



Your Personal Exams Guide



NDA



CDS



SSC CGL



CBSE UGC NET



IAS



SSC CHSL



CTET



MPSC



AFCAT



CSIR UDC NET



IBPS PO



UP POLICE



SSC MTS



SBI PO



BPSC



UP TET



IBPS RRB



IBPS CLERK



IES



UPSC CAPF



SSC Stenogr..



RRB NTPC



SSC GD



RBI GRADE B



RBI Assistant



DSSSB

UGC NET 2022 Paper 1 Previous Year Paper (30-Sep-2022) (Shift 2)

Total Time: 1 Hour

Total Marks: 100

Instructions

1. Test will auto submit when the Time is up.
2. The Test comprises of multiple choice questions (MCQ) with one or more correct answers.
3. The clock in the top right corner will display the remaining time available for you to complete the examination.

Navigating & Answering a Question

1. The answer will be saved automatically upon clicking on an option amongst the given choices of answer.
2. To deselect your chosen answer, click on the clear response button.
3. The marking scheme will be displayed for each question on the top right corner of the test window.

Your Personal Exams Guide

Paper 1

1. The following table presents the number of employees recruited for five different positions/posts of Administrators, Analysts, Programmers, Testers and Peons (R) in an IT company and those who left (L) the company during the years 2016 – 2021. Based on the data in the table, answer the questions: (Year of foundation of the Company is 2016) (+2)

Year-Wise Distribution of Employees

Position	Administrators		Analysts		Programmers		Testers		Peons	
Year	R	L	R	L	R	L	R	L	R	L
2016	380	–	600	–	440	–	580	–	410	–
2017	140	60	136	60	128	52	100	50	92	48
2018	90	46	120	64	120	60	112	52	76	44
2019	74	44	118	48	104	50	124	48	98	40
2020	80	36	128	50	96	56	136	44	112	60
2021	96	48	144	56	124	72	130	46	100	52

During the period from 2016 to 2021 what is the approximate percentage(%) of the total number of programmers who left the company w.r.t the total number

of programmers who joined the Company?

- a. 19
- b. 21
- c. 27
- d. 29

2. The following table presents the number of employees recruited for five different positions/posts of Administrators, Analysts, Programmers, Testers and Peons (R) in an IT company and those who left (L) the company during the years 2016 – 2021. Based on the data in the table, answer the questions: (Year of foundation of the Company is 2016) (+2)

Year-Wise Distribution of Employees

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Position	Administrators		Analysts		Programmers		Testers		Peons	
Year	R	L	R	L	R	L	R	L	R	L
2016	380	-	600	-	440	-	580	-	410	
2017	140	60	136	60	128	52	100	50	92	48
2018	90	46	120	64	120	60	112	52	76	44
2019	74	44	118	48	104	50	124	48	98	40
2020	80	36	128	50	96	56	136	44	112	60
2021	96	48	144	56	124	72	130	46	100	52

The total number of Peons working in the Company at the end of year 2020, is

- a. 656
- b. 596
- c. 544
- d. 484

3. The following table presents the number of employees recruited for five different positions/posts of Administrators, Analysts, Programmers. Testers and Peons (R) (+2)

in an IT company and those who left (L) the company during the years 2016 – 2021. Based on the data in the table, answer the questions: (Year of foundation of the Company is 2016)

Year-Wise Distribution of Employees

Position	Administrators		Analysts		Programmers		Testers		Peons	
Year	R	L	R	L	R	L	R	L	R	L
2016	380	–	600	–	440	–	580	–	410	
2017	140	60	136	60	128	52	100	50	92	48
2018	90	46	120	64	120	60	112	52	76	44
2019	74	44	118	48	104	50	124	48	98	40
2020	80	36	128	50	96	56	136	44	112	60
2021	96	48	144	56	124	72	130	46	100	52

If M and N represent the number of Analysts and number of Testers recruited in the company during the years 2017 to 2021. Then $M - N =$

- a. 64
- b. 56

c. 48

d. 44

4. The following table presents the number of employees recruited for five different positions/posts of Administrators, Analysts, Programmers, Testers and Peons (R) in an IT company and those who left (L) the company during the years 2016 - 2021. Based on the data in the table, answer the questions: (Year of foundation of the Company is 2016) (+2)

Year-Wise Distribution of Employees

Position	Administrators		Analysts		Programmers		Testers		Peons	
Year	R	L	R	L	R	L	R	L	R	L
2016	380	-	600	-	440	-	580	-	410	-
2017	140	60	136	60	128	52	100	50	92	48
2018	90	46	120	64	120	60	112	52	76	44
2019	74	44	118	48	104	50	124	48	98	40
2020	80	36	128	50	96	56	136	44	112	60
2021	96	48	144	56	124	72	130	46	100	52

The pooled sum of the total number of employees working for all the five positions in the company at the end of the year 2018 is

- a. 3126
- b. 2988
- c. 3028
- d. 2958

5. The following table presents the number of employees recruited for five different positions/posts of Administrators, Analysts, Programmers, Testers and Peons (R) in an IT company and those who left (L) the company during the years 2016 - 2021. Based on the data in the table, answer the questions: (Year of foundation of the Company is 2016) **(+2)**

Year-Wise Distribution of Employees

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Position	Administrators		Analysts		Programmers		Testers		Peons	
Year	R	L	R	L	R	L	R	L	R	L
2016	380	-	600	-	440	-	580	-	410	
2017	140	60	136	60	128	52	100	50	92	48
2018	90	46	120	64	120	60	112	52	76	44
2019	74	44	118	48	104	50	124	48	98	40
2020	80	36	128	50	96	56	136	44	112	60
2021	96	48	144	56	124	72	130	46	100	52

The percentage increase in the number of employees working in the company in 2021 to that in 2016 was maximum for the position of

- a. Administrator
- b. Analyst
- c. Programmer
- d. Tester

6. Given below are two statements: One is labeled as Assertion (A) and the other is labeled as Reason (R). (+2)

Assertion (A): High concentration of Nitric Oxide (NO) in soils makes them inhabitable to plants.

Reason (R): NO combines with soil water and forms nitrous and nitric acid which increases the soil acidity.

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

- a. Both (A) and (R) are true and (R) is the correct explanation of (A)
- b. Both (A) and (R) are true but (R) is NOT the correct explanation of (A)
- c. (A) is true but (R) is false
- d. (A) is false but (R) is true

-
7. Match List I with List II:

(+2)

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	List - I		List - II
	(Fundamental factors)		(Attributes of learning)
A.	Drive	I.	Reward
B.	Cue	II.	Motivation
C.	Response	III.	Stimulus
D.	Reinforcement	IV.	Action

Choose the correct answer from the options given below:

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

8. In the context of vocational education, competency level 8 as per NSQF, is equivalent to:

(+2)

- a. Doctrate Degree
- b. Undergraduate Degree
- c. Diploma

d. Master Degree

9. Who among the following was the first thinker in India to write on Spherical Trigonometry? (+2)

a. Bhaskaracharya

b. Aryabhatta

c. Akshapada

d. Kanada

10. Which of the following approach does not come under cooperative learning? (+2)

a. Fishbowl

b. Jigsaw

c. Demonstration

d. Team-pair-solo

11. Match List I with List II: (+2)

	List-I		List -II
	(Input Method)		(Use)
A.	Bar Code Reader	I.	To input text from a printed document
B.	Chip Reader	II.	To input data from a bank cheque
C.	MICR	III.	To input data from a bank card
D.	OCR	IV.	To input data about a product at a POS (Point of Sale)

Choose the correct answer from the options given below:

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

12. Which of the following universities in ancient India attained celebrity as the seat of both Brahmanical and Buddhist learning during the time of Siddha Nagarjuna? (+2)
- a. Nalanda

- b. Takshashila
- c. Dharmaganja
- d. Sridhanya Katak

13. Given below are two statements:

(+2)

Statement I: Artificial Intelligence (AI) learns from changing circumstances, whereas virtual reality is an artificially created environment used to give a feeling of 'being there'.

Statement II: QR, a type of more sophisticated barcode which uses a matrix of dark squares on a light background, stands for Quick Reaction.

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

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

14. One of the factors that influence our feedback to the communicated message most is

(+2)

- a. Location of reception
- b. Channel of mediation
- c. Receptor's involvement
- d. Transmission economy

15. Given below are two statements:

(+2)

Statement I: Understanding the level of teaching and learning is based on the acquisition of factual information. to see relationships, to comprehend, to seek generalization, and their application in life.

Statement II: Reflective level of teaching and learning is based on the development of critical thinking, problem-solving skills, and creative thinking.

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

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

16. Match List I with List II:

(+2)

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	List – I		List – II
	(Committee)		(Chairman)
A.	Committee on Corporate Participation in Higher Education	I.	Swaminathan
B.	Calcutta University Commission	II.	Michael Sadler
C.	Committee on funding Central Universities	III.	N.R. Narayanamurthy
D.	Committee on Technical Education	IV.	Justice K. Punnayya

Choose the correct answer from the option given below:

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

17. 'No one has ever succeeded to provide conclusive evidence for the claims of astrology. Therefore we must conclude that astrology is non-sense'. Which fallacy is committed in the above argument?

(+2)

- a. Hasty Generalisation
- b. Appeal to Ignorance
- c. False cause
- d. Slippery slope

-
18. Given below are two statements: One is labeled as Assertion A and the other is labeled as Reason R. (+2)

Assertion (A): The new system of digital communication has made the emergence of an interactive society possible.

Reasons (R): The new system is based on 'digitized and networked integration of multiple communication modes'.

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

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

-
19. In a mixture of two types of oils A and B, the ratio of A : B is 3 : 2. If the cost of oil A is Rs. 60 per litre and that of oil B is Rs. 120 per litre, then find the cost per litre of the resulting mixture. (+2)

- a. 92
- b. 90

c. 96

d. 84

20. What is the full form of 'NROER'? (+2)

- a. National Repository of Online Educational Resources
- b. National Repository of Open Educational Resources
- c. National Recruitment of Online Educational Resources
- d. National Recruitment of Open Educational Resources

21. Which of the following statements are correct? (+2)

- (A) IP addresses are used to identify computers on the Internet.
- (B) Internet and WWW are two separate but related terms: Internet is a service on the WWW while WWW is the network infrastructure providing such service.
- (C) Large files such as videos which cannot be sent by e-mail as attachments, can be sent to another computer via FTP.

Choose the correct answer from the options given below:

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

22. The Likert scale is used to measure a set of (+2)

- a. Values
 - b. Norms
 - c. Attitudes
 - d. Formulae
-

23. Given below are two statements:

(+2)

Statement I: Qualitative research uses a static set of questions.

Statement II: In quantitative research, questions are standardized.

In 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
-

24. Exploratory research is primarily intended to

(+2)

- a. Gather preliminary information
 - b. Find out the causality of relations
 - c. Know the statistical significance of findings
 - d. Discover the specific contexts of research
-

25. Which one of the following acronyms matches incorrectly with their full form? (+2)

- a. HTTP – Hyper Text Transfer Protocol
- b. FTP – File Transfer Protocol
- c. SMTP – Simple Mail Transfer Protocol
- d. ISP – Internet Service Protocol

26. "When I closed my eyes the cat was sitting on the table when I opened my eyes. I found it sitting on the chair therefore I can conclude that the cat must have moved from the table to the chair while my eyes were closed". According to classical Indian Philosophy which of the following means of knowledge is used in the above argument? (+2)

- a. Pratyaksa (Perception)
- b. Upamāna (Comparison)
- c. Unupalabdhi (Non-apprehension)
- d. Arthāpatti (Postulation)

27. Given below are two statements: (+2)

Statement I: Halocarbons contribute significantly to global warming.

Statement II: Halocarbons also catalytically destroy stratospheric Ozone.

In 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

28. The sequence of stages in experimental research is (+2)

- (A) Selection of the setting.
- (B) Operationalisation of variables.
- (C) Administration of the experiment.
- (D) Selection of the experimental design.
- (E) Analysis and interpretation of results.

Choose the correct answer from the options given below:

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

29. If the population of a town decreases by 25% and 40% in two successive years, (+2)
what shall be the decrease in the percentage of population after 2 years?

- a. 61%
- b. 55%
- c. 65%

d. 62%

30. In how many years the compound interest on Rs. 10.000 at the rate of 10% will be Rs. 2.100? (+2)

- a. 4 years
 - b. 2.5 years
 - c. 2 years
 - d. 3 years
-

31. What is the average of first 6 multiples of 11? (+2)

- a. 27.5
 - b. 40.5
 - c. 38.5
 - d. 51.5
-

32. Find the missing term in the series given below: (+2)

8, 10, 7, 12, 5, 16, 3, ?

- a. 18
- b. 20
- c. 24
- d. 19

33. In intra-personal communication, the medium that carries the messages is **(+2)**

- a. The personal ego
- b. The central nervous system
- c. The physical surrounding
- d. The symbol system

34. If the statement 'All children are innocent' is given as true, then which of the following statement can be inferred to be true? **(+2)**

- a. All those who are innocent are children.
- b. Some children are innocent.
- c. All those who are non-innocent are adults.
- d. Some children are non-innocent.

35. What are the benefits of the asynchronous mode of online learning? **(+2)**

- (A) Self-pacing
- (B) Immediate Feedback
- (C) Self-engagement
- (D) Flexibility
- (E) Presence of Teacher and student at the same time

Choose the most appropriate answer from the options given below:

- a. (A), and (D) only

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

36. What are the advantages of linear communication? (+2)

- (A) It is best suited for persuasion
- (B) It quickens the process of feedback
- (C) It facilitates a two-way exchange of information
- (D) It is extensively used in international propaganda
- (E) It provides demarcated results

Choose the correct answer from the options given below:

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

37. Given below are two statements: (+2)

Statement I: Most of the emerging contaminants of water are Endocrine Disrupting Chemicals (EDCs).

Statement II: Flame retardant additives, found in environments throughout the globe, are considered to be EDCs.

In 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

38. Given below are two statements:

(+2)

Statement I: Relation of invariable concomitance is the relation between hetu and Sādhyā which requires no qualifying term or limitation (upadhi).
e.g. wherever there is smoke there is fire.

Statement II: The relation of invariable concomitance is the relation between hetu and Pakṣa which requires a qualifying term or limitation (upadhi).
e.g. wherever there is fire there is smoke.

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

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

39. Given below are two statements:

(+2)

Statement I: In a breeder reactor the amount of fissile material consumed is more than the amount of fissile material produced.

Statement II: In India Kalpakkam (Chennai) Nuclear Power Plant is an example of a breeder reactor.

In 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

40. Which of the following statement is converse of the statement - "All academicians are visionaries"? (+2)

- a. Some visionaries are academicians.
- b. Some academicians are visionaries.
- c. Some academicians are not non-visionaries.
- d. No visionaries are not non-academicians

41. Which of the developments A-E given below have arisen because of the Internet? (+2)

- (A) Web logs
- (B) Databases
- (C) Wikis
- (D) DTP
- (E) Social networking sites

Choose the correct answer from the options given below:

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

42. A literature review will have to answer the questions:

(+2)

- (A) What area should not be investigated?
- (B) What type of research has been done in the area?
- (C) What research methods have been used?
- (D) What area has not been investigated?
- (E) What methods should not have been used in earlier studies?

Choose the correct answer from the options given below:

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

43. Given below are two statements:

(+2)

Statement I: Communication technology has made revisiting of ideas impossible.

Statement II: Technology has redefined the elements of time and distance in favour of communication managers.

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

-
44. Given below are two statements: One is labeled as Assertion (A) and the other is labeled as Reason (R). (+2)

Assertion (A): Oxygen-demanding wastes are substances that Oxidize in the receiving body of water.

Reason (R): As bacteria decompose these wastes, they release Oxygen into the water.

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

- a. Both (A) and (R) are true and (R) is the correct explanation of (A)
- b. Both (A) and (R) are true but (R) is NOT the correct explanation of (A)
- c. (A) is true but (R) is false
- d. (A) is false but (R) is true (A)

-
45. The focus areas of the New Education Policy are: (+2)

- (A) Establishment of community colleges
- (B) Setting up of skill missions in rural India
- (C) Institutional re-structuring in the educational sector
- (D) Imparting of holistic education
- (E) Transforming the regulatory system of higher education

Choose the correct answer from the options given below:

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

46. Read the passage and answer below questions.

(+2)

The formation of the Indian state runs in a parallel narrative with the formation of its elite. Indian independence marked the powerful role of the elite in establishing an agenda of modernisation driven by an instrumentalist notion of the state. The elite were constituted in the emerging national space of an independent India as the drivers of social change processes, bringing Indian society into modernisation. The elite not only comprised of political power brokers and private interests, but also of a middle class educated in English and employed in the private, state, and civil society sectors. The emergent professional middle class as a subject of the modern state help considerable power. with its access to primarily English-language education and opportunities for employment in both the private and public sectors. The state on one hand, developed an extended bureaucracy for running the state apparatus and on the other hand, gradually cultivated the market, creating employment opportunities for the middle classes and ensuring the participation of the middle classes in India's mixed economy. The participation

of the middle classes in the Indian economy and in the cultivation of its imagination is a salient feature that plays out in the discursive arena. The success of the Indian state in this sense was intrinsically tied to the recrafting of an imagination of an independent India that, on one hand, put forth a narrative of the nation state and on the other hand, mobilised the market as a site for participation.

What phenomenon marked the Indian independence?

- a. Notion of India
- b. Concept of states
- c. Role of power elites
- d. Parallel narratives of modernisation

47. Read the passage and answer below questions.

(+2)

The formation of the Indian state runs in a parallel narrative with the formation of its elite. Indian independence marked the powerful role of the elite in establishing an agenda of modernisation driven by an instrumentalist notion of the state. The elite were constituted in the emerging national space of an independent India as the drivers of social change processes, bringing Indian society into modernisation. The elite not only comprised of political power brokers and private interests, but also of a middle class educated in English and employed in the private, state, and civil society sectors. The emergent professional middle class as a subject of the modern state held considerable power. With its access to primarily English-language education and opportunities for employment in both the private and public sectors. The state on one hand, developed an extended bureaucracy for running the state apparatus and on the other hand, gradually cultivated the market, creating employment opportunities for the middle classes and ensuring the participation of the middle classes in India's mixed economy. The participation of the middle classes in the Indian economy and in the cultivation of its

imagination is a salient feature that plays out in the discursive arena. The success of the Indian state in this sense was intrinsically tied to the recrafting of an imagination of an independent India that, on one hand, put forth a narrative of the nation state and on the other hand, mobilised the market as a site for participation.

The elites were expected to

- a. Promote private interests
- b. Set private agenda
- c. Manage the civil society
- d. Change the society

48. Read the passage and answer below questions.

(+2)

The formation of the Indian state runs in a parallel narrative with the formation of its elite. Indian independence marked the powerful role of the elite in establishing an agenda of modernisation driven by an instrumentalist notion of the state. The elite were constituted in the emerging national space of an independent India as the drivers of social change processes, bringing Indian society into modernisation. The elite not only comprised of political power brokers and private interests, but also of a middle class educated in English and employed in the private, state, and civil society sectors. The emergent professional middle class as a subject of the modern state help considerable power. with its access to primarily English-language education and opportunities for employment in both the private and public sectors. The state on one hand, developed an extended bureaucracy for running the state apparatus and on the other hand, gradually cultivated the market, creating employment opportunities for the middle classes and ensuring the participation of the middle classes in India's mixed economy. The participation of the middle classes in the Indian economy and in the cultivation of its imagination is a salient feature that plays out in the discursive arena. The

success of the Indian state in this sense was intrinsically tied to the recrafting of an imagination of an independent India that, on one hand, put forth a narrative of the nation state and on the other hand, mobilised the market as a site for participation.

The passage describes

- a. The emergence of national space
- b. The elitist imagination of combining nation state with market
- c. The role of bureaucracy in modernising India
- d. Social change as a limited process

49. Read the passage and answer below questions.

(+2)

The formation of the Indian state runs in a parallel narrative with the formation of its elite. Indian independence marked the powerful role of the elite in establishing an agenda of modernisation driven by an instrumentalist notion of the state. The elite were constituted in the emerging national space of an independent India as the drivers of social change processes, bringing Indian society into modernisation. The elite not only comprised of political power brokers and private interests, but also of a middle class educated in English and employed in the private, state, and civil society sectors. The emergent professional middle class as a subject of the modern state help considerable power. with its access to primarily English-language education and opportunities for employment in both the private and public sectors. The state on one hand, developed an extended bureaucracy for running the state apparatus and on the other hand, gradually cultivated the market, creating employment opportunities for the middle classes and ensuring the participation of the middle classes in India's mixed economy. The participation of the middle classes in the Indian economy and in the cultivation of its imagination is a salient feature that plays out in the discursive arena. The success of the Indian state in this sense was intrinsically tied to the recrafting

of an imagination of an independent India that, on one hand, putforth a narrative of the nation state and on the other hand, mobilised the market as a site for participation.

The middle class became powerful in India because of

- a. English-language education
- b. Modernization of the country
- c. Professionalisation of politics
- d. Popularity of power brokering

50. Read the passage and answer below questions.

(+2)

The formation of the Indian state runs in a parallel narrative with the formation of its elite. Indian independence marked the powerful role of the elite in establishing an agenda of modernisation driven by an instrumentalist notion of the state. The elite were constituted in the emerging national space of an independent India as the drivers of social change processes, bringing Indian society into modernisation. The elite not only comprised of political power brokers and private interests, but also of a middle class educated in English and employed in the private, state, and civil society sectors. The emergent professional middle class as a subject of the modern state help considerable power. with its access to primarily English-language education and opportunities for employment in both the private and public sectors. The state on one hand, developed an extended bureaucracy for running the state apparatus and on the other hand, gradually cultivated the market, creating employment opportunities for the middle classes and ensuring the participation of the middle classes in India's mixed economy. The participation of the middle classes in the Indian economy and in the cultivation of its imagination is a salient feature that plays out in the discursive arena. The success of the Indian state in this sense was intrinsically tied to the recrafting of an imagination of an independent India that, on one hand, putforth a

narrative of the nation state and on the other hand, mobilised the market as a site for participation.

The state ensured the middle class participation in

- a. National politics
- b. Bureaucratisation of power
- c. India's mixed economy
- d. Changing the state apparatus

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Answers

1. Answer: d

Explanation:

Given

The total number of programmers who joined the Company from 2016 to 2021:

$$\Rightarrow 440 + 128 + 120 + 104 + 96 + 124 = 1012$$

The total number of programmers who left the company from 2016–2021:

$$\Rightarrow 52 + 60 + 50 + 56 + 72 = 290$$

Formula

$$A \% B = \frac{A}{B} \times 100$$

Solution

The approximate percentage(%) of the total number of programmers who left the company w.r.t the total number of programmers who joined the Company:

$$\Rightarrow 290/1012 \times 100$$

$$\Rightarrow 29\%$$

2. Answer: b

Explanation:

Given

The total number of Peons recruited from 2016–2020:

$$\Rightarrow 410 + 92 + 76 + 98 + 112 = 788$$

The total number of Peons that left from 2017–2020:

$$\Rightarrow 48 + 44 + 40 + 60 = 192$$

Formula used :

People working = Total Recruitment – No. of people left.

Solution

The total number of Peons working in the Company at the end of year 2020:

$$\Rightarrow 788 - 192$$

$$\Rightarrow 596.$$

3. Answer: d

Explanation:

Given

M = The number of Analysts recruited

N = The number of Testers recruited

Solution

$$\Rightarrow M = 136 + 120 + 118 + 128 + 144 = 646$$

$$\Rightarrow N = 100 + 112 + 124 + 136 + 130 = 602$$

$$\text{Then } M - N = 646 - 602 = 44$$

4. Answer: b

Explanation:

Solution

The total number of employees working as administrators till the end of 2018:

$$\Rightarrow R - L = (380+140+90) - (60+46) = 504$$

The total number of employees working as analysts till the end of 2018:

$$\Rightarrow R - L = (600+136+120) - (60+64) = 732$$

The total number of employees working as programmers till the end of 2018:

$$\Rightarrow R - L = (440+128+120) - (52+60) = 576$$

The total number of employees working as testers till the end of 2018:

$$\Rightarrow R - L = (580+100+112) - (50+52) = 690$$

The total number of employees working as peons till the end of 2018:

$$\Rightarrow R - L = (410+92+76) - (48+44) = 486$$

Hence, The pooled sum of the total number of employees working for all the five positions in the company at the end of the year 2018 is:

$$\Rightarrow 504 + 732 + 576 + 690 + 486 = \mathbf{2988}.$$

5. Answer: a

Explanation:

Calculation:

Number of administrators working in the company:

In 2016 = 380

In 2021 = $(380 + 140 + 90 + 74 + 80 + 96) - (60 + 46 + 44 + 36 + 48)$

$$\Rightarrow 860 - 234 = 626$$

Percentage increase in the number of administrators

$$\Rightarrow \{(626 - 380)/380\} \times 100 = 64.736 \approx 64.74\%$$

Number of analyst working in the company:

$$\text{In 2016} = 600$$

$$\text{In 2021} = (600 + 136 + 120 + 118 + 128 + 144) - (60 + 64 + 48 + 50 + 56)$$

$$\Rightarrow 1246 - 278 = 968$$

Percentage increase in the number of analyst

$$\Rightarrow \{(968 - 600)/600\} \times 100 = 61.333 \approx 61.34\%$$

Number of Programmer working in the company:

$$\text{In 2016} = 440$$

$$\text{In 2021} = (440 + 128 + 120 + 104 + 96 + 124) - (52 + 60 + 50 + 56 + 72)$$

$$\Rightarrow 1012 - 290 = 722$$

Percentage increase in the number of programmer

$$\Rightarrow \{(722 - 440)/440\} \times 100 = 64.09\%$$

Number of testers working in the company:

$$\text{In 2016} = 580$$

$$\text{In 2021} = (580 + 100 + 112 + 124 + 136 + 130) - (50 + 52 + 48 + 44 + 46)$$

$$\Rightarrow 1182 - 240 = 942$$

Percentage increase in the number of testers

$$\Rightarrow \{(942 - 580)/580\} \times 100 = 62.413\% \approx 62.41\%$$

$\therefore$ Clearly, the percentage increase is maximum for the administrators.

6. Answer: a

Explanation:

The correct answer is Both (A) and (R) are true and (R) is the correct explanation of (A).

★ Important Points

Nitric Oxide (NO) in soils can combine with soil water to form nitrous and nitric acid, which increases soil acidity, making it inhabitable for plants.

- When Nitric Oxide (NO) is present in high concentrations in soil,
- It can combine with soil water to form nitrous and nitric acid.
- These acids can **increase the soil's acidity**, making it difficult for plants to survive.
- This is because many plants have a specific pH range in which they can thrive, and **if the soil becomes too acidic, it can inhibit the growth and survival of the plants.**
- *This is why a high concentration of NO in soils makes them inhabitable for plants. Statement (R) is the correct explanation of statement (A).*

★ Key Points

- **Nitric Oxide (NO)** is a molecule made up of one nitrogen atom and one oxygen atom.
- In soil, it is produced by microorganisms and plants, and it plays an important role in regulating plant growth and development.
- It is also a signaling molecule, which means it helps plants **communicate with each other and with other organisms in the soil**.
- In agriculture, NO has been studied as a potential way to improve crop yields and plant stress tolerance.
- It can act as a plant growth regulator and can also help plants **resist disease and pests**.
- **NO** has also been used to improve the efficiency of fertilizers by helping plants **absorb more nutrients from the soil**.

- However, as I mentioned earlier, high concentrations of Nitric Oxide (NO) in soils can make them inhabitable for plants because it combines with soil water and forms nitrous and nitric acid which increases the soil acidity.

7. Answer: b

Explanation:

Option second) (A) - (II), (B) - (III), (C) - (IV), (D) - (I) is the correct match.

Learning is an important psychological process that determines human behavior.

Learning can be defined as a “relatively permanent change in behavior that occurs as a result of experience or reinforced practice”.

★ Important Points

The components of the learning process are drive, cue stimuli, response, reinforcement, and retention.

According to Miller and Dollard (1941), there are four essential factors involved in learning: the cue, the response, the drive, and the reward.

- In simple terms, in the presence of an appropriate signal (the cue), the person responds with a particular behavior, if there is an adequate reward (based on learning).
- The entire process will not take place, however, if the individual does **not want a reward (drive).**
- The normal order, after learning has taken place, would then be: drive → cue → response → reward, when we want something, and we see a signal that it is available,
- We try to get it, and are rewarded for our actions. Another important aspect of social learning is that both drives and rewards can be acquired.

★ Key Points

The components of the learning process are **drive, cue stimuli, response, reinforcement, and retention .**

- **Drive**: Drive refers to the *internal motivation or desire to perform a particular action*. It is a psychological state that energizes and directs behavior toward a particular goal or reward.
- **Cue**: A cue is a **stimulus or environmental** event that triggers a particular response or behavior. It can be a visual, auditory, olfactory, or tactile signal that informs an organism of the presence or absence of a particular event or object.
- **Response**: A response is an **observable behavior or action that an organism takes in response to a particular cue or stimulus**. It can be a physical movement, vocalization, or change in physiological state.
- **Reinforcement**: Reinforcement is a **ny consequence that increases the likelihood of a particular behavior being repeated in the future**. This can be a positive reinforcement, which is a desirable outcome that follows a behavior, or a negative reinforcement, which is the removal of an aversive stimulus following a behavior.
- **Reward**: Reward refers to a **desirable outcome or consequence that follows a behavior, it could be a tangible or intangible reward**, or it can be positive reinforcement that reinforces the behavior and make it more likely to occur in the future.

8. Answer: d

Explanation:

A master's is equivalent to competency level 8 as per the National Skills Qualification Framework (NSQF) in the context of vocational education in India.

so, the correct option would be a Master's Degree

★ **Important Points**

- The National Skills Qualification Framework (NSQF) is a framework that describes the levels of knowledge, skills, and abilities required to perform a particular job or occupation in India. It has 10 levels, with level 1 being the most basic and level 10 being the most advance.

- (NSQF), is a quality assurance framework that organizes qualifications according to a series of levels of knowledge, skills, and aptitude.
- NSQF is a framework that helps align all the qualifications of different VET programs to make them more comparable and transferable across different sectors and industries.
- It also helps in making education and training more relevant to the needs of the industry and the job market.

NSQF is not a new concept, similar quality assurance and outcomes-based certification frameworks are already in existence in over 140 countries. In India, NSQF is going to change the educational landscape.

★ Additional Information

NSQF Levels	International Equivalent	Minimum Eligibility
Level 10	Doctorate	Masters OR Level 9
Level 9	Masters	Graduation OR Level 8
Level 8	Post Graduate (PG) Diploma	Graduation OR Level 7
Level 7	Bachelors	12th +
Level 6	Advanced Diploma	12th
Level 5	Diploma	12th
Level 4	Advanced Certificate	12th
Level 3	Certificate	12th
Level 2	Certificate	10th
Level 1	Certificate	10th

The above chart is a descriptive example only, actual eligibility may vary from course to course.

9. Answer: a

Explanation:

Bhaskaracharya was the first thinker in India to write on Spherical Trigonometry.

★ Important Points

- Bhaskaracharya, also known as Bhaskara II,

- Bhaskaracharya was the first thinker in India to write on Spherical Trigonometry.
- He was a **12th-century Indian mathematician and astronomer**
- He wrote several influential works in mathematics and astronomy, including the "Siddhanta Siromani," (the "Crown of Treatises") .
- The treatise contains 1450 verses and was written in Sanskrit which contains a detailed discussion of **spherical trigonometry**.
- **Bhaskaracharya's** work on spherical trigonometry laid the foundation for **future Indian and Islamic mathematicians to develop trigonometry into a full-fledged subject**.
- His work was used by Islamic scholars and later by European scholars in their studies of astronomy and navigation.

Thus, Bhaskaracharya's concept of spherical trigonometry is the study of the relationships between the angles and distances of celestial bodies on the surface of a sphere, based on the Earth as a sphere and his work is *considered the first step in the development of mathematical astronomy in India*.

★ Key Points

- Bhaskaracharya's concept of spherical trigonometry is based on the idea that the Earth is a sphere and that the positions of celestial bodies can be determined by measuring the angles between them and the observer on the surface of the Earth.
- In order to do this, Bhaskaracharya defined several basic concepts in spherical trigonometries such as the celestial sphere, the zenith, the nadir, the horizon, and the meridian.
- He also developed a system of measurement based on the circumference of the Earth and the radius of the Earth, which he used to calculate the angles between celestial bodies.
- Bhaskara II is thought to be the first to invent the differential coefficient and differential calculus.

★ Additional Information

- Aryabhatta was an ancient Indian mathematician and astronomer who lived in the 5th century AD . He wrote the influential astronomical treatise Aryabhatiya .

The work is divided into three sections: Ganita ("Mathematics"), Kala-kriya ("Time Calculations"), and Gola ("Sphere").

- Akshapada was an ancient Indian mathematician and astronomer who wrote the mathematical treatise "Gola" (the sphere).
- Kanada was an ancient Indian philosopher and founder of the **Vaisheshika school of Indian philosophy**. He is also considered the father of Indian Atomic theory. He wrote many texts, including the *Vaisheshika Sutras*.

10. Answer: c

Explanation:

The demonstration does not come under cooperative learning.

★ Important Points

- Cooperative learning is an approach where students work together in small groups to achieve a common goal. The main idea behind cooperative learning is that students can learn from each other and that by working together, they can achieve more than they would be working alone.
- The concept of cooperative learning was first introduced by educational psychologist Elliot Aronson in the 1960s. Aronson developed the "jigsaw" technique, a cooperative learning method where students are grouped into teams and each member is responsible for learning a specific aspect of a larger topic.
- Demonstration, on the other hand, is an approach where a teacher or expert demonstrates a skill or concept to the students. It is not a cooperative learning approach as it does not involve students working together in small groups, but rather learning through observation and instruction.

Thus, we can say Demonstration is not a cooperative learning approach as it does not involve students working together in small groups, but rather learning through observation and instruction.

★ Key Points

A demonstration is an approach where a *teacher or expert demonstrates a skill or concept to the students*. It is not a cooperative learning approach as it does not involve students working together in small groups, but rather learning through observation and instruction.

- Fishbowl is a cooperative learning approach where students take turns being "in the fishbowl" and discussing a topic while the others observe. This approach allows students to practice active listening and speaking skills while also learning from their peers.
- Jigsaw is a cooperative learning approach where students work in small groups to learn a specific aspect of a larger topic. Once they've mastered their part, they then come together with other groups to share what they've learned and create a complete understanding of the topic.
- Team-pair-solo is a cooperative learning approach where students first work in teams to complete a task, then work in pairs to build on the team's work, and finally, work alone to reflect on what they have learned.

11. Answer: c

Explanation:

The correct option is (A) – (IV), (B) – (III), (C) – (II), (D) – (I).

- A. Bar Code Reader – IV. To input data about a product at a POS (Point of Sale)
- B. Chip Reader – III. To input data from a bank card
- C. MICR – II. To input data from a bank cheque
- D. OCR – I. To input text from a printed document

★ Important Points

Input devices are hardware components that are used to enter data into a computer system.

Input devices	Uses
Barcode Reader	- A barcode reader is an <u>input device that is used to scan and read barcodes.</u> - It typically consists of a light source, a lens, and a light sensor. - Barcode readers are commonly used in retail and inventory management to quickly and accurately input product information at Point of Sale (POS) terminals.
Chip Reader	- A chip reader is an input device that is <u>used to read the information stored on a chip, such as a microchip embedded in a bank card.</u> - Chip readers are commonly used in financial transactions, such as at ATM machines or retail point-of-sale terminals, to quickly and securely input data from a bank card.
MICR:	- MICR: MICR stands for <u>Magnetic Ink Character Recognition.</u> <u>It is a technology used to read information from the bottom of checks using special ink that contains magnetic particles.</u> - The MICR technology is used to read the routing and account numbers, as well as the check number.
OCR:	- OCR: OCR stands for Optical Character Recognition. It is a technology used to recognize text within an image and convert it into machine-encoded text. - OCR software is commonly used to digitize printed documents, such as books or newspapers, by inputting text from the printed document into a digital format.

12. Answer: d

Explanation:

The correct answer is Sridhanya Katak in ancient India attained celebrity as the seat of both Brahmanical and Buddhist learning during the time of Siddha Nagarjuna

★ Important Points

Sridhanya Katak University:

- Indian Sridhanya Katak University attained fame as a seat of learning for both Brahmanical and Buddhist during the time of Siddha Nagarjuna.
- Sridhanya Katak was situated on the banks of the Krishna.

★ Key Points

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University	Important Information
Nalanda:	- Nalanda was one of the most renowned universities of ancient India, and it was known for its excellence in teaching and research in various fields such as philosophy, logic, grammar, medicine, and more. - It was a prominent center of Buddhist learning and many famous scholars, such as Nagarjuna, studied and taught there.
Takshashila:	- Takshashila was an ancient university located in the northern region of India, in present-day Pakistan. - It was one of the earliest universities in the world, and it was known for its excellence in teaching and research in various fields such as law, politics, medicine, and more. - It was a prominent center of learning during the time of the Mahajanapadas and the Maurya Empire.
Vikramshila University	- It was one of the old Indian Universities. It was founded by Pala king Dharmapala in the later 7th century BCE. - It was located in the northern Magadha region that is 50 km east of Bhagalpur in Bihar.

13. Answer: c

Explanation:

The correct answer is, Statement I is correct but Statement II is incorrect.

★ Important Points

Statement I: Artificial Intelligence (AI) learns from changing circumstances, whereas virtual reality is an artificially created environment used to give a feeling of 'being there'.

- Artificial Intelligence (AI) is the simulation of human intelligence in machines.
- It involves the development of algorithms and computer programs that can perform tasks that typically require human intelligence, such as understanding natural language, recognizing images and speech, making decisions, and solving problems.
- AI research aims to create machines that can perform any intellectual task that a human can, and that can learn and improve over time.
- AI can be divided into two main categories: narrow or weak AI, which is designed to perform specific tasks, and general or strong AI, which has the ability to perform any intellectual task that a human can.
- AI applications can be found in various fields, including healthcare, finance, transportation, and customer service.
- Virtual reality, on the other hand, is a technology that creates a simulated environment that users can interact with, providing a feeling of immersion.

Hence, this statement is correct.

Statement II: QR, a type of more sophisticated barcode which uses a matrix of dark squares on a light background, stands for Quick Reaction.

- A QR code (an initialism for quick response code) is a type of the **matrix barcode (or the two-dimensional barcode)** invented in 1994 by the Japanese company Denso Wave.
- A barcode is a machine-readable optical label that can contain information about the item to which it is attached.
- A QR code consists of **black squares arranged in a square grid on a white background**, including some fiducial markers, which can be read by an imaging device such as a camera, and processed using Reed–Solomon error correction until the image can be appropriately interpreted.
- The required data is then extracted from patterns that are present in both the horizontal and vertical components of the image.

Hence, it is not correct that the QR codes were created with dark squares on a light background, it specifically uses Black color on white background.

Hence, this statement is incorrect.

The correct answer is, Statement I is correct but Statement II is incorrect

14. Answer: c

Explanation:

The correct answer is option third: Receptors involvement.

★ Important Points

Communication is a process that involves a sender, a message, and a receiver.

- The feedback that the receiver gives to the communicated message is influenced by various factors, one of which is the receptor's involvement.
- The level of involvement of the receiver in the communication process **can greatly affect how they receive and interpret the message.**
- When the receptor is highly involved in the communication process, they are more likely to pay close attention to the message and **give detailed feedback.**
- On the other hand, when the receptor **is less involved, it may not pay** as much attention to the message and give less detailed feedback.

The feedback process in communication refers to the exchange of information between the sender and receiver in order to gauge the effectiveness of the message.

- This process involves the receiver **interpreting and assessing the message**, and then providing feedback to the sender.
- The feedback can be **verbal or nonverbal** and is used to confirm that the message was understood correctly,
- To request clarification, or to provide **suggestions for improvement.**
- The feedback process helps to ensure that the communication is **effective, clear, and accurate**, and helps to improve the overall quality of the

communication.

★ Key Points

Importance of feedback is discussed below from different viewpoints:

- Collection of Information: Feedback is the only way to collect information from the receiver, So, feedback helps the organization (Sender) to collect information from different people (Receivers).
- **Completion of Entire Communication Process**: Through feedback, the sender can learn the reaction or **response of the receiver**.
- **Measuring the Effectiveness of Communication**: Feedback is the only way to get the response or reaction of the receiver. From it, the sender knows how well his message is understood and how it will be used by the receiver.

★ Additional Information

From the discussion, we can say that feedback is a system where the reaction or response of the receiver reaches the sender after he has interpreted the message. Feedback is inevitably essential to make two-way communication effective. In fact, without feedback communication remains incomplete.

15. Answer: a

Explanation:

Both Statement I and Statement II are correct

The teaching-learning process, generally operates at three levels which include:

i) Memory level; ii) understanding level; and (iii) reflective level.

★ Important Points

Both statements describe different levels of teaching and learning.

Statement I describes the understanding level, which is based on the acquisition of factual information, the ability to see relationships, comprehend and seek

generalization,and their application in life.

Statement II describes the reflective level, which is based on the development of critical thinking, problem-solving skills, and creative thinking.

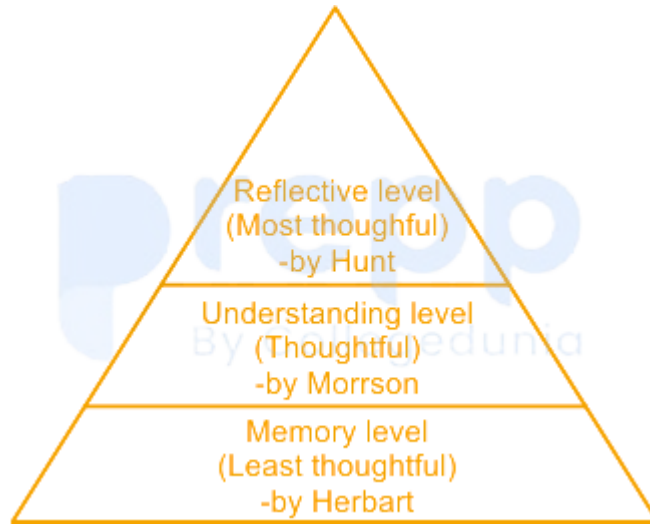
Both Statement I and Statement II are correct

★ Key Points

There is three levels of teaching:

- Memory Level- It is a memory level of teaching in which the *emphasis is on memorization rather than learning, and the instruction is done to convey textbook knowledge to students.*
 - It is not considered to be the best level of instruction because memorization is not beneficial and emphasis should be placed on understanding the subject. This level, on the other hand, *aids with memory enhancement.*
- Understanding Level- Understanding level teaching is a more intentional teaching technique in which students connect with concepts and comprehend the subject, as the name implies.
 - *Based on the students' prior awareness and comprehension level, they analyze the concepts and put together the facts and other thoughts linked with them.*
 - Professors and students are both interested in this phase, and teachers employ debates, seminars, explanations, and other similar tactics at this stage of instruction. The environment in the classroom is warm and stimulating.
- The reflective level -The reflective level is also known as the introspective level of instruction.
 - This is the **highest stage** of the teaching-learning process. This is due to the fact that instruction does not finish until the students **have mastered the concept.**
 - This is the level of training when the instructor pushes the students to try new things.
 - This stage is also known as exploratory learning because students engage in reflective learning by reflecting on what they have read, done, or

learned, applying the lesson to their own life, and making sense of the content. exploring ways to find the answers.



16. Answer: c

Explanation:

The correct option is (A) - (III), (B) - (II), (C) - (IV), (D) - (I).

★ Key Points

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Committee	Description
Calcutta University Commission	Sadler Commission, also known as Calcutta University Commission was appointed in 1917 after its chairman Michael Sadler. • The goal of investigating the conditions and prospects of Calcutta University. • To relieve universities of the burden of secondary education, allowing them to focus solely on higher education • From 1916 to 1921, seven new universities were established: Mysore, Patna, Benaras, Aligarh, Dacca, Lucknow, and Osmani. • Soon after, more universities were established, including Delhi, Agra, and Annamalai (in Madras). • Teaching had previously been the responsibility of degree colleges, and there was no provision for post-graduate education. • The Calcutta, Bombay, and Madras universities were responsible for providing affiliation, conducting examinations, and conferring degrees.
N.R. Narayanamurthy	A Committee <u>headed by Infosys Technologies founder N R Narayana Murthy in 2013</u> has given the following recommendations on higher education: • Form an inter-ministerial group to coordinate ministry-specific policy changes that would gear and support the environment for corporate sector participation in higher education. • Creation of the Council for Industry and Higher Education Collaboration as a nodal agency for facilitating collaboration between industry and higher education.

	Promotion of entrepreneurial outlook in students and staff at the university level with industry support.
Committee on funding Central Universities	Committee on funding Central Universities or Punnayya Committee (1992-93), create global standards in higher education- (1)faculty to signal quality. Whether this and (2) relatively higher fees charged
Committee on Technical Education	The committee on Technical Education was headed by Swaminathan

17. Answer: b

Explanation:

Appeal to Ignorance is the correct option.

★ Important Points

- A **logical fallacy** is an error in reasoning that makes your argument less effective and convincing. And you want to be able to spot these fallacies in other people's arguments (and your own) so you can call them out or fix your strategy. **There are two major types of logical fallacies, formal and informal.**
- Formal fallacy: arguments that have invalid structure or form.
- Informal fallacy: arguments that have incorrect or irrelevant premises.
- Appeal to Ignorance :
 - It asserts that a proposition is true because it has not yet been proven false or a proposition is false because it has not yet been proven true
 - **Example:** 'No one has ever succeeded to provide conclusive evidence for the claims of astrology. Therefore we must conclude that astrology is non-sense'.
 - The fallacy committed in the above argument is an appeal to ignorance.
 - This is a logical fallacy in which a conclusion is drawn based on a lack of evidence to the contrary, rather than on the presence of positive evidence.

- In this argument, the conclusion that astrology is nonsense is drawn based on the lack of conclusive evidence for the claims of astrology, rather than on any positive evidence against it.

★ Additional Information

- Hasty Generalization: This is a logical fallacy in which a conclusion is drawn from insufficient evidence. The conclusion is not necessarily false, but it is not well-supported by the evidence.
- False Cause: This is a logical fallacy in which a cause-and-effect relationship is assumed where none exists. It is also known as "non causa, pro causa" which means "non-cause for cause".
- Slippery slope: This is a logical fallacy in which a chain reaction of events is suggested to occur, *but without any evidence that the events are actually related or likely to occur. It's also known as the "thin edge of the wedge".*
- **Appeal to Pity:**
 - it is a fallacy in which someone tries to win support for an argument or idea by exploiting his opponent's feelings of pity or guilt.
- **Appeal to Force :**
 - It relies on fear as a tool to influence the beliefs of others
 - The bully's argument is what is known as an appeal to force
 - It is based on the threat of harm and is not relevant to the argument itself.

In short, the threat does not prove or disprove the truth of the statement.
- **Appeal to the People**
 - It is a type of argument that a claim is true because a lot of people believe it, or that a claim is false because a lot of people do not believe it.

18. Answer: a

Explanation:

The correct answer is Both (A) and (R) are correct and (R) is the correct explanation of (A).

★ Important Points

- The new system of digital communication has enabled the emergence of an interactive society by allowing for the digitized and networked integration of multiple communication modes .
- This means that people can communicate with each other through various digital platforms and devices, **such as smartphones, computers, and social media, and can easily share information and collaborate with one another in real time .**
- The ability to access and share **information quickly and easily has led to a more connected and interactive society**, where people can communicate and collaborate on a global scale.
- Additionally, the digitized and networked nature of the new system allows for the **creation of virtual communities and the development of new forms of social interaction .** Overall, the new system of digital communication has made the emergence of an interactive society possible by making communication and collaboration more efficient and accessible.

Assertion (A): *The new system of digital communication has made the emergence of an interactive society possible is correct*

Reasons (R): *The new system is based on 'digitized and networked integration of multiple communication modes'. (R) is the correct explanation of (A).*

★ Additional Information

Digital communication refers to the use of **electronic devices and networks to transmit and receive information**. Some key points to consider when discussing digital communication include:

- **Digitization**: Digital communication relies on the conversion of analog information (such as speech or images) into digital format, which can be transmitted and stored more efficiently.
- **Networking**: Digital communication relies on networks to transmit and receive information. This can include local networks, such as a home or office network, or global networks such as the internet.
- **Multi-modality**: Digital communication allows for multiple modes of communication, such as text, audio, video, and images, to be integrated and exchanged.

- **Interactivity:** Digital communication enables real-time, interactive communication between users.

Overall, digital communication enables **faster, more efficient, and more versatile communication, allowing people to communicate and collaborate in new ways and on a global scale .**

19. Answer: d

Explanation:

Given

The ratio of A: B is 3 : 2.

The cost of oil A = Rs. 60 per litre

The cost of oil B = Rs. 120 per litre

Formula used

Total value = Quantity $\times$ price

Solution

Let the two types of oil be $3x$ and $2x$.

Total cost of the mixture = $(3x \times 60) + (2x \times 120)$

$$\Rightarrow 180x + 240x = 420x$$

The cost per litre of the resulting mixture:

$$\Rightarrow 420x/5x$$

$$\Rightarrow 84.$$

20. Answer: b

Explanation:

The full form of 'NROER' is the National Repository of Open Educational Resources.

The National Repository of Open Educational Resources (NROER) is a project that aims to bring together all digital and digitize resources used in school and teacher education.

★ Important Points

- NROER is a project launched by the **government of India's Ministry of Human Resource Development (MHRD)** under the National Mission on Education through Information and Communication Technology (**NMEICT**) initiative.
 - It aims to create a **national repository of open educational resources (OER)** that can be accessed by teachers, students, and researchers across the country.
 - **OERs are educational materials that are freely available for use, reuse, adaptation, and sharing.**
 - NROER was launched in New Delhi on August 13, 2013.
 - **NROER was created by the Central Institute of Educational Technology (CIET) and NCERT.**
 - Video, image, audio, document, and interactive resources are available in a variety of formats.
 - **NROER allows teachers to download, share, comment on, and rate media resources in addition to accessing and posting them.**
 - the platform that houses the repository, is a project of Mumbai's **Homi Bhabha Centre for Science Education's Knowledge Labs.**

★ Additional Information

The **mission of the NROER** is listed below.

- *To store, preserve, and provide access to various digital resources for teachers and students.*

- *To enable community participation in the development and sharing of digital resources.*

NROER include

- An eLibrary is a warehouse of all resources and can be filtered based on:
 - **Media type**
 - **Subjects**
 - **Language**
 - **Level**

Features of NROER

- Open access to the resources.
- Free availability of resources.
- Shareability of resources.
- Resources are available in discrete pieces instead of being available in bulk, making the segregation of information difficult.
- The need to research from different sources minimizes, as all resources on any particular topic are available on one platform.
- Resources may sometimes need to be contextualized by additional materials that support them.
- Users can add resources to the NROER, subject to proper licensing.

Your Personal Exams Guide

21. Answer: b

Explanation:

The correct statements are:

(A) IP addresses are used to identify computers on the Internet.

(C) Large files such as videos which cannot be sent by e-mail as attachments, can be sent to another computer via FTP.

★ Important Points

(A) IP addresses are used to identify computers on the internet

- They are unique numerical labels assigned to each device connected to a computer network that uses the Internet Protocol for communication.
- An IP address serves two main functions: identifying the host or network interface and providing the location of the host in the network.
- IP addresses are divided into two types: IPv4 and IPv6. IPv4 addresses are 32-bit numbers, while IPv6 addresses are 128-bit numbers.

(C) File Transfer Protocol (FTP) is a standard network protocol used to transfer files from one host to another over a TCP-based network, such as the Internet.

- FTP is often used to upload and download large files that cannot be sent as email attachments, such as videos, music, and images.
- Because FTP utilizes a separate control and data connection, it can handle large files and support resuming interrupted transfers.
- File Transfer Protocol (FTP) is a standard network protocol used to transfer files between computers on a TCP-based network, such as the Internet.
- FTP uses separate control and data connections,

B) Internet and WWW (World Wide Web) are related terms but they are not separate.

- The Internet is a global network of **interconnected computer systems**, while the World Wide Web (WWW or Web) is a **collection of documents**
- Images, videos, and other resources can be accessed via the Internet using a web browser.
- The Web is just one of the many services that run on top of the **Internet, along with email, file transfer, and remote login.**

Thus, option b is not correct.

22. Answer: c

Explanation:

The Likert scale is used to measure a set of Attitudes

★ Important Points

The **Likert scale** is a method of measuring attitudes, opinions, or beliefs by asking respondents to rate their level of agreement or disagreement with a statement or series of statements.

- It is also a reliable and valid measure of attitudes, as it eliminates the problem of 'acquiescence bias' which is the tendency of respondents to agree with the statements.
- It's important to note that the Likert scale is a unidimensional measurement, which means that it measures one variable at a time and it doesn't capture the complexity and multi-dimensionality of attitudes, thus it's better to use it in combination with other methods to get a more comprehensive understanding of attitudes.

★ Key Points

- It is named after its developer, psychologist **Rensis Likert**, who introduced it in **1932**.
- The Likert scale is typically presented as a series of statements each with a set of response options, such as
 - *"strongly agree,"*
 - *"somewhat agree,"*
 - *"neither agree nor disagree,"*
 - *"somewhat disagree,"*
 - *and "strongly disagree."*
- Respondents are asked to **choose the option that best** represents their level of **agreement or disagreement with each statement.**
- It is used because it is a simple and easy-to-use method of **gathering data**

23. Answer: d

Explanation:

Statement I is false but Statement II is true

★ Important Points

In **qualitative research**, the goal is to gain an in-depth understanding of the research topic, and the questions are designed to be open-ended and non-standardized to allow for a more in-depth exploration of the research topic.

- The questions are **not fixed but can change and evolve** as the research progresses.
- This means that the researcher has the freedom to ask follow-up questions and probe **deeper into the subject matter based on the responses received**.
- In **quantitative research**, questions are standardized, usually in the form of closed-ended questions or surveys.
- These questions are designed to be as **neutral as possible and are the same for all participants**.

Thus, while qualitative research generally has more open-ended questions, they may change and evolve during the research, while quantitative research has standardized questions that are designed to be as neutral as possible to ensure consistency and comparability across participants.

★ Additional Information

- **Quantitative research** is a type of research that uses numerical data to analyze and understand a phenomenon.
 - It is based on statistical and mathematical methods and is used to test hypotheses or to establish cause-and-effect relationships. Some key points of quantitative research include:
 - The sample size is usually large to make **generalizations about the population**.
 - It is focused on objectivity and is **less concerned with understanding the complexities of the subject matter**.
 - Data is analyzed by using **inferential statistics**.
 - The results are generalizable and can be used to make predictions about the population.
- **Qualitative research** is a type of research that explores and understands a phenomenon **through non-numerical data, often in the form of words, images, and observations**. Some key points of qualitative research include:

- It uses **non-numerical data**, which can be collected through various methods such as interviews, **observation, focus groups, and ethnography**.
- It is based on **interpretive and inductive methods to analyze the data**.
- It is used to understand the complexities of a phenomenon and **generates insights into the subject matter**.
- It is focused on understanding the **subjective experiences of participants and emphasizes the importance of context**.
- Data is analyzed by using techniques such as coding, categorizing, and identifying patterns.
- The results are **not generalizable but provide rich and detailed insights into the phenomenon**.

24. Answer: a

Explanation:

Exploratory research is primarily intended to Gather preliminary information

★ Important Points

Exploratory research

- **Exploratory research** is the process of investigating a problem that has not been studied or thoroughly investigated in the past.
- **Exploratory** type of **research** is usually conducted to have a better understanding of the existing problem but usually doesn't lead to a conclusive result.
- Exploratory research is the preliminary research to clarify the exact nature of the problem to be solved.
- The **goal of exploratory research** is to formulate problems, clarify concepts, and form hypotheses.
- Exploration can begin with a literature search, a **focus** group discussion, or case **studies**.

★ Key Points

Exploratory research is primarily intended to gain a general understanding of a topic or problem and to identify key issues and concepts. It is often used in the early stages of research, when little is known about a topic, or when the researcher is trying to define a problem or develop a research question. Some key points of exploratory research include:

- It is a flexible and open-ended approach, with no preconceived hypotheses.
- It uses various methods such as literature reviews, focus groups, and interviews to gather data.
- The sample size is usually small and non-representative.
- The data collected is often qualitative in nature.
- It is used to generate ideas, identify problems, and develop hypotheses for further research.
- It is also known as formative research because it's used to formulate the problem, research question, and objectives

25. Answer: d

Explanation:

ISP – Internet Service Protocol is incorrectly matched



Important Points

ISP stands for Internet Service Provider,

- It is a company that **provides internet services**, such as internet access or web hosting.
- ISPs connect customers to the internet using various technologies such as **DSL, cable, or fiber-optic**.
- An ISP, or Internet Service Provider, is a **company or organization that provides Internet services to customers**
- This includes providing access to the Internet via wired or wireless connections, as well as additional services such as **email, hosting, and online storage**.
- ISPs can be divided into different categories such as **cable, DSL, and satellite** ISPs.

- They are the **gatekeepers to the internet** and without them, the internet would not be accessible to the general public.

So, the option that matches incorrectly is option 4) ISP – Internet Service Protocol.

★ Key Points

HTTP stands for Hypertext Transfer Protocol, it is a protocol for **transferring data over the internet**. It is the foundation of data communication for the World Wide Web. It is used for transferring data from a web server to a browser to view web pages.

FTP stands for File Transfer Protocol, it is a standard network protocol used to **transfer files from one host to another over a TCP-based network, such as the internet**.

SMTP stands for Simple Mail Transfer Protocol, it is a protocol for **sending email messages between servers**. Most email systems that send mail over the Internet use SMTP to send messages from one server to another, as well as to deliver messages to local mail clients like Microsoft Outlook or Apple Mail.

26. Answer: d

Explanation:

The correct option is Arthāpatti (Postulation).

★ Important Points

In the given argument, the person is making a comparison between the cat's location when their eyes were closed (on the table) and when their eyes were opened (on the chair) and using that comparison to conclude that the cat must have moved from the table to the chair while their eyes were closed. Therefore, the means of knowledge used in the argument is Arthāpatti (Postulation).

Arthāpatti (Postulation):

This is the means of knowledge by postulating something, which is not directly perceived, to explain certain facts. It is the knowledge that is inferred by inferring

something that is required to explain the given facts.

★ Key Points

In classical Indian philosophy, there are several means of knowledge (pramanas) that are used to acquire knowledge and understand the world. These include:

- Pratyaksa (Perception): This is the direct perception of an object through the senses. It is considered the most basic and reliable means of knowledge. It is the direct observation of an object.
- Anumana (Inference): This is the process of inferring the properties of an object through logical reasoning. It is used to understand objects that cannot be directly perceived. It is the reasoning process that helps one to arrive at a conclusion based on certain observations or facts.
- Upamāna (Comparison): This is the process of inferring the properties of an object through comparison with another object. It is used to understand new objects based on similarities with known objects.
- Sabda (Testimony): This is the acceptance of knowledge on the authority of a reliable source. It is used to acquire knowledge that cannot be directly perceived or inferred. It is the knowledge that comes from the testimony of trustworthy people, like the knowledge about historical events and religious texts.
- Arthāpatti (Postulation): This is the means of knowledge by postulating something, which is not directly perceived, to explain certain facts. It is the knowledge that is inferred by inferring something that is required to explain the given facts.
- Anupalabdhi (Non-apprehension): This is the means of knowledge by negation. It is the knowledge that is inferred by the absence of something. It is the knowledge by elimination of the impossible.
- All these pramanas (means of knowledge) are considered valid in Indian Philosophy, and one can choose the best-suited pramana for a given situation.

27. Answer: a

Explanation:

The correct option is Both Statements I and Statement II are true

★ Important Points

- Halocarbons are a **group of man-made compounds that contain chlorine or bromine**, and they have been found to contribute significantly to global warming.
- These compounds, **such as chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs)**, are powerful greenhouse gases that **trap heat in the atmosphere and contribute to the warming of the planet**.
- Halocarbons also catalytically **destroy stratospheric ozone**.
- The **chlorine and bromine atoms in these compounds break down ozone molecules** in the stratosphere, which protects the earth from harmful ultraviolet radiation.
- This process, **called ozone depletion**, has led to the creation of the Antarctic ozone hole and has the potential to cause serious damage to human health and the environment.

Thus, both statement I and statement II are true and correctly describe the effects of halocarbons on the environment. Statement I mentions their contribution to global warming and statement II mentions their role in catalytically destroying the ozone layer.

★ Key Points

- Halocarbons are a **group of man-made compounds that contain chlorine or bromine**
- Halocarbons are powerful greenhouse gases **that trap heat in the atmosphere and contribute to global warming**
- Halocarbons catalytically **destroy stratospheric ozone, leading to the creation of the Antarctic ozone hole**
- Ozone depletion caused by halocarbons can have serious impacts on human health and the environment
- Examples of **halocarbons include chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs)**

28. Answer: c

Explanation:

The correct sequence of stages in experimental research is: (D), (A), (B), (C), (E)

(A) Selection of the setting

(D) Selection of the experimental design

(B) Operationalisation of variables

(C) Administration of the experiment

(E) Analysis and interpretation of results

★ Important Points

- The first step in experimental research the researcher must choose an appropriate setting in which to conduct the study.
- After selecting the appropriate setting, the researcher has to select the appropriate experimental design (such as a randomized controlled trial) that will allow the researcher to test their hypothesis.
- Next, the researcher must operationalize the variables of interest, meaning they must define and measure these variables in a way that is consistent across the study.
- Once the variables have been operationalized, the researcher can administer the experiment by recruiting participants and randomly assigning them to different groups (if using a randomized controlled trial design).
- Finally, the researcher must analyze and interpret the results of the study in order to draw conclusions about the relationship between the variables under investigation.

★ Key Points

Experimental Method:

- It is a systematic and scientific approach to research on establishing causal relationships.
- It is designed for establishing cause-and-effect relationships between two or more variables.
- It investigates a hypothesis through experiments in a controlled environment where a variable is manipulated by the researcher and its impact is observed on the dependent variable.
- It tests the formulated hypothesis and uses the results to generalize to a larger population.
- It helps in establishing causal relationships among different events in the educational situation under controlled conditions
- There are four essential characteristics of experimental research:
 - control
 - manipulation
 - observation and
 - replication

29. Answer: b

Explanation:

Given

The successive decreases in the population are 25% and 40%.

Formula used

Successive decreases = $X + Y - (XY)/100$

Solution

$\Rightarrow 25 + 40 - (25 \times 40)/100$

$\Rightarrow 65 - 10 = 55\%$

30. Answer: c

Explanation:

Given

Principal = 10000

Rate = 10%

Interest = 2100

Formula used

$$A = P(1 + r/100)^n$$

Where, P = Principal, r = rate and n = No. of years

Solution

Let the number of years be n.

Amount = P + C.I

$$\Rightarrow 10000 + 2100 = 12100$$

Applying the given formula:

$$\Rightarrow 12100 = 10000(1 + 10/100)^n$$

$$\Rightarrow 12100 = 10000(11/10)^n$$

$$\Rightarrow 121/100 = (11/10)^n$$

$$\Rightarrow (11/10)^2 = (11/10)^n$$

Since the base is the same, we can equate the powers.

$$\Rightarrow n = 2 \text{ years.}$$

31. Answer: c

Explanation:

Given

The first 6 multiples of 11 are 11, 22, 33, 44, 55 and 66.

Formula used

Average = Sum of all values/No. of value

Solution

The sum of all six multiples will be:

$$\Rightarrow 11 + 22 + 33 + 44 + 55 + 66$$

$$\Rightarrow 11(1 + 2 + 3 + 4 + 5 + 6)$$

$$\Rightarrow 11 \times 21 = 231$$

$$\text{Average} = 231/6$$

$$\Rightarrow 38.5$$

32. Answer: b

Explanation:

Given: 8, 10, 7, 12, 5, 16, 3, ?

The logic follows here is:



Hence, the correct answer is "20".

33. Answer: b

Explanation:

In intra-personal communication, the medium that carries the messages is The central nervous system

so, the correct option is The central nervous system.

★ Important Points

The **central nervous system (CNS)** plays a crucial role in this type of communication because it is responsible for processing and interpreting the various stimuli that an individual experiences.

- Intra-personal communication is the communication that occurs **within an individual**.
- It involves the processing and interpretation of various **stimuli, both external and internal**.
- It allows individuals to process and interpret their **own thoughts and emotions, and then translate them into action**.
- It is a type of **self-talk** that helps us to make sense of our thoughts and feelings and to plan and monitor our behavior.
- It helps us to understand ourselves better and to make better decisions.

★ Additional Information

One-to-one	Interpersonal communication
One-to-many	Mass communication especially print
Many-to-many	Network (Transactional) communication
One-to-none	Intra-personal

- **Interpersonal communication** is the exchange of ideas **between two or more people** and where both participants, can affect one another. It is a dynamic, two-way flow of information. communication is sending and receiving. It often includes **the face-to-face exchange of information** , in a form of voice, facial expressions, body language, and gestures.
 - **For example** communication between a son and a father, an employer and an employee, two sisters, a teacher and a student, and so on.
- **Mass communication** – is the process by which a person, **group of persons, or organization creates a message and transmits it through some type of medium to a large, anonymous, heterogeneous audience** . The audience of mass communication is mostly made up of different cultures, behavior, and belief systems.
 - **For example** commercial advertising, public relations, journalism, and political campaigning.

34. Answer: b

Explanation:

The correct option is Some children are innocent.

★ Important Points

- If the statement "All children are innocent" is true, then it can be logically inferred that option second) "Some children are innocent" is also true.
- This is because the statement "All children are innocent" means that every child is innocent ,
- Which implies that at least some children are innocent .
- It's important to note that this logical form is based on the assumption that the given statement "All children are innocent" is true and it is not a generalization that always holds true, as some children may not be innocent.

★ Key Points

- Option first) "All those who are innocent are children" is not necessarily true because it is not a logical consequence of the given statement. It would be

necessary to prove that no adult or any other individual is innocent and that all innocent people are children in order to make this statement true.

- Option third) "All those who are non-innocent are adults" is not necessarily true. It is possible that there are children who are not innocent, regardless of the given statement.
- Option four) "Some children are non-innocent" is not necessarily true . It is possible that all children are innocent and no child is non-innocent, regardless of the given statement.

It's important to note that this reasoning assumes that the statement "All children are innocent" is true. However, it's important to remember that in real life, it is not a generalization that always holds true, as some children may not be innocent.

35. Answer: c

Explanation:

The most appropriate option for the benefits of asynchronous online learning is option 3) (A), (C), and (D) only.

★ Key Points

- **Self-pacing**: Asynchronous online learning allows students to **work at their own pace and complete coursework on their own schedule**. This means students can work on course materials and assignments at times that are most convenient for them.
- **Self-engagement**: Asynchronous online learning also allows students to take more control over their own learning by giving them the opportunity to engage with the course materials and assignments on their own terms.
- **Flexibility**: Asynchronous online learning is also beneficial because it allows students to attend classes and complete coursework **from anywhere, which makes it more flexible than traditional, in-person classes**.
 - Option (B) **Immediate Feedback** is not a benefit of asynchronous online learning because it is not necessary for the teacher to provide feedback in real-time.

- Option (E) **Presence of Teacher and student at the same time is not a benefit of asynchronous online learning** , because it does **not require the teacher and student to be online** at the same time, this is the main characteristic of the asynchronous mode of online learning.

Thus, asynchronous online learning offers benefits like self-pacing, self-engagement, and flexibility, which make it an attractive option for students looking for a more flexible way to learn.

★ Additional Information

Asynchronous online learning:

- Involves course materials and assignments that can be accessed and completed **at any time, without the need for real-time interaction** or coordination between students and instructors.
- Allows students to **work at their own pace and complete coursework on their own schedule.**
- Provides flexibility for students to attend classes and **complete coursework from anywhere** .

Synchronous online learning:

- Involves **real-time interaction** and coordination between students and instructors.
- Classes and coursework are completed in a **scheduled time frame** with all students participating at the same time.
- Allows for **immediate feedback and interaction between students and instructors in real-time** .
- Provides the opportunity for more collaborative learning and interactive activities.
- It's more rigid in time management and students need to be **online at the same time to participate in the class**

36. Answer: d

Explanation:

The correct answer is option 4) (A), (D), and (E) only.

★ Important Points

Linear communication is best suited for persuasion as it allows for a clear and direct message to be sent to the receiver.

- It also provides demarcated results, which can be useful in situations where it is important to track the effectiveness of communication.
- However, it is not the best option for quickening the process of feedback as it is a one-way process, and it is not used extensively in a two-way exchange of information.
- It is extensively used in international propaganda as it allows for a clear and direct message to be sent to a large audience.

★ Key Points

Today, the main models of communication are can be split into three categories:

- Linear models – only look at one-way communication.
 - *Aristotle's Model*
 - *Lasswell's Model*
 - *Shannon-Weaver Model*
 - *Berlo's S-M-C-R Model*
- Linear models of communication focus on one-way communication, where a sender transmits a message to a receiver without any feedback or interaction

Interactive models – look at two-way communication.

- *Osgood-Schramm Model*
- *Westley and Maclean Model*
- Interactive models of communication focus on two-way communication, where both the sender and receiver can actively participate in the exchange of information. This model is often used in situations where dialogue or conversation is necessary, such as in interpersonal communication, group discussions, or customer service interactions.

Transactional models – look at two-way communication where the message gets more complex as the communication event (e.g. conversation) progresses.

- *Barnlund's Transactional Model*
- *Dance's Helical Model*
- In this model, the sender and receiver are both active participants and their roles can change depending on the situation. The message is not only conveyed through words but also through gestures, facial expressions, and other nonverbal cues. It is often used in situations where the conversation requires mutual understanding and the negotiation of meaning, such as in therapy sessions, business negotiations, or diplomatic talks.

37. Answer: a

Explanation:

Option first) Both Statement I and Condition II are true and are the correct answer.

★ Hint

This is because both statements are describing the presence of **EDCs in the environment**,

with **Statement I stating that most emerging contaminants of water are EDCs and Statement II stating that flame retardant additives**, which are found globally, are considered to be EDCs. Both statements are supported by scientific research and evidence and can be considered true.

Endocrine disruptors can be ingested through food and beverages, applied through pesticides, and utilized topically through cosmetics. In essence, your cuisine, air, skin, and water may expose you to these substances.

- Endocrine-disrupting substances may be dangerous even in small quantities.
- It is known that even very tiny variations in hormone levels can have substantial developmental and biological implications as part of the body's normal endocrine functioning.

- According to this observation, endocrine-disrupting chemical exposures, even in little doses, might affect the body's delicate systems and result in health issues.

★ Important Points

- **Endocrine Disrupting Chemicals (EDCs)** are chemicals that can interfere with the normal functioning of the endocrine system.
- They can **mimic or block the actions of hormones**, leading to changes in the development, growth, reproduction, and behavior of organisms.
- EDCs can come from a variety of sources, including pesticides, industrial chemicals, and personal care products.
- They can be found in the environment and can accumulate in the body over time.
- EDCs can have a wide range of effects on health, including **reproductive disorders, cancers, and developmental disorders**.

Common endocrine-disrupting chemicals include:

- **Bisphenol A (BPA)** – commonly found in plastics and canned foods
- **Phthalates** – used to make plastics more flexible and can be found in personal care products and cosmetics
- **Polychlorinated biphenyls (PCBs)** – are used in electrical equipment and have been banned since the 1970s but still persist in the environment
- **Dioxins and dioxin-like compounds** – byproducts of industrial processes and can be found in food and air
- **Pesticides** – such as atrazine and DDT, can disrupt endocrine function

38. Answer: c

Explanation:

Statement I is correct and Statement II is incorrect.

★ Important Points

- In the Indian philosophical tradition, *the relationship of invariable concomitance (vyapti) is the relation between a hetu (reason or cause) and its effect, known as the sadhya.*
 - This relationship is invariable, meaning that the **presence of the hetu necessarily implies the presence of the sadhya and vice versa,**
 - without any qualifying terms or limitations (upadhi). *An example of this relationship is "wherever there is smoke, there is fire."*
- Paksa refers to *the subject or the object under investigation* and is not directly related to the relationship of invariable concomitance. *Thus, the statement that the relationship of invariable concomitance is between hetu and paksa with a qualifying term or limitation (upadhi) is incorrect.*

★ Key Points

The concept of Vyapti with an example:

- The relation of invariable concomitance between the hetu and the sādhyā is known as vyapti.
- In the above question example, we pass from the perception of smoke in the mountain to the knowledge of the existence of fire in it on the ground of **our previous knowledge of the universal relation between smoke and fire.**
- A vyapti may be of two types: Samavyapti, and Asamavyapti.
- Vyapti guarantees the truth of the conclusion. It signifies the relation of invariable concomitance between "hetu" and "sadhya" and is of two kinds.
- Vyapti between terms of unequal extension is called "asamavyavyapti" or "visamavyapti" and vyapti between equal extensions are called "samavyapti"

★ Additional Information

- According to Nyaya, four means of valid knowledge are admitted: perception, inference, comparison, and verbal testimony.
- **Hetu is the equivalent of the middle term.**
- It also goes by the names "linga," "mark," and "sign."
- For example,
 - Major Premise: All things which have smoke have a fire.
 - Minor Premise: This hill has smoke
 - Conclusion: Therefore, this hill has a fire.

- Here 'smoke' is the middle term , 'hill' is the minor term and 'fire' is the major term.
- It is discovered twice, first in relation to sdhya and subsequently to paksa.
- Finally, it aids in the establishment of sdhya in paksa.
- Smoke is referred to as "hetu" on the inference made above.

39. Answer: d

Explanation:

Statement I is incorrect and Statement II is correct.

In a breeder reactor, the amount of fissile material produced is more than the amount of fissile material consumed. Breeder reactors are designed to produce more fissile material than they consume, making them an attractive option for countries looking to extend their limited fuel resources.

On the other hand statement, the second is correct Kalpakkam (Chennai) Nuclear Power Plant in India is an example of a breeder reactor.

★ Important Points

- Breeder reactors are designed to produce more fissile material than they consume.
- This is achieved through the process of nuclear breeding, where **non-fissile isotopes of uranium or plutonium are transformed into fissile isotopes through neutron capture and subsequent nuclear reactions**.
- The net effect is an increase in the amount of fissile material in the reactor.
- This makes breeder reactors an attractive option for countries looking to **extend their limited fuel resources**.
- By producing more fuel than they consume, breeder reactors can help countries **reduce their dependence on imported fuel and extend the life** of their existing fuel resources.
- Overall, the concept of breeder reactors is based on the idea of "closing the fuel cycle," where the waste from one generation of reactors is used as fuel for the next generation, resulting in a self-sustaining fuel cycle.

Kalpakkam (Chennai) Nuclear Power Plant in India is an example of a **breeder reactor**.

- The plant uses a **fast breeder reactor (FBR) design**, which is capable of **producing more fuel than it consumes**.
- This makes it an important part of India's nuclear energy program, as it allows the country to utilize **its limited uranium resources more efficiently**.
- **Kalpakkam (Chennai) Nuclear Power Plant** is located in the Indian state of **Tamil Nadu**.
- It is operated by the **Nuclear Power Corporation of India Limited (NPCIL)** and is an example of a breeder reactor.

★ Additional Information

There are several types of nuclear power plants, including:

- **Boiling Water Reactors (BWRs)**: This type of reactor uses boiling water to transfer heat from the reactor core to the turbine generator.
- **Pressurized Water Reactors (PWRs)**: This type of reactor uses pressurized water to transfer heat from the reactor core to the turbine generator. It is the most commonly used type of reactor in the world.
- **Fast Breeder Reactors (FBRs)**: This type of reactor uses fast neutrons to breed new fuel from non-fissile isotopes. This allows the reactor to produce more fuel than it consumes, making it an attractive option for countries looking to extend their limited fuel resources.
- **Heavy Water Reactors (HWRs)**: This type of reactor uses heavy water (deuterium oxide) as a coolant and neutron moderator.

40. Answer: a

Explanation:

The correct option is Some visionaries are academicians

Some visionaries are academicians converse of the statement - "All academicians are visionaries"

★ Important Points

- The converse of the statement "All academicians are visionaries" is "Some visionaries are academicians".
 - The converse of a statement is formed by reversing the roles of the subject and the predicate.
 - In this case, the original statement has "academicians" as the subject and "visionaries" as the predicate, so in the converse, the roles are reversed, with "visionaries" as the subject and "academicians" as the predicate.

So, the correct option is first: "Some visionaries are academicians". This converse statement is not necessarily true based on the original statement, as it is possible that not all visionaries are academicians.

41. Answer: c

Explanation:

The correct answer is option 3: (A), (C), and (E) only.

So, the developments that have arisen because of the internet are weblogs (A), wikis (C), and social networking sites (E).

★ Important Points

- **Weblogs:** Also known as "**blogs**", weblogs are online journals or diaries that allow users to publish their thoughts, opinions, and experiences on the internet.
 - They arose because of the internet as they require a web platform to be hosted and shared.
 - Online journals
 - User-generated content
 - Real-time update
 - Public facing
- **Databases:** Databases existed before the internet, but the growth of the internet has led to the creation of new types of databases,
 - such as cloud databases

- and big data databases,
- which are designed to store and manage large amounts of data in a distributed manner.
- **Wikis:** A wiki is a website that allows users to create and edit content collectively.
 - They arose because of the internet as they require a web platform to allow multiple users to contribute and edit content in real-time.
- **DTP: DTP (desktop publishing)** refers to the process of creating and printing digital documents, such as
 - magazines,
 - flyers, and
 - brochures.
 - DTP predates the internet and was originally done on desktop computers.
- **Social networking sites:** Social networking sites, such as Facebook and Twitter, arose because of the internet.
 - They are web-based platforms that allow users to create profiles, share content, and
 - connect with other users.

42. Answer: b

Explanation:

The correct answer is option second : (B), (C), (D) only.

- A literature review should answer questions related to
 - What research has been done in a particular area
 - What research methods have been used
 - What areas have not been investigated
- It should not answer questions related to
 - What area should not be investigated
 - What methods should not have been used in earlier studies?

★ Key Points

A literature review is a **comprehensive overview and evaluation of existing research and literature on a specific topic** . Key points include:

- **Purpose:**To identify gaps and existing knowledge in a specific field, and to provide context for new research.
- **Methodology** The process involves searching for, evaluating, and synthesizing existing research articles, books, and other sources.
- **Focus:** It focuses on a specific area of research, theme, or problem and summarizes the findings of previous studies.
- **Synthesis:** The review integrates and synthesizes existing research, **highlighting strengths and limitations, and identifying trends and patterns.**
- **Importance:** Literature reviews provide important context and background information for new research, **and help to identify areas that need further investigation.**

★ Additional Information

Prepp

Your Personal Exams Guide

Steps of research	
Identification of the Problem	The researcher identifies the problem on which he wants to research
View of Literature	The research views the available literature on the problem
Formulating a Hypothesis	The researcher formulates a hypothesis based on the available literature
Identifying, Manipulating, and Controlling Variables	The researcher identifies the variable that effecting the problem
Formulating a Research Design	The researcher formulates a design of the research according to the nature of the problem
Constructing Devices for Observation and Measurement	The researcher constructs tools by which the researcher collects the data
Sample Selection and Data Collection	The researcher selects the people with the identified problem and collects samples of data
Generalization , Data Analysis, and Interpretation	The researcher, based on the data collection, interprets the result of the research

Program Implementation
and Final Evaluation

In action research besides the above points,
program implementation and evaluations are
also done by the researchers

43. Answer: d

Explanation:

Option fourth) Statement I is false but Statement II is true.

★ Important Points

- *Statement I is false because communication technology has made revisiting ideas easier, as information can be easily stored and retrieved through various digital means.*
 - *Statement II is true because technology has indeed redefined the elements of time and distance in communication, allowing people to connect and collaborate across vast distances in real time, regardless of their physical location.*
- Technology has greatly facilitated communication, enabling people to **connect and exchange ideas and information more easily than ever before.** This has revolutionized the way people work, socialize, and do business, making it easier for communication managers to connect with their teams, partners, and customers.

★ Key Points

- **Statement I: Communication technology has made revisiting ideas impossible.**
 - This statement is **false**.
 - Communication technology, such as **email, cloud storage, and online collaboration tools**, has made revisiting ideas easier by allowing individuals to store and access information and ideas digitally.

- For example, a person can save an email or document to a cloud storage service and retrieve it at any time from any device, making it easy to revisit past ideas and continue to build upon them.
- **Statement II: Technology has redefined the elements of time and distance in favor of communication managers.**
 - This statement is true.
 - Technology has changed the way people communicate and has redefined the elements of time and distance in communication.
 - With the use of instant messaging, video conferencing, and other digital tools, communication managers can now connect with their teams, partners, and customers from anywhere at any time, regardless of their physical location.
 - This has made it easier for communication managers to manage and coordinate projects, as they can communicate in real time with their team members, regardless of where they are located.
 - For example, a communication manager can conduct a virtual meeting with team members in different parts of the world, breaking down the barriers of time and distance.

44. Answer: c

Explanation:

(A) is true but (R) is false

★ **Important Points**

Assertion (A) states that oxygen-demanding wastes are substances that oxidize in the receiving body of water.

- These types of wastes are organic in nature and are broken down by bacteria through a process called decomposition, which consumes oxygen in the water.
- Thus assertion is true.

Reason (R) states that as bacteria decompose these wastes, they release oxygen into the water.

- The decomposition process produces waste products, including carbon dioxide and water, which are then consumed by other aquatic plants and organisms.
- These plants and organisms then release oxygen into the water through photosynthesis.
- Thus bacteria does not release oxygen into water.

Hence reason is false.

In conclusion, (A) is true but (R) is false.

★ Additional Information

The strength of oxygen-demanding wastes is mainly measured using two methods:

BOD (Biological Oxygen Demand):

- Measures the amount of oxygen **required by microorganisms to break down organic matter in a sample of water**
- Provides an estimate of the **organic pollution in water**
- The test involves incubating a water sample for 5 days at a specific temperature and measuring the decrease in dissolved oxygen levels

COD (Chemical Oxygen Demand):

- Measures the **total amount of oxygen required to oxidize all the organic and inorganic matter in a water sample**
- Provides a measure of the total pollution in water
- The test involves the use of a strong chemical oxidizing agent to oxidize all organic matter in a water sample and measure the amount of oxygen consumed.

45. Answer: d

Explanation:

The correct option is (C), (D), (E) only.

★ Hint

The New Education Policy 2020 in India aims to bring comprehensive reforms in the education sector, including

- Restructuring the institutional setup,
- Promoting holistic education, and
- Transforming the regulatory system of higher education.

While the policy also mentions the establishment of community colleges and setting up of skill missions in rural India, these are not its main focus areas.

★ Important Points

The focus areas of the New Education Policy 2020 in India are:

- **Access:** Improving access to education, especially in rural and marginalized communities.
- **Equity :** Providing equal educational opportunities to all students, regardless of their background.
- **Quality :** Improving the quality of education through better teacher training and curriculum reform.
- **Research and Development:** Encouraging a culture of research and innovation in education.
- **Holistic Education :** Promoting a well-rounded education that includes not only academics but also physical, mental, and emotional development.
- **Technical and Vocational Education:** Emphasizing the importance of technical and vocational education and skills development.
- **Regulation and Accreditation :** Transforming the regulatory system and ensuring accreditation of educational institutions to maintain quality standards.
- **Internationalization :** Encouraging internationalization of education and fostering cultural exchange.

★ Additional Information

Reforms of NEP 2020 include -

- **Equitable and inclusive education** – Special emphasis is given to Socially and Economically Disadvantaged Groups (**SDGs**).
- **Ensuring Universal Access at All Levels of schooling from pre-primary school to Grade 12.**
- New Curricular and Pedagogical Structure(**5+3+3+4**).
- Setting up of State School Standards Authority (SSSA).
- New Policy promotes **Multilingualism** in both schools and higher education as multilingual education stresses using a student's mother tongue, or native language, to teach students as it makes learning effective.
- Classrooms that use **multicultural education** use various strategies to help students learn in their native languages. The NEP, 2020 recommends regular, formative, and competency-based and focuses on ' **assessment for learning**.

46. Answer: c

Explanation:

The correct answer is "Role of power elites" .

★ Key Points

- Let's consider the following points from the above passage.
 - Indian independence marked t **he powerful role of the elite** in establishing an agenda of modernisation driven by an instrumentalist notion of the state.
- From the above statement it is clear that the Role of power elites marked the Indian independence.

Therefore, the correct answer is **Option 3**.

47. Answer: d

Explanation:

The correct answer is " **Change the society**".

★ Key Points

- Let's consider the following points from the above passage.
 - The elite were constituted in the emerging national space of an independent India **as the drivers of social change processes**, bringing Indian society into modernisation.
- From the highlighted part of the above statement it is clear that the elites were expected to change the society.

Therefore, the correct answer is **Option 4**.

48. Answer: b

Explanation:

"The elitist imagination of combining nation state with market".

★ Key Points

- Let's consider the following lines of the above passage.
 - The success of the Indian state in this sense was intrinsically tied to the recrafting of an imagination of an independent India that, on one hand, putforth a narrative of the nation state and on the other hand, mobilised the market as a site for participation.
- The passage describes the role of the elite in forming the Indian state, where they were the drivers of modernisation, bringing Indian society into modernisation. They had an agenda of combining the nation state with the market, and the state developed an extended bureaucracy and gradually cultivated the market to create employment opportunities for the middle class. The success of the Indian state is tied to the recrafting of an imagination of an independent India that combines the nation state with the market.

Therefore, the correct answer is Option 2.

49. Answer: a

Explanation:

The correct answer is "English-language education".

★ Key Points

- Let's consider the following statement from the passage.
 - The emergent professional middle class as a subject of the modern state help considerable power. with its access to primarily **English-language education** and opportunities for employment in both the private and public sectors.
- From the highlighted part of the above statement, it is clear that the middle class became powerful in India because of English-language education.

Therefore, the correct answer is **Option 1**.

50. Answer: c

Explanation:

The correct answer is "India's mixed economy".

★ Key Points

- Let's consider the following statements from the passage.
 - The state on one hand, developed an extended bureaucracy for running the state apparatus and on the other hand, gradually cultivated the market, **creating employment opportunities for the middle classes and ensuring the participation of the middle classes in India's mixed economy.**
- From the highlighted part of the above statement it is clear that the state ensured the middle class participation in India's mixed economy.

Therefore, the correct answer is **Option 3**.