variables (1) – to specify independent, dependent, or control variables.
 3. Selecting a suitable research design (3) – depending on the problem and variables.
 4. Operationalizing variables (4) – defining how each variable will be measured.

Information booster:

- Research questions drive the entire research design.
- Variables must be aligned with research objectives.
- Research design is selected based on how the variables and questions interact.
- Operationalization converts abstract variables into measurable indicators.
- Correct sequencing prevents conceptual and methodological errors.
- Helps in valid data collection and hypothesis testing.

Common mistakes:

Additional key points:

- Framing questions clearly and concisely.
- Identifying variables accurately.
- Selecting a research design that matches the research type.
- Operationalizing variables into measurable indicators.

Q9. Identify the component of the computer system which explains the present part of the paragraph. Part of the computer system is responsible for calculation and data currently in use. It performs calculation and data currently in use and devices how

- (A) Control Unit
(B) ASCII
(C) Immediate Access Store
(D) ALU
(E) SSD

Choose the correct option.

- A. (D), (C)
B. (C), (D)
C. (C), (E), (A)
D. (B), (D), (E)

Answer:

B

Sol: Immediate Access Store (C): Holds programs and data currently in use.

ALU (D): Performs calculations and logical operations.

Control Unit (A): Directs input/output device operations.

Information Booster:

CPU Components:

1. IAS: Temporary data storage for processing.
2. ALU: Executes arithmetic and logic tasks.

3. Control Unit: Coordinates overall CPU activity.

Additional Knowledge:

Option (c): Incorrect, as SSD (SSD) is a storage device, not part of the CPU.

Option (d): ASCII is unrelated to CPU roles.

Q10. Which of the following components are part of the central processing unit (CPU) of the Von Neumann model for a computer system?

- A. Arithmetic Logic Unit (ALU)
- B. Hard Disk Drive (HDD)
- C. Memory Address Register (MAR)
- D. Solid State Drive (SSD)
- E. Control Unit

Choose the correct answer:

- A. A and C only
- B. B, C and D only
- C. A and E only
- D. A, C and E only

Answer:

D

Sol: In the Von Neumann model, the central processing unit (CPU) consists of several components. The correct components that are part of the CPU are the Arithmetic Logic Unit (ALU), Memory Address Register (MAR), and Control Unit. The ALU is responsible for performing mathematical operations such as addition, subtraction, and multiplication. The MAR is used to store the address of the memory location to be accessed. The Control Unit coordinates the overall operation of the CPU. The Hard Disk Drive (HDD) and Solid State Drive (SSD) are storage devices and are not part of the CPU. Therefore, the correct answer is D, which includes the ALU, MAR, and Control Unit.

Q11. Select the correct answer:

- A. Role of Teacher's personality is very important-Idealism
- B. Role of Teacher's personality is of limited importance-Pragmatism
- C. Role of Teacher's personality is very important-Pragmatism
- D. Role of Teacher's personality is not of limited importance -Naturalism

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 C only

Answer:

A

Sol: Introduction:

This question tests the understanding of how different schools of philosophy in education—Idealism, Pragmatism, and Naturalism—view the role and importance of the teacher's personality. Each philosophy has a distinct perspective on the teacher's function, which directly influences how central their personal character is to the educational process.

Information Booster: Philosophical Perspectives on the Teacher's Role

Let's analyze the core belief of each philosophy regarding the teacher:

- A. Role of Teacher's personality is very important - Idealism
 - Correct. Idealists (e.g., Plato, Hegel) believe the teacher is a crucial, exemplary figure. The teacher is seen as a role model, a guide to the world of ideas, and a "spiritual engineer" who shapes the moral, intellectual, and moral character of the student.
- B. Role of Teacher's personality is less important - Pragmatism
 - Correct. Pragmatists (e.g., Dewey) view the teacher as a guide on the journey of learning. The teacher's personality is less central; instead, the focus is on the learning process, problem-solving, and the teacher's ability to facilitate student growth through experience.
- C. Role of Teacher's personality is not of limited importance - Naturalism
 - Correct. Naturalists (e.g., Rousseau) emphasize the child's innate abilities and the learning process and method. The teacher's personality is explained in terms of how it influences the child's natural development.
- D. Role of Teacher's personality is very important - Idealism (repeated)

Additional Information:

- Why is the teacher's personality important / of limited importance?
 - Idealism: The teacher's personality is of paramount importance. The teacher is a moral guide and a role model. The teacher's personality is central to the learning process.
- Contrasting Views:
 - Idealism: Teacher-centric. The teacher is the key to unlocking spiritual and intellectual development.
 - Pragmatism: Experience-centric. The teacher is a resource and a organizer of experiences.
 - Naturalism: Child-centric. The teacher is an unobtrusive observer and a creator of a natural learning environment.
- Real-world Implication: These philosophies influence teaching styles today. A highly charismatic, knowledge-imparting teacher reflects Idealism. A teacher who designs projects and group work reflects Pragmatism. A teacher in a Montessori-style classroom, emphasizing self-directed learning, reflects Naturalism.

Q12. Which of the following statements correctly contrast linear, interactional, and transactional models of communication?

- I. Linear models view communication as a one-way process from sender to receiver with no feedback.
- II. Interactional models incorporate feedback but still treat communication as turn-by-turn rather than simultaneous.
- III. Transactional models view communicators as senders and receivers simultaneously, engaging in ongoing message and feedback exchange.
- IV. Linear models are the only ones that recognize the role of noise in communication.

Choose the correct answer from the codes given below:

- A. I, II and III only
- B. I and IV only
- C. II, III and IV only
- D. I, III and IV only

Answer:

A

Sol: Introduction of communication models has come from the linear model. In the transactional model, each adding more context and meaning to the message.

Information:

- Linear model describes communication from sender to receiver, with no feedback.
- Interactional model views communication as a two-way process but often as alternating roles. One person sends a message and the other responds.
- Transactional model views communication as a simultaneous exchange of meaning within a shared context, with no clear sender or receiver.
- These models analyze communication from simple message transmission to complex relational and contextual processes.

Additional Knowledge:

- Noise is any disturbance that interferes with the communication process.
- Transactional model is the most complex, viewing communication as a simultaneous exchange of meaning within a shared context, with no clear sender or receiver.

Q13. What is the full form of the acronym 'VoIP'?

- A. Voice over Internet Protocol
- B. Voice over Intranet Protocol
- C. Vacuum over Internet Protocol
- D. Vacuum over Intranet Protocol

Answer:

A

Sol: VoIP stands for Voice over Internet Protocol, a technology that allows for the transmission of voice communications over the internet, as opposed to traditional telephone lines. It is widely used for services like Skype, WhatsApp, and other internet calling platforms.

- Voice over Internet Protocol (VoIP) allows people to make phone calls using the internet, providing a cheaper and more flexible alternative to conventional phone systems.
- The other options, such as "Voice over Intranet Protocol," "Vacuum over Internet Protocol," and "Vacuum over Intranet Protocol," are incorrect as they do not relate to the standard definition of VoIP.

Information Booster:

1. VoIP works by converting analog voice signals into digital packets that are transmitted over the internet.
2. VoIP is a cost-effective solution for businesses and individuals alike, as it eliminates the need for traditional phone lines and equipment.
3. Examples of VoIP services include Skype, WhatsApp, and Zoom.
4. Unlike traditional phone systems, VoIP uses packet-switching technology to transmit voice data.
5. VoIP can be used on a variety of devices, including smartphones, computers, and dedicated VoIP phones.
6. VoIP services often offer additional features, such as call forwarding, voicemail, and video conferencing.

Q14. If $(L)_{16}$ is a 4-digit hexadecimal number system

- A. $(E6B)_{16}$
- B. $(A7B)_{16}$
- C. $(CFC)_{16}$
- D. $(D68)_{16}$

Answer:

A

Sol: The add of two hexadecimal numbers is $(E6B)_{16} + (A7B)_{16} = (1768)_{16}$. The result is a 4-digit hexadecimal number, which is $(E6B)_{16}$.

Information

1. Convert Hexadecimal to Decimal:

- $(4AC)_{16}$:
 $4 \times 16^2 + 10 \times 16^1 + 12 \times 16^0$
 $= 1024 + 160 + 12 = 1196.$
- $(9BF)_{16}$:
 $9 \times 16^2 + 11 \times 16^1 + 15 \times 16^0$
 $= 2304 + 176 + 15 = 2495.$

2. Add the Decimal Values:

$$1196 + 2495 = 3691.$$

3. Convert Decimal Back to Hexadecimal:

- Divide 3691 by 16:
 $3691 \div 16 = 230 \text{ remainder } 11 (B)$.
 $230 \div 16 = 14 \text{ remainder } 6 (6)$.
 $14 = E \text{ (in hexadecimal)}$.
- Result: $(E6B)_{16}$.

Additional Knowledge

- Hexadecimal uses digits 0 to 9 and letters A to F for values 10 to 15.
- To convert from hexadecimal to decimal, multiply each digit by 16^{position} (right to left, starting at position 0).
- For addition, it's often easier to perform in decimal and convert back to hexadecimal.

Q15. Mass media

- A. Personal communication
- B. Bureaucratic communication
- C. Public communication
- D. Ethical communication

Answer:

C

Sol: The public life where individuals interact, discuss and identify social issues, that media play a crucial role in these discussions. They provide a platform for individuals to express their views and engage in debates about various issues of public concern.

Q16. Which of the following statements correctly describe mass communication?

- I. Mass communication uses mass media technology to reach a large audience.
- II. Mass communication involves one-way communication from the communicator to the audience.

III. A teacher interacting with 40 students in a classroom is the most appropriate example of mass communication.

IV. Television news bulletins and daily newspapers are common examples of mass communication.

Choose the correct answer from the codes given below:

- A. I, II and IV only
- B. I and III only
- C. II, III and IV only
- D. I, II, III and IV

Answer:

A

Sol: Introduction: Mass communication refers to one-to-many transmission of messages from an organized source (like media houses) to large, often anonymous audiences using technologies such as TV, radio, and newspapers.

Information Booster:

- Mass communication involves an organization or institutional source using technologies (TV, radio, newspapers, online portals) to address a wide audience spread across large areas.
- Feedback in mass communication is often indirect, delayed or limited, such as TRP ratings, letters to editor, comments, or social media responses.
- Television newscasts, radio bulletins, films, and newspapers are standard and widely accepted examples of mass communication.

• The audience in mass communication is usually large, heterogeneous and anonymous, unlike the more identifiable audience in interpersonal communication.

Additional Key Points:

- A teacher addressing a class is interpersonal communication as the group size is limited, interaction is direct, and the medium is verbal.
- Mass communication is impersonal, one-way, and uses technological media like TV, radio, and newspapers.

- Q17.** The theory of social media behavior is often analyzed through various sociological theories. These theories help explain why users present themselves in certain ways and how they communicate on these platforms.
- A. Impression Management Theory
 - B. Uses and Gratifications Theory
 - C. Cultivation Theory
 - D. Spiral of Silence Theory

Answer:

A

Sol: Introduction: Social media behavior is often analyzed through various sociological theories. These theories help explain why users present themselves in certain ways and how they communicate on these platforms.

Information Booster:

• **Option (a) Impression Management Theory:** Developed by Erving Goffman, this theory suggests that individuals present a curated version of themselves ("front stage") to an audience (followers/friends) to manage perceptions and control the impressions they make. On social media, this involves carefully selecting posts, photos, and updates.

• **Option (b) Uses and Gratifications Theory:** This theory focuses on the audience's active role. It posits that users consciously choose media to fulfill specific needs like surveillance (information), personal identity, integration and social interaction, and entertainment.

• **Option (c) Cultivation Theory:** Developed by George Gerbner, this theory argues that long-term, heavy exposure to television (and by extension, social media) shapes viewers' perceptions of social reality, making them believe the world is more violent or scary than it is ("mean world syndrome").

• Option (d) Spiral of Silence Theory: Proposed by Elisabeth Noelle-Neumann, this theory suggests that individuals are less likely to express their opinions if they believe they are in the minority for fear of isolation. This can be amplified on social media through visible metrics like likes and shares.

Additional Knowledge: The concept of the "curated self" on Instagram or the professional persona on LinkedIn are direct application of Impression Management Theory. Users engage in "gatekeeping" their own content, deciding what to share and what to hide to maintain a desired image.

Q18. Arrange the stages in the encoding-decoding process of communication.

- A. Sender formulates idea
- B. Encoding into symbols
- C. Transmission via channel
- D. Decoding

Choose the correct order

- A. A, B, C, D
- B. B, A, C, D
- C. C, D, A, B
- D. D, A, B, C

Answer:

A

Sol: Introduction of the sender's idea, Encoding, Channel, Decoding, and Interpretation of the receiver.

- Sender formulates idea (A): The source originates the message or concept originating from their communication.
- Encoding into symbols (B): The sender translates the idea into a form that can be transmitted through a channel.
- Transmission via channel (C): The encoded message is delivered through a chosen medium.
- Decoding by receiver (D): Interpretation based on experience and context.

Additional Knowledge:

- Sender formulates idea (A): The source originates the message or concept originating from their communication. This stage involves the sender's perception and the initiation of the communication process.
- Encoding into symbols (B): The sender translates the idea into a form that can be transmitted through a channel. This involves selecting appropriate symbols (words, gestures, or images) that represent the intended message.
- Transmission via channel (C): The encoded message is delivered through a chosen medium (e.g., speech, writing, visual, audio, or touch channels). The channel selected should be effective in reaching the receiver with minimal distortion.
- Decoding by receiver (D): The receiver interprets the symbols back into meaning using their own skills, knowledge, attitudes, and cultural filters, reconstructing the idea based on personal experience and context.

Q19. Arrange the following Digital India-related initiatives in correct chronological order of their launch / initiation:

1. UMANG
2. FOSSEE
3. SAKSHAT
- A. SAKSHAT → FOSSEE → UMANG
- B. FOSSEE → SAKSHAT → UMANG
- C. UMANG → SAKSHAT → FOSSEE
- D. SAKSHAT → UMANG → FOSSEE

Answer:

A

Sol: SAKSHAT was conceptualized and launched first as a National e-Learning initiative under the Ministry of Education to strengthen higher education through digital content. FOSSEE was initiated later by IIT Bombay to support research and research. UMANG was a programme to integrate multiple digital content in a logical order. The correct chronological order is SAKSHAT → UMANG → FOSSEE.

Information:

1. SAKSHAT was launched in 2012 to provide digital content to students through platforms like SWAYAM.
2. FOSSEE was launched in 2014 to provide digital content to students through platforms like SWAYAM.
3. UMANG was launched in 2015 to provide digital content to students through platforms like SWAYAM.
4. Chronological order of the above initiatives is SAKSHAT → UMANG → FOSSEE.
5. Such initiatives are also being implemented by various states, including Jharkhand, SSC, State PSC, and others.

Additional Information:

- UMANG is a programme to integrate multiple digital content in a logical order.
- FOSSEE is a programme to provide digital content to students through platforms like SWAYAM.
- SAKSHAT is a programme to provide digital content to students through platforms like SWAYAM.

Q20. What is the correct chronological order from older to newer is: according to their year of implementation?

- A. Environment Protection Act
- B. Wildlife Protection Act
- C. Air (Prevention and Control of Pollution) Act
- D. Water (Prevention and Control of Pollution) Act

Choose the correct answer from the options given below:

- A. B, D, C, A
- B. B, D, A, C
- C. A, B, C, D
- D. A, B, D, C

Answer:

A

Sol: The correct chronological order from older to newer is:

1. Wildlife Protection Act (1972) – First among these, this act was enacted to provide for the protection of wild animals, birds, and plants.
2. Water (Prevention and Control of Pollution) Act (1974) – This Act was enacted to prevent and control water pollution and maintain or restore water quality.
3. Air (Prevention and Control of Pollution) Act (1981) – Enacted to control and prevent air pollution in India.
4. Environment Protection Act (1986) – The broadest and most comprehensive environmental legislation providing for the protection and improvement of the environment.

Hence, Option A is the correct answer.

Information Booster:

1. The Wildlife Protection Act, 1972, was a pioneering legislation for conserving biodiversity.
2. The Water (Prevention and Control of Pollution) Act, 1974, was enacted to prevent and control water pollution and maintain or restore water quality.
3. The Air (Prevention and Control of Pollution) Act, 1981, was enacted to control and prevent air pollution in India.
4. The Environment Protection Act, 1986, is the broadest and most comprehensive environmental legislation providing for the protection and improvement of the environment.
5. The Bhopal Gas Tragedy, 1984, was a major industrial disaster in India.
6. The Chernobyl nuclear disaster, 1986, was a major nuclear disaster in the Soviet Union.
7. The Fukushima nuclear disaster, 2011, was a major nuclear disaster in Japan.

Q21. Choose the correct option regarding environmental disasters.

- A. Bhopal accident was due to methyl isocyanate.
- B. Hiroshima atomic bombing was due to radioactivity.
- C. Bhuji incident was due to a gas leak.
- D. Fukushima nuclear disaster was due to a gas leak.
- E. Chernobyl nuclear disaster in Soviet Union occurred due to a gas leak.

Choose the correct answer from the options given below.

- A. A, B and C only
- B. A, B and D only
- C. A, C and E only
- D. C, D and E only

Answer:

B

Sol: Introduction:

This question requires you to have a basic factual understanding of some of the most significant environmental and industrial disasters in recent history. A key aspect of this question is to distinguish between the actual causes of these events and common misconceptions.

Information Booster:

- A. Bhopal accident was due to methyl isocyanate: This statement is correct. On the night of December 2-3, 1984, a leak of over 40 tons of the toxic gas methyl isocyanate (MIC) from the Union Carbide India Limited pesticide plant in Bhopal, India, caused one of the world's worst industrial disasters.

- B. Hiroshima and Nagasaki incident was due to radioactivity: This statement is correct. While the atomic bombs dropped on these Japanese cities in 1945 caused massive immediate destruction from the blast and heat, the long-term, devastating health effects on the survivors and future generations were due to the high levels of radiation released, which is a form of radioactivity.
- C. Bhuj incident occurred due to poison gas: This statement is incorrect. The Bhuj incident refers to a massive earthquake that struck the Kutch district of Gujarat, India, on January 26, 2001. It was a natural disaster, not a result of poison gas.
- D. Fukushima nuclear power plant incident was due to earthquake: This statement is correct. The Fukushima Daiichi nuclear disaster in Japan was initiated by a massive earthquake in March 2011, which led to a tsunami. The tsunami flooded the power plant's backup generators, causing the reactors to lose their cooling systems, which led to a meltdown.
- E. Chernobyl incident occurred due to human error: This statement is correct. The Chernobyl nuclear disaster in Ukraine was caused by a combination of human error and design flaws during a test, leading to a massive release of radioactive material.

Additional Key Points: Understanding disasters as categorized into natural disasters (like earthquakes, tsunamis, and cyclones) and human-made disasters (like nuclear accidents, chemical spills, and fires) is crucial. The Bhuj and Fukushima incidents were primarily natural disasters, while Chernobyl was a human-made disaster. The Bhuj incident was caused by natural forces (a volcanic eruption), not a man-made disaster like a volcano. The Fukushima incident was caused by a massive earthquake, not a human error. The Chernobyl incident was caused by a combination of human error and design flaws, not a natural disaster like a volcano.

Human beings are a species that have a shared biological nature, but they are also a species that is highly variable. This means that while we share a common biological nature, our behavior and culture can vary significantly. This is why we have a shared biological nature, but we also have a shared culture. The idea that human beings are a species that is highly variable is a key concept in understanding human behavior. The idea that human beings are a species that is highly variable is a key concept in understanding human behavior. The idea that human beings are a species that is highly variable is a key concept in understanding human behavior.

unlike kin selection, does not depend on genetic relatedness: it does, however, depend upon repeated, direct personal interaction.

Q22. The shared biological nature of human's influences:

- A. The division of social constructs.
- B. The nature of institutions in society.
- C. The political behaviour of people.
- D. The formation of social groups.

Answer:

B

Sol: The passage states that the shared biological nature of humans frames and limits the nature of institutions in society.

Q23. Human

- A. Social
- B. Hum
- C. Instit
- D. Abse

Answer:

A

Sol: The author argues that humans are not primarily individuals in a pre-social state but are in kin-based social groups. Therefore, the correct option is (a).

Q24. From the passage, we can infer that

- A. Anarchic violence
- B. Pacifism and of the other
- C. Kinship based social groups
- D. Calculated

Answer:

C

Sol: The author argues that humans are not primarily individuals or anarchic violence. Therefore, the correct option is (c) Kinship based social groups.

Q25. The concept of social cooperation involves:

- A. Kin selection
- B. Cognitive faculty
- C. Emotional detachment
- D. Reciprocal altruism

Choose the correct option:

- A. A and B only

-
- B. B and C only
 - C. C and D only
 - D. A and D only

Answer:

D

Sol: The passage highlights two principles for social cooperation: kin selection and reciprocal altruism. These principles explain why humans cooperate beyond calculated decisions. Therefore, the correct option is (d) A and D only.

Q26. The passage recognises the fact that human sociability has:

- A. Political determinants
- B. Ration
- C. Integ
- D. Gene

Answer:

D

Sol: The pas... on eve... selection and reciprocal al... etic link... (d) Genetic linkage.

Q27. Which... the '... core... as per the UNESCO's M... Programme?

- A. Core... itation Zone, Sustaina
- B. Core...
- C. Core... SI... rea... 7... 14... 17... e
- D. Core... fer Z... Manipulation Zone, Cultu... Zone, Rel... Area

Answer:

B

Sol: Introdu... UNESCO to promote a bal... relationship between pe... be sites of experimental Information

• The structured zoning of a Biosphere Reserve is fundamental to its function:

1. Core Area: This is the strictly protected zone that conserves biodiversity, monitors minimally disturbed ecosystems, and contains genetic resources. Legal protection is highest here.
2. Buffer Zone: This zone surrounds or is adjacent to the core area. Activities here are compatible with conservation objectives and can include environmental education, recreation, ecotourism, and applied research.
3. Transition Area (or Manipulation Zone): This is the outermost part where the greatest activity is allowed. It fosters sustainable economic and human development through partnerships between local communities, scientists, and other stakeholders. Settlements, agriculture, and other land uses are managed in an ecologically sustainable manner.

• The other options include incorrect or non-standard terms like "Corridor Area," "Rehabilitation Zone," etc., which are not part of the official UNESCO MAB zoning classification.

Additional Knowledge:

• India has a network of 18 Biosphere Reserves. Of these, 12 are part of the World Network of Biosphere Reserves (WNBR). The Nilgiri Biosphere Reserve was the first to be established in India (1986).

Q28. Kyoto Protocol (1997) was about:

- A. Protection of ozone layer
- B. Reduction in Green House Gas emissions
- C. Conservation of Biodiversity
- D. Limiting the rise in global temperature to 2°C above pre-industrial times

Answer:

B

Sol: The Kyoto Protocol was an international agreement under the United Nations Framework Convention on Climate Change (UNFCCC) to reduce greenhouse gas emissions. It was signed by 160 countries in 1997, with the aim of limiting the rise in global temperature to 2°C above pre-industrial times. The protocol sets binding targets for industrialized countries to reduce their greenhouse gas emissions. The gases covered under the protocol include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs). The protocol requires developed countries to reduce their emissions by an average of 5.2% from 1990 levels by 2012. Developing countries were not required to reduce their emissions, but they were encouraged to do so. The protocol also includes provisions for financial and technical assistance to help developing countries meet their commitments.

Q29. Which

- A. CH₄ (Methane)
- B. C₆H₆ (Benzene)
- C. SO₂ (Sulphur dioxide)
- D. CO (Carbon monoxide)

Answer:

C

Sol: Acid rain is a form of precipitation that is acidic due to the presence of sulfuric acid (H₂SO₄) and nitric acid (HNO₃). It is caused by the release of sulfur dioxide (SO₂) and nitrogen oxides (NO_x) into the atmosphere. These gases react with water vapor to form the acids. The acids then fall to the ground as acid rain. Acid rain can cause damage to buildings, forests, and aquatic life. It is a major environmental problem in many parts of the world.

Information booster: Methane (CH₄), benzene (C₆H₆), and carbon monoxide (CO) are not significant contributors to acid rain formation. Therefore, the correct answer is (c) SO₂ (Sulphur dioxide).

Q30. Statement I: An increase in CO₂ is expected to enhance global plant growth.

Statement II: Deforestation can increase the biosphere's capacity.

Choose the most appropriate answer from the options given below:

Given below are two statements:

- 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.

Answer:

C

Sol: Statement I is true: Higher levels of CO_2 can enhance plant growth through a process called CO_2 fertilization, where plants use the increased availability of carbon dioxide for photosynthesis. This effect is observed in certain ecosystems, although it depends on other factors like nutrients and water availability.

Statement II is false: Deforestation decreases the biosphere's capacity to sequester carbon. Forests act as major carbon sinks, absorbing CO_2 . When trees are cut down, this capacity is lost, and the atmosphere ends up with more CO_2 .

Direction: (Q. 30-32)

The following table shows the marks obtained by six students in six different subjects. The maximum marks for each subject are also given (shown in brackets).
Student-wise marks are given in the following table:

Students	Subjects (Maximum Marks)					
	A (150)	B (100)	C (150)	D (125)	E (75)	F (50)
Anil	66%	75%	88%	56%	56%	90%
Arman	82%	76%	84%	96%	92%	88%
Arpit	76%	66%	78%	88%	72%	70%
Gaurav	90%	88%	96%	76%	84%	86%
Gurjit	64%	70%	68%	72%	68%	74%
Priya	48%	56%	50%	64%	64%	58%

Q31. If M and N represent the average marks obtained by all the students together in subject C and E, respectively, then the value of $M + N$ is:
(112, 56.5)

- A. (114, 56)
B. (115, 56)
C. (116, 54.5)
D. (116, 54.5)

Answer:

D

Sol: Marks obtained in subject C,

By Anil = $88/100 \times 150 = 132$

Arman = $84/100 \times 150 = 126$

Arpit = $78/100 \times 150 = 117$

Gaurav = $96/100 \times 150 = 144$

Gurjit = $68/100 \times 150 = 102$

$$\text{Priya} = 50/100 \times 150 = 75$$

$$M = (132 + 126 + 117 + 144 + 102 + 75)/6 = 696/6 = 116$$

Marks obtained in subject E,

$$\text{Anil} = 56/100 \times 75 = 42$$

$$\text{Arman} = 92/100 \times 75 = 69$$

$$\text{Arpit} = 72/100 \times 75 = 54$$

$$\text{Gaurav} = 84/100 \times 75 = 63$$

$$\text{Gurjit} = 68/100 \times 75 = 51$$

$$\text{By Priya} = 64/100 \times 75 = 48$$

$$N = (42 + 69 + 54 + 63 + 51 + 48)/6 = 327/6 = 54.5$$

Q32. Marks obtained by Gaurav in all the 6 subjects together.
(rounded off to one decimal place)

- A. 27.5
- B. 24.52
- C. 29.45
- D. 28.15

Answer:

A

Sol: Gaurav's

Subject A = 90

Subject B = 85

Subject C = 92

Subject D = 88

Subject E = 80

Subject F = 80

Total marks of Gaurav in all the 6 subjects = 568

Gurjit's marks

Subject A = 90

Subject B = 85

Subject C = 92

Subject D = 88

Subject E = 68% of 75 = 51

Subject F = 74% of 50 = 37

Total marks of Gurjit in all the 6 subjects = 446

Difference = 568 - 446 = 122

Percentage = $122/446 \times 100 = 27.35$

Q33. How many marks did Anil get in all the six subjects together?

- A. 396
- B. 463
- C. 558

D. 496

Answer:

B

Sol: Anil's marks in,

Subject A = 66% of 150 = $66/100 \times 150 = 99$

Subject B = 75% of 100 = $75/100 \times 100 = 75$

Subject C = 88% of 150 = $88/100 \times 150 = 132$

Subject D = 56% of 125 = $56/100 \times 125 = 70$

Subject E = 56% of 75 = $56/100 \times 75 = 42$

Subject F = 90% of 50 = $90/100 \times 50 = 45$

Marks scored in all the six subjects = $(99 + 75 + 132 + 70 + 42 + 45) = 463$

Q34. What is the average marks obtained by the six students together?

A. 48

B. 50

C. 52

D. 54

Answer:

C

Sol: Marks obtained by

By Anil = 66% of 150 = 99

Arman = 82% of 150 = 123

Arpit = 76% of 150 = 114

Gaurav = 90% of 150 = 135

Gurjit = 64% of 150 = 96

By Priya = 48% of 150 = 72

Average marks in A = $(99 + 123 + 114 + 135 + 96 + 72)/6 = 639/6 = 106.5$

Marks obtained in E =

Anil = 56% of 75 = 42

Arman = 92% of 75 = 69

Arpit = 72% of 75 = 54

Gaurav = 84% of 75 = 63

Gurjit = 68% of 75 = 51

Priya = 64% of 75 = 48

Average marks in E = $(42 + 69 + 54 + 63 + 51 + 48)/6 = 327/6 = 54.5$

Difference = $106.5 - 54.5 = 52$

Q35. Total marks obtained in all the six subjects together is more than 490 by exactly _____ students.

A. two

B. three

C. four

D. five

Answer:

B

Sol: Anil's marks in

Subject A = 66% of 150 = 99

Subject B = 75% of 100 = 75

Subject C = 88% of 150 = 132

Subject D = 56% of 125 = 70

Subject E = 56% of 75 = 42

Subject F = 90% of 50 = 45

Total marks of anil = 463

Arman's marks in

Subject A = 80%

Subject B = 70%

Subject C = 85%

Subject D = 60%

Subject E = 90%

Subject F = 80%

Total marks = 568

Arpit's marks in

Subject A = 70%

Subject B = 60%

Subject C = 75%

Subject D = 80%

Subject E = 70%

Subject F = 70%

Total marks = 568

Gaurav's marks in

Subject A = 80%

Subject B = 80%

Subject C = 90%

Subject D = 80%

Subject E = 84% of 75 = 63

Subject F = 86% of 50 = 43

Total marks of gaurav = 568

Gurjit's marks in

Subject A = 64% of 150 = 96

Subject B = 70% of 100 = 70

Subject C = 68% of 150 = 102

Subject D = 72% of 125 = 90

Subject E = 68% of 75 = 51

Subject F = 74% of 50 = 37



Total marks of gurjit = 446

Priya's marks in

Subject A = 48% of 150 = 72

Subject B = 56% of 100 = 56

Subject C = 50% of 150 = 75

Subject D = 64% of 125 = 80

Subject E = 64% of 75 = 48

Subject F = 58% of 50 = 29

Total marks of priya = 360

Q36. There are fifteen successive percentage discounts given in a series of 2%, 4%, 6%, 8%, _____ on an item. At the end of the series, the price of the item cannot be higher than 50%?

- A. 7th
- B. 10th
- C. 8th
- D. 6th

Answer:

C

Sol:

from options:

$$\text{On taking six successive percentage discount} = 100 - 100 \times \frac{98}{100} \times \frac{96}{100} \times \frac{94}{100} \times \frac{92}{100} \times \frac{90}{100} \times \frac{88}{100} \\ = 100 - 64.43 = 35.57\%$$

$$\text{On taking seven successive percentage discount} = 100 - 100 \times \frac{98}{100} \times \frac{96}{100} \times \frac{94}{100} \times \frac{92}{100} \times \frac{90}{100} \times \frac{88}{100} \times \frac{86}{100} \\ = 100 - 55.41 = 44.59\%$$

$$\text{On taking eight successive percentage discount} = 100 - 100 \times \frac{98}{100} \times \frac{96}{100} \times \frac{94}{100} \times \frac{92}{100} \times \frac{90}{100} \times \frac{88}{100} \times \frac{86}{100} \times \frac{84}{100} \\ = 100 - 46.54 = 53.46\%$$

Therefore, after eight such successive discounts will be effective discount higher than 50%.

Q37. Which of the following universities were established in the year 1857?

- A. Calcutta University
- B. Bombay University
- C. Madras University
- D. Allahabad University

Choose the correct answer from the options given below:

- A. A, B and D only
- B. A, B and C only
- C. B, C and D only
- D. A, C and D only

Answer:

B

Sol: Calcutta University, Bombay University, and Madras University were all established in the year 1857, making them some of the oldest universities in India. These universities were set up by the British in an effort to promote Western-style higher education in India.

Information booster:

Allahabad University, however, was established later, in 1887. It is not part of the group of universities established in 1857.

Therefore, the correct combination is Calcutta University (A), Bombay University (B), and Madras University (C).

Q38. Arrange

1. AICTE
2. UGC
3. ICSSR
4. NAAC

- A. 1, 2, 3, 4
- B. 4, 3, 2, 1
- C. 2, 1, 4, 3
- D. 1, 2, 4, 3

Answer:

A

Sol: Introduction

Chronology of the establishment of these bodies: Each body was established to address specific challenges. Media evolved politically, economically, and technologically.

Information:

1. AICTE (1987): The earliest among these, AICTE was formed to oversee technical and engineering education.
2. UGC (1956): Established to regulate higher education in the university sector, ensuring coordination and standards.
3. ICSSR (1985): Focuses on social science research. Through grants and scholarships, ICSSR encourages studies on socio-economic issues and policy formulation.
4. NAAC (1994): Created to ensure quality and accountability in institutions through a structured accreditation process.

Additional Knowledge:

The creation of NAAC marked a new era in higher education quality assurance. Today, institutions accredited by NAAC are recognised globally for maintaining excellence.

Q39. Variance of the data 2, 4, 5, 6, 8, 17 is 23.33. Then the variance of 4, 8, 10, 12, 16, 34 will be:

- A. 11.66
- B. 46.66

C. 93.33

D. 4.83

Answer:

C

Sol:

$$\text{S.D of 1}^{\text{st}} \text{ series} = \sqrt{23.33} \quad \dots(i)$$

$$\text{S.D. of 2}^{\text{nd}} \text{ series} = 2 \times \sqrt{23.33}$$

$$\Rightarrow \text{Variance of 2}^{\text{nd}} \text{ series} = 4 \times 23.33 = 93.33$$

Q40. Which of the following universities provided holistic and multidisciplinary education?

- A. Takshashila
- B. University of Mumbai
- C. University of Calcutta
- D. Nalanda

Answer:

A

Sol: Introduction

The question asks about universities that provided holistic and multidisciplinary education. The model of higher education that emerged in the West, predating the modern university system, was holistic and multidisciplinary. It was established in ancient times.

Information

- Takshashila University was one of the earliest known universities in the world, flourishing from at least the 5th century BCE until the 5th century CE. It was a center of learning offering a vast array of subjects, including philosophy, medicine, astronomy, grammar, and more. The breadth makes it the quintessential example of a multidisciplinary learning institution.

- Nalanda University was a major center of learning in ancient India, known for its Buddhist teachings, but was also a hub for other disciplines. It was one of the two great ancient centers.

- University of Mumbai (b) and University of Calcutta (c) were established in 1857 under the British rule based on the model of the University of London, which introduced a more specialized, Western-style curriculum, and are therefore not examples of the first holistic, multidisciplinary model.

Additional Knowledge:

Ancient Indian universities like Takshashila and Nalanda emphasized not only academic knowledge but also the development of a student's character, skills, and ethical behavior, aligning perfectly with the concept of holistic education that NEP 2020 seeks to revive.

Q41. Match List I with List II:

List I (Verticles of Higher Education Commission of India (HECI))	List II (Name of the Vertical)
A. First Vertical of HECI	I. General Education Council (GEC)
B. Second Vertical of HECI	II. National Higher Education Regulatory Council (NHERC)
C. Third Vertical of HECI	III. National Accreditation Council (NAC)
D. Fourth Vertical of HECI	IV. Higher Education Grants Council (HEGC)

Choose the correct answer from the options given below:

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

Answer:

A

Sol: The correct answer is A.

- A. First Vertical of HECI is responsible for the regulation of higher education in India.
- B. Second Vertical of HECI is responsible for the regulation of higher education in India.
- C. Third Vertical of HECI is responsible for the regulation of higher education in India.
- D. Fourth Vertical of HECI is responsible for the regulation of higher education in India.

Information:

1. HECI: The Higher Education Commission of India is proposed to be set up in India.
2. NHERC: The National Higher Education Regulatory Council is responsible for the regulation of higher education in India.
3. NAC: The National Accreditation Council is responsible for the regulation of higher education in India.
4. HEGC: The Higher Education Grants Council is responsible for the regulation of higher education in India.
5. GEC: The General Education Council is responsible for the regulation of higher education in India.

Q42. Match List I with List II:

Column-I (Commission)	Column-II (Key Recommendation)
(A) Sadler Commission	1. Transformation of universities into teaching and residential bodies
(B) Radhakrishnan Commission	2. Emphasis on moral and spiritual education
(C) Kothari Commission	3. Introduction of the 10+2+3 educational structure
(D) Sargent Plan	4. Compulsory and free education for all children up to the age of 14

- A. A-(1), B-(2), C-(3), D-(4)
- B. A-(2), B-(1), C-(4), D-(3)
- C. A-(3), B-(4), C-(1), D-(2)
- D. A-(4), B-(3), C-(2), D-(1)

Answer:

A

Sol: Introduction

Education in India has been shaped by several committees and commissions appointed during the colonial as well as post-independence period. Each commission made recommendations addressing challenges of its time, which collectively guided the evolution of India's educational policy framework. Questions on matching commissions with their recommendations are common in UGC NET as they test factual recall along with conceptual clarity about Indian education history.

Information Booster

Let us analyze each Commission one by one:

1. Sadler Commission (1917–1919, Calcutta University Commission)

- Appointed to study the state of university education in India, emphasizing that universities should be self-governing.
- Recommended the establishment of a system of universities.

• Suggested

• Hence, A →

2. Radhakrishnan Commission (1948–1949, University Education Commission)

- Appointed to study the state of university education in India.

• Stressed on the importance of research and innovation along with

• Recommended the establishment of a system of universities, emphasizing

• Hence, B →

3. Kothari Commission (1959–1967, Education Commission)

- First comprehensive commission on education in India after

• Introduced the concept of a 10+2+3 system (10 years of school education + 2 years of higher secondary education + 3 years of degree).

• Advocated education as a means of national development and social reform.

• Hence, C →

4. Sargent Plan (1944)

• Formulated

• Proposed

• Also suggested

• Hence, D → (4).

Therefore, the correct matching is: A-(1), B-(2), C-(3), D-(4).

Additional Information

- Sadler Commission: Called the "Magna Carta of Indian Education." It influenced later educational reforms.
- Radhakrishnan Commission: Provided the philosophical foundation of higher education, stressing cultural and ethical values.
- Kothari Commission: Its report became the basis of the National Policy on Education (1968).
- Sargent Plan: Though ambitious, it was considered impractical due to India's financial and infrastructural limitations at that time.

Q43. Given below are two statements:

Statement I: Reputed scholars like Panini and Chanakya had their education from Nalanda university

Statement II: Thakshashila was university known for its education in Indian arts and science especially medicine

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

Answer:

D

Sol: Statement I is true as Kautilya or Vishnugupta was a famous scholar. Panini is believed to have studied at Nalanda associated with the ancient Sanskrit language. Statement II is false as Thakshashila was an ancient university known in various Indian arts and sciences. It was one of the world and attracted students from other parts of the world and a wide range of subjects, including medicine.

Q44. Which of the following is not related to the quality of research articles?

- (A) number of publications
- (B) impact factor
- (C) citation index
- (D) frequency of publication
- (E) h-index

Choose the correct answer from the options given below.

- A. (A), (C) and (E)
- B. (B), (C) and (D)
- C. (B), (C) and (E)
- D. (A), (C) and (D)

Answer:

C

Sol: The quality of research articles is typically evaluated using the following metrics:

- Impact Factor (B): Measures the average number of citations to articles published in a specific journal. Higher impact factors suggest that the journal's articles are frequently cited, indicating high quality.
- Citation Index (C): Tracks how many times an article has been cited in other research, reflecting its influence and relevance in the academic community.
- h-index (E): Combines the number of publications and their citations to measure both the productivity and impact of a researcher or journal. A high h-index indicates significant contributions to the field.

The number of research articles (A) and the frequency of their publication (D) are not directly related to the quality of the research but rather to quantity and regularity.

Information Booster: 1. Impact factor is commonly used to assess journals, reflecting their influence based on citation frequency.

2. Citation index measures the impact of individual research articles based on how often they are referenced by other scholars.

3. h-index evaluates both the productivity and the citation impact of a scholar or research group.

4. The number of research articles published does not necessarily indicate quality but can reflect productivity.

5. The frequency of publication pertains to how often a journal issues new articles but is not a measure of article quality.

Q45. Which of the following scales of measurement scales from lowest to highest mathematical sophistication? (1 mark)

- Ratio Scale
- Nominal Scale
- Interval Scale
- Ordinal Scale

- iv, ii, iii, i
- ii, iv, iii, i
- ii, iii, iv, i
- iv, iii, ii, i

Answer:

B

Sol: Introduction to statistics are performed on data and statistical analyses that are appropriate for understanding and interpreting the data. Proper data analysis is essential for understanding the data.

Information Booster:

- ii. Nominal Scale: Used for categorical data without quantitative value (e.g., gender, eye color).
- iv. Ordinal Scale: Used for data that can be ranked (e.g., socioeconomic status, Likert scale responses).

3. iii. Interval Scale: Has equal intervals between values but no true zero point (e.g., temperature in Celsius, IQ scores). Permits mean, standard deviation, and correlation analysis.

4. i. Ratio Scale (Highest): Has equal intervals and a true zero point (e.g., height, weight, income). Permits all statistical operations including ratio comparisons.

Additional Knowledge:

- The hierarchy reflects increasing mathematical sophistication: nominal (classification only) → ordinal (classification + order) → interval (classification + order + equal intervals) → ratio (classification + order + equal intervals + true zero). This progression determines which parametric or non-parametric tests are appropriate.

Q46. If the statement "No birds are animals" is given as false, which of the following statements can be inferred to be true?

- A. Some animals are not birds.
- B. Some birds are not animals.
- C. Some animals are birds.
- D. Some birds are animals.

Choose the most appropriate answer from the options given below:

- A. A and B only
- B. C and D only
- C. B only
- D. A, B, C and D

Answer:

B

Sol: Introduction of a statement that is the converse of a categorical proposition is true when the original proposition is false. This is because the truth value of a categorical proposition is determined by the truth value of its converse. In this case, the statement "No birds are animals" is given as false, which means its converse, "Some birds are animals", must be true.

- S = B
- P = A

Given Statement:

- This is an E (Universal Negative) proposition: "No S are P."
- It is given as false.

Now, let's analyze the options:

1. Contradiction (E):
 - o Contradictory propositions always have opposite truth values. If one is true, the other must be false.
 - o Contradiction of an E (Universal Negative: "No S are P") is an I (Particular Affirmative: "Some S are P").
 - o Since the given statement is false, its contradictory proposition must be true.

2. Conversion of I Propositions:

- o I propositions (Particular Affirmative) convert simply. This means that if "Some S are P" is true, then "Some P are S" is also true.
- o Since we inferred that "Some birds are animals" (D) is TRUE, its converse, "Some animals are birds" (C), must also be TRUE.
- o This matches option C. Some animals are birds. So, C is TRUE.

Now let's consider the other options:

- A. Some animals are not birds.
 - o This is an O (Particular Negative) proposition: "Some P are not S."

- o From "No birds are animals" (E) being FALSE, we cannot logically infer the truth value of "Some animals are not birds" (A) using immediate inferences of the Square of Opposition. While in the real world (where birds are a subset of animals), "Some animals are not birds" is true (e.g., a dog is an animal but not a bird), this truth is not logically necessitated solely by the falsity of "No birds are animals." For instance, if "birds" and "animals" were co-extensive (meaning all birds are animals and all animals are birds), then "No birds are animals" would be false, but "Some animals are not birds" would also be false. Therefore, we cannot infer A to be true based only on the given false statement.

- B. Some birds are not animals.

- o This is an O (Particular Negative) proposition: "Some S are not P."
- o This is the subaltern of the given E proposition ("No birds are animals").
- o

Conclusion:

"No birds are animals" is false.
Therefore, the given statement is true.

Q47. The Square of Opposition represents the logical relationships between corresponding A, E, I, and O propositions. Arrange the following relationships in order of strength from strongest to weakest.

- I Contradictory
- II Contrary
- III Subcontrary
- IV Subalternation

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

Answer:

B

Sol: Introduction: The Square of Opposition is a diagram that represents the logical relationships between corresponding A, E, I, and O propositions that have the same subject and predicate terms. These relationships have varying degrees of logical force.

Information Booster: The relationships, from strongest to weakest, are:

1. II Contrary: Holds between A and E propositions. They cannot both be true, but they can both be false. This is a very strong relationship of opposition.
2. I Contradictory: Holds between A and O, and between E and I. They always have opposite truth values. If one is true, the other must be false, and vice versa. This is the strongest possible opposition.



3. III Subcontrary: Holds between I and O propositions. They cannot both be false, but they can both be true. This is a weaker relationship.

4. IV Subalternation: Holds between A and I, and between E and O. If the universal (A or E) is true, the corresponding particular (I or O) must also be true. This is an implicative relationship, not one of opposition, making it the "weakest" in terms of direct conflict.

Additional Knowledge: The Square of Opposition assumes that the subject class (S) is not empty. This is known as the existential import. In modern logic, often only the I and O propositions are considered to have existential import.

Q48. Match List I with List II.

List I (Statements)	List II (Options)
A. No fishes are mammals.	
B. All fishes are mammals.	
C. Some fishes are mammals.	
D. Some mammals are fishes.	

Choose the correct match from the options given below:

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

Answer:

C

Sol: The correct match is:

- No fishes are mammals. This is logically equivalent to I. No fishes are mammals.
- Both statements indicate that there is no overlap between the categories of fishes and mammals.
- All fishes are mammals is logically equivalent to I. No fishes are mammals.
- If all fishes are mammals, it means there are no fishes that are not mammals.
- Some fishes are mammals.
- If some fishes are mammals, it implies that some fishes belong to the non-mammal category.
- Some mammals are fishes.
- If some mammals are not fishes, it implies that some mammals belong to the non-fish category.

Q49. Find the missing number in the following series:

(-1), 2, 7,, 23, 34

- A. 12
- B. 13
- C. 14
- D. 15

Answer:

B

Sol: Observe the pattern of differences between consecutive terms. The series starts from -1 and each next term is obtained by adding consecutive odd numbers starting from 3. The differences increase regularly: $+3, +5, +7, +9, +11$. Applying this pattern, the missing term after 7 is obtained by adding 6? No—adding the next odd number ($+6$ is incorrect); instead $+6$ is skipped, and $+6 + 1 = +7$ gives the correct progression. Hence, the missing term is 13, and the series continues consistently up to 34.

Information Booster:

1. Difference pattern:
 - o $2 - (-1) = 3$
 - o $7 - 2 = 5$
 - o $13 - 7 = 6$ (check skipped)
 - o Correct pattern resumes as odd increments
2. Final
3. Serie
4. Nega
5. Such

Q50. In the _____ cause _____ is fragrant”,
e.g., “Lotus g _____
Mention the _____

- A. Swar
- B. Ashr
- C. Vyāp
- D. Viru

Answer:

B

Sol: The term _____ refers to a non-existent entity. Since the subject (śāyā / _____) itself does not exist, the _____ (bhāṅga) cannot meaningfully apply to it. In Indian logic (śāyā), this defect is called Ashrayasiddha — the fallacy of an unsupported locus.