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CBSE Objective Questions Exam 2019-2020
CLASS : 10th
SUB : Science
For 15 Years Exams Chapter-wise Question Bank

CHAPTER 9

Heredity and Evolution

1. OBJECTIVE QUESTIONS

1. There was no free oxygen in the early atmosphere because most of it was tied up in
(a) water (b) ammonia
(c) methane (d) rock

Ans : (d) rock

2. Which of the following provides evidence for evolution?
(a) Direct observations of genetic changes in populations
(b) Shared characteristics of organisms
(c) The fossil record
(d) All of the above

Ans : (d) All of the above

3. Which of the following is a Test Cross?
(a) TT × tt (b) Tt × tt
(c) Tt × TT (d) tt × tt

Ans : (b) Tt × tt

4. In natural selection,
(a) the genetic composition of the population changes at random over time
(b) new mutations are generated over time
(c) all individuals in a population are equally likely to contribute offspring to the next generation.
(d) individuals that possess particular inherited characters survive and reproduce at a higher rate than other individuals.

Ans : (d) individuals that possess particular inherited characters survive and reproduce at a higher rate than other individuals

5. A heterozygous red-eyed female Drosophila mated with a white-eyed male would produce
(a) red-eyed females and white-eyed males in the F_1
(b) white-eyed females and red-eyed males in the F_1
(c) half red and half white-eyed females and all white eyed males in the F_1
(d) half red and half white-eyed females as well as males in the F_1

Ans : (d) half red and half white-eyed females as well as males in the F_1

6. Sex-linked disorders such as color blindness and hemophilia are
(a) caused by genes on the X chromosome
(b) caused by genes on the autosome
(c) caused by genes on the Y chromosome
(d) expressed only in men

Ans : (a) caused by genes on the X chromosome

7. Which of the following would stop evolution by natural selection from occurring?
(a) If humans became extinct because of a disease epidemic
(b) If a thermonuclear war killed most living organisms and changed the environment drastically
(c) If ozone depletion led to increased ultraviolet radiation, which caused many new mutations
(d) If all individuals in a population were genetically identical and there was no genetic recombination, sexual reproduction, or mutation

Ans : (d) If all individuals in a population were genetically identical, and there was no genetic recombination, sexual reproduction, or mutation

8. The earliest living organisms were
(a) multicellular (b) eukaryotes
(c) prokaryotes (d) photosynthesizes

Ans : (c) prokaryotes

9. Which of the following is Heterozygous?
(a) TTRR (b) ttrr
(c) TT (d) Tt

Ans : (d) Tt

10. The phenomenon by which a new set of population is formed from the change in frequency of some genes is
(a) genetic drift (b) organic evolution
(c) variations (d) speciation

Ans : (a) genetic drift

The change in the frequency of some genes which leads to appearance of a new set of population without any survival disadvantage is called genetic drift.

11. Genetic s is the study of-
(a) Inheritance (b) Cell structure
(c) Only plants (d) Only animals

Ans : (a) Inheritance

12. If two parents have the genotypes $AA \times aa$, the probability of having an aa genotype in the F_1 generation is-
(a) 25 percent (b) 50 percent
(c) 75 percent (d) None of the above

Ans : (d) None of the above

13. Eye color in the fruit fly is said to be sex-linked. This simply means that the gene for eye colour is:
(a) on the Y chromosome
(b) on an auto some
(c) on the X and Y chromosomes
(d) on the X chromosome

Ans : (a) on the Y chromosome

14. The arrangement of organisms into a series of groups based on physiological, biochemical, anatomical and other relationships is
(a) hierarchy (b) categorisation
(c) taxonomy (d) classification

Ans : (d) classification

Classification involes hierarchical arrangement living organisms into different categories on the basis of common inter-relationships between them

15. The presence of homologous organs in different animals indicates
(a) independent evolution (b) common ancestry
(c) different ancestry (d) hierarchy

Ans : (b) common ancestry

Hmologous organs represent common ancestry. It represents the evolution of closely related species from a common ancestor.

16. Gene is made of which chemical
(a) D.N.A. (b) R.N.A.
(c) protein (d) enzyme

Ans : (a) D.N.A.

17. Fossils are the remains of
(a) hard parts of life forms in rock
(b) soft parts of life forms in rock
(c) protein and bones of life forms
(d) None of the above

Ans : (a) hard parts of life forms in rock

Fossils are the remains of hard parts of life forms found in rocks, e.g. tree trunks or skull.

18. Which of the following rediscovered the Mendel's work?
(a) Correns (b) de Vries
(c) Tschermark (d) all of the above

Ans : (d) all of the above

19. What determines the sexs of a child?
(a) Chromosome content of the ovum
(b) Chromosome content of the sperm
(c) Number of days between ovulation and fertilisation
(d) Number of days between fertilisation and implantation

Ans : (b) Chromosome content of the sperm

If a sperm containing X-chromosome fertilises an ovum, female child is produced. If a sperm containing Y-chromosome fertilises an ovum, male child is produced. Ovum always provides X-chromosome and plays no role in determining the sex of a child.

20. The Genotype of offspring formed from Tt × tt will be-
(a) TT and tt (b) Tt and tt
(c) only tt (d) only TT

Ans : (b) Tt and tt

21. Which amongst the listed tools was used to study the law of inheritance in pea plant by Gregor J Mendel?
(a) Family tree (b) Pedigree chart
(c) Punnett square (d) Herbarium sheet

Ans : (c) Punnett square

Punnett square was used by GJ Mendel to determine the law of inheritance in his experiments with pea plants.

22. When a breed of cattle with red coats is crossed with the same breed with white coats, all the offspring have coats with a mixture of red and white hairs, a condition called roan.
If roan cows were crossed with a red-coated bull, the theoretical ratio of the offspring would be
(a) all red (b) all roan
(c) 1 red : 1 roan (d) 3 red : 1 roan

Ans : (c) 1 red : 1 roan

She following cross shows how this ratio 1 : 1 is obtained.

Parents :	Roan	Red
Genotype :	Rr	RR
Gametes :	(R) (r)	(R)
Offsprings : Genotype	RR	Rr
Phenotype :	1 Red	1 Roan

23. Which of the following are fossils?
(a) pollen grains buried in the bottom of a peat bog

(b) the petrified cast of a clam's burrow
(c) the impression a clam shell made in mud, preserved in mudstone
(d) all of the above

Ans : (d) all of the above

24. Which statement is true for a dominant allele?
(a) It cannot undergo mutation
(b) It gives a greater chance of survival than a recessive allele
(c) It gives the same phenotype in heterozygotes and homozygotes
(d) It is only responsible for male characteristics

Ans : (c) It gives the same phenotype in heterozygotes and homozygotes

Dominant allele suppresses the recessive allele in terms of its expression. Hence, it also shows its phenotype in heterozygotes.

25. Which statement about the genotypes of organisms is correct?
(a) Dominant alleles are only found in homozygotes
(b) One recessive allele always causes a recessive phenotype
(c) Recessive phenotypes must be homozygous
(d) The dominant phenotype must be heterozygous

Ans : (c) Recessive phenotypes must be homozygous

Recessive phenotype only expresses if both alleles are homozygous, while dominant phenotype may express in either homozygous or heteroygous conditions.

26. A farmer saves the seeds from his best maize crop plants to sow for next year's crop.
(a) artificial selection (b) genetic engineering
(c) natural selection (d) variation

Ans : (a) artificial selection

Its artificial selection because the farmer is giving the chance to grow best maize crop next year while the natural selection operates due to competition and survival for the fittest.

27. What is a result of natural selection?
(a) Dogs that are friendly to humans
(b) Grapes that contain no seeds
(c) Mosquitoes that are resistant to insecticides
(d) Onion crops that have a pleasant taste

Ans : (c) Mosquitoes that are resistant to insecticides

By natural selection, resistant mosquitoes are produced dut to continuous spray of insecticides.

28. Mendel's concept of segregation implies that the two members of an allelic pair of genes-
(a) are distributed to separate gametes
(b) may contaminate one another
(c) are segregated in pairs
(d) are linked

Ans : (a) are distributed to separate gametes

29. Your arm is homologous with-
(a) a seal flipper (b) an octopus tentacle
(c) a bird wing (d) both a and c

Ans : (d) both a and c

30. Which statement describes an example of artificial selection?
(a) It has been found that some strains of bacteria produce antibiotics
(b) It is common practice to mate bulls with cows that produce the most milk
(c) It is possible to control caterpillars on food crops by releasing small wasps which lay their eggs on caterpillars and kill them
(d) Mosquitoes have developed strains that are resistant to insecticides

Ans : (b) It is common practice to mate bulls with cows that produce the most milk

Artificial cross-breeding of animals and then selection of desirable traits is an example of artificial selection by human beings.

31. Which of the following evolutionary mechanisms acts to slow down or prevent the evolution of reproductive isolation?
(a) Natural selection (b) Gene flow
(c) Mutation (d) Genetic drift

Ans : (b) Gene flow

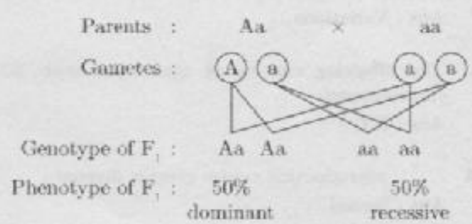
32. Which of the following features do humans lack that other primates have?
(a) Forward-facing eyes
(b) Short snouts
(c) Flexible shoulder and elbow joints
(d) Opposable big toes

Ans : (d) Opposable big toes

33. A recessive homozygote is crossed with a heterozygote of the same gene. What will be the phenotype of the F_1-generation?
(a) All dominant
(b) 75% dominant, 25% recessive
(c) 50% dominant, 50% recessive
(d) 25% dominant, 50% heterozygous, 25% recessive

Ans : (c) 50% dominant, 50% recessive

Suppose aa is recessive homozygote and Aa is heterozygote. Rusult of the cross are shown below.



34. The genotype of the height of an organism is written as Tt. What conculsion may be drawn?

(a) The allele for height has at least two different genes

(b) There are atleast two different alleles for the gene for height

(c) There are two different genes for height, each having a single allele

(d) There is one allele for height with two different forms

Ans : (b) There are atleast two different alleles for the gene for height

Alleles are different forms of the same gene. They occupy the same relative positions on a pair of homologous chromosomes. The allele for tallness is designed T (dominant allele) and the allele for dwarfness, t (recessive allele). The different alleles for height represented in the genotype Tt shows that the organisms is heterozygous for height and exhibit tallness.

2. FILL IN THE BLANK

1. The sex chromosomes in male are indicated by .....

Ans : XY

2. Tendril of a pea plant and phylloclade of Opuntia are ..... structures.

Ans : analogous

3. Chromosome consists of a DNA molecule and .....

Ans : Protein

4. The sex chromosomes in female are indicated by .....

Ans : XX

5. The phenotypic ratio between tall and dwarf is .....

Ans : 3 : 1

6. The phenotypic in dihybrid cross is .....

Ans : 9 : 3 : 3 : 1

7. There are ..... pairs of chromosomes in human.

Ans : 23

8. The differences from one generation to the other generation are called .....

Ans : Variations

9. The offspring can be of two types with XX and ..... chromosomes.

Ans : XY

10. ..... reproduction causes greater diversity.

Ans : Sexual

11. Transmission of traits from one generation to the next generation is called .....

Ans : Heredity

12. The chromosome related to determination of sex is called ..... .

Ans : Sex Chromosome

13. A test cross can distinguish the pure dominant from the ..... dominant.

Ans : Impure

14. Mendel performed his experiments on .....

Ans : Garden pea

15. According to modern concept, Mendel's factor is called a .....

Ans : Gene

16. Characteristics that are developed during the lifetime of an individual are .....

Ans : acquired

17. Mendelian factors or genes as well as chromosomes are present in .....

Ans : Pairs

18. The traits which express themselves in F_1 generation are called .....

Ans : Dominant

19. The genetics is the science of ..... and .....

Ans : Heredity, Variations

20. DNA segment in a chromosome performing specific function is the .....

Ans : gene

21. The traits which are acquired by an organism during its lifetime are called ..... .

Ans : Acquired traits

22. The two types of reproduction are sexual and .....

Ans : Asexual

23. ..... traits are unable to express in a hybrid.

Ans : Recessive

24. Gene is the segment of .....

Ans : DNA

25. Two types of nucleic acids are DNA and ..... .

Ans : RNA

26. Out of tall and dwarf plants ..... trait is dominant.

Ans : Tall

27. If tall plant contains TT gene then dwarf plant contains .....

Ans : TT

28. ..... called father of genetics.
Ans : Mendel

29. The term genetics was coined by .....
Ans : Bateson

30. Mendel chose ..... characters in Pea for his experiments.
Ans : Seven

31. Broccoli has been developed from ..... cabbage through artificial selection.
Ans : Wild

32. ..... speciation occurs in geographically separated populations.
Ans : Allopatric

33. Fossils are written documents of ..... .
Ans : Evolution

34. Earth cam into existence probably ..... million years ago.
Ans : 4600

35. ..... and ..... proved that life originated from inorganic molecules.
Ans : Stanley Miller and Harold Urey

36. There is no possibility of chemical evolution of life on earth today, because .....
Ans : The atmosphere is oxidising

37. Mendel is known as the father of .....
Ans : genetics

38. An atmosphere rich in hydrogen is an ..... atmosphere.
Ans : Reducing

39. The first organisms were ..... and not autotrophs.
Ans : Heterotrophs

40. The study of fossils, a branch of biology called ..... was founded by Goerges Cuiver.
Ans : Paleontology

41. The age of fossil is usually determined by analysing the ..... present in the rock from which fossil is recovered.
Ans : Radioactive materials

42. Theory of natural selection was proposed by .....
Ans : Darwin

43. The theory of natural selection was given by .....
Ans : Darwin

44. Wind of bat and wing of bird are the example of the ..... organs.
Ans : Analogous

45. The process by which new species develop from existing ones is called .....
Ans : speciation

46. Forelimbs of frog and lizard are the example of the ..... organs.
Ans : Homologous

47. ..... are the chromosomes found in somatic cells.
Ans : autosomes

48. The analogous organs have similar functions but have ..... structures.
Ans : Different

49. The homologous organs have different functions but have ..... structures.
Ans : Similar

3. TRUE/FALSE

1. Selection of variants by environmental factors forms the basis of evolutionary process.
Ans : True

2. The more characteristics two species will have in common, the more closely they are related.
Ans : True

3. Traits which are not inherited over generations do not cause evolution.
Ans : True

4. Both the parents contribute DNA equally to the offspring.
Ans : True

5. Sex of the child is determined by the type of ovum provided by the mother.
Ans : False

6. A recessive trait can also be common as blood group O.
Ans : True

7. There was plenty of oxygen present in atmosphere of primitive earth.
Ans : False

8. Variations arising during the process of reproduction cannot be inherited.
Ans : False

9. Sex is determined by different factors in various

species.
Ans : True

10. At present time evolution is not possible.
Ans : False

11. Mouth parts of insects show divergent evolution.
Ans : True

12. Life can originate on earth from pre-existing life only.
Ans : True

13. The atmosphere of the primitive earth was reducing.
Ans : True

14. Changes in the non-reproductive tissues caused by environmental factors are inheritable.
Ans : False

15. Evolution cannot be said to 'progress' from 'lower' forms to 'higher' forms.
Ans : True

16. Exchange of genetic material takes place in asexual reproduction.
Ans : False

17. A cross between a true tall and pure dwarf pea plant resulted in prodnction of all tall plants because tallness is the dominant trait.
Ans : True

18. For every molecule of fat there is a gene.
Ans : False

19. Reduction in weight of an organism due to nutrition is genetically controlled.
Ans : False

20. Reduction in weight of the organism due to starvation is genetically controlled.
Ans : False

21. New species may be formed if DNA undergoes significant changes germ cells or chromosome number changes in the gametes.
Ans : True

22. Variation is minimum in asexual reproduction.
Ans : True

23. Tendril of a pea plant and phylloclade of Opuntia are homologous.
Ans : True

24. The artificial classification of organisms is based on homology.
Ans : True

25. A trait in an organism is influenced by both maternal and paternal DNA.
Ans : True

26. The similarities in homologous organs are because of convergent evolntion.
Ans : True

27. A factor which shows its effect in the hybrid is called recessive.
Ans : False

28. Dromaesaurs were the first to fly.
Ans : False

29. Attached ear lobe is recessive trait.
Ans : True

30. Charles Darwin discovered the law of independent assortment.
Ans : False

4. MATCHING QUESTIONS

DIRECTION : Each question contains statements given in two columns which have to be matched. Statements (A, B, C, D) in column-I have to be matched with statements (p, q, r, s) in column II.

1. Match the genetic cross of the parents on the left with the genotypes of the offspring most likely to be produced from that cross on the right.

Column I		Column II	
(A)	BB × bb	(p)	100% Bb
(B)	Bb × Bb	(q)	25% BB, 50% Bb, 25% bb
(C)	BB × BB	(r)	100% BB
(D)	bb × bb	(s)	100% bb

Ans : A-p, B-q, C-r, D-s

2. Match the physical evidence of evolution with the best description of that particular type of evidence.

Column I		Column II	
(A)	Fossils	(p)	The remains of deceased organisms that are studied.
(B)	Embryology	(q)	Comparisons of the early development stages of an organism.

Column I		Column II	
(C)	Cytology	(r)	Comparing and constrasting cell structures found within an organism.
(D)	DNA evidence	(s)	Comparing similarities and differences between amino acid sequences in two organisms

Ans : A-p, B-q, C-r, D-s

3.

Column I		Column II	
(A)	Erect ape man	(p)	Java man
(B)	Homo sapiens fossils	(q)	Cromagnon man
(C)	Base analogons	(r)	5-Bromouracil
(D)	Lamarck	(s)	Theory of inheritance of acquired character.

Ans : A-p, B-q, C-r, D-s

4.

Column I		Column II	
(A)	Allopatric speciation	(p)	Finches to darwin
(B)	Bar eye character in Drosophila	(q)	Duplication in X-chromosome
(C)	Louis pasteur	(r)	Swan neck experiment
(D)	Ladder of nature	(s)	Aristotle

Ans : A-p, B-q, C-r, D-s

5.

Column I		Column II	
(A)	Genetic changes	(p)	Homologous organ
(B)	Independent inheritance	(q)	Fossil
(C)	Natural selection	(r)	Analogous organ
(D)	Dihybrid ratio	(s)	XY
(E)	Male human beings	(t)	9 : 3 : 3 : 1
(F)	Wing of a bat and a wing of a bird	(u)	Darwin
(G)	Remanant of ancient animals	(v)	Mendel
(H)	Arm of a man and wing of a bird	(w)	DNA copying

Ans : A-w, B-v, C-u, D-t, E-s F-r, G-q, H-p

5. ASSERTION AND REASON

DIRECTION : In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

(e) Both Assertion and Reason are false.

1. **Assertion :** Evolution is called as organic evolution.
Reason : Evolution involves the living organisms.
Ans : (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
Evolution is called as organic evolution, because it involves the living organisms.

2. **Assertion :** Dominant allele is an allele whose phenotype expresses even in the presence of another allele of that gene.
Reason : It is represented by a capital letter, e.g. T.
Ans : (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
Dominant allele is an allele whose phenotype will be expressed even in the presence of another allele of that gene. It is represented by a capital letter, e.g. T. Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.

3. **Assertion :** Forelimbs of vertebrates are homologous organs.
Reason : Analogous organs have same origin but different functions.
Ans : (c) Assertion (A) is true but reason (R) is false.
Forelimbs of vertebrates are homologous organs. Analogous organs have different origin but show similar appearance.

4. **Assertion :** The sex of the children will be determined by chromosome received from the father.
Reason : A human male has one X and one Y -chromosome.
Ans : (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
If a child inherits X-chromosome from the father will be a girl and one who inherits a Y-chromosome will be a boy.

5. **Assertion :** Among the primates, chimpanzee is the closest relative of the present day humans.
Reason : The banding pattern in the autosome number 3 and 6 of man and chimpanzee is remarkably similar.
Ans : (a) Both assertion (A) and reason (R) are true

and reason (R) is the correct explanation of assertion (A).

The banding pattern seen on stained chromosomes from humans and chimpanzee show striking similarities which indicates that they have evolutionary relationships (cytogenetic evidence).

6. **Assertion :** Human ancestors never used their tails and so the tail expressing gene has disappeared in them.
Reason : Lamarck's theory of evolution is popularly called theory of continuity of germ plasm.
Ans : (c) Assertion (A) is true but reason (R) is false.

According to Lamark's theory, continuous disuse of organs make them weak. The theory of continuity of germplasm was given by Weismann.

7. **Assertion :** Speciation is the process of formation of a new species from a pre-existing one.
Reason : Mutation plays a role in speciation.
Ans : (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

Speciation is an evolutionary process by which new species arise. One of the factors that lead to speciation is mutation.

8. **Assertion :** Mutation is sudden change in the genetic material.
Reason : Variation is useful for the survival of species over time.
Ans : (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

9. **Assertion :** Changes in non-reproductive tissues can be passed on the the DNA of the germ cells.
Reason : Inherited traits include the traits developed during the lifetime of an individual that cannot be passed on to its propeny.
Ans : (d) Assertion (A) is false but reason (R) is true.

Changes in non-reproductive tissues cannot be passed on the the DNA of the germ cells.

The traits developed during the lifetime of an individual that cannot be passed on to its progenies are acquired traits.

10. **Assertion :** Chromosomes are known as hereditary vehicles.
Reason : The chromosomes are capable of self-reproduction and maintaining morphological and physiological properties through successive generations.
Ans : (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

11. **Assertion :** Mendel chose a number of varieties of garden pea as plant material for his experiments.
Reason : Garden pea has well defined characters and was bisexual.
Ans : (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

Mendel chose garden pea as plant material for his experiment because garden pea plants were easily available/they grow in one season/fertilization was easy.

12. **Assertion :** Ear muscles of external ear in man are poorly developed.
Reason : These muscles are useful which move external ear freely to detect sound efficiently.
Ans : (c) Assertion (A) is true but reason (R) is false.

13. **Assertion :** The establishment of reproductive isoloations in an event of biological significance.
Reason : In the absence of reproductive isolation species can merge into single population.
Ans : (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

14. **Assertion :** The sex of a child is determined by the mother.
Reason : Humans have two types of sex chromosomes: XX and XY.
Ans : (d) Assertion (A) is false but reason (R) is true.

15. **Assertion :** In humans, males play an important role in determining the sex of the child.
Reason : Males have two X chromosomes.
Ans : (c) Assertion (A) is true but reason (R) is false.

Sex of a child is dependent on the type of the male gamete that fuses with the female gamete. Human beings possess 23 pairs of chromosomes. Out of these, 22 pairs are known as autosomes, while the remaining one pair comprises sex chromosomes (XX in females and XY in males). At the time of fertilisation, tha egg cell fuses with the sperm cell, resulting in the formation of the zygote. If the egg cell carrying an X chromosome fuses with the sperm carrying an X chromosome, the resulting child would be a girl. If the egg cell carrying an X chromosome fuses with the sperm carrying a Y chromosome, the resulting child would be a boy.

16. **Assertion :** DNA finger printing is a method in which polymerase chain reaction followed by DNA probe is used.
Reason : A DNA finger print is inherited and therefore, resembles that of parents.
Ans : (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

17. **Assertion :** The birds have large, light spongy bones with air sacs.
Reason : These adaptations help them during flight.
Ans : (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

18. **Assertion :** We have lost all the direct evidence of

origin of life.

Reason : The persons responsible for protecting evidences were not skilled.

Ans : (c) Assertion (A) is true but reason (R) is false.

19. Assertion : Variations are seen in offspring produced by asexual reproduction.

Reason : DNA molecule generated by replication is not exactly identical to original DNA.

Ans : (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

20. Assertion : Although living organism always arise from other living organism,, life should certainly have had a beginning.

Reason : The study of the conditions and the mechanisms involved in the creation of most primitive living structures on earth is actually the problem of origin of life.

Ans : (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

21. Assertion : Wings of butterfly and wings of bat are analogous organs.

Reason : Analogous organs have different origin and structural plan but same function.

Ans : (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

Wings of butterfly and wings of bat thongh they perform similar function, they have different origin/ basic structure. Hence, they are known as analogous organs.

22. Assertion : Mendel selected the pea plant for his experiments.

Reason : Pea plant is cross-pollinating and has unisexual flowers.

Ans : (a) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

23. Assertion : The genetic complement of an organism is called genotype.

Reason : Genotype is the type of hereditary properties of an organism.

Ans : (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

Genotype of the organism include all dominant and recessive characters.

24. Assertion : Learning a skill such as dance and music is an acquired trati.

Reason : Acquired traits develops in the life time of an individual and do not pass to the progeny.

Ans : (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

Trails which develop in the life time of an individual and do not pass to the progeny are called acquired traits. Learning a skill such as dance/music/loss of body parts/weight etc are example of acquired traits.

25. Assertion : Traits like eye colour or height are inherited traits.

Reason : Inherited traits are not transferred from parents to young ones.

Ans : (c) Assertion (A) is true but reason (R) is false.

Eye colour and height are genetically inherited traits, as these are expressed by genes. Inherited traits are the traits which are transferred from parents to young ones. Acquired traits are the characters that are acquired by the individual during its lifetime. These traits cannot be inherited. For example, if a wrestler develops large muscles due to his training program that does not mean it will be passed on to his offspring.

26. Assertion : Fossils are remains of dead organisms.

Reason : It is helpful in study of evolution.

Ans : (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

Fossils are remains of hard parts of the past individuals in the strata of earth. It help in tracing evolutionary pathways.

27. Assertion : A geneticist crossed two pea plants and got 50% tall and 50% dwarf in the progeny.

Reason : One plant was heterozygous tall and the other was dwrf.

Ans : (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).