



PART – A

1. Find the odd one out from the following :
A) sitting B) standing C) observing D) eating
2. Choose which of the conclusion/s logically follow/s from both the premises.
A. Some cushions are soft.
B. All pillows are soft.
Conclusion I: Some pillows are cushions.
Conclusion II : Some pillows are not cushions.
Conclusion III: No cushion is a pillow.
Conclusion IV: Some cushions may be pillows.
A) I and II B) I and III C) Only IV D) Only III
3. Read the short passages and answer the question that follow.
No one would confuse a glass of apple juice with Pinot Noir, a wine, but apple growers want you to believe they share one property to reduce the risk of heart disease. A study suggests that a quarter litre of apple juice works just as well as wine to reduce the risk of heart disease.
Which of the following would strengthen the argument ?
A) The saying “An apple a day keeps the doctor away” must have some truth in it.
B) Apple juice is packed with powerful anti-oxidants known as flavonoids.
C) Apple juice like wine helps delay the formation of artery clogging plaque.
D) Wines made out of apples are packed with blood thinning agents.
4. Arrange the phrases to form a meaningful sentence.
A. they could not release their contents
B. tests on herbal supplements
C. or were so badly made that
D. half did not contain their listed ingredients
E. taken to reduce cholesterol confirmed that
A) DCBEA B) BEDCA C) ADECB D) BEACD
5. The passage is written by
A) an architect B) a historian C) a journalist D) a priest
6. For the word below, a contextual usage is provided. Pick the word from the alternatives given that is most APPROPRIATE in the given context.
Ignominy: Only after committing the crime was he aware of the ignominy and shame that it would bring to his family.
A) tranquillity B) satisfaction
C) embarrassment D) displeasure



7. Four statements with blanks are given followed by four words. Choose the word that fits the set of statements the maximum number of times.
1. Haggling always went against his _____
 2. We must all share the _____ for this deplorable situation.
 3. The prisoner proved his _____
 4. There is not a _____ of truth in this rumour.
- A) blame B) innocence C) wrong D) grain
8. In the below sentence, part/parts of the sentence is/are left blank. Choose the word for each blank that best fits the meaning of the sentence as a whole.
Consumption of _____ food and _____ physical activities among the general public was contributing significantly to a greater incidence of heart disease among the populace.
- A) nutritious, strenuous B) unhygienic, desirable
C) junk, fewer D) delicious, restricted
9. Choose the grammatically correct and concise statement.
- A) It is appalling the fact that so many children have to suffer at the hands of adults.
B) It is appalling that so many children have to suffer in the hands of adults.
C) It is appalling that so many children have to suffer at the hands of adults.
D) It is appealing that so many children have to suffer under the hands of adults.
10. Three out of four words below are related to each other in some way and hence form a group. Find the odd one out.
- A) Pineapple B) Guava C) Grapes D) Papaya
11. How many players are there on each side in the game of Basketball ?
- A) 4 B) 5 C) 6 D) 7
12. Professor Amartya Sen is famous in which of the fields ?
- A) Biochemistry B) Electronics C) Economics D) Geology
13. Shankaracharya, the founder of the Bhakti movement belonged to
- A) Maharashtra B) Assam C) Bengal D) South India
14. Whose signature appears on ten-rupee currency note ?
- A) Minister of Finance B) Governor, RBI
C) Secretary, Ministry of Finance D) Prime Minister
15. India's longest road tunnel is located in the state of
- A) Arunachal Pradesh B) Sikkim
C) Meghalaya D) Jammu and Kashmir
16. If $2p + 3q = 18$ and $2p - q = 2$, then $2p + q = ?$
- A) 6 B) 7 C) 8 D) 10



17. In an examination, 35% of total students failed in Hindi, 45% failed in English and 20% in both. Find the percentage of those who passed in both the subjects.
A) 35% B) 40% C) 45% D) 50%
18. How long will it take a sum of money invested at 5% p.a. simple interest to increase its value by 40% ?
A) 5 years B) 6 years C) 7 years D) 8 years
19. A person has to pay 20% tax on first Rs. 4,500 earned, for amount earned between Rs. 4,500 and Rs. 7,500 the tax is 25% and for the amount earned more than Rs. 7,500, the tax is 30%. If he paid 23.33% of his income as tax, then what is his income?
A) Rs. 9,000 B) Rs. 8,500 C) Rs. 10,000 D) Rs. 10,500
20. A and B can do a piece of work in 45 days and 40 days respectively. They began to do the work together but A leaves after some days and then B completed the remaining work in 23 days. The number of days after which A left the work was
A) 6 B) 8 C) 9 D) 12
21. $5358 \times 51 = ?$
A) 273258 B) 273268 C) 273348 D) 273358
22. In a certain language, 36492 is written as SMILE and 058 is written as RUN. How are the 90089 coded in that language ?
A) NLLRN B) LRLNN C) LLRRN D) LRRNL
23. Pointing to an old man Kamal said. "His son is my son's uncle." How is the old man related to Kamal ?
A) Brother B) Uncle C) Father D) Grandfather
24. Statements :
I. The State Government has announced special tax package for the new industries to be set-up in the State.
II. Last year the State Government had hiked the taxes for all industrial activities in the State.
A) Statement I is the cause and statement II is its effect.
B) Statement II is the cause and statement I is its effect.
C) Both the statements I and II are independent causes.
D) Both the statements I and II are effects of independent causes.
25. Constitution is to Amendment as Book is to?
A) Errata B) Contents C) Preface D) Acknowledgement



PART – B

26. Which of the following is not considered part of the endo-membrane system ?
- A) Nuclear envelope
 - B) Chloroplast
 - C) Golgi apparatus
 - D) Endoplasmic Reticulum
27. Cyanide binds with at least one of the molecules involved in the production of ATP. Following exposure of a cell to cyanide, most of the cyanide could be expected to be found within the
- A) mitochondria
 - B) ribosomes
 - C) lysosomes
 - D) endoplasmic reticulum
28. According to the fluid mosaic model of membrane structure, proteins of the membrane are mostly
- A) spread in continuous layer over the inner and outer surfaces of the membrane
 - B) confined to the hydrophobic core of the membrane
 - C) embedded in a lipid bilayer
 - D) randomly oriented in the membrane, with no fixed inside outside polarity
29. Which of the following factors would tend to increase membrane fluidity ?
- A) a greater proportion of unsaturated phospholipids
 - B) a greater proportion of saturated phospholipids
 - C) a lower temperature
 - D) a relatively high protein content in the membrane



30. Some bacteria are metabolically active in hot springs because
- A) they are able to maintain a cooler internal temperature
 - B) high temperatures make catalysis unnecessary
 - C) their enzymes have high optimal temperatures
 - D) their enzymes are completely insensitive to temperature
31. Which is the reducing agent in the following reaction ?
- $$\text{Pyruvate} + \text{NADH} + \text{H}^+ \rightarrow \text{Lactate} + \text{NAD}^+$$
- A) Oxygen
 - B) NADH
 - C) NAD^+
 - D) Lactate
32. The immediate energy source that drive ATP synthesis by ATP synthase during oxidative phosphorylation is
- A) the oxidation of glucose and other organic compounds
 - B) the flow of electrons down the electron transport chain
 - C) the affinity of oxygen for electrons
 - D) the H^+ concentration gradient across the inner mitochondrial membrane
33. The final electron acceptor of the electron transport chain that function in oxidative phosphorylation is
- A) Oxygen
 - B) Pyruvate
 - C) Water
 - D) ADP



34. Which of the following is a true distinction between fermentation and cellular respiration ?
- A) Only respiration oxidizes glucose
 - B) NADH is oxidized by the electron transport chain in respiration only
 - C) Fermentation but not respiration, is an example of a catabolic pathway
 - D) Substrate-level phosphorylation is unique to fermentation
35. In his work with pneumonia- causing bacteria and mice, Griffith found that
- A) the protein coat from pathogenic cells was able to transform nonpathogenic cells
 - B) heat – killed pathogenic cells caused pneumonia
 - C) some substance from pathogenic cells was transferred to nonpathogenic cell, making them pathogenic
 - D) the polysaccharide coat of bacteria caused pneumonia
36. Synthesis of a new DNA strand usually begins with
- A) An RNA primer
 - B) DNA primer
 - C) DNA ligase
 - D) An Okazaki fragment
37. A eukaryotic cell lacking active telomerase would
- A) be unable to take up DNA from the surrounding solution
 - B) be unable of identify and correct mismatched nucleotides
 - C) experience a gradual reduction of chromosome length with each replication cycle
 - D) be unable to connect Okazaki fragments
38. The most reasonable inference form the observation that defects in DNA repair enzymes contribute to some cancers is that
- A) cancer is generally inherited
 - B) uncorrected changes in DNA can lead to cancer
 - C) cancer cannot occur when repair enzymes work property
 - D) cancer is caused by environmental factor that damage DNA repair enzymes



39. Meiosis II is similar to mitosis in that
- A) Homologous chromosomes synapse
 - B) DNA replicates before the division
 - C) The daughter cells are diploid
 - D) Sister chromatids separate during anaphase
40. Crossing over usually contributes to genetic variation by exchanging chromosomal segments between
- A) sister chromatids of a chromosome
 - B) chromatids of nonhomologues
 - C) nonsister chromatids of homologues
 - D) nonhomologous loci of the genome
41. In comparing the typical life cycles of plants and animals a stage found in plants but not in animals is a
- A) gamete
 - B) zygote
 - C) multicellular diploid
 - D) multicellular haploid
42. Through a microscope, you can see a cell plate beginning to develop across the middle of the cell and nuclei re-forming on either side of the cell plate. This cell is most likely
- A) an animal cell in the process of cytokinesis
 - B) a plant cell in the process of cytokinesis
 - C) an animal cell in the S phase of the cell cycle
 - D) a plant cell in metaphase



47. In mitochondria, exergonic redox reaction
- A) are the source of energy driving prokaryotic ATP synthesis
 - B) are directly coupled to substrate- level phosphorylation
 - C) provide the energy to establish the proton gradient
 - D) reduce carbon atoms to carbon dioxide
48. When electrons flow along the electron transport chains of mitochondria, which of the following changes occur ?
- A) The pH of the matrix increases
 - B) ATP synthase pumps protons by active transport
 - C) The electrons gains free energy
 - D) The cytochromes phosphorylate ADP to form ATP
49. In eukaryotic cells, transcription cannot begin until
- A) the two DNA strands have completely separated and exposed the promoter
 - B) several transcription factors have bound to the promoter
 - C) the 5' caps are removed from the mRNA
 - D) the DNA introns are removed from the template
50. Which of the following is not true of a codon ?
- A) it consists of three nucleotides
 - B) it may code for the same amino acid as another codon
 - C) it never codes for more than one amino acid
 - D) it extends from one end of a tRNA molecule



51. The anticodon of a particular tRNA molecule is
- A) complementary of the corresponding mRNA codon
 - B) complementary to the corresponding triplet in rRNA
 - C) the part of tRNA that bonds to a specific amino acid
 - D) changeable, depending on the amino acid that attaches to the tRNA
52. Which component is not directly involved in translation ?
- A) mRNA
 - B) DNA
 - C) tRNA
 - D) ribosomes
53. In a nucleosome, the DNA is wrapped around
- A) polymerase molecules
 - B) ribosomes
 - C) the nucleolus
 - D) histones
54. One of the characteristics of retrotransposons is that
- A) they code for an enzyme that synthesizes DNA using an RNA template
 - B) they are found only in animal cells
 - C) they generally move by a cut-and-paste mechanism
 - D) they contribute a significant portion of the genetic variability seen within a population of gametes
55. Within a cell, the amount of protein made using a given mRNA molecule depends partly on
- A) the degree of DNA methylation
 - B) the rate at which the mRNA is degraded
 - C) the presence of certain transcription factors
 - D) the number of introns present in the mRNA



56. Proto-oncogenes can change into oncogenes that cause cancer which of the following best explains the presence of these potential time bombs in eukaryotic cells ?
- A) Proto-oncogenes first arose from viral infections
 - B) Proto-oncogenes normally help regulate cell division
 - C) Proto-oncogenes are mutant versions of normal genes
 - D) Cells produce proto-oncogenes as they age
57. Which of the following has the largest genome size and the smallest number of genes per million base pairs ?
- A) *Hemophilus influenza* (bacterium)
 - B) *Saccharomyces cerevisiae* (yeast)
 - C) *Arabidopsis thaliana* (plant)
 - D) *Homo sapiens* (human)
58. An example of bioremediation is
- A) the use of prokaryotes to treat sewage or clean up oil spills
 - B) the production of antibiotics by cultured prokaryotes
 - C) the application of bacteria to produce transgenic plant
 - D) the introduction of parasitic bacteria to kill other bacteria
59. Erythromycin functions as an antibiotic mainly by inhibiting the ability of some prokaryotes to
- A) form spores
 - B) replicate DNA
 - C) synthesize protein in ribosomes
 - D) synthesize ATP



60. Which of the following has peptidoglycan as a major constituent of cell wall ?
- A) Gram-negative bacteria
 - B) Gram-positive bacteria
 - C) Fungi
 - D) None of these
61. In bacterial promoters, which of the following describes the 'Pribnow box' ?
- A) The 5' untranslated region
 - B) The -10 box
 - C) The -35 box
 - D) The termination sequence (B)
62. What is the role of eukaryotic RNA polymerase I ?
- A) Transcription of mRNA only
 - B) Transcription of mRNA, rRNA and tRNA
 - C) Transcription of 'small' RNAs including tRNAs, 5S RNAs and snRNAs
 - D) Transcription of the major rRNA transcript (D)
63. The melting of 40-45 bp at the oriC site of E. coli requires
- A) DNA + ATP + HU
 - B) DNA + ATP + HU + DNAb
 - C) DNA + ATP + HU + DNAb + DNAa
 - D) DNA + ATP + HU + DNAb + DNAa + Pol III holoenzyme
64. The R/r and S/s genes are linked and 10 map units apart. In the cross Rs/rS × rs/rs what fraction of the progeny will be RS/rs ?
- A) 5%
 - B) 10%
 - C) 25%
 - D) 40%



65. Old ripened plants/fruits softer texture due to
- A) High degree of esterification
 - B) Moderate degree of esterification
 - C) Low degree of esterification
 - D) No degree of esterification
66. The main monomer of pectic substances is
- A) Galacturonic acid
 - B) Galactopyranose
 - C) Arabinofuranose
 - D) Rhamnose
67. Limonene is a
- A) Monoterpene
 - B) Sesquiterpene
 - C) Diterpene
 - D) Triterpene
68. Secondary metabolite which contain a hydroxyl functional group on an aromatic ring is called as
- A) Phenolic compound
 - B) Terpene
 - C) Alkaloid
 - D) Non protein amino acid
69. Caffeine is a representative of
- A) Phenolics
 - B) Alkaloids
 - C) Terpene
 - D) Non protein Amino acid



70. Source of rubber is
- A) *Hevea brasiliensis*
 - B) *Tectona grandis*
 - C) *Cedrus deodara*
 - D) *Michelia champaca*
71. The smallest Angiosperm is
- A) *Wolffia*
 - B) *Lemna*
 - C) *Pistia*
 - D) *Eichhornia*
72. The tallest Gymnosperm is
- A) *Sequoia*
 - B) *Pinus*
 - C) *Rhododendron*
 - D) *Eucalyptus*
73. Archer J. P. Martin and R. L. Millington were awarded in 1952 the Nobel Prize for their contribution in
- A) Electrophoresis
 - B) PCR
 - C) Chromatography
 - D) Spectrophotometry
74. Glycolysis
- A) Takes place in the mitochondria
 - B) Produces no ATP
 - C) Has no connection with electron transport chain
 - D) Reduces two molecules of NAD⁺ for every glucose molecule processed



75. Which of the following is the correct sequence for the movement of electrons ?
- A) P680 -> P700 -> water -> NADP+
 - B) water -> P700 -> NADP+ -> P680
 - C) P700 -> P680 -> NADP+ -> water
 - D) water -> P680 -> P700 -> NADP+
76. To reduce six molecules of carbon dioxide to glucose via photosynthesis, how many molecules of NADPH and ATP are required ?
- A) 12 NADPH and 12 ATP
 - B) 12 NADPH and 18 ATP
 - C) 18 NADPH and 12 ATP
 - D) 24 NADPH and 18 ATP
77. Following pigments play vital role in photosynthesis, except
- A) Phycocyanin
 - B) Xanthophylls
 - C) Phycoerythrin
 - D) Anthocyanin
78. The hormone required for systemic acquired resistance is
- A) Jasmonic acid
 - B) Ethylene
 - C) ABA
 - D) Salicylic acid
79. The key hormone for drought response is
- A) Jasmonic acid
 - B) Ethylene
 - C) ABA
 - D) Salicylic acid



80. Which of the following statements about mitochondria and chloroplasts is generally true ?
- A) Plants have chloroplast but no mitochondria; animals have mitochondria but no chloroplasts
 - B) Plants and fungi have chloroplasts but no mitochondria; animals have only mitochondria
 - C) Plants and fungi have both chloroplasts and mitochondria; animals have only mitochondria
 - D) Plants have both chloroplasts and mitochondria; animals and fungi have only mitochondria
81. All protists are
- A) unicellular
 - B) eukaryotic
 - C) symbionts
 - D) monophyletic
82. Why do migratory birds often fly in a V-shaped cluster ?
- I. To conserve energy due to aerodynamic effects
 - II. To facilitate orientation and communication among the birds
 - III. To save themselves from the predatory birds
 - IV. To enhance their visual range
- A) I and II
 - B) I only
 - C) I, II and III
 - D) I, II and IV



88. Soon after the coelom begins to form, a researcher injects a dye into the coelom of a deuterostome embryo. Initially, the dye should be able to flow directly into the
- A) blastopore
 - B) blastocoel
 - C) archenteron
 - D) pseudocoelom
89. How many forms of viral hepatitis have been found so far ? Vaccines have been developed to protect against which of these ?
- A) Five forms (Hepatitis A, B, C, D and E); Vaccines against Hepatitis A and B
 - B) Fours forms (Hepatitis A, B, C, D); Vaccines against Hepatitis A and B
 - C) Five forms (Hepatitis A, B, C, D and E); Vaccines against hepatitis B only
 - D) Fours forms (Hepatitis A, B, C, D); Vaccines against Hepatitis B only
90. Which animal model is particularly useful for studying embryology ?
- A) Drosophila
 - B) Zebrafish
 - C) Mice
 - D) C. elegans
91. When is the developing human most susceptible to the occurrence of birth defects from radiation or chemical insults ?
- A) at the time of birth
 - B) during the third trimester
 - C) during the first trimester
 - D) during zygote stage



92. Insects such as *Drosophila* undergo three molts before becoming a pupa and undergoing metamorphosis. Molting is controlled by which hormone ?
- A) Ecdysone
 - B) Juvenile hormone
 - C) Adipokinetic hormone
 - D) Growth hormone
93. The biological clock of mammals is located in the
- A) suprachiasmatic nuclei of the hypothalamus
 - B) suprachiasmatic nuclei of the pineal gland
 - C) melatonin of the pineal gland
 - D) androgens of the gonads
94. BRCA1 is associated with which cancer ?
- A) Thyroid
 - B) Lung
 - C) Renal Cells
 - D) Breast
95. A genetic disorder caused by a dominant allele is
- A) Sickle-cell Anaemia
 - B) Tay-Sachs disease
 - C) Hemophilia
 - D) Huntington's disease
96. A man of A-blood group marries women of AB blood group. Which type of progeny would indicate that man is heterozygous A ?
- A) AB
 - B) A
 - C) O
 - D) B



97. If Mendel had studied the seven traits using a plant with 12 chromosomes instead of 14, in what way would his interpretation have been different ?
- A) he would not have discovered the law of independent assortment
 - B) he would have discovered sex linkage
 - C) he could have mapped the chromosome
 - D) he would have discovered blending or incomplete dominance
98. Which of the following stomach cells synthesize and secrete histamine ?
- A) Parietal cells
 - B) Chief cells
 - C) Enterochromaffin-like cells
 - D) Goblet Cells
99. Many cells in the body divide only rarely, if at all; neurons, red blood cells, and keratinocytes are extreme examples. In which portion of the cell cycle would such cells be considered to be ?
- A) M phase
 - B) G_1 phase
 - C) G_0 phase
 - D) G_2 phase
100. As mammalian zygotes divide, all cells are totipotent upto the _____ celled stage.
- A) 4
 - B) 6
 - C) 8
 - D) 16
-



SPACE FOR ROUGH WORK