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MODEL QUESTION PAPER

1. Ecology Deals With The Study Of:
A) Living Beings
B) Living And Non Living Components
C) Reciprocal Relationship Between Living And Non Living Components
D) Environment

2. Autoecology Deals With
A) Ecology Of Species
B) Ecology Of Many Species
C) Ecology Of Community
D) All The Above

3. Synecology Deals With
A) Ecology Of Many Species
B) Ecology Of Many Populations
C) Ecology Of Community
D) None Of The Above

4. Ecotype Is A Type Of Species In Which Environmentally Induced Variations Are
A) Temporary
B) Genetically Fixed
C) Genetically Not Related
D) None Of The Above

5. The Term 'Biocoenosis' Was Proposed By
A) Transley
B) Carl Mobius
C) Warming
D) None Of The Above

6. The Pyramid Of Energy In Any Ecosystem Is
A) Always Upright
B) May Be Upright Or Invented
C) Always Inverted
D) None Of The Above

7. Energy Flow In Ecosystem Is
A) Unidirectional
B) Bidirectional
C) Multidirectional
D) None Of The Above

8. An Ecosystem Must Have Continuous External Source Of
A) Minerals
B) Energy
C) Food
D) All Of The Above

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9. The source of energy in an ecosystem is
a) ATP
b) Sunlight
c) D.N.A
d) R.N.A

10. Trophic levels are formed by
a) Only plants
b) only animals
c) Only carnivorous
d) Organisms linked in food chain

11. Biotic potential is counteracted by
a) Competition with other organisms
b) Producer is the largest
c) Limitation of food supply
d) None of the above

12. Definition of ecosystem is
a) The community of organisms together with the environment in which they live
b) The abiotic component of a habitat
c) The part of the earth and its atmosphere which inhibits living organisms
d) A community of organisms interacting with one another

13. In a food chain of grassland ecosystem the top consumers are
a) Herbivorous
b) Carnivorous
c) Bacteria
d) Either carnivorous or herbivorous

14. MAB stands for
a) Man and biosphere
b) Man, antibiotics and bacteria
c) Man and biotic community
d) Mayer, Anderson and Bisby

15. Species that occur in different geographical regions separated by special barrier are:
a) Allopatric
b) Sympatric
c) Sibling
d) None of the above

16. The water readily available to plants for absorption by roots is
a) Gravitational water
b) Capillary water
c) Rain water
d) Hygroscopic water

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17. The water potential of pure water at atmospheric pressure is
a) -2.3 bar
b) +2.3 bar
c) Zero bar
d) One bar

18. Loss of water from the stomata of leaves are known as
a) Guttation
b) Exudation
c) Transpiration
d) Evaporation

19. During rainy season wooden doors are difficult to open or closure because of
a) Plasmolysis
b) Imbibition
c) Osmosis
d) Diffusion

20. Plasmolysis occurs due to
a) Absorption
b) Osmosis
c) Endoosmosis
d) Exosmosis

21. The marine animals that kept in fresh water burst. It shows the process of
a) Exosmosis
b) Endoosmosis
c) Plasmolysis
d) Deplasmolysis

22. Cooling of plants is caused by
a) Guttaion
b) Photorespiration
c) Transpiration
d) Assimilation

23. Active uptake of minerals by roots mainly depends on the
a) Availability of oxygen
b) Temperature
c) Light
d) Availability of CO_2

24. The hormone which signals the closure of stomata is
a) Auxins
b) Cytokinine
c) Gibberelline
d) Abscisic acid

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25. Water absorption takes place through
a) Lateral roots
b) Root cap
c) Root hairs
d) Tap root

26. Which of the following is an anti-transpirant
a) PMA
b) PAN
c) IAA
d) AUG

27. What is the action spectrum of transpiration?
a) Orange and red
b) Green and ultraviolet
c) Blue and red
d) None of these

28. Which one of the following is used for measuring the rate of transpiration?
a) Porometer
b) Osmometer
c) Moll's experiment
d) Potometer

29. Transpiration is least in
a) High atmospheric humidity
b) good soil moisture
c) high wind velocity
d) dry environment

30. Stomata open at night and close during day time in
a) Xerophytes
b) Mesophytes
c) Succulents
d) Hydrophytes

31. DNA replication occurs in
a) S phase
b) G phase
c) G2 phase
d) M phase

32. The pairing of homologous chromosomes
a) Tetrads
b) Crossing over
c) Synapsis
d) Terminalisation

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33. Which aspect of mitosis is affected by colchicine in inducing polyploidy?
a) DNA duplication
b) Spindle formation
c) Cell plate formation
d) Chromosome doubling

34. Pairing of homologous chromosomes can be seen during
a) Zygotene
b) leptotene
c) Diplotene
d) Pachytene

35. The cell cycle of a germinal cell has
a) two successive mitotic divisions
b) two successive reduction divisions
c) very short prophase in first division
d) one reduction division followed by one mitotic division

36. During cell division, sometimes there will be failure of separation of sister chromatids. This event is called
a) interference
b) coincidence
c) fusion
d) Non disjunction

37. In the cell cycle DNA synthesis takes place during
a) G1 phase
b) G2 phase
c) S phase
d) Prophase

38. During metaphase mitosis chromosomes
a) undergo coiling
b) Move towards the poles
c) Line up at the equator
d) Break and disintegrate

39. A cell divides every one minute. At this rate of division it can fill a 100 ml of beaker in one hour. How much time does it take to fill a 50 ml beaker?
a) 30 minutes
b) 60 minutes
c) 59 minutes
d) one minute

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40. In how many cells the meiotic division has taken place, if the total number of spermatids produced are 32?
a) 16
b) 8
c) 32
d) 4

41. Zygotic meiosis occurs in
a) Pteris
b) Marchantia
c) Puccinia
d) Chalmydomonas

42. Daughter cells are formed as a result of meiosis are not similar to that of parent cell because
a) Meiosis is completed in two stages.
b) Prophase is longest phase.
c) Nucleus size increases in daughter cells.
d) Crossing over takes place and chromosome number is halved.

43. During meiosis chiasmata are observed at
a) Pachytene
b) Diplotene
c) Leptotene
d) Diakinesis

44. Number of mitotic divisions required to produce 128 cells from a single cell is
a) 7
b) 8
c) 16
d) 32

45. During which stage of prophase I the crossing over takes place?
a) Pachytene
b) Leptotene
c) Zygotene
d) Diplotene

46. Mendel's findings were rediscovered by
a) De vries
b) Correns
c) tschermak
d) all of the above

47. The physical expression or appearance of a character is called as
a) morphology
b) geneoype
c) phenotype
d) ecotype

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48. Genotype is the
a) genetic constitution
b) genetic constitution of the phenotype
c) trait expressed
d) expressed genes

49. The alternate forms of a gene is called
a) recessive character
b) dominant character
c) alleles
d) alternative gene

50. If the genotype consists of only one type of allele. It is called
a) homozygous
b) hetreozygous
c) momoallelic
d) uniallelic

51. How to increase the energy stored in an inductor by four times?
a) By doubling the current
b) This is not possible
c) By doubling the inductance
d) By making current 2–√ times

52. Consider an inductor whose linear dimensions are tripled and the total number of turns per unit length is kept constant, what happens to the self-inductance?
a) 9 times
b) 3 times
c) 27 times
d) 13 times

53. Lenz law is based on which of the following conservation
a) Charge
b) Mass
c) Momentum
d) Energy

54. What will be the acceleration of the falling bar magnet which passes through the ring such that the ring is held horizontally and the bar magnet is dropped along the axis of the ring?
a) It depends on the diameter of the ring and the length of the magnet
b) It is equal due to gravity
c) It is less than due to gravity
d) It is more than due to gravity

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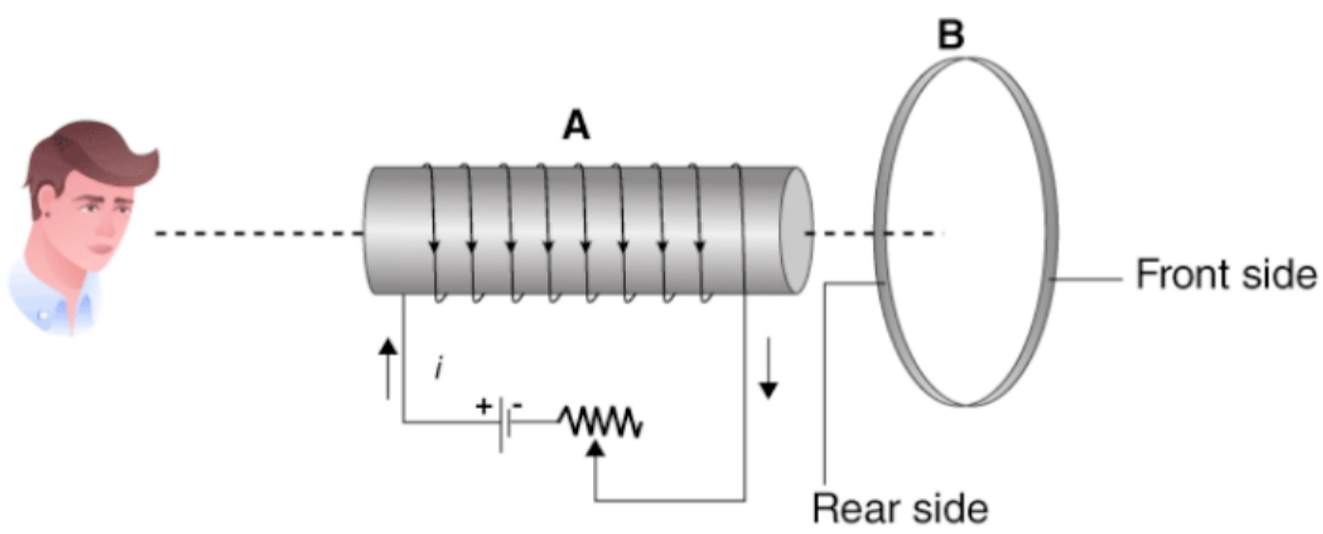
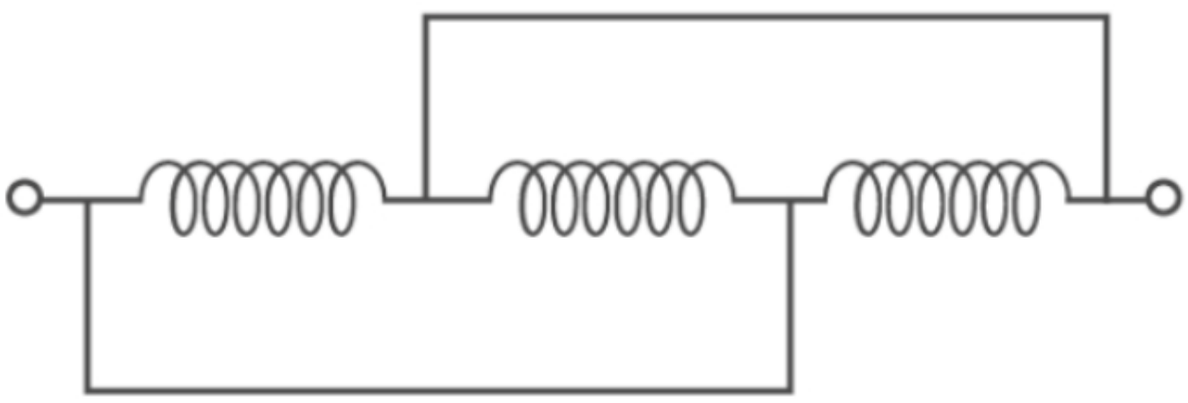
MODEL QUESTION PAPER

55. An observer is seeing the setup of an aluminium ring B facing an electromagnet A. The current I through A can be altered if



a) B is independent of an increase or decrease of I
b) If I increases, A will attract B
c) If I increase, A will repel B
d) If I decrease, A will repel B

56. What is the equivalent inductance of the following circuit if the pure inductance is 3.0H



a) 9H
b) 3H
c) 1H
d) 2H

57. What is the need for laminating the core of a transformer?
a) To reduce the resistance in the winding
b) To reduce the eddy currents
c) To reduce the hysteresis
d) None of the above

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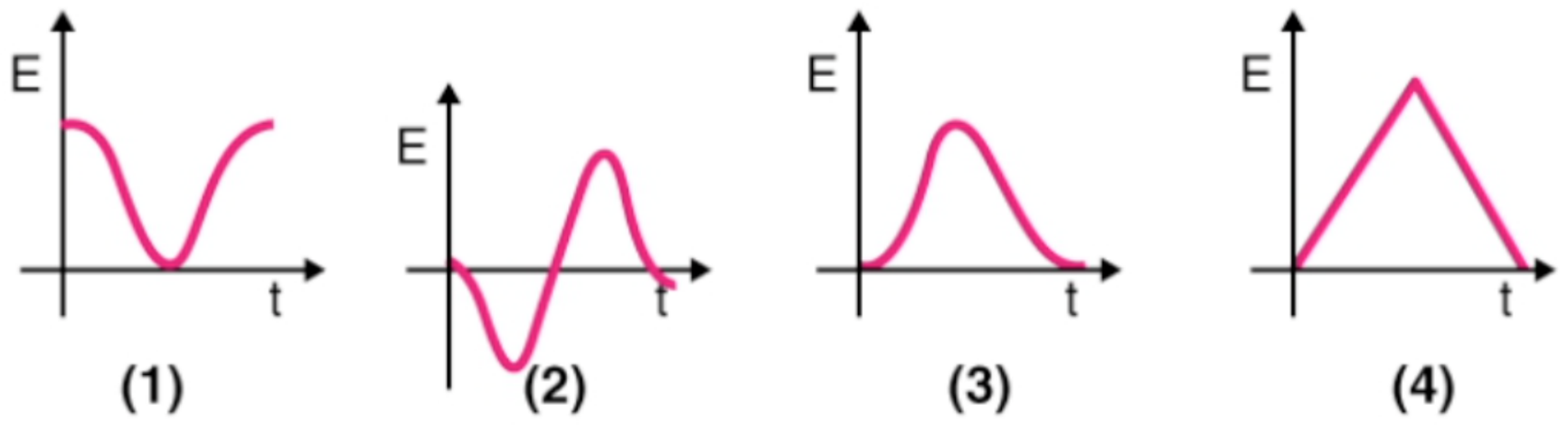
MODEL QUESTION PAPER

58. Which of the following represent the variation of induced EMF with respect to time t if a short bar magnet is moved along its axis and has a constant velocity.



59. A wire loop is rotated in a magnetic field such that the frequency of change of direction of the induced emf is

a) Six times per revolution
b) Four times per revolution
c) Twice per revolution
d) Once per revolution

60. Which of the following is the equivalent quantity of mass in electricity?

a) Current
b) Charge
c) Potential
d) Inductance

61. What is the unit of inductance?

a) Volt/ampere
b) Joule/ampere
c) Volt-ampere/sec
d) Volt-sec/ampere

62. What is the angle made by the plane of eddy currents with the plane of magnetic lines of force?

a) 0°
b) 40°
c) 90°
d) 180°

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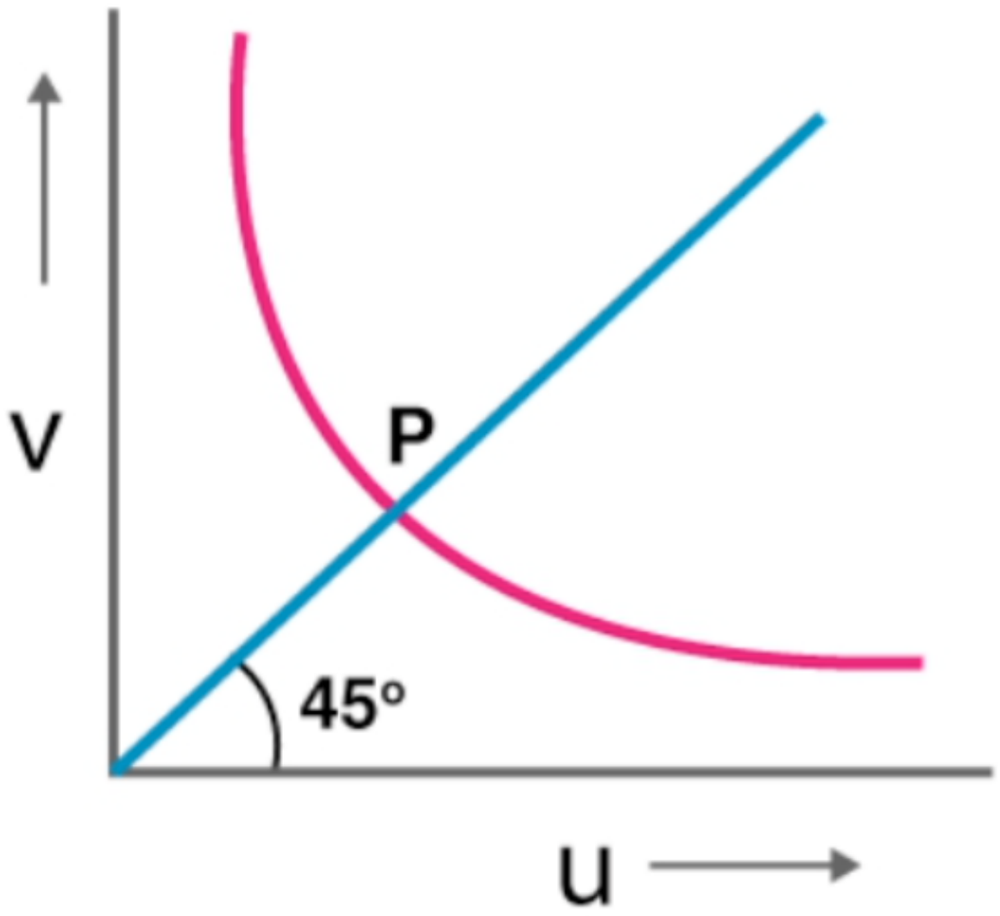
63. Following is the graph explaining the variation of v with respect to u for a mirror. What is the value of points above the marking P on the curve for values of v



a) Smaller than f
b) Larger than 2f
c) Smaller than 2f
d) Smaller than 2

64. What is the magnification produced by the plane mirror?
a) Zero
b) +1
c) -1
d) Between 0 and +∞

65. The image formed by the convex mirror is 1n times the object and has a focal length f. What is the distance of object from the mirror?
a) (n + 1)f
b) (n − 1)f
c) (n+1n)f
d) (n−1n)f

66. The metal does not give H2 on treatment with dilute HCL is
a) Zn
b) Fe
c) Ag
d) Ca

67. The molecule which has the highest percentage of ionic character among the following is
a) HI
b) HF
c) HCl
d) HBr

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68. The main chemical constituent of the oil of cardamom which is responsible for flavour of this oil is
a) cineole
b) engenol
c) geraniol
d) limonene

69. Zone refining is used for the purification of
a) Au
b) Ge
c) Ag
d) Cu

70. The gas used for artificial ripening of green fruit is
a) Ethylene
b) Ethane
c) carbon dioxide
d) acetylene

71. The following are the half lives of four active isotopes. Which one of the following is the most dangerous to handle?
a) 3 billion years
b) 100 years
c) 0.01 minute
d) 13 days

72. The method that cannot be used for removing permanent hardness of water is
a) adding sodium carbonate
b) Distillation
c) adding caustic soda
d) boiling

73. The mineral containing both magnesium and calcium is
a) magnesite
b) Calcite
c) Carnallite
d) dolomite

74. The main chemical constituent of clay is
a) silicon oxide
b) aluminium borosilicate
c) zeolites
d) aluminium silicate

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75. The major constituent of air is
a) nitrogen
b) carbon dioxide
c) oxygen
d) hydrogen

76. The ionisation energy of hydrogen atom in the ground state is x KJ. The energy required for an electron to jump from 2nd orbit to 3rd orbit is
a) 5x/36
b) 5x
c) 7.2 x
d) x/6

77. The iron ore magnetite consists of
a) Fe2O3
b) Fe3OH4
c) FeCO3
d) 3Fe2O3 .. 3H2O

78. The high reactivity of fluorine is due to
a) its high electro negativity
b) small size of fluorine atom
c) availability of d-orbitals
d) strong F – F bond B

79. The inexpensive and commonly used variety of glass is called soda glass. It is called so because
a) was used initially for making bottles of soda (carbonated drink)
b) is made using soda (sodium carbonate)
c) was initially used for storing sodium carbonate
d) is made using soda lime

80. The mass number of a nucleus is
a) always less than its atomic number
b) the sum of the number of protons and neutrons present in the nucleus
c) always more than the atomic weight
d) a fraction

81. It refers to a body of knowledge regarding crime as a social phenomenon.
a) Penology
b) Criminology
c) Sociology
c) Psychology

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82. The study of criminology involves the study of many disciplines in the collection of knowledge about criminal actions, thereby it is:

A. Scientific
B. Multidisciplinary
C. Psychiatric
D. Economics

83. In its legal definition, a Criminal is :

A. A person who committed a crime and convicted by a court of the violation of a criminal law.
B. A person who violated a social norm or one who have an antisocial act.
C. A person who violated the rules of conduct due to behavioral maladjustments.
D. All of the above.

84. REBELLION is an example of a crime.

A. Against public order.
B. Against public interest
C. Against public morals
D. Committed by public officers.

85. Kidnapping is an example of crime.

A. Against personal liberty and security.
B. Against Honor
C. Against person
D. Against chastity

86. A term denoting various offences committed by children or youths under the age of 18

A. Juvenile crime.
B. Youthful offender
C. Status offender
D. All of them.

87. A term used to describe a large number of disapproved behaviors of children or youths.

A. Criminal act.
B. Mala in se.
C. Mala prohibita
D. Juvenile delinquency.

88. One who repeatedly commits an act that is against the norms or more observed by the society.

A. Delinquent.
B. Delinquency.
C. Offender.
D. None of the above.

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89. One of the most powerful and prime mover of the criminal justice system and an institution in the community with the broad goals of maintaining peace and order, the protection of life and property and the enforcement of laws.
A. Police
B. Barangay tanod
C. Security guard
D. Fireman.

90. It is the study of victims and their contributory role,if any, in crime causation.
A. Victimology
B. Epidemiology
C. Demography
D. Demonlogy

91. The first man to introduce Fingerprint testing in Criminal investigation is
a) William Herschel
b) Francis Galton and Edward Henry
c) Thomas Edison
d) William James

92. Who told genetic code could be used to identify individuals
a) Dr. Henry
b) Charles Darwin
c) Alec Jeffrey
d) Alphonse Bertillon

93. What is a scientific data called when used in a courtroom setting to establish the connection of a person from a crime
a) Evidence
b) Testimony
c) Hearsay
d) Showcase

94. What do blunt objects produce
a) Incisions
b) Lacerations
c) Pain
d) Scar

95. How many Central Forensic Laboratories are in India
a) 4
b) 5
c) 7
d) 9

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96. The number of 'permanent teeth found in a typical human mouth
a) 26
b) 32
c) 36
d) 42

97. A virus can be transmitted from dried blood
a) True
b) False
c) Not specified
d) None

98. Full form for ELISA
a) Enzyme linked immunity association
b) Easily linked immunity assay
c) Erase line immunosorbent assay
d) Enzyme linked immunosorbent assay

99. A gross examination is one that:
a) Internal examination
b) Internal and external examination
c) Autopsy
d) Deals only with what is visible to the unaided eye

100. Hair cuttings contain:
a) Contain mitochondrial DNA
b) Contains Fibers
c) Contain blood samples
d) Need to calm down

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ANSWER KEY

1. C	26. A	51. A	76. A
2. A	27. C	52. B	77. A
3. C	28. D	53. D	78. A
4. B	29. A	54. C	79. B
5. B	30. C	55. C	80. B
6. A	31. A	56. C	81. B
7. A	32. C	57. B	82. B
8. B	33. B	58. B	83. D
9. B	34. A	59. C	84. A
10. D	35. D	60. D	85. C
11. D	36. D	61. D	86. A
12. A	37. C	62. C	87. D
13. B	38. C	63. B	88. C
14. A	39. C	64. B	89. A
15. A	40. B	65. B	90. A
16. B	41. D	66. C	91. B
17. C	42. D	67. B	92. C
18. C	43. A	68. A	93. A
19. B	44. A	69. B	94. B
20. D	45. A	70. A	95. C
21. B	46. D	71. C	96. B
22. C	47. C	72. D	97. A
23. A	48. B	73. D	98. D
24. D	49. C	74. D	99. D
25. C	50. A	75. A	100. A