

Pathfinder Academy

CSIR-NET : June 2011

Answer

Part – A

- Q1. The cumulative profits
- Answer : 3. 90 crores
- Q2. Popular use of which of the following
- Answer : 2. Ammonium sulphate
- Q3. Exposing an organism to a certain
- Answer : 3. mutation created a terminator codon
- Q4. A reference material is required to be
- Answer : 3. 4 mg
- Q5. Identify the figure which
- Answer : 2
- Ref : General science (2011 edition), Pathfinder Academy publication*
- Q6. The speed of a car increases very
- Answer : 4. 28.5
- Ref : General science (2011 edition), Pathfinder Academy publication*
- Q7. If the atmospheric concentration of carbon
- Answer : 3. it decreases
- Q8. If V_{input} is applied to the circuit shown
- Answer : 3.
- Q9. A physiological disorder X always
- Answer : 2. less than 4% of the population suffers from X
- Q10. Water is dripping out of a tiny
- Answer : 4. C faster, B slowest
- Q11. How many σ bonds are
- Answer : 2. 10
- Ref : General science (2011 edition), Pathfinder Academy publication*
- Q12. The graph represents are depth
- Answer : 3. polar region
- Q13. The normal boiling point of a solvent
- Answer : 1. 400 K
- Ref : General science (2011 edition), Pathfinder Academy publication*
- Q14. Diabetic patients are advised a low.....
- Answer : 3. they need to have slow, but sustained release of glucose in their blood stream

- Q15. Glucose molecules diffuse across
Answer : 4. decrease to $\tau/9$
- Q16. The reason for the
Answer : 1. extended covalent bonding
- Q17. Which of the following particles has
Answer : 2. gamma
Ref : General science (2011 edition), Pathfinder Academy publication
- Q18. A ball is dropped from a height
Answer : 4
Ref : General science (2011 edition), Pathfinder Academy publication
- Q19. Standing on a polished stone floor
Answer : 4. there is greater heat loss from the soles is greater
- Q20. The acidity of normal rain water
Answer : 2. CO₂
Ref : General science (2011 edition), Pathfinder Academy publication

Part – B

- Q21. Recent studies on Archaea suggest that
Answer : 3. in deep hydrothermal vents
- Q22. If the ratio of the number of
Answer : 2. negative
- Q23. The following is the biochemical
Answer : 2. 3 white : 1 purple
Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 13
- Q24. The frequencies of alleles
Answer : 3. 105
Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 13
- Q25. The transition to flowering
Answer : 3. reprogramming of the shoot apical meristem
- Q26. In an altruistic act, if a donor
Answer : 4. $\gamma_B - C > 0$
- Q27. Aneuploid females with only
Answer : 4. Turner syndrome
Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 52
- Q28. Which of the following food crops.....
Answer : 3. potato
- Q29. The most commonly used method of
Answer : 3. oxygen released

- Q30. The area of allowed regions in
Answer : 4. α -methyl L-valine
- Q31. Small RNAs with internally
Answer : 4. miRNA
Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 164
- Q32. A much greater proportion of energy
Answer : 4. terrestrial autotrophs have more indigestible tissues
- Q33. Polar bears maintain
Answer : 2. uncoupling protein
Ref : Life sciences, Fundamentals and Practice, Part - I (2011 Edition), Page number - 139
- Q34. Transport of water across
Answer : 3. Asn-Pro-Ala
- Q35. Which of the cyclins have
Answer : 1. A-type
Ref : Life sciences, Fundamentals and Practice, Part - I (2011 Edition), Page number - 340
- Q36. During generation of an
Answer : 3. Na^+ influx
Ref : Life sciences, Fundamentals and Practice, Part - I (2011 Edition), Page number - 275
- Q37. G protein-linked
Answer : 4. seven-pass
Ref : Life sciences, Fundamentals and Practice, Part - I (2011 Edition), Page number - 324
- Q38. Release of nutrients
Answer : 1. biostimulation
Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 469
- Q39. A mechanism that can cause
Answer : 3. translocation
Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 55
- Q40. Th2 response is generated
Answer : 1. IL-4 and IL-10
Ref : Life sciences, Fundamentals and Practice, Part - I (2011 Edition), Page number - 481
- Q41. Cytoplasmic determinants coding
Answer : 2. formation of additional ectopic head
Ref : Developmental Biology by Scott F. Gilbert
- Q42. The dwarf pea mutant
Answer : 2. GA 3β -hydroxylase
Ref : Introduction to plant physiology by W. Hopkins
- Q43. ELISA assay
Answer : 3. a substrate which gets converted into a coloured product
Ref : Life sciences, Fundamentals and Practice, Part - I (2011 Edition), Page number - 498

- Q44. Which of the following molecules
- Answer : 2. cadherin
- Ref* : Life sciences, Fundamentals and Practice, Part - I (2011 Edition), Page number - 316
- Q45. The 5' Cap of RNA is required
- Answer : 2. stability and transport of RNA
- Ref* : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 132
- Q46. Yeast artificial chromosome
- Answer : 2. SUP4
- Q47. In amphibian oocyte
- Answer : 3. Localized at vegetal pole
- Ref* : Developmental Biology by Scott F. Gilbert
- Q48. Which of the following statements
- Answer : 1. alternate oxidase accepts electrons directly from cytochrome
- Ref* : Life sciences, Fundamentals and Practice, Part - I (2011 Edition), Page number - 134
- Q49. In mature *Arabidopsis* embryo
- Answer : 4. hypophysis only
- Ref* : Life sciences, Fundamentals and Practice, Part - I (2011 Edition), Page number - 532
- Q50. $\text{Na}^+ - \text{K}^+$ ATPase is a tetramer
- Answer : 1. both on α
- Ref* : Life sciences, Fundamentals and Practice, Part - I (2011 Edition), Page number - 272
- Q51. A mother of blood group
- Answer : 1. A or B or O
- Q52. Following figure shows McArthur
- Answer : 1. extinction, immigration, equilibrium number of species, size of species pool
- Ref* : Introduction to population ecology by Larry and Rockwood
- Q53. Routinely used glucose
- Answer : 2. oxygen
- Ref* : Life sciences, Fundamentals and Practice, Part - I (2011 Edition), Page number - 256
- Q54. Name the ectothermic animal that
- Answer : 3. lizard in a desert
- Q55. Which of the following methods of
- Answer : 2. particle delivery system
- Q56. The μ and σ of wing length
- Answer : 1. 20 individuals
- Q57. Which of the following is a
- Answer : Both option 3 and 4 are correct
- Ref* : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 447

- Q58. A culture of an *E.coli* strain
Answer : 2. ultra violet radiation
Ref : Life sciences, Fundamentals and Practice, Part - I (2011 Edition), Page number - 416
- Q59. During urine formation
Answer : 3. a pressure-dependent physical process
Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 386
- Q60. IF the core body temperature of a human
Answer : 1. peripheral vasodilation, increased rate of respiration, tachycardia
- Q61. With which protein of
Answer : 3. invasins
- Q62. Graves disease is associated
Answer : 2. excess of thyroid hormones
Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 363
- Q63. The fidelity of replicative base
Answer : 4. TLS DNA polymerase
Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 116
- Q64. What is the minimum number of NTPs
Answer : 3. four
Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 178
- Q65. *Imperfect fungi* is a group
Answer : 2. no known mechanisms of sexual reproduction
Ref : Life sciences, Fundamentals and Practice, Part - I (2011 Edition), Page number - 515
- Q66. The photoreceptor commonly involved
Answer : 4. cryptochrome
Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 321
- Q67. The free energy ΔG of
Answer : 2. decrease with solute concentration
- Q68. Which of the following is *not*
Answer : 2. amniotic egg
Ref : Life sciences, Fundamentals and Practice, Part - I (2011 Edition), Page number - 549
- Q69. In India, brown antlered deer
Answer : 4. Lok TaK lake
- Q70. Both halophytes and
Answer : 4. tonoplast

Part - C

- Q71. You are studying the binding
Answer : 2. right-side-out vesicles will simply
- Q72. The overall length of the
Answer : 10 h
- Q73. Using molecular clock, it was
Answer : 1. 0.0270
Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 500
- Q74. A protein in 100 mM KCl solution was
Answer : 1. hydrophobic interaction is increased and
Ref : Proteins by Thomas E. Creighton
- Q75. During receptor-mediated
Answer : 3. mutation in the LDL-receptor
Ref : Life sciences, Fundamentals and Practice, Part - I (2011 Edition), Page number - 281
- Q76. Budding yeast cells that are
Answer : 1. in the absence of benomyl
Ref : Life sciences, Fundamentals and Practice, Part - I (2011 Edition), Page number - 342
- Q77. Eukaryotic genomes are organized
Answer : 3. GC-rich and gene rich regions
Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 51
- Q78. An amino acid contains no ionizable
Answer : 4
Ref : Life sciences, Fundamentals and Practice, Part - I (2011 Edition), Page number - 8
- Q79. A researcher has isolated a restriction
Answer : 1. A: No B: Yes
- Q80. Lac repressor inhibits expression of genes in *lac*-operon
Answer : 2. A, B and C
- Q81. An α -helix in a peptide or protein is
Answer : Correct values of Phi and Psi are not given
- Q82. Mouse bone marrow cells were
Answer : 1. interleukin-3
Ref : Immunology by Janis Kuby
- Q83. Precursors of the atoms in
Answer : 3. N1, Asp; C2 and C8
Ref : Life sciences, Fundamentals and Practice, Part - I (2011 Edition), Page number - 207
- Q84. Two *E.coli* cultures A and B are
Answer : 3. in culture A, lactose permease was induced

- Q85. Cancer causing genes can be functionally
 Answer : 2. bcl-2
- Q86. It has been observed that in 5-10% of the
 Answer : 1. A and B
Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 175
- Q87. Values of T_m (midpoint of denaturation), ΔH_m
 Answer : 4. only hydrophobic interaction
Ref : Proteins by Thomas E. Creighton
- Q88. Toll-like receptor 4 is associated with responsiveness
 Answer : 2. BALB/b mice receiving the bacteria
- Q89. Presence of circular mRNAs for a specific
 Answer : 3. A and C
Ref : The Cell by Bruce Albert
- Q90. siRNAs and miRNAs are used for achieving gene
 Answer : 3. A and B
Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 163
- Q91. Glucose is mobilized in muscle when
 Answer : 1. due to the presence of a cAMP
- Q92. In eukaryotic chromatin, 30 nm fiber
 Answer : 1. A and D
Ref : The Cell by Bruce Albert
- Q93. Intracellular pathogens like
 Answer : 2. Leishmania reside in lysosome
- Q94. Macrophages were collected from BALB/c mice, CD40-deficient
 Answer : 1. BALB/c macrophage-T
- Q95. Genetic studies demonstrated that TBP
 Answer : 3. B and D
Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 125
- Q96. cAMP signalling plays a very
 Answer : 1. A and D
- Q97. Fill in the blanks (a, b, c and d)
 Answer : 1. m o n p
Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 321
- Q98. The total variance in a phenotypic
 Answer : 3. $V_G / (V_G + V_E)$
Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 45
- Q99. Mutations in CONSTANS (CO) of
 Answer : 1.

- Q100. Following are some statements
- Answer : 3. B and C
- Q101. During early cleavage of
- Answer : 1. P1 cell would develop
- Ref : Developmental Biology by Scott F. Gilbert
- Q102. In case of sea urchin, which
- Answer : 2. Chemoattraction of sperm to the egg
- Ref : Developmental Biology by Scott F. Gilbert
- Q103. The time taken for atrial systole
- Answer : 1. $(t_{as} + t_{ad}) - t_{vs}$
- Ref : Review of Medical Physiology by William F. Ganong
- Q104. A patient undergoes liver transplantation
- Answer : 3. Treatment with antibiotics reducing the infection but retaining the transplant
- Q105. The dependence of the rate of sucrose
- Answer : 3. at lower concentration of sucrose the uptake of sucrose is energy
- Q106. During episodes of anoxia in plants, pyruvate produced
- Answer : 4. The cytosolic pH decreases, thus inhibiting lactate dehydrogenase and activating
- Q107. Bacteria often acquire genes by the
- Answer : 2. A: foreign, B: native
- Q108. Injection of noggin mRNA into a
- Answer : 1. A, B and C
- Ref : Developmental Biology by Scott F. Gilbert
- Q109. Atmospheric CO₂ contains the naturally
- Answer : 2. A and C
- Q110. Spinal cord of an animal was transected
- Answer : 2. B and C only
- Q111. An organism having heart for circulation
- Answer : 3. only B
- Q112. The MALDI spectrum of a peptide
- Answer : 2. pure with
- Q113. In a stressful condition, ACTH
- Answer : 2. A and B
- Q114. In one study a group of 5 day
- Answer : 3. More control experiments are
- Q115. In *Neurospora* a cross between in the
- Answer : 2. A followed by B
- Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 30

- Q116. Which one of the following graph
 Answer : 2.
 Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 397
- Q117. Based on the structural regions
 Answer : 3. B and D
 Ref : The Cell by Bruce Albert
- Q118. When F_1 female *Drosophila* of
 Answer : 3. B, E and F
 Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 25
- Q119. Monoclonal antibodies (mAB) can be potentially
 Answer : 3. replacing C_L and C_H regions of
- Q120. The following is a hypothetical pathway
 Answer : 4. A, B and D
 Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 15
- Q121. Mendel crossed tall pea plants with dwarf ones
 Answer : 3. 9/64
 Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 10
- Q122. Two new plant species, A and B, were
 Answer : 2. neotypes for both A and B
- Q123. According to MacArthur and Wilson's
 Answer : 1. Larger islands and islands closer to
- Q124. Proteins in cells can be visualized by
 Answer : 1. A only
 Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 253
- Q125. Affected individuals from the pedigree given
 Answer : 2. III-2, III-3, III-5, III-6, II-2, II-4, II-5 and I-2
- Q126. Assume a new subspecies
 Answer : 2. *F. callosa* subsp. *microcarpa* Jacobs and
- Q127. Primary production in aquatic ecosystem
 Answer : 1. (L - D) and (L - I) respectively
- Q128. Identify the most appropriate
 Answer : 2.
- Q129. Gause's Competitive exclusion
 Answer : 3. The principle is universally true
 Ref : Essentials of Ecology by Colin R. Townsend, Begon and Harper
- Q130. In a lake ecosystem bottom-up effects
 Answer : 2. P, Z and C are all controlled by T

- Q131. An organism has the following
Answer : 2. C only
Ref : Animal diversity by Cleveland P. Hickman
- Q132. Identify the apomorphic characters
Answer : 4. a-aminotoc egg; b-synapsidan skull;
Ref : Life of vertebrate by J. Z. Young
- Q133. The graph below shows the relationships
Answer : 4. As the age at first reproduction is postponed
- Q134. What will be the approximate effective
Answer : 2. 133
Ref : Evolution by Mark Ridley
- Q135. An animal was first maintained in a constant
Answer : 1. A and C
- Q136. Shown in the graph below are
Answer : 2. Q only
- Q137. The following geological eras mark the advent
Answer : 2. Origin of terrestrial plants
- Q138. Industrial products in which bacteria are
Answer : 1. 1. A - iii; B - i; C- ii; D - iv
- Q139. Insertion lambda vectors are used to create cDNA
Answer : 3. Hf1 protease degrades cII and therefore
- Q140. A transposon carrying a promoterless
Answer : 1. In group A, the insertion could be
Ref : Life sciences, Fundamentals and Practice, Part - II (2011 Edition), Page number - 233
- Q141. A 30-residue peptide was treated with trypsin
Answer : 3.
- Q142. To detect mutation (GAG → GTG) allele
Answer : 2. Offspring I is affected
- Q143. Molecular beacons (MB) and Taqman
Answer : 3. Annealing for A and extension for B
- Q144. An experiment was designed to find out the
Answer : 1. A and B
- Q145. When a wrist blastema from a recently cut
Answer : 2. helps in the distalization of the blastema
Ref : Developmental Biology by Scott F. Gilbert