Evolution

1. **Assertion (A):** There has been gradual evolution of life forms at earth.
Reason (R): The new forms of life arose at different periods of history of earth.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

2. **Assertion (A):** Any population has built in variation in characteristics.
Reason (R): Variations are stable and inheritable.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

3. **Assertion (A):** Those who are better reproductively fit in an environment, leave more progeny than others.
Reason (R): These will survive more and hence are selected by nature.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

4. **Assertion (A):** Charles Darwin concludes that reproductively fit population produces more progenies and there are much more chances of their survival. They will get selected by nature.
Reason (R): He called natural selection as a mechanism of evolution.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

5. **Assertion (A):** Alfred Russel Wallace, a naturalist worked in Malay Archepelago that is Modern Indonesia.
Reason (R): He divided earth in seven geographical realms based on the distribution of invertebrates.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

6. **Assertion (A):** The ancestors of present life forms were present at different periods in the history of earth.
Reason (R): The geological history of earth closely correlates with the biological history of earth.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

7. **Assertion (A):** Different-aged rock sediments contain fossils of different life forms.
Reason (R): The different organisms buried during the formation of the particular sediment.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

8. **Assertion (A):** In England, before industrialization, it was observed that there were more white-winged moths on trees than dark-winged or melanized moths.
Reason (R): White winged moths can survive only in non industrialized area.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

9. **Assertion (A):** Lichens can be used as industrial pollution indicator.
Reason (R): Lichens forces the moth to change as dark-winged or white winged in industrial area.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

10. **Assertion (A):** Selection of resistant varieties in a much lesser time scale is now possible.
Reason (R): Origin of virus like organism is an example of progressive evolution.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

11. **Assertion (A):** Australian marsupials can be taken as an example of adaptive radiation.
Reason (R): A number of marsupials, evolved from an ancestral stock, but all within the Australian island continent.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

12. **Assertion (A):** Tasmanian wolf and Placental wolf are the good example of convergent evolution.
Reason (R): More than one adaptive radiation appeared to have occurred in an isolated geographical area, (representing different habitats) one can call this convergent evolution.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

13. **Assertion (A):** The rate of appearance of new forms is linked to the life cycle or the life span of organisms.
Reason (R): The organism with short life span have ability to produce more progenies in shorter time and that have chance to more exposure with nature.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

14. **Assertion (A):** Fitness is the end result of the ability to adapt and get selected by nature.
Reason (R): Some organisms are better adapted to survive in an otherwise hostile environment.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

15. **Assertion (A):** According to Hugo de Vries; it is mutation which causes speciation and hence called it saltation.
Reason (R): Mutations are random and directional.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

16. **Assertion (A):** Due to continental drift pouched mammals of Australia survived.
Reason (R): There is lack of competition from any other mammal.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

17. **Assertion (A):** Some mammals like whales, dolphins seals and sea cows etc. live wholly in water.
Reason (R): They evolve from aquatic reptilian ancestors.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

18. **Assertion (A):** *Homo sapiens* arose in Africa and moved across continents and developed into distinct races.
Reason (R): After development of agriculture human settlements started.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

19. **Assertion (A):** *Dryopithecus* and *Ramapithecus* were hairy and walked like gorillas and chimpanzees.
Reason (R): *Australopithecus* probably lived in East African grasslands.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

20. **Assertion (A):** Branching descent and Natural selection are the two key concepts of Darwinian theory of evolution.
Reason (R): Darwinism is able to explain the presence of vestigial organ.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

21. **Assertion (A):** *Homo erectus* had a large brain that is around 900C.C.
Reason (R): *Homo erectus* probably ate meat.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

22. **Assertion (A):** Analogous structures are a result of convergent evolution.
Reason (R): Different structures evolving for the same function and hence having similarity.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

23. **Assertion (A):** The original drifted population in a new habitat becomes founders and the effect is called founder effect.
Reason (R): Darwin finches of Galapagos island shows adaptive radiation.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

24. **Assertion (A):** Hardy Weinberg principle says that allele frequencies in a population are stable and is constant from generation to generation.
Reason (R): Genetic drift operates in small population.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

25. **Assertion (A):** Homologous organs suggest same origin.
Reason (R): Organs which are similar in function and dissimilar in internal morphology called as Homologous organs.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

26. **Assertion (A):** Miller used four gases- methane, oxygen, hydrogen and water vapour for formation of simple organic compounds.
Reason (R): He prepared some proteins in his apparatus.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

27. **Assertion (A):** Evolution of man is the example of progressive evolution.
Reason (R): Tapworm is development due to retrogressive evolution.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

Directions: In the following questions, a statement of assertion is followed by a statement of reason. Mark the correct choice as:
(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
(c) If Assertion is true but Reason is false.
(d) If both Assertion and Reason are false.

28. **Assertion:** In a DNA molecule, A–T rich parts melt before G–C rich parts.
Reason: In between A and T there are three H–bond, whereas in between G and C there are two H-bonds.

29. **Assertion:** Histones are basic proteins of major importance in packaging of eukaryotic DNA. DNA and histones comprise chromatin forming the bulk of eukaryotic chromosome.
Reason: Histones are of five major types H_1, H_2A, H_2B, H_3 and H_4.

30. **Assertion:** DNA is associated with proteins.
Reason: DNA binds around histone proteins that form a pool and the entire structure is called
a nucleosome.

31. **Assertion:** The mechanism of DNA replication is semiconservative in nature.
Reason: Each of the complementary strands of the parental double helix is conserved during the process.

32. **Assertion:** mRNA attaches to ribosome through its 3' end.
Reason: The mRNA has F-capsular nucleotide and bases of lagging sequence.

33. **Assertion:** Untranslated regions are sequences of RNA before initiation codon and after termination codon.
Reason: Untranslated regions provide stability to mRNA and also increase translational efficiency.

34. **Assertion:** Polycistronic mRNA, found in prokaryotes, specify a number of polypeptides.
Reason: Monocistronic mRNA, found in eukaryotes, specify only a single polypeptide.

35. **Assertion:** In transcription, the strand with 3'→5' polarity acts as the template strand.
Reason: The RNA polymerase catalyses the polymerisation in only one direction that is 5'→3'.

36. **Assertion:** Repetitive sequences make up very large portion of human genome.
Reason: Repetitive sequences do not have direct coding functions in the genome.

37. **Assertion:** rRNA is the most abundant RNA.
Reason: rRNA is a constituent of ribosomes.

38. **Assertion:** An organism with lethal mutation may not even develop beyond the zygote.
Reason: All types of gene mutations are lethal.

39. **Assertion:** Lac operon is a repressible operon.
Reason: The product of gene activity stops the activity of the lac operon.

40. **Assertion:** Heterochromatin is transcriptionally inactive.
Reason: Heterochromatin is densely packed.

41. **Assertion:** Agrobacterium tumefaciens is popular in genetic engineering because this bacterium is associated with the roots of all cereal and pulse crops.
Reason: A gene incorporated in the bacterial chromosomal genome gets automatically transferred to the crop with which the bacterium is associated.

42. **Assertion:** Gel electrophoresis and elution are two important processes.
Reason: After staining with ethidium bromide it has to be exposed to U.V. light.

ANSWER KEY																			
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Ans.	2	3	2	2	3	2	1	3	3	3	1	1	1	2	3	1	3	2	2	3
Que.	**21**	**22**	**23**	**24**	**25**	**26**	**27**													
Ans.	2	1	2	1	3	4	2													

28.	**29.**	**30.**	31.	32.	33.	34.	35.	36.	37.	38.	39.	40.	41.	42.		
C	A	A	A	B	B	B	A	B	B	C	D	A	D	b		