

(1-5)

The following table shows the number of students (Boys and Girls) and the percentage of girls who passed in a 10+2 examination from six different schools (A–F) in the year 2023 and 2024. Based on the data in the table, answer the questions that follow.

School-wise Details of Students Passing in a 10+2 Examination

School	2023 – Number of Passed Students	2023 – Percentage of Passed Girls	2024 – Number of Passed Students	2024 – Percentage of Passed Girls
A	500	46%	550	44%
B	600	42%	640	40%
C	650	56%	560	45%
D	720	60%	800	48%
E	600	54%	840	55%
F	650	50%	750	36%

1) What is the average number of boys who passed in the 10+2 examination in the year 2024 from all the six schools (A–F) together?

- (A) 376
- (B) 377
- (C) 378
- (D) 379

Correct Answer: (D) 379

Explanation:

Number of Boys = Total Passed Students – Number of Girls.

For 2024:

$$A = 550 \times 56\% = 308$$

$$B = 640 \times 60\% = 384$$

$$C = 560 \times 55\% = 308$$

$$D = 800 \times 52\% = 416$$

$$E = 840 \times 45\% = 378$$

$$F = 750 \times 64\% = 480$$

$$\text{Total boys} = 308 + 384 + 308 + 416 + 378 + 480 = \mathbf{2274}$$

$$\text{Average} = 2274 \div 6 = \mathbf{379}$$

Therefore, the correct answer is **(D) 379**.

2) What is the ratio of the number of boys who passed from School A in 2023 to the number of girls who passed from School E in the year 2023?

- (A) 4 : 3
- (B) 5 : 4
- (C) 5 : 6
- (D) 6 : 7

Correct Answer: (C) 5 : 6

Explanation:

For School A in 2023, girls constitute 46%, so boys constitute **54%**.

Number of boys in School A = $500 \times 54/100 = 270$

For School E in 2023, girls constitute 54%.

Number of girls in School E = $600 \times 54/100 = 324$

Required ratio = 270 : 324

Dividing both terms by 54:

270 : 324 = **5 : 6**

Therefore, the correct answer is **(C) 5 : 6**.

3) For School F, the number of boys who passed in the year 2024 is approximately _____ % more than that in 2023.

- (A) 42.5
- (B) 47.7
- (C) 52.8
- (D) 57.5

Correct Answer: (B) 47.7

Explanation:

In 2023, School F had 50% girls, so boys were also 50%.

Boys in 2023 = $650 \times 50\% = 325$

In 2024, girls were 36%, so boys were 64%.

Boys in 2024 = $750 \times 64\% = 480$

$$\text{Increase} = 480 - 325 = 155$$

$$\text{Percentage increase} = (155 \div 325) \times 100 = 47.69\% \approx 47.7\%$$

Therefore, the correct answer is **(B) 47.7**.

4) The average number of girls who passed in the year 2024 from all the six schools is _____ % of the number of students who passed from School A in the year 2023.

- (A) 61.1
- (B) 62.2
- (C) 63.3
- (D) 64.4

Correct Answer: (B) 62.2

Explanation:

Number of girls in 2024:

$$\begin{aligned} A &= 550 \times 44\% = 242 \\ B &= 640 \times 40\% = 256 \\ C &= 560 \times 45\% = 252 \\ D &= 800 \times 48\% = 384 \\ E &= 840 \times 55\% = 462 \\ F &= 750 \times 36\% = 270 \end{aligned}$$

Total girls = **1866**

$$\text{Average} = 1866 \div 6 = 311$$

School A's total passed students in 2023 = **500**

$$\text{Required percentage} = (311 \div 500) \times 100 = 62.2\%$$

Therefore, the correct answer is **(B) 62.2**.

5) Number of boys who passed in the examination is more than 300 in the year 2023 as well as in 2024 in only _____ schools.

- (A) two
- (B) three
- (C) four
- (D) five

Correct Answer: (A) two

Explanation:

The number of boys in 2023 and 2024 respectively is:

A = 270, 308

B = 348, 384

C = 286, 308

D = 288, 416

E = 276, 378

F = 325, 480

For the condition to be satisfied, the number of boys must be **more than 300 in both 2023 and 2024**. Only **School B (348, 384)** and **School F (325, 480)** satisfy this condition.

Hence, the total number of schools is **two**.

Therefore, the correct answer is **(A) two**.

6. The role of a teacher in supporting experiential learning can't be of a/the _____.

(A) Coach

(B) Mentor

(C) Tutor

(D) Technology

Correct Answer: (D) Technology

Explanation:

Experiential learning emphasizes learning through direct experience, reflection, and active participation. In this approach, a teacher can perform different supportive roles such as a **coach**, who guides learners through activities; a **mentor**, who provides advice and encouragement; and a **tutor**, who assists learners in developing knowledge and skills. **Technology**, however, is not a role that a teacher can perform; it is a tool or resource that may be used to facilitate experiential learning. Therefore, Technology is the correct answer.

7. Which of the following is not considered as self-generated feedback?

(A) Assurance

(B) Previewing

(C) Retracing

(D) Observation

Correct Answer: (A) Assurance

Explanation:

Self-generated feedback refers to information that learners obtain by monitoring and evaluating their own learning or performance. **Previewing** helps learners anticipate and examine a task before performing it, **retracing** involves reviewing the steps or processes already followed, and **observation** allows learners to monitor their own actions and outcomes. These processes can contribute to self-generated feedback. **Assurance**, on the other hand, refers to confirmation or encouragement rather than a process through which learners generate feedback for themselves. Therefore, Assurance is not considered self-generated feedback.

8. Arrange the level of Bloom's Taxonomy from lower to higher order in the cognitive domain.

- A. Analyzing
- B. Understanding
- C. Applying
- D. Evaluating
- E. Remembering

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

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

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

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

Correct Answer: (B) E, B, C, A, D

Explanation:

In the Revised Bloom's Taxonomy, the cognitive domain progresses from simple thinking skills to more complex higher-order thinking skills. The complete sequence is **Remembering → Understanding → Applying → Analyzing → Evaluating → Creating**.

Among the levels given in the question, the correct order from lower to higher is:

Remembering (E) → Understanding (B) → Applying (C) → Analyzing (A) → Evaluating (D)

Remembering involves recalling information, Understanding involves explaining its meaning, Applying involves using knowledge, Analyzing involves breaking information into parts and examining relationships, and Evaluating involves making judgments based on criteria. Therefore, **E, B, C, A, D** is the correct sequence.

9. What among the following are known as Assessment Instruments?

- A. Tests
- B. Examinations
- C. Rubrics
- D. Worksheets
- E. Quizzes

(A) A, B and E Only

(B) B, C, D and E Only

(C) D and E Only

(D) A, B, D and E Only

Correct Answer: (D) A, B, D and E Only

Explanation:

Assessment instruments are tools used to collect evidence about a learner's knowledge, skills, understanding, or performance. **Tests, examinations, worksheets, and quizzes** can directly elicit learner responses and provide evidence that can be assessed. Hence, A, B, D, and E are included as assessment instruments in this question.

A **rubric**, in this classification, is primarily an **assessment/scoring criterion or guide** used to judge and grade the quality of a learner's performance rather than the instrument used to elicit the response itself. Therefore, the correct combination is **A, B, D and E Only**.

10. Match the LIST-I with LIST-II

LIST-I (Principle)	LIST-II (Implication)
A. Encouraging student's deep approaches to learning objectives	I. Feedback should be embedded within assessment practices.
B. The summative and formative assessments to be learning oriented	II. Task design should be approached from a program-wide perspective.
C. Facilitating dialogic forms of feedback	III. Greater sense of ownership by students

D. Involving some personal student investment	IV. A variety of assessment for student motivation.
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(A) A-I, B-II, C-III, D-IV

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

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

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

Correct Answer: (B) A-II, B-IV, C-I, D-III

Explanation:

The principles are matched with their appropriate implications in learning-oriented assessment. **Encouraging deep approaches to learning objectives** requires assessment tasks to be designed coherently from a **program-wide perspective**, so A-II. Using both **summative and formative assessments** in a learning-oriented manner requires a **variety of assessments to support student motivation**, so B-IV.

Dialogic feedback involves interaction and discussion around performance; therefore, feedback should be **embedded within assessment practices**, giving C-I. Finally, **personal student investment** encourages active participation and responsibility, resulting in a **greater sense of ownership by students**, so D-III. Hence, the correct matching is **A-II, B-IV, C-I, D-III**.

11. What is not a Research?

(A) Research is a careful and exhaustive investigation of a phenomenon with an objective of advancing knowledge.

(B) It is a systematic and objective attempt to study a problem for the purpose of deriving general principles.

(C) Research is based on common sense knowledge, based on the accumulated experiences and beliefs of the people.

(D) It is a systematic investigation to find solutions to a problem.

Correct Answer: (C) Research is based on common sense knowledge, based on the accumulated experiences and beliefs of the people.

Explanation:

Research is a **systematic, objective, and scientific investigation** undertaken to generate knowledge, test ideas, understand phenomena, or find solutions to problems. It follows

established methods of collecting, analyzing, and interpreting evidence. Therefore, statements (A), (B), and (D) correctly describe important characteristics of research.

Common-sense knowledge based mainly on accumulated experiences and beliefs does not necessarily involve systematic investigation, objective verification, or scientific methodology. Such knowledge may provide ideas for research, but it cannot itself be regarded as research. Therefore, statement (C) is the correct answer.

12. Scientific Observations are based on _____.

- (A) Verifiable evidence or systematic body of proof that can be cited.
- (B) Accumulated experiences
- (C) Prejudices
- (D) Beliefs of the people

Correct Answer: (A) Verifiable evidence or systematic body of proof that can be cited.

Explanation:

Scientific observation is based on **objective, systematic, and verifiable evidence** that can be examined, tested, and supported by others. Scientific knowledge requires evidence that can be documented and subjected to verification rather than relying merely on personal experiences or opinions. **Accumulated experiences, prejudices, and people's beliefs** may be subjective and are not sufficient evidence for scientific conclusions. Therefore, scientific observations are based on **verifiable evidence or a systematic body of proof that can be cited**.

13. For different sets of datasets X and Y, correlation coefficient between X and Y, that is R and standard deviation of X and Y, that is, S(X) and S(Y) are given in A-D below. Estimate the covariance between X and Y for each dataset and arrange in ascending order.

- A. $R = 0.5$, $S(X) = 8$, $S(Y) = 10$
- B. $R = 4/7$, $S(X) = 7$, $S(Y) = 9$
- C. $R = 0.7$, $S(X) = 12$, $S(Y) = 5$
- D. $R = 19/42$, $S(X) = 14$, $S(Y) = 6$

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

(D) A, C, D, B

Correct Answer: (C) B, D, A, C

Explanation:

The relationship between correlation coefficient and covariance is:

$$\text{Cov}(X,Y) = R \times S(X) \times S(Y)$$

Now calculate the covariance for each dataset:

$$A = 0.5 \times 8 \times 10 = 40$$

$$B = 4/7 \times 7 \times 9 = 36$$

$$C = 0.7 \times 12 \times 5 = 42$$

$$D = 19/42 \times 14 \times 6 = 38$$

Therefore, in ascending order:

$$\mathbf{B (36) < D (38) < A (40) < C (42)}$$

Hence, the correct sequence is **B, D, A, C**.

14. Criteria for Hypotheses construction are

- A. It should describe one issue only.
- B. It should describe many issues.
- C. It should specify variables between which the relationship is to be established.
- D. It should be specific and precise.
- E. It should be empirically testable, whether it is right or wrong.

(A) B Only

(B) A, B and C Only

(C) A, C, D and E Only

(D) A, B, C and D Only

Correct Answer: (C) A, C, D and E Only

Explanation:

A well-constructed hypothesis should be **clear, specific, precise, and empirically testable**. It should normally focus on **one issue or relationship** rather than combining several

unrelated issues, making statement A correct and B incorrect. It should clearly identify the **variables and the expected relationship between them**, so C is correct. It must also be stated precisely to avoid ambiguity, making D correct. Finally, a scientific hypothesis must be capable of being **tested empirically** so that evidence can support or reject it; therefore, E is also correct.

Hence, the appropriate criteria are **A, C, D and E Only**.

15. Match the LIST-I with LIST-II

LIST-I (Concepts)	LIST-II (Meanings)
A. Theory	I. Generalized representations of a system or an object, that is constructed to some aspects of that system or the system as a whole.
B. Model	II. Research problem is represented by a mathematical model.
C. Survey	III. It is a set of systematically interrelated propositions that explain and predict a phenomenon or a fact.
D. Modeling	IV. It is a data collection technique using a questionnaire.

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

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

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

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

Correct Answer: (D) A-III, B-I, C-IV, D-II

Explanation:

A **Theory** consists of systematically interrelated concepts or propositions used to explain and predict phenomena; therefore, A matches III. A **Model** is a generalized or simplified representation of a system or object, so B matches I. A **Survey** is a method of collecting data, commonly through questionnaires, making C-IV. **Modeling** involves representing a research problem through a model, including a mathematical model, so D-II.

Therefore, the correct matching is **A-III, B-I, C-IV, D-II**.

16. When a person is talking to himself/herself or contemplating or dreaming while in sleep, then this type of communication is known as

- (A) Inter-personal
- (B) Intra-personal
- (C) Inter-cultural
- (D) Inter-national

Correct Answer: (B) Intra-personal

Explanation:

Intrapersonal communication refers to communication that occurs **within an individual**. It includes internal dialogue, self-talk, thinking, contemplation, imagination, and dreaming. Here, the person acts as both the sender and receiver of the communication. In contrast, interpersonal communication occurs between two or more individuals, while intercultural and international communication involve communication across cultures or nations. Therefore, talking to oneself, contemplating, or dreaming is classified as **intrapersonal communication**.

17. If the sender has not formulated the idea, thought or message in proper manner, it can result into a barrier in communication. The barrier occurs at what level?

- (A) Transmission stage
- (B) At the end of the decoder
- (C) At the level of the encoder
- (D) Technical stage

Correct Answer: (C) At the level of the encoder

Explanation:

In the communication process, the **sender acts as the encoder**, converting an idea, thought, or information into words, symbols, gestures, or other forms of message. If the sender has not formulated the idea clearly or fails to encode it properly, the intended meaning may not be communicated accurately. This creates a barrier **at the level of the encoder**, even before the message reaches the receiver. Transmission barriers occur while the message is being sent, whereas decoding problems occur at the receiver's end. Therefore, the correct answer is **at the level of the encoder**.

18. As of February 28, 2025, write the highest grossing Indian films starting from highest grossing to the lowest grossing.

- A. Bahubali-2
- B. RRR
- C. Pushpa-2
- D. KGF- Chapter 2
- E. Dangal

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

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

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

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

Correct Answer: (A) E, A, C, B, D

Explanation:

Based on worldwide box-office gross, the films in the question are ranked from highest to lowest as **Dangal**, **Baahubali 2: The Conclusion**, **Pushpa 2: The Rule**, **RRR**, and **KGF: Chapter 2**. Contemporary figures place Dangal at about ₹2,000 crore or more worldwide, followed by Baahubali 2 at about ₹1,810 crore and Pushpa 2 at roughly ₹1,700–1,800 crore. RRR and KGF: Chapter 2 follow with lower worldwide grosses.

Therefore, the correct descending order is:

Dangal (E) → Bahubali-2 (A) → Pushpa-2 (C) → RRR (B) → KGF-Chapter 2 (D)

Hence, the correct answer is **E, A, C, B, D**.

19. What among the following are some media organisations?

- A. Registrar of Newspaper for India (RNI)
- B. National Institute of Fashion Technology (NIFT)
- C. The Press Council of India (PCI)
- D. Audit Bureau of Circulation Ltd (ABC)
- E. University School of Mass Communication (USMC)

(A) B and E Only

(B) A and B Only

(C) A, C and D Only

(D) A, B and C Only

Correct Answer: (C) A, C and D Only

Explanation:

RNI, PCI, and ABC are organisations associated with India's print media and newspaper sector. The **Registrar of Newspapers for India (RNI)** deals with registration and related regulatory functions concerning newspapers and periodicals. The **Press Council of India (PCI)** is a statutory body concerned with preserving the freedom of the press and maintaining journalistic standards. The **Audit Bureau of Circulations (ABC)** verifies and certifies circulation figures of publications.

In contrast, **NIFT** is an educational institution specializing in fashion education, while **USMC** is an academic institution for education in mass communication rather than a media regulatory or industry organisation. Therefore, **A, C and D Only** is the correct answer.

20. Match the LIST-I with LIST-II

LIST-I (Films)	LIST-II (Year of release)
A. Mugle Azam	I. 1975
B. Sholay	II. 1973
C. Bobby	III. 1989
D. Maine Pyar Kiya	IV. 1960

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

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

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

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

Correct Answer: (B) A-IV, B-I, C-II, D-III

Explanation:

The films can be matched with their respective release years based on their original theatrical releases. **Mughal-e-Azam** was released in **1960**, so A-IV. **Sholay** was released in **1975**, making B-I. **Bobby** was released in **1973**, so C-II. **Maine Pyar Kiya** was released in **1989**, making D-III.

Therefore, the correct matching is **A-IV, B-I, C-II, D-III**.

21. Find the wrong term in the series given below:

3, 12, 36, 144, 432, 1738, 5184

- (A) 12
- (B) 432
- (C) 1738
- (D) 5184

Correct Answer: (C) 1738

Explanation:

The series follows an alternating multiplication pattern of $\times 4$ and $\times 3$:

$$\begin{aligned} 3 \times 4 &= 12 \\ 12 \times 3 &= 36 \\ 36 \times 4 &= 144 \\ 144 \times 3 &= 432 \\ 432 \times 4 &= \mathbf{1728} \\ 1728 \times 3 &= 5184 \end{aligned}$$

Therefore, the sixth term should be **1728**, but **1738** is given in the series. Hence, **1738 is the wrong term.**

Therefore, the correct answer is **(C) 1738**.

22. In a certain code language 'GERMANY' is coded as 9, 7, 20, 15, 3, 16, 27. How 'FRANCE' will be coded in this language?

- (A) 7, 19, 2, 15, 4, 6
- (B) 8, 20, 30, 16, 5, 7
- (C) 8, 20, 3, 16, 5, 7
- (D) 6, 18, 1, 14, 3, 5

Correct Answer: (C) 8, 20, 3, 16, 5, 7

Explanation:

The coding rule is obtained by taking the **alphabetical position of each letter and adding 2**.

For GERMANY:

$$\begin{aligned} G &= 7 + 2 = 9 \\ E &= 5 + 2 = 7 \\ R &= 18 + 2 = 20 \end{aligned}$$

$$M = 13 + 2 = 15$$

$$A = 1 + 2 = 3$$

$$N = 14 + 2 = 16$$

$$Y = 25 + 2 = 27$$

Applying the same rule to **FRANCE**:

$$F = 6 + 2 = 8$$

$$R = 18 + 2 = 20$$

$$A = 1 + 2 = 3$$

$$N = 14 + 2 = 16$$

$$C = 3 + 2 = 5$$

$$E = 5 + 2 = 7$$

Thus, **FRANCE = 8, 20, 3, 16, 5, 7.**

Therefore, the correct answer is **(C) 8, 20, 3, 16, 5, 7.**

23. The interest earned on ₹8000 when invested in some scheme for 2 years at 7% simple interest, per annum is half of the interest earned on another amount P invested for five years in the same scheme at the same rate of interest. Find the value of P.

(A) ₹6200

(B) ₹6000

(C) ₹6400

(D) ₹5000

Correct Answer: (C) ₹6400

Explanation:

Using the simple interest formula:

$$SI = (P \times R \times T) / 100$$

Interest on ₹8000 for 2 years at 7%:

$$SI = (8000 \times 7 \times 2) / 100 = \text{₹}1120$$

According to the question, ₹1120 is **half** of the interest earned on amount P. Therefore, interest on P:

$$SI = 1120 \times 2 = \text{₹}2240$$

Now,

$$2240 = (P \times 7 \times 5) / 100$$

$$P = (2240 \times 100) / 35 = \text{₹}6400$$

Therefore, the correct answer is (C) ₹6400.

24. Which of the following statement(s) is/are true?

A. Speed of x m/sec is equal to $x \times 5/18$ km/hr.

B. If a train runs at $5/6$ of its usual speed, it gets late by 10 minutes. The usual time of the train to cover the journey is 40 minutes.

C. A car moves at the speed of 80 Km/hr. The speed of the car in meters per second is $22 \frac{2}{9}$.

D. A person crosses a 600 m long street in 5 minutes. The speed of the person in Km per hour is 7.2.

(A) A, B and C Only

(B) A and B Only

(C) B, C and D Only

(D) C and D Only

Correct Answer: (D) C and D Only

Explanation:

Statement A is false: To convert m/sec into km/hr, we multiply by **$18/5$** , not $5/18$. Hence, x m/sec = $x \times 18/5$ km/hr.

Statement B is false: At $5/6$ of the usual speed, time becomes $6/5$ of the usual time. Therefore, the delay is $1/5$ of the usual time. If the delay is 10 minutes, usual time = $10 \times 5 =$ **50 minutes**, not 40 minutes.

Statement C is true:

$$80 \text{ km/hr} = 80 \times 5/18 = 200/9 = 22 \frac{2}{9} \text{ m/sec.}$$

Statement D is true:

$$\text{Speed} = 600 \text{ m} \div 5 \text{ min} = 120 \text{ m/min.}$$

$$\text{Converting into km/hr: } 120 \times 60/1000 = 7.2 \text{ km/hr.}$$

Thus, only **C and D are true**.

Therefore, the correct answer is (D) C and D Only.

25. A person takes a loan of ₹5000 at 5% simple interest. He returns ₹3000 at the end of one year. How much he would have to pay, in order to clear his dues, at the end of 2 years?

(A) ₹2450

(B) ₹2500

(C) ₹2350

(D) ₹2400

Correct Answer: (C) ₹2350

Explanation:

For the first year, simple interest on ₹5000 at 5% is:

$$\text{Interest} = (5000 \times 5 \times 1) / 100 = \text{₹250}$$

Thus, the amount due at the end of the first year = ₹5000 + ₹250 = ₹5250.

He pays ₹3000, so the remaining balance is:

$$\text{₹5250} - \text{₹3000} = \text{₹2250}$$

For the second year, interest is calculated on the unpaid principal portion of ₹2000:

$$\text{Interest} = (2000 \times 5 \times 1) / 100 = \text{₹100}$$

Therefore, the total amount required to clear the dues at the end of two years is:

$$\text{₹2250} + \text{₹100} = \text{₹2350}$$

Therefore, the correct answer is (C) ₹2350.

26. Which fallacy is committed in the following statement, “I can expect that you would not find any moral issue in making abortion illegal, since your ability to feel sympathy for the rights of women in general is very limited?”

(A) Begging the question

(B) Ad Hominem

(C) Hasty generalisation

(D) Slippery slope

Correct Answer: (B) Ad Hominem

Explanation:

The statement commits the **Ad Hominem fallacy** because instead of addressing the actual argument about whether making abortion illegal raises a moral issue, it attacks the person by claiming that their “ability to feel sympathy for the rights of women” is limited. An ad hominem fallacy occurs when a person’s character, motives, attitudes, or personal qualities are attacked rather than examining the merits of their argument. Here, the criticism of the person's capacity for sympathy is used to dismiss their presumed position without providing relevant reasoning about the moral or legal issue itself. Therefore, **Ad Hominem** is the correct answer.

27. Which of the following statements are logically equivalent?

- A. No soaps are writing-tools.
- B. All soaps are non-writing-tools.
- C. No non-writing-tools are soaps.
- D. No writing-tools are soaps.

Choose the correct answer from the options given below:

- (A) A and D Only
- (B) A, B and D Only
- (C) B and C Only
- (D) A and C Only

Correct Answer: (B) A, B and D Only

Explanation:

Statement A, “**No soaps are writing-tools,**” means that soaps and writing-tools have no members in common. Statement B, “**All soaps are non-writing-tools,**” expresses the same relationship because if no soap is a writing-tool, every soap must belong to the class of non-writing-tools. Statement D, “**No writing-tools are soaps,**” is also equivalent to A through **conversion of an E-type categorical proposition**: “No S are P” validly converts to “No P are S.”

However, Statement C, “**No non-writing-tools are soaps,**” means that soaps cannot be non-writing-tools, which is contrary to Statement B. Therefore, the logically equivalent statements are **A, B and D only**.

28. Which of the following propositions are so related that they cannot both be false, though they can both be true?

- A. Some poems are artworks.
- B. All poems are artworks.
- C. Some poems are not artworks.
- D. Some artworks are poems.

Choose the correct answer from the options given below:

(A) A and D Only

(B) A and C Only

(C) B and C Only

(D) A and B Only

Correct Answer: (B) A and C Only

Explanation:

The relationship described—**“cannot both be false, though they can both be true”**—is called **subcontrariety** in the traditional Square of Opposition. Subcontrariety exists between two particular propositions: the **I-proposition** (“Some S are P”) and the **O-proposition** (“Some S are not P”).

Statement A, **“Some poems are artworks,”** is an I-proposition, while Statement C, **“Some poems are not artworks,”** is an O-proposition. Both can be true if some poems are artworks while other poems are not. However, they cannot both be false under the traditional Square of Opposition. Therefore, **A and C Only** is the correct answer.

29. Arrange the following terms in order of increasing denotation.

- A. Chess
- B. Board games
- C. Sports
- D. Indoor games

Choose the correct answer from the options given below:

(A) A, B, C, D

(B) C, D, A, B

(C) C, D, B, A

(D) A, B, D, C

Correct Answer: (D) A, B, D, C

Explanation:

Denotation refers to the number or range of objects to which a term applies. Therefore, increasing denotation means arranging the terms from the **narrowest or most specific class to the broadest class**.

Chess has the smallest denotation because it refers to one specific game. **Board games** form a broader category that includes chess and many other games. **Indoor games** have still wider denotation because they include board games as well as various other games played indoors. **Sports** is the broadest term among the given terms, covering a wide variety of sporting activities.

Thus, the increasing order of denotation is **Chess → Board games → Indoor games → Sports**, i.e., **A, B, D, C**.

30. "The world is an effect and hence it must have an efficient and intelligent cause. That efficient and intelligent cause is God." Which means of knowledge is used in this argument as per classical Indian School of Logic (Nyāya)?

(A) Perception

(B) Inference

(C) Analogy

(D) Verbal authority

Correct Answer: (B) Inference

Explanation:

The argument uses **Inference (Anumāna)**, one of the accepted means of valid knowledge (Pramāṇa) in the Nyāya school. In inference, knowledge of something that is not directly perceived is obtained through reasoning based on a known relationship between a reason and what is to be established.

Here, the **world is regarded as an effect**, and from the general principle that an effect requires a cause, the existence of an **efficient and intelligent cause—God—is inferred**. God is not established here through direct perception, comparison, or verbal testimony, but through a reasoning process from effect to cause. Therefore, the means of knowledge used is **Inference (Anumāna)**.

31. In _____, each communicating device is connected with every other device in the computer network.

- (A) Star topology
- (B) Mesh topology
- (C) Bus topology
- (D) Ring topology

Correct Answer: (B) Mesh topology

Explanation:

In a **mesh topology**, each device in the network is connected through a dedicated point-to-point link to every other device. This provides multiple communication paths between devices and offers **high reliability and fault tolerance**, because the failure of one link generally does not disrupt communication through the remaining links.

In contrast, a **star topology** connects devices through a central hub or switch, a **bus topology** uses a common communication cable, and a **ring topology** connects devices in a circular sequence. Therefore, the topology in which each communicating device is connected with every other device is **Mesh topology**.

32. Which of the following is not a web browser?

- (A) Opera
- (B) Safari
- (C) Firefox
- (D) Google

Correct Answer: (D) Google

Explanation:

Google is not a web browser; it is primarily a **search engine** that allows users to search for information available on the Internet. Google's web browser is called **Google Chrome**.

In contrast, **Opera, Safari, and Firefox** are web browsers used to access and display websites and other web content. Opera is developed by Opera, Safari by Apple, and Firefox by Mozilla. Therefore, among the given options, **Google** is the correct answer because it refers to the search engine rather than a web browser.

33. Identify the sequence of appropriate words A-D that correctly fill the blanks in the following paragraph:

Radio _____ Identification Systems use radio waves to read and capture information stored on a tag, which can be read from several metres away. The _____ is made up of a(n) _____ to store and process data, and a(n) _____ to receive and transmit data.

- A. tag
- B. frequency
- C. antenna
- D. microchip

Choose the correct answer from the options given below:

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

Correct Answer: (C) B, A, D, C

Explanation:

The correct sequence describes **Radio Frequency Identification (RFID)** technology. Therefore, the first blank is **frequency**. An RFID system uses radio waves to identify and track objects carrying an RFID **tag**.

The RFID **tag** consists mainly of a **microchip**, which stores and processes information, and an **antenna**, which receives and transmits radio-frequency signals. Thus, the completed sequence is **frequency** → **tag** → **microchip** → **antenna**, corresponding to **B, A, D, C**.

34. Which of following statements are correct?

- A. Worm can be hardware and software.
- B. Cookies are used to store browsing information.
- C. Sandbox detection is malware identification method.
- D. HTTP has better security than HTTPS.
- E. Trojan is an antivirus.

Choose the correct answer from the options given below:

- (A) A, B and C Only
- (B) C and E Only

(C) B and C Only

(D) B and D Only

Correct Answer: (C) B and C Only

Explanation:

Statements **B and C are correct**. **Cookies** are small pieces of data stored by websites in a user's browser to retain information such as preferences, session details, and browsing-related information. **Sandbox detection** is also associated with malware identification and analysis, where suspicious programs are executed in an isolated environment so that their behaviour can be observed safely.

Statement A is incorrect because a **computer worm is a type of malicious software (malware), not hardware**. Statement D is incorrect because **HTTPS provides better security than HTTP** by encrypting communication using TLS. Statement E is also incorrect because a **Trojan is a type of malware disguised as legitimate software, not an antivirus program**. Therefore, **B and C Only** is correct.

35. Match the LIST-I with LIST-II

LIST-I (Recognition System)	LIST-II (Application)
A. MICR	I. Reading the car number plates
B. OCR	II. Capturing product information so that it can be added to the customer's purchase total
C. OMR	III. Reading the numbers found on a bank cheque
D. Barcode Reader	IV. Reading marks written using pencil or pen on a specially printed paper

Choose the correct answer from the options given below:

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

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

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

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

Correct Answer: (D) A-III, B-I, C-IV, D-II

Explanation:

MICR (Magnetic Ink Character Recognition) is mainly used in banking to read characters printed with magnetic ink on cheques, so **A-III**. **OCR (Optical Character Recognition)**

converts printed or written characters into machine-readable form and can be used for recognizing characters on vehicle number plates, so **B-I**.

OMR (Optical Mark Recognition) detects marks made with pencil or pen on specially designed forms, such as answer sheets, so **C-IV**. A **Barcode Reader** scans barcodes to retrieve product information, commonly at billing counters where the product is added to the customer's purchase total, so **D-II**. Therefore, the correct matching is **A-III, B-I, C-IV, D-II**.

36. What is the correct sequence, from initial to final, of blue baby disease, methemoglobinemia, in human infants?

- A. Conversion of nitrate ions to nitrite ions by microorganisms in human body
- B. Oxidation of ions from Fe(II) to Fe(III) in hemoglobin by nitrite ions.
- C. Consumption of nitrate polluted water
- D. Forming of abnormal hemoglobin called methemoglobin

Choose the correct answer from the options given below:

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

Correct Answer: (B) C, A, B, D

Explanation:

Methemoglobinemia or **blue baby syndrome** can occur in infants following exposure to water containing high levels of **nitrate**. The process begins with the **consumption of nitrate-polluted water (C)**. In the body, microorganisms convert nitrate ions into **nitrite ions (A)**.

These nitrite ions oxidize the iron in hemoglobin from the **ferrous state Fe(II) to the ferric state Fe(III) (B)**. This converts normal hemoglobin into abnormal **methemoglobin (D)**, which has a greatly reduced ability to carry and release oxygen effectively. Reduced oxygen delivery can produce bluish discoloration of the skin. Hence, the correct sequence is **C → A → B → D**.

37. Electrostatic Precipitator is used in Thermal Power Plants to remove which of the following air pollutants?

- (A) Polycyclic Aromatic Hydrocarbons

- (B) Gaseous Pollutants
- (C) Fly ash
- (D) Volatile Organic Compounds

Correct Answer: (C) Fly ash

Explanation:

An **Electrostatic Precipitator (ESP)** is an air-pollution control device widely used in thermal power plants to remove **fly ash and other fine particulate matter** from flue gases before they are released through the chimney. It works by electrically charging the suspended particles and then attracting them towards oppositely charged collecting plates.

ESP is particularly effective in removing very fine solid particles and can achieve a high particulate-removal efficiency. It is not primarily designed to remove gaseous pollutants or volatile organic compounds. Therefore, **fly ash** is the correct answer.

38. Match the LIST-I with LIST-II

LIST-I (Types of water pollutant)	LIST-II (Example)
A. Disease Causing Agent	I. Fine particles of clay
B. Oxygen Consuming Waste	II. Coliform bacteria
C. Plant Nutrient	III. Animals and Plants in aquatic habitat
D. Suspended Solids	IV. Phosphorous

Choose the correct answer from the options given below:

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

Correct Answer: (B) A-II, B-III, C-IV, D-I

Explanation:

Disease-causing agents in water include pathogenic microorganisms, and **coliform bacteria** are commonly used as indicators of microbial contamination; therefore, **A-II. Oxygen-consuming wastes** include biodegradable organic matter such as dead or decaying **plants and animals**, whose decomposition by microorganisms consumes dissolved oxygen; hence, **B-III.**

Plant nutrients include substances such as nitrogen and **phosphorus**, which promote aquatic plant and algal growth, so **C-IV**. **Suspended solids** are insoluble particles suspended in water, such as **fine particles of clay**, giving **D-I**. Therefore, the correct matching is **A-II, B-III, C-IV, D-I**.

39. Match the LIST-I with LIST-II

LIST-I (Waste water treatment process)	LIST-II (Explanation)
A. Ozonation	I. Removal of excess iron and manganese
B. Aeration	II. Removal of large solids
C. Flocculation	III. Disinfection
D. Screening	IV. Very small particles are clustered together

Choose the correct answer from the options given below:

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

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

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

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

Correct Answer: (A) A-III, B-I, C-IV, D-II

Explanation:

Ozonation uses ozone, a powerful oxidizing agent, primarily for **disinfection** by destroying microorganisms in water; hence, **A-III**. **Aeration** brings water into contact with air and assists in the oxidation and subsequent removal of dissolved **iron and manganese**, giving **B-I**.

Flocculation causes very small suspended particles to come together and form larger clusters called flocs, so **C-IV**. **Screening** is a preliminary treatment process in which screens physically remove **large solids and debris** from wastewater, giving **D-II**. Therefore, the correct matching is **A-III, B-I, C-IV, D-II**.

40. What is the correct increasing order of U-235 (fissile uranium) ratio in following?

A. Natural Uranium

B. Uranium Ore

C. Weapon grade uranium

D. Reactor grade uranium

Choose the correct answer from the options given below:

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

Correct Answer: (B) B, A, D, C

Explanation:

The question asks for the **increasing order of the proportion of U-235**. **Uranium ore** is placed first because it contains uranium mixed with other minerals and impurities. **Natural uranium** contains about **0.7% U-235**, with most of the remainder being U-238.

For many reactor applications, uranium is **enriched in U-235** above its natural proportion, so **reactor-grade uranium** comes next. **Weapon-grade uranium** has the highest U-235 enrichment among the given categories. Hence, the intended increasing order is **Uranium Ore → Natural Uranium → Reactor grade uranium → Weapon grade uranium**, i.e., **B, A, D, C**.

Q.41) Which of the following are the four guiding principles in the development of higher education in India?

- [a] Access, Authority, Equity and Equality
 - [b] Accountability, Freedom, Access and Free Education
 - [c] Access, Equity, Accountability and Equality
 - [d] Assessment, Equality, Affordability and Research Orientation
- [S1] No correct option is provided.

[EXPLANATION]

The recognised four guiding principles for developing higher education in India are:

Access, Equity, Accountability and Quality

- A. Incorrect. “Authority” and “Equality” do not complete the recognised set.
- B. Incorrect. “Based on freedom” and “Free” are not included as the four guiding principles.
- C. Incorrect as printed. “Equality” should be replaced with **Quality**. This would then become the correct option.
- D. Incorrect. Assessment, affordability and research orientation are important aspects of higher education, but they are not the specified four guiding principles.

42. The full form of AICTE is _____.

- (A) Academic Institutions Council of Teacher Education
- (B) All India Council for Technical Education
- (C) All India Constitution for Teacher Education
- (D) All India Institute for Teacher Education

Correct Answer: (B) All India Council for Technical Education

Explanation:

The full form of **AICTE** is **All India Council for Technical Education**. It is a statutory body concerned with the coordinated development and proper planning of the **technical education system in India**. Its functions include promoting quality and standards in technical education and dealing with matters related to technical institutions and programmes in accordance with its statutory mandate.

Therefore, **All India Council for Technical Education** is the correct expansion of AICTE.

43. Arrange the following components in the context of “Effective Learning Environment”.

- A. Continuous Formative Assessment
- B. Adequate Students Support
- C. Appropriate Curriculum
- D. Engaging Pedagogy
- E. Providing suitable resources and infrastructure

Choose the correct answer from the options given below:

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

Correct Answer: (C) C, D, A, B, E

Explanation:

An **effective learning environment** can be understood as a systematic arrangement of interconnected educational components. It begins with an **appropriate curriculum (C)** that defines relevant learning objectives and content. This is followed by **engaging pedagogy (D)**, through which the curriculum is effectively delivered to learners.

Next, **continuous formative assessment (A)** helps monitor students' learning progress and provides feedback for improvement. **Adequate student support (B)** addresses learners' academic and developmental needs, while **suitable resources and infrastructure (E)** provide the physical and technological conditions necessary to support the entire learning process. Therefore, the correct sequence is **C → D → A → B → E**.

44. In the Buddha Period, which educational centres were established along with monasteries?

- A. Ballabhi
- B. Baba Mastnath University
- C. Nalanda
- D. Vikramshila
- E. Taxila

Choose the correct answer from the options given below:

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

Correct Answer: (C) A, C, D and E Only

Explanation:

During the Buddhist period, monasteries developed into important **centres of learning and higher education**. **Nalanda** became one of the most renowned Buddhist monastic universities, while **Vikramshila** was another major centre of Buddhist scholarship. **Valabhi (Ballabhi)** was also an important ancient centre of education, and **Taxila (Takshashila)** was a prominent ancient centre of learning associated with various traditions, including Buddhist scholarship.

Baba Mastnath University, in contrast, is a modern educational institution and does not belong to the ancient Buddhist period. Therefore, the intended correct combination is **A, C, D and E Only**.

45. Match the LIST-I with LIST-II

LIST-I (Author)	LIST-II (Area)
A. Sankara	I. Vedanta Sutras
B. Ramanuja	II. Algebra and Astronomy

C. Vidyapati	III. Dialect of Behar
D. Bhaskara	IV. Vedanta Sutras and the Bhagavatgita

Choose the correct answer from the options given below:

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

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

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

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

Correct Answer: (B) A-IV, B-I, C-III, D-II

Explanation:

Sankara (Adi Shankaracharya) is associated with commentaries on the **Vedanta Sutras and the Bhagavad Gita**, giving **A-IV**. **Ramanuja**, a major exponent of Vishishtadvaita Vedanta, is associated with his commentary on the **Vedanta Sutras**, particularly the *Sri Bhashya*, giving **B-I**.

Vidyapati was a celebrated poet whose writings are associated with the regional dialects of **Bihar**, giving **C-III**. **Bhaskara (Bhaskaracharya)** was a renowned Indian mathematician and astronomer who made significant contributions to **algebra and astronomy**, giving **D-II**. Therefore, the correct matching is **A-IV, B-I, C-III, D-II**.

Comprehension: (46-50)

Read the following passage carefully and answer the questions:

The capitalist system of society does not foster healthy relations among human beings. A few people own all the means of production and others—though nominally few have to sell their labour under conditions imposed upon them. The emphasis of capitalism being on the supreme importance of material wealth the intensity of its appeal is to the acquisitive intensity. It promotes worship of economic power with little regard to the means employed for its acquisition and the end that it serves. By its exploitation of human beings to the limits of endurance its concentration is on the largest profit rather than maximum production.

Thus the division of human family is done on the basis of economic circumstances. All this is injurious to division of human dignity. And when the harrowed poor turn to the founders of religion for succour, they rather offer a subtle defence of the established order. They promise future happiness for their present suffering and conjure up visions of paradise to redress the balance to soothe the suffering and the revolt of the tortured men. The system imposes injustice, the religion justifies it.

46. After going through the passage, it can be inferred that the capitalist system is

- (A) Ambitious
- (B) Biased
- (C) Humane
- (D) Realistic

Correct Answer: (B) Biased

Explanation:

The passage presents the capitalist system as biased because economic power and control over the means of production are concentrated in the hands of a few people, while others are required to sell their labour under conditions imposed upon them. The system gives greater importance to material wealth, economic power and profit, leading to unequal treatment and exploitation. Therefore, the passage portrays capitalism as favouring the economically powerful rather than treating all sections of society equally.

47. The maximum control over the means of production is under

- (A) All the stake holders
- (B) Proletarian class
- (C) Owners of the system
- (D) Working class

Correct Answer: (C) Owners of the system

Explanation:

The passage clearly states that “a few people own all the means of production,” while others have to sell their labour under conditions imposed upon them. Thus, control over productive resources is concentrated primarily in the hands of those who own them. The working or proletarian class provides labour but does not possess maximum control over the means of production. Hence, the owners of the system exercise the maximum control.

48. In a capitalist system,

- (A) the ends justify the means
- (B) the means justify the ends
- (C) the means leading to exploitation are strictly prohibited
- (D) the religion decides the issue related to the means

Correct Answer: (A) the ends justify the means

Explanation:

According to the passage, capitalism promotes the pursuit of economic power with “little regard to the means employed for its acquisition.” This indicates that achieving the desired end—particularly wealth, economic power and profit—is given greater importance than the methods used to achieve it. Even exploitative means may be tolerated in the pursuit of economic gain. Therefore, the idea conveyed is that, in such a system, the ends justify the means.

49. Capitalism is detrimental to equality as it divides the society into the groups, namely,

- (A) Working and non-working
- (B) Buyers and Sellers
- (C) Exploiters and Exploited
- (D) Religious and Atheist

Correct Answer: (B) Buyers and Sellers

Explanation:

The given answer identifies “Buyers and Sellers” as the two groups created within the capitalist economic structure. Capitalism operates largely through market relationships involving those who buy and those who sell goods, services or labour. The passage particularly refers to people who own the means of production and others who have to sell their labour. In this context, economic relationships create divisions and inequalities among people based on their economic circumstances.

Note: The passage itself more directly supports **(C) Exploiters and Exploited**, because it explicitly discusses the exploitation of human beings and inequality between owners and labourers. Therefore, the supplied key **(B)** appears questionable.

50. The capitalist system focuses on

- (A) Maximum production
- (B) Unusual benefits
- (C) Investment on human resources
- (D) Reduction of expenditure

Correct Answer: (B) Unusual benefits

Explanation:

The passage states that the capitalist system concentrates on obtaining the “largest profit rather than maximum production.” This shows that its primary concern is securing greater economic gains or benefits rather than simply increasing production. Among the options provided, “Unusual benefits” is the closest to the passage’s idea of seeking exceptionally large profits. Maximum production is specifically rejected by the passage as the main focus, while investment in human resources and reduction of expenditure are not mentioned.

Note: The wording of option **(B) “Unusual benefits”** is unusual and does not exactly reproduce the passage. The precise idea expressed in the passage is “**largest profit.**”