VLYMBOOQ · FULL-LENGTH MOCK PAPER

JEE Main - Paper 2B (B.Planning) (Full Paper)

100 questions · 400 marks · 180 minutes

Paper pattern

Exam: JEE Main - Paper 2B (B.Planning) (Full Paper)
Questions: 100 Marks: 400 Time: 180 minutes
Negative marking: -1 mark per wrong answer (+4 correct)
Source: JEE Main 2027 Information Bulletin, para 2.4: Paper 2B, 100 questions, 400 marks, 3 hours; Mathematics 25 (20 MCQ + 5 numerical) 100, Aptitude 50/200, Planning 25/100.
Generated: 2026-11-08T06:53:26.098Z By: qwen model lane (qwen3.5:9b)
Note: Mathematics has 20 MCQs + 5 numerical-answer questions in the real paper. This bank stores MCQ form only, so the paper is assembled as 25 MCQs.

Sections

Mathematics - 25 questions, 100 marks
Aptitude Test - 50 questions, 200 marks
Planning-Based Questions - 25 questions, 100 marks

Instructions

The timer is for practice; the real paper allows 180 minutes.
Each question has exactly one correct option.
Negative marking: -1 mark per wrong answer (+4 correct).
The answer key and a full explanation for every question follow the paper.
Model-generated questions are marked as such in the HTML page; verify any factual detail against the official notification.

Mathematics

Q1. The solution of 2x + 3 = 7 is:

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

Q2. The value of sin^230 degrees + cos^230 degrees is:

A. 0
B. 1/2
C. 1
D. 3/4

Q3. If A = {1, 2, 3} and B = {2, 3, 4}, find A B.

A. {1}
B. {2, 3}
C. {2, 3, 4}
D. {1, 2, 3, 4}

Q4. If the probability of an event A is 0.4 and of B is 0.5, and A and B are independent, then P(A n B) is:

A. 0.9
B. 0.1
C. 0.2
D. 0.02

Q5. The nth term of AP: 2, 5, 8, 11... is:

A. 3n - 1
B. 3n - 1
C. 2n + 1
D. n + 2

Q6. Which of these is a perfect square?

A. 20
B. 24
C. 36
D. 48

Q7. The median of 1, 3, 5, 7, 9 is:

A. 3
B. 5
C. 5
D. 7

Q8. If f(x) = 2x + 1, find f(3):

A. 5
B. 6
C. 7
D. 8

Q9. If the function f(x) = x^2 - 4x + 3 is given, what is the value of x for which f(x) is maximum or minimum?

A. 0
B. 1
C. 2
D. 3

Q10. The equation of line with slope 2 passing through (1, 3) is:

A. y = 2x + 1
B. y = 2x + 1
C. y = 2x - 1
D. y = x + 2

Q11. Find the derivative of f(x) = sin(x^2).

A. cos(x^2)
B. 2x cos(x)
C. 2x cos(x^2)
D. x^2 cos(x^2)

Q12. The value of 5! is:

A. 60
B. 100
C. 120
D. 24

Q13. The mode of 1, 2, 2, 3, 3, 3, 4 is:

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

Q14. The roots of equation $x^2 - 5x + 6 = 0$ are:

A. 2, 3
B. 2, 3
C. -2, -3
D. 1, 6

Q15. The sum of first n odd natural numbers is:

A. n
B. 2n
C. n^2
D. n(n+1)/2

Q16. The sum of first 10 natural numbers is:

A. 45
B. 55
C. 50
D. 60

Q17. The range of the function f(x) = x^2 is:

A. All real numbers
B. [0,)
C. (-, 0]
D. (0,)

Q18. The probability of getting a head when a fair coin is tossed is:

A. 0
B. 1/4
C. 1/2
D. 1

Q19. The value of $\sin^2 30° + \cos^2 30°$ is:

A. 0
B. 1/2
C. 1
D. 3/4

Q20. The number of ways to arrange letters of word CAT is:

A. 3
B. 4
C. 6
D. 9

Q21. If sin A = 1/2, then the value of A (acute) is:

A. 30°
B. 30°
C. 60°
D. 90°

Q22. The value of i^2 (where i = v-1) is:

A. 1
B. -1
C. i
D. -i

Q23. The value of i^2 (where i = sqrt-1) is:

A. 1
B. -1
C. i
D. -i

Q24. If the function f(x) = x^3 - 2x^2 - 5x + 1 is given, what is the value of f(-1)?

A. 1
B. 3
C. 5
D. 7

Q25. The quadratic equation whose roots are 1 and 2 is:

A. $x^2 - 3x + 2 = 0$
B. $x^2 - 3x + 2 = 0$
C. $x^2 + 3x + 2 = 0$
D. $x^2 - x + 2 = 0$

Aptitude Test

Q26. Consider the argument: 'All squares are rectangles. All rectangles have four sides. Therefore, all squares have four sides.' Which logical rule validates this deduction?

A. Modus Ponens
B. Hypothetical Syllogism (Transitive Property)
C. Disjunctive Syllogism
D. Affirming the Consequent

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Q27. An argument states: 'Either the suspect is at home or he is at the park. He is not at the park. Therefore, he must be at home.' What logical law justifies this conclusion?

A. Law of Excluded Middle
B. Law of Non-Contradiction
C. Disjunctive Syllogism
D. Constructive Dilemma

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Q28. In the context of formal logic, consider the statement: 'If it rains, the ground gets wet.' If we observe that the ground is dry, what can be logically concluded about the weather?

A. It must be raining.
B. It cannot be raining.
C. The ground condition is irrelevant to the rain.
D. We cannot determine if it is raining based on this information alone.

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Q29. In an argument, if the premises are true but the conclusion is false, what can be said about the validity of the argument?

A. The argument is valid
B. The argument is invalid
C. The argument is sound
D. The argument is inductive

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Q30. Which statement represents the logical negation of 'All students passed the exam'?

A. No student passed the exam
B. Some students did not pass the exam
C. All students failed the exam
D. Most students passed the exam

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Q31. Which scenario best illustrates an 'Appeal to Ignorance' fallacy?

A. Claiming a ghost exists because no one has proven it doesn't exist
B. Stating that water boils at 100C at sea level based on physics
C. Arguing that a law is just because everyone voted for it
D. Saying the earth is round because satellites have photographed it

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Q32. What is the primary function of a counter-example in logical analysis?

A. To prove a universal statement true
B. To disprove a universal statement
C. To introduce ambiguity into an argument
D. To support a premise with emotional appeal

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Q33. In the statement 'If 2+2=4, then 4 is an even number', what is the truth value of the conditional if the hypothesis (2+2=4) is true and the conclusion (4 is even) is also true?

A. True
B. False
C. Undefined

D. Dependent on the definition of even
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Q34. If 'All roses are flowers' is true and 'Some flowers are red' is true, what can be concluded about roses?

A. All roses are red
B. Some roses are red
C. No roses are red
D. Nothing definite can be concluded about the color of roses
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Q35. What is the logical negation of the statement: 'For every student x, if x studies hard, then x passes'?

A. There exists a student who does not study hard and fails
B. There exists a student who studies hard but does not pass
C. All students study hard and all fail
D. No student studies hard
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Q36. In a syllogism, if the major premise states 'All M are P' and the minor premise states 'No S are M', what is the valid conclusion regarding the relationship between S and P?

A. All S are P
B. No S are P
C. Some S are P
D. No conclusion can be drawn
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Q37. In an argument, Person X says: 'Everyone in this room likes pizza; therefore, John must like pizza.' This reasoning assumes which of the following unstated premises?

A. John is not in this room.
B. John is part of the group 'everyone in this room'.
C. Pizza is a popular food worldwide.
D. John has never visited a restaurant before.
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Q38. If the statement 'For every x, if x is a bird, then x can fly' is false, what must be true?

A. No birds can fly.
B. All birds can fly.
C. Some birds cannot fly.
D. There are no birds.
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Q39. Which logical fallacy is committed when someone argues: 'If we allow this new policy, soon everyone will be unemployed and society will collapse'?

A. Ad Hominem.
B. Straw Man.
C. Slippery Slope.
D. Circular Reasoning.
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Q40. Which of the following statements is logically equivalent to 'No cats are dogs'?

A. All cats are not dogs
B. Some cats are not dogs
C. All dogs are not cats
D. Some dogs are not cats
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Q41. If 'P implies Q' is true, and 'Q' is found to be false, what must be the truth value of 'P'?

A. P must be true.
B. P must be false.
C. P can be either true or false.
D. P cannot be determined.
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Q42. In a logical system where 'A implies B' is true, if A is false, what can be determined about the truth value of B?

A. B must be true
B. B must be false
C. B can be either true or false
D. B cannot be determined without knowing C
Model-generated · 2026-11-07

Q43. Which type of reasoning involves drawing a probable conclusion based on specific observations rather than guaranteeing the truth of the conclusion?

A. Deductive Reasoning
B. Inductive Reasoning
C. Abductive Reasoning
D. Analogical Reasoning

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Q44. In a debate, a speaker argues: 'You should support Plan A because Plan B leads to disaster.' What type of reasoning error might this represent if the link between Plan A and avoiding disaster is not established?

A. Ad Hominem.
B. Appeal to Consequence.
C. False Dilemma.
D. Slippery Slope.

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Q45. If 'No birds are mammals' is true, which of the following statements must also be true?

A. Some birds are not mammals
B. No mammals are birds
C. All mammals are birds
D. Some mammals are birds

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Q46. Which of the following statements is logically equivalent to the negation of 'There exists an x such that x is both even and prime'?

A. For all x, if x is even then x is not prime
B. For all x, x is either not even or not prime
C. There exists an x such that x is not even and not prime
D. There exists an x such that x is neither even nor prime

Model-generated · 2026-11-08

Q47. If 'Some cats are black' is true, which of the following statements could be false?

A. No cats are black
B. All cats are black
C. Some black things are not cats
D. Some cats are not black

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Q48. Which of the following best describes a 'Circular Argument'?

A. Using irrelevant evidence to support a claim
B. Assuming the truth of the conclusion within the premises
C. Attacking the opponent's character instead of their argument
D. Presenting two false choices

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Q49. In a debate about climate change, Speaker A says: 'The government should ban fossil fuels because they cause pollution.' Speaker B replies: 'You are an environmentalist with a bias against industry.' This is an example of which fallacy?

A. Ad Hominem
B. Straw Man
C. Red Herring
D. Slippery Slope

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Q50. If the premises of an argument are true and the conclusion is also true, the argument is:

A. Valid
B. Invalid
C. Sound
D. Neither valid nor invalid

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Q51. Consider the argument: 'All squares are rectangles. Some shapes are not rectangles. Therefore, some shapes are not squares.' Is this syllogism valid?

A. Yes, it is valid because the conclusion necessarily follows from the premises.
B. No, it is invalid because the middle term 'rectangles' is not distributed at least once in the premises.
C. No, it is invalid because the conclusion makes an affirmative claim while a premise is negative.
D. Yes, it is valid because squares are a subset of rectangles by definition.

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Q52. Consider the statement: 'All squares are rectangles.' If this statement is true, which of the following statements must also be true?

A. Some rectangles are not squares.
B. No squares are circles.
C. All rectangles are squares.
D. Some squares are rectangles.

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Q53. Which type of fallacy is committed when someone argues: 'You cannot trust his testimony about the accident because he was seen arguing with one of the drivers yesterday.'?

A. Ad Hominem Circumstantial
B. Straw Man
C. Red Herring
D. Appeal to Authority

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Q54. In formal logic, consider the argument: 'All metals are conductors. All conductors are elements.' Which of the following best describes the validity of the conclusion 'Therefore, all metals are elements'?

A. A. The argument is valid because the premises are true.
B. B. The argument is invalid due to the fallacy of undistributed middle.
C. C. The argument is invalid because it commits the fallacy of illicit major.
D. D. The argument is valid regardless of whether the premises are actually true in reality.

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Q55. Which of the following is a logical equivalent of the statement: 'It is not the case that all integers are positive'?

A. No integers are positive.
B. Some integers are positive.
C. Some integers are not positive.
D. All integers are negative.

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Q56. Consider the statement: 'If a number is divisible by 4, then it is divisible by 2.' If we find a number that is divisible by 2 but NOT divisible by 4, what does this tell us about the converse of the original statement?

A. The converse ('If divisible by 2, then divisible by 4') is true.
B. The converse ('If divisible by 2, then divisible by 4') is false.
C. The contrapositive is false.
D. The original implication was incorrect.

Model-generated · 2026-11-08

Q57. If 'No mammals are fish' and 'All whales are mammals', then it logically follows that:

A. Some whales are fish
B. No whales are fish
C. Some fish are not mammals
D. All fish are mammals

Model-generated · 2026-11-07

Q58. Consider the argument: 'Either the team will win or draw. They did not draw. Therefore, the team won.' Which logical law validates this deduction?

A. Law of Contradiction
B. Law of Excluded Middle combined with Disjunctive Syllogism
C. Modus Ponens
D. Hypothetical Syllogism

Model-generated · 2026-11-08

Q59. Consider the argument: 'If it rains, the ground gets wet. The ground is not wet. Therefore, it did not rain.' Is this argument valid?

A. Yes, it follows the form Modus Tollens
B. No, because the ground could be wet for other reasons too
C. Yes, but only if we assume no sprinklers were used
D. No, because denying the antecedent leads to a false conclusion

Model-generated · 2026-11-07

Q60. Which of the following statements correctly defines a 'Counterexample' in logic?

A. An example that supports the hypothesis.
B. An instance that disproves a universal claim.
C. A statistical average of a dataset.
D. A hypothetical scenario with no real-world basis.

Model-generated · 2026-11-08

Q61. If the conditional statement 'If P then Q' is true, and we know that Q is false, what can be logically concluded about P?

A. P must be true
B. P must be false
C. P cannot be determined from the given information
D. P must be true if and only if Q is true

Model-generated · 2026-11-08

Q62. An argument states: 'Either the project will succeed or it will fail. The project will not fail. Therefore, the project will succeed.' What logical law justifies this conclusion?

A. Law of Excluded Middle
B. Law of Identity
C. Law of Non-Contradiction
D. Principle of Induction

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Q63. In the syllogism: 'All squares are rectangles. Some rectangles are blue. Therefore, some squares are blue.' Is the conclusion valid?

A. Yes, it is valid
B. No, it is invalid
C. It depends on the color of the paper
D. Only if some squares are not white

Model-generated · 2026-11-07

Q64. Which of the following best describes an argument that commits the fallacy of 'Begging the Question'?

A. An argument where the conclusion is assumed within the premises without independent evidence
B. An argument based on irrelevant emotional reasoning
C. An argument that ignores contrary evidence to support a conclusion
D. An argument that attacks the character of the opponent instead of their argument

Model-generated · 2026-11-08

Q65. In a logical system, if the statement 'Some mammals are not pets' is true, which of the following must necessarily be false?

A. All mammals are pets
B. No mammals are pets
C. Some mammals are pets
D. Some non-pets are mammals

Model-generated · 2026-11-08

Q66. If every integer is either even or odd, and 10 is an integer, then:

A. 10 is neither even nor odd
B. 10 must be prime
C. 10 is either even or odd
D. 10 cannot be divisible by 2

Model-generated · 2026-11-07

Q67. If 'Some cats are dogs' is false, which of the following statements must necessarily be true?

A. All cats are dogs
B. No cats are dogs
C. Some dogs are not cats
D. All dogs are cats

Model-generated · 2026-11-07

Q68. If the statement 'No mammals are reptiles' is true, which of the following must be false?

A. Some mammals are reptiles.
B. All reptiles are mammals.
C. Some reptiles are not mammals.
D. No reptiles are mammals.

Model-generated · 2026-11-08

Q69. Which statement correctly identifies a necessary condition for an argument to be considered 'sound'?

A. The premises must be true and the reasoning must be valid
B. The conclusion must be true regardless of the premises
C. The premises must be false but lead to a true conclusion
D. The argument must contain no fallacies but can have false premises

Model-generated · 2026-11-07

Q70. In critical thinking, distinguishing between a 'fact' and an 'opinion' primarily relies on:

A. Whether the statement is supported by evidence and can be verified
B. The tone of voice used when stating it
C. The number of people who agree with it
D. The complexity of the vocabulary used

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Q71. If the statement 'All roses are flowers' is true, which of the following statements must necessarily be false?

A. Some roses are not flowers
B. No roses are flowers
C. Some flowers are roses
D. All flowers are roses

Model-generated · 2026-11-07

Q72. If the statement 'Some integers are even' is true, which of the following statements must necessarily be false?

A. All integers are odd
B. No integers are even
C. Some integers are not even
D. At least one integer is even

Model-generated · 2026-11-07

Q73. In a set of statements involving quantifiers, if the statement 'For all integers n, if n is even then n^2 is even' is true, what is the truth value of the statement 'There exists an integer k such that k is odd and k^2 is odd'?

A. True
B. False
C. Undecidable without knowing specific values
D. It depends on the definition of integers

Model-generated · 2026-11-08

Q74. In a debate, Person A states: 'All birds can fly.' Person B points out that penguins are birds but cannot fly. Which logical principle is being violated by Person A's initial statement?

A. The Principle of Non-Contradiction
B. Existential Import (or the need for counter-examples to refute universal claims)
C. The Law of Identity
D. Modus Ponens

Model-generated · 2026-11-07

Q75. Which of the following pairs represents a valid 'Disjunctive Syllogism'?

A. If it rains, the ground is wet. It is raining. So, the ground is wet.
B. Either the light is on or the switch is broken. The light is not on. Therefore, the switch is broken.
C. All dogs are mammals. This animal is a dog. Therefore, this animal is a mammal.
D. Some birds can fly. Penguins are birds. Therefore, penguins can fly.

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Planning-Based Questions

Q76. In the context of India's National Forest Policy 1988, which of the following was NOT a primary objective?

A. To ensure optimum utilization of forest resources for economic development
B. To conserve and develop forests as a self-regulating ecosystem
C. To maintain ecological balance and biodiversity conservation
D. To promote the concept of joint forest management with local communities

Model-generated · 2026-11-07

Q77. Which of the following forest types is recognized in India's National Forest Policy 2009 as having the highest carbon sequestration potential per hectare annually?

A. A. Teak plantations
B. B. Sal forests
C. C. Tropical Moist Deciduous forests
D. D. Mangroves

Model-generated · 2026-11-07

Q78. According to the Forest Rights Act, 2006, which authority is primarily responsible for preparing the 'Record of Rights' (RoR) at the village level?

A. District Collector
B. Village Council consisting of Gram Sabha members
C. Sub-Divisional Magistrate
D. State Chief Secretary

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Q79. Under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, which body has the final authority to adjudicate disputes regarding individual forest rights?

A. Gram Sabha
B. Village Council
C. District Level Committee
D. Sub-Divisional Officer

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Q80. Which of the following actions by a State Government requires prior approval from the Central Government under the Forest (Conservation) Act, 1980?

A. Afforestation in barren lands
B. Diversion of forest land for non-forest purposes like mining or industry
C. Plantation of native species in village commons
D. Construction of rural roads within existing forest boundaries

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Q81. Which of the following forest policies explicitly shifted the focus from timber production to conservation and community rights?

A. Indian Forest Act, 1865
B. National Forest Policy, 1988
C. Forest Conservation Act, 1980
D. Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006

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Q82. Which of the following is a key indicator used in the National Forest Policy 1988 to assess forest cover?

A. Area under dense forests as a percentage of total geographical area
B. Total number of trees planted in a year
C. Value of timber produced annually
D. Number of people dependent on forests

Model-generated · 2026-11-07

Q83. In the context of India's National Forest Policy 1988, which of the following forest cover percentage was identified as the critical threshold to ensure ecological security? A) 25% B) 33% C) 40% D) 50%

A. 25%
B. 33%
C. 40%
D. 50%

Model-generated · 2026-11-07

Q84. Which of the following bodies is responsible for adjudicating disputes related to 'Community Forest Rights' under the FRA, 2006?

A. Gram Sabha
B. Village Council
C. District Level Committee
D. State Level Committee

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Q85. The National Mission for a Green India (NM-GI) is a component of which larger national framework?

A. National Action Plan on Climate Change (NAPCC)
B. Swachh Bharat Abhiyan
C. Pradhan Mantri Fasal Bima Yojana
D. Atal Bhima Yojana

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Q86. According to the National Forest Policy of India, which of the following forest types is prioritized for afforestation in degraded areas to ensure ecological security?

A. Monoculture plantations of fast-growing species like Eucalyptus
B. Mixed-species natural regeneration communities
C. Clear-cutting followed by immediate monoculture planting
D. Removal of all undergrowth to maximize sunlight penetration

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Q87. Which of the following forest types has the highest carbon sequestration potential per hectare annually among the options provided?

A. Open Forests (Jhum lands)
B. Dense Forests (Tropical Rainforests)
C. Monsoon Deciduous Forests
D. Dry Mixed Forests

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Q88. The concept of 'Ecological Security' in India's forest policy is most closely associated with which of the following outcomes?

A. Prevention of land degradation and soil erosion
B. Increase in urban real estate value
C. Reduction in agricultural output due to deforestation
D. Expansion of industrial zones within forest limits

Model-generated · 2026-11-07

Q89. Which of the following forest types is most critical for preventing soil erosion in hilly regions of India?

A. Mangroves along coastal areas
B. Alpine meadows at high altitudes
C. Tropical deciduous forests on steep slopes
D. Temperate coniferous forests in the Himalayas

Model-generated · 2026-11-07

Q90. In the context of the National Mission for a Green India (NM-GI), which of the following is NOT a primary objective?

A. Carbon Sequestration and Storage
B. Conservation and Restoration of Forest/Landscapes
C. Enhancing Livelihood Security
D. Conversion of all wastelands into commercial pine plantations

Model-generated · 2026-11-07

Q91. According to the Forest Rights Act, 2006, what is the time limit prescribed for the Gram Sabha to deliberate on the recommendations of the Village Council regarding forest rights?

A. 30 days
B. 90 days
C. 180 days
D. One year

Model-generated · 2026-11-07

Q92. The concept of 'Community Forestry' in India is most closely associated with which of the following outcomes?

A. Centralized management by the Forest Department
B. Exclusive ownership of forest produce by local industries
C. Participatory management and benefit sharing by local communities
D. Complete prohibition of any human entry into forest areas

Model-generated · 2026-11-07

Q93. Which of the following forest products is typically classified as a 'Non-Timber Forest Product' (NTFP)?

A. Teak logs
B. Sal wood
C. Medicinal herbs like Tulsi or Ashwagandha collected from forests
D. Bamboo poles used for construction

Model-generated · 2026-11-07

Q94. Under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, which body is constitutionally mandated to constitute the District Level Committee (DLC)?

A. The State Government alone
B. The District Collector in consultation with the Chief Minister
C. The Village Council exclusively
D. The Central Ministry of Environment and Forests

Model-generated · 2026-11-07

Q95. Under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, which category of rights includes the right to collect minor forest produce?

A. Individual Forest Right
B. Community Forest Right
C. Restriction on Entry Right
D. Residential Land Right

Model-generated · 2026-11-07

Q96. Under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, which of the following authorities is primarily responsible for preparing the 'Record of Rights' (RoR) at the village level?

A. District Collector
B. Village Council (Gram Sabha)
C. Sub-Divisional Officer
D. Chief Wildlife Warden

Model-generated · 2026-11-07

Q97. Under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, which of the following categories of rights is NOT recognized by the Act?

A. Individual forest rights for those who have been residing in and depending on forests since before December 13, 2005
B. Community forest resource rights for traditional forest dwellers
C. Right to generate electricity from small hydro projects within their village limits
D. Right to transfer of land title for non-forest land acquired by the State prior to 2006

Model-generated · 2026-11-07

Q98. According to the National Forest Policy, 1988, what was the target percentage of forest cover recommended for India?

A. 20%
B. 33%
C. 67%
D. 50%

Model-generated · 2026-11-07

Q99. In the context of the Forest Rights Act, 2006, what is the role of the State Level Committee?

A. To prepare the initial Record of Rights at the village level
B. To adjudicate appeals against orders passed by the District Level Committee
C. To plant trees in urban areas
D. To issue identity cards to forest workers

Model-generated · 2026-11-07

Q100. Under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, who constitutes the 'Expert Committee' that assists the District Level Committee?

A. The Gram Sabha members only
B. A team comprising experts from forest department, agriculture, and local administration
C. The State Chief Minister's office staff
D. District Court judges

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Answer key

Q1 B	**Q2 C**	**Q3 B**	**Q4 C**
Q5 B	**Q6 C**	**Q7 C**	**Q8 C**
Q9 C	**Q10 B**	**Q11 C**	**Q12 C**
Q13 B	**Q14 B**	**Q15 C**	**Q16 B**
Q17 B	**Q18 C**	**Q19 C**	**Q20 C**
Q21 B	**Q22 B**	**Q23 B**	**Q24 D**
Q25 B	**Q26 B**	**Q27 C**	**Q28 B**
Q29 B	**Q30 B**	**Q31 A**	**Q32 B**
Q33 A	**Q34 D**	**Q35 B**	**Q36 B**
Q37 B	**Q38 C**	**Q39 C**	**Q40 A**
Q41 B	**Q42 C**	**Q43 B**	**Q44 B**
Q45 B	**Q46 B**	**Q47 B**	**Q48 B**
Q49 A	**Q50 C**	**Q51 B**	**Q52 D**
Q53 A	**Q54 B**	**Q55 C**	**Q56 B**
Q57 B	**Q58 B**	**Q59 A**	**Q60 B**
Q61 B	**Q62 A**	**Q63 B**	**Q64 A**
Q65 A	**Q66 C**	**Q67 B**	**Q68 A**
Q69 A	**Q70 A**	**Q71 B**	**Q72 A**
Q73 A	**Q74 B**	**Q75 B**	**Q76 A**
Q77 D	**Q78 B**	**Q79 B**	**Q80 B**
Q81 B	**Q82 A**	**Q83 B**	**Q84 D**
Q85 A	**Q86 B**	**Q87 B**	**Q88 A**
Q89 C	**Q90 D**	**Q91 C**	**Q92 C**
Q93 C	**Q94 B**	**Q95 B**	**Q96 B**
Q97 D	**Q98 C**	**Q99 B**	**Q100 B**

Solutions and explanations

Q1. The solution of 2x + 3 = 7 is:
Answer: B
2x = 4 -> x = 2.
Research Team · ~3s · Isolate then Divide
Subtract 3 from both sides of the equation. -> Divide the remaining x term by 2. -> Select option B which matches the result.

Q2. The value of sin^230 degrees + cos^230 degrees is:
Answer: C
sin^2 + cos^2 = 1 (identity).
Research Team · ~2s · Pythagorean Identity
Recognize 30° is same angle for both terms. -> Apply identity sin² + cos² = 1 directly. -> Conclude sum equals 1 regardless of value. -> Select option C

Q3. If A = {1, 2, 3} and B = {2, 3, 4}, find A B.
Answer: B
A B = elements common to both sets = {2, 3}.
Research Team · ~2s · Direct Intersection
Identify elements in set A: 1, 2, 3. -> Identify elements in set B: 2, 3, 4. -> Select only numbers present in both lists (2 and 3).

Q4. If the probability of an event A is 0.4 and of B is 0.5, and A and B are independent, then P(A n B) is:
Answer: C
For independent events: P(A n B) = P(A)·P(B) = 0.4 × 0.5 = 0.2.
Research Team · ~2s · Decimal Multiply
Ignore decimals first: multiply 4 times 5 to get 20. -> Count total decimal places in original numbers (one for 0.4, one for 0.5). -> Place decimal point two spots left of result: 0.20 becomes 0.2. -> Select option C which equals 0.2.

Q5. The nth term of AP: 2, 5, 8, 11... is:
Answer: B
a = 2, d = 3, T = 2 + (n-1)3 = 3n - 1.

Q6. Which of these is a perfect square?
Answer: C
36 = 6². Others are not perfect squares.
Research Team · ~1s · Last Digit Check
List possible last digits of squares: 0, 1, 4, 5, 6, 9. -> Check option A (20): ends in 0, but 20 is not a square (4*5). -> Check option B (24): ends in 4, but 24 is not a square (4*6). -> Check option D (48): ends in 8, impossible for a perfect square. -> Only option C (36) remains and fits the pattern. -> Final answer is C.

Q7. The median of 1, 3, 5, 7, 9 is:
Answer: C
Middle value of sorted 5 numbers = 5.

Q8. If f(x) = 2x + 1, find f(3):
Answer: C
f(3) = 2(3) + 1 = 7.
Research Team · ~2s · Direct Sub
Substitute x=3 into f(x)=2x+1. -> Calculate 2*3 + 1. -> Result is 7, matching option C

Q9. If the function f(x) = x^2 - 4x + 3 is given, what is the value of x for which f(x) is maximum or minimum?
Answer: C
To find the maximum or minimum of the function f(x), we need to find the critical points by taking the derivative of f(x) and setting it equal to zero. The derivative of f(x) = x^2 - 4x + 3 is f'(x) = 2x - 4. Setting f'(x) = 0, we get 2x - 4 = 0, which gives x = 2.
Research Team · ~3s · Vertex Formula
Identify quadratic form ax^2+bx+c with a=1, b=-4. -> Calculate vertex x-coordinate using formula x = -b/(2a).

Q10. The equation of line with slope 2 passing through (1, 3) is:
Answer: B
Point-slope form: y - 3 = 2(x - 1) -> y = 2x + 1.
Research Team · ~3s · Direct Isolation
Subtract 3 from both sides to get 2x = 4 -> Divide both sides by 2 to find x

Q11. Find the derivative of f(x) = sin(x^2).
Answer: C
Using chain rule: d/dx[sin(x^2)] = cos(x^2) . d/dx(x^2) = 2x cos(x^2).

Q12. The value of 5! is:
Answer: C
5! = 5x4x3x2x1 = 120.
Research Team · ~4s · Pattern Recall
Recall pattern d/dx[sin(g(x))] = g'(x)cos(g(x)). -> Identify g(x)=x^2 so g'(x)=2x. -> Combine terms to write result 2x cos(x^2).

Q13. The mode of 1, 2, 2, 3, 3, 3, 4 is:
Answer: B
3 appears 3 times (highest frequency).

Q14. The roots of equation $x^2 - 5x + 6 = 0$ are:
Answer: B
$x^2 - 5x + 6 = (x-2)(x-3) = 0$ x = 2 or x = 3.

Q15. The sum of first n odd natural numbers is:
Answer: C
$1 + 3 + 5 + ... + (2n-1) = n^2$.

Q16. The sum of first 10 natural numbers is:
Answer: B
Sum = n(n+1)/2 = 10×11/2 = 55.

Q17. The range of the function f(x) = x^2 is:
Answer: B
x^2 0 for all real x -> range [0,).

Q18. The probability of getting a head when a fair coin is tossed is:
Answer: C
P(Head) = 1/2 (favorable outcomes / total outcomes).

Q19. The value of $\sin^2 30° + \cos^2 30°$ is:
Answer: C
$\sin^2 + \cos^2 = 1$ (identity).

Q20. The number of ways to arrange letters of word CAT is:
Answer: C
3! = 6 ways (CAT, CTA, ACT, ATC, TCA, TAC).

Q21. If sin A = 1/2, then the value of A (acute) is:
Answer: B
sin 30° = 1/2.

Q22. The value of i^2 (where i = v-1) is:
Answer: B
$i^2 = -1$ (fundamental property of imaginary numbers).

Q23. The value of i^2 (where i = sqrt-1) is:
Answer: B
i^2 = -1 (fundamental property of imaginary numbers).

Q24. If the function f(x) = x^3 - 2x^2 - 5x + 1 is given, what is the value of f(-1)?
Answer: D
To find the value of f(-1), we substitute x = -1 into the function: f(-1) = (-1)^3 - 2(-1)^2 - 5(-1) + 1 = -1 - 2 + 5 + 1 = 3.

Q25. The quadratic equation whose roots are 1 and 2 is:
Answer: B
Sum = 3, Product = 2 -> $x^2 - 3x + 2 = 0$.

Q26. Consider the argument: 'All squares are rectangles. All rectangles have four sides. Therefore, all squares have four sides.' Which logical rule validates this deduction?
Answer: B
The argument follows a chain of implication where if A implies B and B implies C, then A implies C. Here, 'Square' -> 'Rectangle' and 'Rectangle' -> 'Four Sides', so 'Square' -> 'Four Sides'. This is the definition of Hypothetical Syllogism or Transitive Property. Modus Ponens requires a conditional premise and an affirmation of the antecedent to conclude the consequent directly, which isn't the primary structure here. Disjunctive Syllogism deals with 'or' statements. Affirming the Consequent is a fallacy.

Q27. An argument states: 'Either the suspect is at home or he is at the park. He is not at the park. Therefore, he must be at home.' What logical law justifies this conclusion?
Answer: C
This is a classic Disjunctive Syllogism: Given 'A or B' and 'Not B', we conclude 'A'. It relies on eliminating one option of a disjunction to affirm the other. The Law of Excluded Middle states A or Not-A, Non-Contradiction states not both A and B, and Constructive Dilemma involves two conditionals.

Q28. In the context of formal logic, consider the statement: 'If it rains, the ground gets wet.' If we observe that the ground is dry, what can be logically concluded about the weather?
Answer: B
By Modus Tollens, if 'If P then Q' is true and Q is false (ground is dry), then P must be false (it is not raining). Option A contradicts the logical deduction. Options C and D ignore the strict implication where the falsity of the consequent necessitates the falsity of the antecedent in a valid conditional.

Q29. In an argument, if the premises are true but the conclusion is false, what can be said about the validity of the argument?

Answer: B

An argument is defined as valid if and only if it is impossible for the premises to be true and the conclusion false. Since the scenario describes true premises leading to a false conclusion, the argument must be invalid by definition.

Q30. Which statement represents the logical negation of 'All students passed the exam'?

Answer: B

The negation of a universal affirmative ('All S are P') is a particular negative ('Some S are not P'). Saying 'No student passed' is too strong (it denies even one passing), whereas only failing at least one student disproves the claim that *all* passed.

Q31. Which scenario best illustrates an 'Appeal to Ignorance' fallacy?

Answer: A

Appeal to Ignorance occurs when one argues that a proposition is true simply because it has not been proven false (or vice versa). Option A claims existence based on lack of disproof. The other options rely on empirical evidence, majority vote (Ad Populum), or scientific observation.

Q32. What is the primary function of a counter-example in logical analysis?

Answer: B

A single counter-example (an instance where the antecedent is true but the consequent is false, or a member of the subject set that fails to have the predicate) is sufficient to disprove a universal affirmative statement. It does not prove anything about other instances.

Q33. In the statement 'If 2+2=4, then 4 is an even number', what is the truth value of the conditional if the hypothesis (2+2=4) is true and the conclusion (4 is even) is also true?

Answer: A

In classical logic, a conditional statement 'If P then Q' is True whenever both P and Q are true. Since 2+2=4 is true and 4 is even is true, the entire implication holds as True. The other options misunderstand the truth table for material implication where T->T results in T.

Q34. If 'All roses are flowers' is true and 'Some flowers are red' is true, what can be concluded about roses?

Answer: D

Nothing definite can be concluded. While all roses are in the set of flowers, and some flowers are red, we do not know if the specific subset of flowers that are red overlaps with the subset of roses. The 'some' in the second premise does not guarantee an intersection with 'roses'.

Q35. What is the logical negation of the statement: 'For every student x, if x studies hard, then x passes'?

Answer: B

The negation of a universal quantifier ('For every') is an existential quantifier ('There exists'). The negation of 'If P then Q' is 'P and Not Q'. Thus, the negation is: There exists a student (x) such that x studies hard AND x does not pass. Option A keeps the implication structure which is incorrect for negation.

Q36. In a syllogism, if the major premise states 'All M are P' and the minor premise states 'No S are M', what is the valid conclusion regarding the relationship between S and P?

Answer: B

The major premise establishes that the set M is entirely contained within set P. The minor premise states that set S and set M have no intersection. Since S cannot touch M, and all of M is inside P, it logically follows that no part of S can be inside P (assuming standard existential import where terms are non-empty). Thus, 'No S are P' is the valid conclusion. Option A contradicts this exclusion. Option C implies an intersection that doesn't exist. Option D is incorrect because a definitive negative conclusion follows from these universal premises.

Q37. In an argument, Person X says: 'Everyone in this room likes pizza; therefore, John must like pizza.' This reasoning assumes which of the following unstated premises?

Answer: B

The conclusion about John relies entirely on John being included in the universal set defined by the premise ('everyone in this room'). If John were not in the room, the premise would not apply to him. The other options are irrelevant to the logical connection between the general statement and the specific conclusion.

Q38. If the statement 'For every x, if x is a bird, then x can fly' is false, what must be true?

Answer: C

The negation of a universal quantifier ('All') is an existential quantifier ('Some'). If 'All birds can fly' is false, it means there is at least one bird that does not satisfy the condition (cannot fly). Thus, 'Some birds cannot fly' must be true. Option 0 is too strong; Option 1 is the original statement; Option 4 is irrelevant to the truth value of the conditional.

Q39. Which logical fallacy is committed when someone argues: 'If we allow this new policy, soon everyone will be unemployed and society will collapse'?

Answer: C

The argument assumes that a small first step (allowing the policy) will inevitably lead to extreme negative outcomes (society collapse) without providing evidence for each intermediate step. This is the definition of a Slippery Slope fallacy. Ad Hominem attacks the person. Straw Man misrepresents an argument. Circular Reasoning repeats the conclusion as a premise.

Q40. Which of the following statements is logically equivalent to 'No cats are dogs'?

Answer: A

'No cats are dogs' means there is no overlap between the set of cats and the set of dogs. This is logically equivalent to 'All cats are not dogs' (meaning every cat falls outside the dog category). The other options ('Some...') represent weaker statements that allow for partial overlap, which contradicts the absolute exclusion in 'No...'.

Q41. If 'P implies Q' is true, and 'Q' is found to be false, what must be the truth value of 'P'?
Answer: B
By Modus Tollens: If P -> Q is true and Q is false, then P must be false. If P were true, Q would have to be true (given the implication), which contradicts the fact that Q is false. Therefore, P must be false. Option 0 contradicts the implication. Option 2 is incorrect because if P were true, Q would be true, creating a contradiction.

Q42. In a logical system where 'A implies B' is true, if A is false, what can be determined about the truth value of B?
Answer: C
If 'A implies B' is true and A is false, B can be either true or false. In formal logic, a conditional statement with a false antecedent (A) is automatically considered true regardless of the consequent (B). Therefore, knowing A is false gives no information about the actual truth value of B. The other options incorrectly assert that B must have a specific fixed value.

Q43. Which type of reasoning involves drawing a probable conclusion based on specific observations rather than guaranteeing the truth of the conclusion?
Answer: B
Inductive reasoning moves from specific observations to broader generalizations and is characterized by conclusions that are probable but not certain. Deductive reasoning guarantees the conclusion if premises are true, while abductive reasoning seeks the best explanation.

Q44. In a debate, a speaker argues: 'You should support Plan A because Plan B leads to disaster.' What type of reasoning error might this represent if the link between Plan A and avoiding disaster is not established?
Answer: B
This argument attacks the alternative (Plan B) by highlighting its negative consequences (disaster) rather than addressing the merits of Plan A directly. This is an Appeal to Consequence (specifically Appeal to Negative Consequences or Fear Mongering). Ad Hominem attacks the person. False Dilemma presents only two options when more exist. Slippery Slope claims a chain reaction of events without evidence.

Q45. If 'No birds are mammals' is true, which of the following statements must also be true?
Answer: B
The statement 'No birds are mammals' establishes a complete disjoint between the two sets. By the law of conversion for E-propositions (universal negatives), if no A is B, then no B is A must also hold true. Options A, C, and D imply some intersection or subset relationship that contradicts the universal exclusion stated in the premise.

Q46. Which of the following statements is logically equivalent to the negation of 'There exists an x such that x is both even and prime'?
Answer: B
The original statement is an existential quantification: x (Even(x) Prime(x)). Its negation is x ¬(Even(x) Prime(x)). By De Morgan's Law, ¬(A B) is equivalent to ¬A ¬B. Thus, the negation is 'For all x, not (Even or Prime)', which translates to 'For all x, x is either not even or not prime'. Option A uses implication which changes the meaning. Options C and D use existential quantifiers instead of universal ones.

Q47. If 'Some cats are black' is true, which of the following statements could be false?
Answer: B
If 'Some cats are black' is true, it implies that there is at least one black cat. Consequently, 'All cats are black' could be false because the existence of non-black cats would still allow the original statement to remain true while making this option false. Option A is directly contradicted by the premise, but 'could be false' usually asks for a possibility; however, in strict logic, if some are black, 'all are black' is not guaranteed and thus could be false.

Q48. Which of the following best describes a 'Circular Argument'?
Answer: B
A circular argument (petitio principii) occurs when the premise of an argument is merely a restatement of the conclusion, thus assuming what needs to be proven. The other options describe Ad Hominem, False Dilemma, and Red Herring fallacies respectively.

Q49. In a debate about climate change, Speaker A says: 'The government should ban fossil fuels because they cause pollution.' Speaker B replies: 'You are an environmentalist with a bias against industry.' This is an example of which fallacy?
Answer: A
An Ad Hominem fallacy occurs when one attacks the person making the argument (Speaker B attacking Speaker A's identity as an 'environmentalist') rather than addressing the substance of the argument (the link between fossil fuels and pollution).

Q50. If the premises of an argument are true and the conclusion is also true, the argument is:
Answer: C
While 'valid' means the conclusion follows logically from the premises regardless of their truth value, a 'sound' argument requires both validity AND the actual truth of the premises. Since the problem states premises are true and the structure leads to a true conclusion (implying validity), the argument meets all criteria for being sound.

Q51. Consider the argument: 'All squares are rectangles. Some shapes are not rectangles. Therefore, some shapes are not squares.' Is this syllogism valid?
Answer: B
The argument is invalid due to the fallacy of the undistributed middle. The term 'rectangles' appears as the predicate in both premises; in standard categorical logic, the predicate of an affirmative proposition (All squares are rectangles) and the predicate of a negative proposition (Some shapes are not rectangles) are not distributed. Since the middle term is never distributed, no valid connection can be established between the subject 'shapes' and the predicate 'squares'. Options A and D

incorrectly assume validity, while Option C misidentifies the specific logical error.

Q52. Consider the statement: 'All squares are rectangles.' If this statement is true, which of the following statements must also be true?

Answer: D

The original statement establishes that the set of squares is a subset of the set of rectangles. Therefore, any element in the set of squares is also in the set of rectangles, making 'Some squares are rectangles' necessarily true. The other options are incorrect: 'Some rectangles are not squares' is likely true but not logically forced by the premise alone (though practically true), 'No squares are circles' is a separate fact not derived from the premise, and 'All rectangles are squares' is false as there are non-square rectangles.

Q53. Which type of fallacy is committed when someone argues: 'You cannot trust his testimony about the accident because he was seen arguing with one of the drivers yesterday.'?

Answer: A

This is an Ad Hominem fallacy (specifically circumstantial) because it attacks the person's character or circumstances (arguing with a driver) rather than addressing the actual evidence of what happened in the accident. Straw Man involves misrepresenting an argument, Red Herring introduces irrelevant topics, and Appeal to Authority relies on an expert opinion instead of reasoning.

Q54. In formal logic, consider the argument: 'All metals are conductors. All conductors are elements.' Which of the following best describes the validity of the conclusion 'Therefore, all metals are elements'?

Answer: B

The conclusion 'All metals are elements' does not logically follow from the premises provided, even if both premises were true. The term 'conductors' acts as the middle term but is not distributed (fully referenced) in either premise, making it impossible to establish a valid relationship between 'metals' and 'elements'. This specific structural error is known as the fallacy of the undistributed middle. Options A, C, and D are incorrect because validity depends on logical structure, not truth values or other fallacies.

Q55. Which of the following is a logical equivalent of the statement: 'It is not the case that all integers are positive'?

Answer: C

The negation of a universal affirmative ('All A are B') is a particular negative ('Some A are not B'). The statement 'It is not the case that all integers are positive' means there exists at least one integer that is not positive. This corresponds exactly to 'Some integers are not positive'. Option 0 is too strong (denies all), Option 1 affirms some are positive (which is true but doesn't capture the negation of 'all'), and Option 4 is factually false.

Q56. Consider the statement: 'If a number is divisible by 4, then it is divisible by 2.' If we find a number that is divisible by 2 but NOT divisible by 4, what does this tell us about the converse of the original statement?

Answer: B

The original statement (P -> Q) is true. The example given (Q is true, P is false) is a counter-example to the converse (Q -> P). Since we found a case where Q is true but P is false, the converse 'If divisible by 2, then divisible by 4' is demonstrably false. The original implication remains valid regardless of the converse's truth value.

Q57. If 'No mammals are fish' and 'All whales are mammals', then it logically follows that:

Answer: B

Using syllogistic logic: If the set of mammals and the set of fish are disjoint (no overlap), and whales are entirely within the mammal set, then whales must also be entirely outside the fish set. Thus, no whales are fish.

Q58. Consider the argument: 'Either the team will win or draw. They did not draw. Therefore, the team won.' Which logical law validates this deduction?

Answer: B

The argument presents a disjunction (A or B) and denies one part (not B), concluding the other (A). This is the structure of Disjunctive Syllogism, which relies on the Law of Excluded Middle (that A or not-A covers all possibilities in this binary context). Option A refers to contradictory statements being mutually exclusive. Option C requires an implication, not a disjunction. Option D links two conditionals.

Q59. Consider the argument: 'If it rains, the ground gets wet. The ground is not wet. Therefore, it did not rain.' Is this argument valid?

Answer: A

The argument is valid. It follows the logical structure of Modus Tollens: If P then Q; Not Q; therefore Not P. Since the ground is not wet (Not Q), and rain causes wetness (P->Q), it logically concludes that rain did not occur (Not P). The other options describe invalid reasoning or incorrect interpretations of the conditional relationship.

Q60. Which of the following statements correctly defines a 'Counterexample' in logic?

Answer: B

A counterexample is a specific instance that contradicts a general statement (universal claim). If someone says 'All swans are white', finding one black swan provides a counterexample, disproving the universal claim. Option 0 supports, not disproves. Option 3 and 4 are unrelated to the definition of a logical counterexample.

Q61. If the conditional statement 'If P then Q' is true, and we know that Q is false, what can be logically concluded about P?

Answer: B

By Modus Tollens, if 'If P then Q' is true and Q is false, then P must be false. If P were true, Q would have to be true, which contradicts the given that Q is false. Therefore, P cannot be true; it must be false. Option A is incorrect because if P were true, Q would be true. Option C is incorrect because we can determine P's status. Option D describes a biconditional relationship,

not implied by a simple conditional.

Q62. An argument states: 'Either the project will succeed or it will fail. The project will not fail. Therefore, the project will succeed.' What logical law justifies this conclusion?
Answer: A
The argument relies on the Law of Excluded Middle (P ¬P) combined with Disjunctive Syllogism. The premise establishes that exactly one of two exhaustive possibilities must be true (Success or Failure). Since 'Failure' is denied, 'Success' must follow. Law of Identity states A=A. Law of Non-Contradiction states not both A and not-A. Principle of Induction is for mathematical proofs.

Q63. In the syllogism: 'All squares are rectangles. Some rectangles are blue. Therefore, some squares are blue.' Is the conclusion valid?
Answer: B
The argument is invalid because the premises do not guarantee the conclusion. Just because some rectangles are blue does not mean those specific rectangles are squares. The intersection of 'squares' and 'blue things' cannot be deduced solely from the overlap between 'rectangles' and 'blue things'.

Q64. Which of the following best describes an argument that commits the fallacy of 'Begging the Question'?
Answer: A
Begging the Question (Circular Reasoning) occurs when the premise assumes the truth of the conclusion, creating a loop. Option A describes this perfectly. Option B describes an Appeal to Emotion. Option C describes Ignoring Evidence or Special Pleading. Option D describes Ad Hominem.

Q65. In a logical system, if the statement 'Some mammals are not pets' is true, which of the following must necessarily be false?
Answer: A
If 'Some mammals are not pets' is true, it means there exists at least one mammal that is not a pet. This directly contradicts the universal affirmative statement 'All mammals are pets', making it necessarily false. 'No mammals are pets' could still be false (since some might be pets). 'Some mammals are pets' is consistent with the premise. 'Some non-pets are mammals' is actually equivalent to the premise, so it would be true.

Q66. If every integer is either even or odd, and 10 is an integer, then:
Answer: C
The statement establishes a universal property for the set of integers: every element belongs to one of two disjoint subsets (even or odd). Since 10 is an integer, it must satisfy this condition. Therefore, 10 is either even or odd.

Q67. If 'Some cats are dogs' is false, which of the following statements must necessarily be true?
Answer: B
The statement 'Some cats are dogs' implies an intersection between the set of cats and the set of dogs. If this intersection is empty (making the statement false), then no member of the cat set belongs to the dog set. Therefore, the universal negative statement 'No cats are dogs' must be true.

Q68. If the statement 'No mammals are reptiles' is true, which of the following must be false?
Answer: A
The original statement asserts that the intersection of mammals and reptiles is empty. Therefore, claiming 'Some mammals are reptiles' directly contradicts this and must be false. Option 1 is a fallacy of equivocation or confusion. Options 2 and 3 can be true without contradicting the premise (if all reptiles are non-mammals, then no mammal is a reptile).

Q69. Which statement correctly identifies a necessary condition for an argument to be considered 'sound'?
Answer: A
A sound argument requires two things: valid logical structure (reasoning) AND all premises must actually be true. If either condition fails, the argument is not sound. Option B describes an inference that might happen by coincidence, not soundness. Option D describes a valid but unsound argument.

Q70. In critical thinking, distinguishing between a 'fact' and an 'opinion' primarily relies on:
Answer: A
A fact is a statement that can be proven true or false through observation, measurement, or evidence. An opinion expresses a belief or feeling that cannot be objectively verified. The distinction rests on verifiability and evidentiary support.

Q71. If the statement 'All roses are flowers' is true, which of the following statements must necessarily be false?
Answer: B
The statement 'All roses are flowers' implies that the set of roses is a subset of the set of flowers. Therefore, it is impossible for 'No roses are flowers' to be true simultaneously; if all roses are flowers, then none can exist outside that category. Options A contradicts the premise directly but 'No roses are flowers' is the strict negation making it false in this specific logical context where the universal affirmative holds.

Q72. If the statement 'Some integers are even' is true, which of the following statements must necessarily be false?
Answer: A
If 'Some integers are even' is true, then it is impossible for 'No integers are even' to be true (as that would contradict the existence of an even integer). Therefore, 'No integers are even' must be false. The other options ('All integers are odd', 'Some integers are not even') can coexist with the truth of the premise or are simply not necessarily false based solely on the existence of *some* even numbers.

Q73. In a set of statements involving quantifiers, if the statement 'For all integers n, if n is even then n^2 is even' is true, what is the truth value of the statement 'There exists an integer k such that k is odd and k^2 is odd'?

Answer: A

The original statement establishes a property for even numbers. The new statement concerns odd numbers. Since the square of an odd number is always odd (a standard mathematical fact), the existence of such a k is true. The first statement does not negate the properties of odd numbers; they are independent domains here. Options B, C, and D are incorrect because the property holds universally for odd integers.

Q74. In a debate, Person A states: 'All birds can fly.' Person B points out that penguins are birds but cannot fly. Which logical principle is being violated by Person A's initial statement?

Answer: B

The statement 'All birds can fly' is false because a single counter-example (penguins) exists. This relates to Existential Import in the sense that a universal claim ('All') requires no exceptions; finding one exception falsifies it immediately. The other options are incorrect: Non-Contradiction deals with mutually exclusive properties, Identity deals with A=A, and Modus Ponens is a valid inference rule, not a principle of truth-value verification.

Q75. Which of the following pairs represents a valid 'Disjunctive Syllogism'?

Answer: B

A disjunctive syllogism has the form: 'Either P or Q; not P; therefore Q.' Option 1 is a Modus Ponens (conditional). Option 3 is a universal instantiation/syllogism. Option 4 commits a fallacy by ignoring exceptions (penguins cannot fly). Only Option 2 follows the strict disjunctive syllogism structure where one alternative is eliminated to affirm the other.

Q76. In the context of India's National Forest Policy 1988, which of the following was NOT a primary objective?

Answer: A

While the 1988 policy emphasized conservation, biodiversity, and community participation (JFM), its primary focus was not 'optimum utilization for economic development' in the exploitative sense; rather, it shifted towards conservation and sustainable use. The policy aimed to balance needs but prioritized ecological stability over aggressive economic exploitation.

Q77. Which of the following forest types is recognized in India's National Forest Policy 2009 as having the highest carbon sequestration potential per hectare annually?

Answer: D

Mangroves are widely recognized globally and in India's National Forest Policy 2009 for having the highest carbon sequestration potential per hectare due to their dense biomass accumulation and soil carbon storage capabilities. Teak plantations, Sal forests, and Tropical Moist Deciduous forests, while ecologically significant, generally store less carbon per unit area compared to mangrove ecosystems.

Q78. According to the Forest Rights Act, 2006, which authority is primarily responsible for preparing the 'Record of Rights' (RoR) at the village level?

Answer: B

The RoR is prepared by the Village Council, which includes representatives from the Gram Sabha, as per the Act's decentralization principles. The District Collector and SDM oversee the process but do not prepare the initial village-level records themselves.

Q79. Under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, which body has the final authority to adjudicate disputes regarding individual forest rights?

Answer: B

The Village Council (Sarpanch) is the primary authority that examines and recommends claims for individual forest rights under the FRA, 2006. The Gram Sabha deliberates on these recommendations but does not have final adjudication power over disputes. The District Level Committee reviews village-level decisions but typically refers disputes to higher authorities if they are contested. The Sub-Divisional Officer is an administrative functionary, not a statutory adjudicatory body under the Act for this specific role.

Q80. Which of the following actions by a State Government requires prior approval from the Central Government under the Forest (Conservation) Act, 1980?

Answer: B

The Forest (Conservation) Act, 1980 mandates prior approval from the Central Government for any diversion of forest land for non-forest purposes such as mining, industry, or infrastructure projects. Afforestation and plantation activities generally promote conservation and do not require this specific approval if they align with state forestry plans. Construction of rural roads is a sensitive issue but the broad category of 'diversion' covers the major industrial shifts requiring central clearance.

Q81. Which of the following forest policies explicitly shifted the focus from timber production to conservation and community rights?

Answer: B

The National Forest Policy, 1988 marked a paradigm shift by prioritizing conservation, environmental balance, and community participation over mere timber production. The Indian Forest Act, 1865 was primarily for regulation and revenue generation. The Forest Conservation Act, 1980 deals specifically with diversion of forest land for non-forest purposes. While the FRA, 2006 is crucial for rights, the specific policy shift in focus described is best attributed to the 1988 policy framework which laid the groundwork for modern conservation strategies.

Q82. Which of the following is a key indicator used in the National Forest Policy 1988 to assess forest cover?

Answer: A

The National Forest Policy 1988 specifically aims to increase the area under 'dense forests' as a percentage of the total geographical area (targeting 33%) as a primary indicator of forest cover health. The other metrics are economic or social indicators, not direct measures of forest cover status.

Q83. In the context of India's National Forest Policy 1988, which of the following forest cover percentage was identified as the critical threshold to ensure ecological security? A) 25% B) 33% C) 40% D) 50%

Answer: B

The National Forest Policy 1988 explicitly set a target of 33% forest cover for the country to maintain ecological security, noting that this figure was already achieved in hilly and mountainous areas but fell short in plains. Option A (25%) represents the lower limit often associated with degraded lands or earlier policies before 1988. Option C (40%) and D (50%) exceed the specific target set by the 1988 policy, which acknowledged that achieving such higher percentages was not immediately feasible for all regions at that time.

Q84. Which of the following bodies is responsible for adjudicating disputes related to 'Community Forest Rights' under the FRA, 2006?

Answer: D

The State Level Committee is the authority designated to adjudicate disputes regarding Community Forest Rights under the FRA, 2006. The District Level Committee handles individual rights and initial community recommendations but refers complex community disputes upwards. The Gram Sabha and Village Council are lower-level bodies responsible for identification and recommendation, not final adjudication of disputes.

Q85. The National Mission for a Green India (NM-GI) is a component of which larger national framework?

Answer: A

The National Mission for a Green India (NM-GI) is one of the eight missions under the National Action Plan on Climate Change (NAPCC). The other options are unrelated climate or social welfare schemes.

Q86. According to the National Forest Policy of India, which of the following forest types is prioritized for afforestation in degraded areas to ensure ecological security?

Answer: B

The National Forest Policy emphasizes mixed-species natural regeneration to maintain biodiversity and ecological balance, making 'Mixed-species natural regeneration communities' the correct choice. Monocultures (Option A) reduce biodiversity; clear-cutting (Option C) causes degradation; and removing all undergrowth (Option D) disrupts soil health and micro-habitats.

Q87. Which of the following forest types has the highest carbon sequestration potential per hectare annually among the options provided?

Answer: B

Dense forests, particularly tropical rainforests, possess a higher biomass density and canopy cover compared to open or deciduous forests, leading to superior carbon sequestration rates. Open and dry forests have lower biomass and thus lower carbon capture potential.

Q88. The concept of 'Ecological Security' in India's forest policy is most closely associated with which of the following outcomes?

Answer: A

Ecological security in Indian forest policy directly relates to maintaining environmental stability, preventing soil erosion, and protecting watersheds. Increasing real estate or reducing agriculture are not goals; expanding industries within forests contradicts the principle of ecological security.

Q89. Which of the following forest types is most critical for preventing soil erosion in hilly regions of India?

Answer: C

Tropical deciduous forests on steep slopes play a vital role in preventing soil erosion in hilly regions due to their extensive root systems that hold the soil together. Mangroves prevent coastal erosion, not hillside erosion. Alpine meadows are fragile and specific to high altitudes, while temperate forests are geographically limited to the Himalayas. The question asks specifically about general hilly regions where tropical deciduous forests are widespread and effective.

Q90. In the context of the National Mission for a Green India (NM-GI), which of the following is NOT a primary objective?

Answer: D

The National Mission for a Green India (NM-GI), part of the National Action Plan on Climate Change, aims at carbon sequestration, conservation/restoration, and livelihood security. It does not mandate the conversion of all wastelands into commercial pine plantations; in fact, promoting monoculture like extensive pine plantations is often discouraged to maintain biodiversity. The other three options are core pillars of the mission's strategy.

Q91. According to the Forest Rights Act, 2006, what is the time limit prescribed for the Gram Sabha to deliberate on the recommendations of the Village Council regarding forest rights?

Answer: C

The Act mandates that the Gram Sabha must deliberate on the Village Council's recommendations within 180 days. The 30-day and 90-day periods do not match the statutory requirement for this specific deliberation phase.

Q92. The concept of 'Community Forestry' in India is most closely associated with which of the following outcomes?

Answer: C

Community Forestry emphasizes participatory management where local communities have rights and responsibilities in managing forest resources, leading to benefit sharing. Centralized management is the traditional model, not community forestry. Exclusive ownership by industries contradicts the principle of community involvement. Complete prohibition of entry is contrary to the FRA which grants rights for access and use.

Q93. Which of the following forest products is typically classified as a 'Non-Timber Forest Product' (NTFP)?
Answer: C
Medicinal herbs are classic examples of Non-Timber Forest Products (NTFPs). Teak and Sal are timber species, and while bamboo is a grass, in many contexts it is treated as a timber substitute or structural material; however, medicinal herbs are definitively NTFPs without being wood.

Q94. Under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, which body is constitutionally mandated to constitute the District Level Committee (DLC)?
Answer: B
Section 5(3) of the Act mandates that the District Level Committee be constituted by the State Government, typically involving the District Collector, making Option B correct. The DLC is a state-level body, not formed solely by the Village Council (Option C) or the Central Ministry (Option D), and while the State Government initiates it, the specific composition involves consultation with the CM, distinguishing it from an action taken 'alone' in isolation without defined structure (Option A).

Q95. Under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, which category of rights includes the right to collect minor forest produce?
Answer: B
The Community Forest Right under the FRA, 2006 specifically grants rights to manage and protect community lands and includes the right to collect minor forest produce (MFP) from those areas. Individual Forest Rights are granted for residential land or specific cultivation/collecting rights on individual plots but the broad MFP rights often fall under community management in traditional contexts. Restriction on Entry is a prohibition, not a right. Residential Land Right is for habitation.

Q96. Under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, which of the following authorities is primarily responsible for preparing the 'Record of Rights' (RoR) at the village level?
Answer: B
The Village Council (Gram Sabha) is the primary authority mandated to deliberate and prepare the Record of Rights based on recommendations from the Gram Sabha itself, ensuring community participation. The District Collector oversees the process at the district level, the Sub-Divisional Officer acts as a nodal officer for verification, and the Chief Wildlife Warden manages wildlife conservation matters, none of which involve preparing the initial RoR at the village level.

Q97. Under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, which of the following categories of rights is NOT recognized by the Act?
Answer: D
The Act recognizes individual rights (Section 3), community rights (Section 4), and rights for vulnerable sections, but it does not grant a right to generate electricity from small hydro projects as a specific category of forest right. Furthermore, the Act operates within existing land laws and does not create a new right to transfer state-acquired non-forest land titles in the manner suggested.

Q98. According to the National Forest Policy, 1988, what was the target percentage of forest cover recommended for India?
Answer: C
The National Forest Policy, 1988 recommended that India should maintain a forest cover of 33% (or one-third) of its geographical area to ensure ecological stability. This was a significant increase from previous targets. The 20% figure was often associated with earlier colonial or early post-independence goals before the policy shift. The 50% target is not part of the 1988 policy recommendations, though it is sometimes discussed as an ideal goal for specific regions like the Western Ghats.

Q99. In the context of the Forest Rights Act, 2006, what is the role of the State Level Committee?
Answer: B
The State Level Committee's primary function is to adjudicate appeals against the decisions made by the District Level Committee. The preparation of RoR is done at the village level, and tree planting/ID issuance are operational tasks not specific to this committee's appellate role.

Q100. Under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, who constitutes the 'Expert Committee' that assists the District Level Committee?
Answer: B
The Expert Committee is constituted to provide technical advice and includes experts from relevant departments like forests, agriculture, etc., to assist the District Level Committee. The Gram Sabha deliberates but does not form the expert committee itself.