

ORIGIN AND EVOLUTION OF MAN

Ramapithecus → *Australopithecus* → *Homo habilis*

Homo erectus → *Homo sapiens* → *Homo sapiens sapiens*.

- * About 15 mya primates called *Dryopithecus* and *Ramapithecus* were existing.
- * They were hairy and walked like gorillas and chimpanzees.
- * *Ramapithecus* was more **man like** while *Dryopithecus* was more **ape-like**.
- * Few fossils of man-like bones have been discovered in Ethiopia and Tanzania.
- * Two mya *Australopithecines* probably lived in East African grasslands.
 - They hunted with stone weapons.
 - Essentially ate fruit.
- * The first human-like being the hominid and was called *Homo habilis*.
 - Brain capacity was between 650 - 800 cc.
 - They did not eat meat.
- * Fossils discovered in Java in 1891 revealed the next stage i.e. *Homo erectus* about 1.5 mya.
 - Had large brain around 900 cc.
 - Probably ate meat.
- * **Neanderthal man:**
 - Brain size 1400 cc
 - Lived in east and central Asia between 1,00,000-40,000 years back.
 - They used hides to protect their body.
 - Buried their dead.
- * **Homo sapiens:**
 - Arose in Africa and moved across continents and developed distinct races.
 - During ice age between 75,000-10,000 years ago modern *Homo sapiens* arose.
 - Pre historic cave art developed about 18,000 years ago.
 - Agriculture came around 10,000 years back and human settlement started.

QUESTION BANK

EXERCISE - 1

LEVEL - 1

- Q.1** If a trait A exists in 10% of a population of an asexually reproducing species and a trait B exists in 60% of the same population, which trait is likely to have arisen earlier?
- Q.2** How does the creation of variations in a species promote survival?
- Q.3** How do Mendel's experiments show that traits may be dominant or recessive?
- Q.4** How do Mendel's experiments show that traits are inherited independently?
- Q.5** A man with blood group A marries a woman with blood group O and their daughter has blood group O. Is this information enough to tell you which of the traits – blood group A or O – is dominant? Why or why not?
- Q.6** How is the sex of the child determined in human beings?
- Q.7** What are the different ways in which individuals with a particular trait may increase in a population?
- Q.8** Why are traits acquired during the life-time of an individual not inherited?
- Q.9** Why are the small numbers of surviving tigers a cause of worry from the point of view of genetics?
- Q.10** What factors could lead to the rise of a new species?
- Q.11** Will geographical isolation be a major factor in the speciation of a self-pollinating plant species? Why or why not?

- Q.12** Will geographical isolation be a major factor in the speciation of an organism that reproduces asexually? Why or why not?
- Q.13** Give an example of characteristics being used to determine how close two species are in evolutionary terms.
- Q.14** Can the wing of a butterfly and the wing of a bat be considered homologous organs? Why or why not?
- Q.15** What are fossils? What do they tell us about the process of evolution?
- Q.16** Why are human beings who look so different from each other in terms of size, colour and looks said to belong to the same species?
- Q.17** In evolutionary terms, can we say which among bacteria, spiders, fish and chimpanzees have a 'better' body design? Why or why not?
- Q.18** What are fossils ?
- Q.19** Name the connecting link between reptiles and birds.
- Q.20** What is sex chromosome ?
- Q.21** Where are genes located ? What is the chemical nature of gene ?
- Q.22** Who provided the evidence of DNA as a genetic material?
- Q.23** Write the term coined by Johanssen for Mendel's factors.
- Q.24** Name the two purines.
- Q.25** Write the number of chromosomes in human beings.
- Q.26** Who proposed the theory of inheritance of acquired characters ?
- Q.27** Name the hormone that causes tallness in pea plant.
- Q.28** Who gave the concept of evolution.
- Q.29** What is meant by microevolutuion ?
- Q.30** What is molecular phylogeny ?
- Q.31** Only variations that confer an advantage to an individual organism will survive in a population. Do you agree with this statement ? Why or why not ?
- Q.32** What was the nature of atmosphere on the primitive earth?
- Q.33** When did life originate on the earth ?
- Q.34** Name the theory of evolution given Lamarck.
- Q.35** Evolution is a discontinuous process. Is it correct ?
- Q.36** Give the three key factors of the modern concept of evolution.
- Q.37** Mendel proposed result of segregation on the basis of which cross ?
- Q.38** How many conclusions were prepared by Mendel ?
- Q.39** What is phylogeny, and how did it play a role in Darwin's studies ?
- Q.40** In rabbits, short hair is due to a dominant allele (S), and long hair to a recessive allele (s). A cross between a short-haired female and a long-haired male produces a litter of one long-haired and seven short-haired offspring.
- (a) What are the genotypes of the parents?
- (b) What phenotypic ratio was expected in the offspring generation ?
- (c) How many of the eight offspring were expected to be long-haired ?
- Q.41** What is heredity ?
- Q.42** Which plant is called true or pure for a character ? Explain.
- Q.43** What is hybrid ?
- Q.44** Write the name of the two mutagenic agents.
- Q.45** Write two reasons of Mendel's success.
- Q.46** Define Mutation.
- Q.47** In pea plants, yellow flowers (Y) are dominant to white (y). Predict the ratio of genotypes and offspring produced by a cross between a homozygous yellow-flowered pea plant and a heterozygous yellow-flowered pea plant. What is the phenotypic ratio ?

Q.48 Flower color in snapdragons follows a pattern of incomplete dominance. A pink-flowered snapdragon is crossed with a white-flowered individual. What phenotypes and what ratio of occurrence would you expect in the offspring?

LEVEL-2

Q.49 One gene has alleles A and a; another gene on another chromosome has alleles B and b. For each of the following genotypes, what type(s) of gametes will be produced?

- (a) AA, BB (b) Aa, BB (c) Aa, bb (d) Aa, Bb

Q.50 What was the turning point in the process of revolution, which changed the atmosphere of the earth?

Q.51 What is living fossils? Give 3 examples of living fossils?

Q.52 What do you mean by Dominant and Recessive factors?

Q.53 What do you understand by Law of Segregation?

Q.54 Explain the Law of Segregation with one example.

Q.55 Write the disadvantages of cross-breeding or hybridization.

Q.56 Differentiate the followings: Homozygous and Heterozygous

Q.57 Recall that in most fruit flies, the sex chromosomes are XX for females and XY for males.

(a) Does a male fly inherit his X chromosome from his mother or father?

(b) With respect to an X-linked gene, how many different types of gametes can a male produce?

(c) If a female is homozygous for an X-linked gene, how many different types of gametes can be produced for this gene? (d) If a female is heterozygous for an X-linked gene, how many different types of gametes can be produced for this gene?

Q.58 Although biologists agree that evolution occurs, they debate which mechanisms are most important in causing evolutionary change. Does this mean that the "theory" of evolution is wrong –

Q.59 How Did Gregor Mendel Lay the Foundations for Modern Genetics?

Q.60 What are some variations on the Mendelian theme?

Q.61 How do we know that evolution has occurred?

Q.62 What Causes Evolution?

Q.63 How did Humans Evolve?

EXERCISE - 2

Fill in the blanks

Q.1 Earth came into existence probably million years ago.

Q.2 Darwins "warm little pond" was

Q.3 There is not possibility of chemical evolution of life on earth today, because

Q.4 An atmosphere rich in hydrogen is an atmosphere.

Q.5 The first organisms were and not autotrophs.

Q.6 The study of fossils, a branch of biology called was founded by Goerges Cuiver.

Q.7 The age of fossil is usually determined by analysing the present in the rock from which fossil is recovered.

Q.8 is the father of genetics.

Q.9 The unit of recombination frequency is

Q.10 Mendel did experiment on plant on suggestion of Karl Negali.

Q.11 A test cross can distinguish the pure dominant from the dominant.

Q.12 Mendel performed his experiments on

Q.13 According to modern concept, Mendel's factor is called a

Q.14 Mendelian factors or genes as well as chromosomes are present in

Q.15 Theory of natural selection was proposed by

True-false Statements –

- Q.16** At present time evolution is not possible.
Q.17 Mouth parts of insects show divergent evolution.
Q.18 Life can originate on earth from pre-existing life only.
Q.19 The atmosphere of the primitive earth was reducing.
Q.20 There was plenty of oxygen present in atmosphere of primitive earth.
Q.21 Variations arising during the process of reproduction cannot be inherited.
Q.22 Sex is determined by different factors in various species.
Q.23 Changes in the non-reproductive tissues caused by environmental factors are inheritable.
Q.24 Evolution cannot be said to ‘progress’ from ‘lower’ forms to ‘higher’ forms.

EXERCISE - 3

- Q.1** Genetics is the study of –
(A) Inheritance (B) Cell structure (C) Only plants (D) Only animals
- Q.2** 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
- Q.3** If two parents have the genotypes AA × aa, the probability of having an aa genotype in the F₂ generation is –
(A) 25 percent (B) 50 percent (C) 75 percent (D) None of the above
- Q.4** Eye color in the fruit fly is said to be sex-linked. This simply means that the gene for eye color is:
(A) On the Y chromosome. (B) On an autosome.
(C) On the X and Y chromosomes. (D) On the X chromosome.
- Q.5** 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
- Q.6** 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.
- Q.7** The first mammals evolved 220 million years ago. The supercontinent Pangea began to break apart 200 million years ago. Therefore, fossils of the first mammals should be found
(A) on most or all of the current continents. (B) only in Antarctica.
(C) on only one or a few continents. (D) none of the above
- Q.8** 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
- Q.9** An early (about 5 to 8 mya) and crucial step in human evolution was –
(A) the development of large brains.
(B) a sudden and dramatic improvement in toolmaking technology.
(C) the switch to walking upright.
(D) genetic changes that improved spoken language.
- Q.10** 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

- Q.11** An organism is described as Rr : red. The Rr is the organism's [A]; red is the organism's [E]; and the organism is [C].
 (A) [A] phenotype; [B] genotype; [C] degenerate (B) [A] karyotype; [B] hybrid; [C] recessive
 (C) [A] genotype; [B] phenotype; [C] heterozygous (D) [A] gamete; [B] linkage; [C] pleiotropic
- Q.12** A heterozygous red-eyed female *Drosophila* mated with a white-eyed male would produce
 (A) red-eyed females and white-eyed males in the F₁
 (B) white-eyed females and red-eyed males in the F₁
 (C) half red and half white-eyed females and all white-eyed males in the F₁
 (D) half red and half white-eyed females as well as males in the F₁
- Q.13** 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
- Q.14** Your arm is homologous with –
 (A) a seal flipper (B) an octopus tentacle (C) a bird wing (D) both (A) and (C)
- Q.15** 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
- Q.16** 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
- Q.17** 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
- Q.18** The earliest living organisms were –
 (A) multicellular (B) eukaryotes (C) prokaryotes (D) photosynthesizes
- Q.19** The evolution of the shelled, waterproof egg was an important event in vertebrate evolution because it –
 (A) led to the Cambrian explosion (B) was the first example of parents caring for their young
 (C) allowed the colonization of freshwater environments
 (D) freed organisms from having to lay their eggs in water
- Q.20** Which of the following rediscovered the Mendel's work
 (A) Correns (B) de Vries (C) Tschermak (D) all of the above
- Q.21** The Genotype of offspring formed from Tt × tt will be –
 (A) TT and tt (D) Tt and tt (C) only tt (D) only TT
- Q.22** Which of the following is a Test Cross –
 (A) TT × tt (B) Tt × tt (C) Tt × TT (D) tt × tt
- Q.23** Which of the following is Heterozygous –
 (A) TTRR (D) ttrr (C) TT (D) Tt
- Q.24** Gene is made of which chemical –
 (A) D.N.A. (B) R.N.A. (C) protein (D) enzyme
- Q.25** Mute is the example of –
 (A) inter-specific (B) hybridization (C) mutation (D) selective breeding
- Q.26** You got red and white pea flower plants in F₂ generation during hybridization in your garden. In formation of white flower plants minimum requirements are –
 (A) proper manure, water and one recessive gene (B) proper manure, water and both recessive genes
 (C) proper manure, water and one dominant gene (D) proper manure, water and both dominant genes

- Q.27** Mendel chose pea plants because –
 (A) they were cheap (B) they were having seven pairs of contrasting characters
 (C) they were easily available (D) of great economic importance
- Q.28** Heredity deals with the study of –
 (A) resemblances and differences between the parents and offsprings
 (B) resemblances between the parents and offsprings
 (C) differences between the parents and offspring (D) none of the above
- Q.29** Mendel worked on :
 (A) edible Pea (B) wild Pea (C) garden Pea (D) none of these
- Q.30** Gene is part of chromosome was proved first of all by –
 (A) Sutton & Boveri (B) Griffith & McCarty (C) Watson & Crick (D) None of the above
- Q.31** Chemically a nucleotide has a –
 (A) Pentose group (B) Nitrogenous base (C) Phosphate group (D) All the above
- Q.32** Guanine pairs with –
 (A) Adanine (B) Cytocine (C) Thymine (D) None of the above
- Q.33** Which is the example of homologous organs –
 (A) Forelimbs of man and wings of bird (B) Wings of birds and wings of insects
 (C) Vermiform appendix and nictitating membrane (D) Archaeopteryx and Balano glossus
- Q.34** Who proposed the theory of ‘natural selection’ –
 (A) Lemarck (B) Darwin (C) Weismann (D) De Vries
- Q.35** A Mendelian experiment consisted of breeding tall pea plants bearing violet flowers with short pea plants bearing white flowers. The progeny all bore violet flowers, but almost half of them were short. This suggests that the genetic make-up of the tall parent can be depicted as
 (A) TTWW (B) TTww (C) TtWW (D) TtWw
- Q.36** An example of homologous organs is
 (A) our arm and a dog’s fore-leg (B) our teeth and an elephant’s tusks
 (C) potato and runners of grass (D) all of the above
- Q.37** In evolutionary terms, we have more in common with
 (A) a Chinese school-boy (B) a chimpanzee. (C) a spider (D) a bacterium.
- Q.38** Of the following possibilities, the best way to estimate an organism’s evolutionary fitness is to measure the –
 (A) size of its offspring (B) number of eggs it produces
 (C) number of eggs it produces over its lifetime
 (D) number of offspring it produces over its lifetime that survive to breed
- Q.39** Principles and rules of classification are studied under –
 (A) Systematics (B) Natural classification (C) Nomenclature (D) Taxonomy
- Q.40** Three kingdom classification was proposed by –
 (A) Linnaeus (B) Haeckel (C) Whittaker (D) Lamarck
- Q.41** Thallophyta includes –
 (A) fungi and bacteria (B) algae, fungi, bacteria and lichens
 (C) algae, fungi and lichens (D) algae and fungi
- Q.42** Which of the following has an embryo but lacks vascular tissue –
 (A) Bryophyta (B) Pteridophytes (C) gymnosperms (D) angiosperms
- Q.43** The most primitive vascular plants are –
 (A) bryophytes (B) pteriphytes (C) gymnosperms (D) angiosperms
- Q.44** Who is known as father of taxonomy –
 (A) Mendel (B) Linnaeus (C) Darwin (D) Crick

- Q.45** The basic unit of classification is –
 (A) Variety (B) Species (C) Genus (D) Family
- Q.46** According to binomial nomenclature, the scientific name of an organism must consist of two words. These are –
 (A) Species and tribe (B) Genus and species (C) Order and family (D) Genus and family
- Q.47** Cryptogams include –
 (A) Thallophytes (B) Bryophytes (C) Pteridophytes (D) All of the above
- Q.48** In Whittaker's classification, unicellular organisms are grouped under –
 (A) Protista (B) Porifera (C) Fungi (D) Protozoa
- Q.49** The reserve food in fungal cells is –
 (A) Starch (B) Cyanophycean starch (C) Glycogen (D) Glycogen and fat
- Q.50** Pteridophytes are known as –
 (A) Sea plants (B) Vascular cryptogams
 (C) Club mosses (D) Horse tails
- Q.51** Mendel formulated the law of purity of gametes on the basis of –
 (A) Dihybrid cross (B) Monohybrid cross (C) Back cross (D) Test cross
- Q.52** In monohybrid cross what is the ratio of homozygous dominant and homozygous recessive individuals in F_2 -generation –
 (A) 1 : 2 : 1 (B) 2 : 1/1 : 2 (C) 3 : 1/1 : 3 (D) 1 : 1
- Q.53** A white flowered mirabilis plant rr was crossed with red coloured RR , if 120 plants are produced in F_2 generation. The result would be –
 (A) 90 uniformly and 30 white (B) 90 Non-uniformly coloured and 30 white
 (C) 60 Non-uniformly coloured and 60 white (D) All coloured and no white
- Q.54** From heredity point of view which marriage is not suitable –
 (A) Man Rh (–) and Woman Rh (+) (B) Both Rh (+)
 (C) Both Rh (–) (D) Man Rh (+) and Woman Rh (–)
- Q.55** If one parent has blood group A and the other parent has blood group B. The offsprings have which blood group –
 (A) AB (B) O (C) BO (D) A, B, AB, O
- Q.56** Plants having similar genotypes produced by plant breeding are called –
 (A) Clone (B) Haploid (C) Autopolyploid (D) Genome
- Q.57** Mendel's law of segregation is based on separation of alleles during –
 (A) Gametes formation (B) Seed formation
 (C) Pollination (D) Embryonic development
- Q.58** Disease resistant varieties can be produced by –
 (A) Crossing a plant with wild variety (B) Treating with colchicine
 (C) Crossing with hormones (D) Treating with low temperature
- Q.59** A pure tall plant can be differentiated from a hybrid tall plant –
 (A) By measuring length of plant (B) By spraying gibberellins
 (C) if all plants are tall after self-pollination (D) if all plants are dwarf after self-pollination
- Q.60** In animals sex determination is due to –
 (A) X-chromosome (B) Y-chromosome (C) A-chromosome (D) B-chromosome
- Q.61** The famous book "Origin of species" was written by Charles Darwin in –
 (A) 1809 (B) 1859 (C) 1885 (D) 1871
- Q.62** The term evolution in Biology means that –
 (A) Fossils are old (B) Life began in sea
 (C) Living things constantly change (D) Beagle

- Q.63** Homologous structures have –
 (A) Similar origin but dissimilar functions (B) Dissimilar origin but similar functions
 (C) Dissimilar origin but dissimilar functions (D) Dissimilar origin but dissimilar structures
- Q.64** The idea of “Survival of fittest” was given by –
 (A) Darwin (B) Herbert Spencer (C) Germplasm RNA (D) Somatic DNA
- Q.65** Which one is not a vestigial organ in man –
 (A) Vermiform appendix (B) Plica seminuralis
 (C) Ear muscles (D) Epiglottis
- Q.66** When an organ is used it will develop and if it is not used, it weakens to become vestigial. Who could have said this theory –
 (A) Darwin (B) De-Vries (C) Lamarck (D) Mendel
- Q.67** An experiment to prove that organic compounds were the basis of life, was performed by –
 (A) Oparin (B) Miller (C) Melvin (D) Fox
- Q.68** According to the Neo-Darwinian theory which of the following is responsible for the origin of new species –
 (A) Mutations (B) Useful variations
 (C) Mutations together with natural selection (D) Hybridization
- Q.69** Nucleoprotein gave most probably the first sign of –
 (A) Life (B) Amino acid (C) Soil (D) Sugar
- Q.70** Origin of life is due to –
 (A) Spontaneous generation (B) Will to God
 (D) Effect of sun rays on mud (D) None of the above are correct

EXERCISE - 4

Match the column–

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**.

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

Column I

- (A) $BB \times bb$
 (B) $Bb \times Bb$
 (C) $BB \times BB$
 (D) $b \times bb$

Column II

- (p) 100% Bb
 (q) 25% BB, 50% Bb, 25% bb
 (r) 100% BB
 (s) 100% bb

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

Column I

- (A) fossils
 (B) embryology
 (C) cytology
 (D) DNA evidence

Column II

- (p) The remains of deceased organisms that are studied.
 (q) Comparisons of the early development stages of an organism.
 (r) Comparing and contrasting cell structures found within an organism.
 (s) Comparing and similarities and differences between amino acid sequences in two organisms.

- Q.3** Match the column

Column I

- (A) Erect ape man
 (B) Homosapiens fossils
 (C) Base analogous
 (D) Lamarck

Column II

- (p) Java man
 (q) Cromagnon man
 (r) 5-Bromouracil
 (s) Theory of inheritance of acquired character.

Q.4 Match the column

Column I

- (A) Modified form of Lamarckism
- (B) Variation and evolution in plants
- (C) Germinal selection theory
- (D) Supporter of Lamarck's theory

Column II

- (p) G.L. Stebbins (1950)
- (q) Neo-Lamarckism
- (r) Etienne Geoffroy
- (s) August Weismann

Q.5 Match the column

Column I

- (A) Allopatric speciation
- (B) Bar eye character in drosophila
- (C) Louis pasteur
- (D) Ladder of nature

Column II

- (p) Finches to darwin
- (q) Duplication in X-chromosome
- (r) Swan neck experiment
- (s) Aristotle

ASSERTION & REASON TYPE

Each question contains **STATEMENT-1 (Assertion)** and **STATEMENT-2 (Reason)**. Each question has **5 choices (A), (B), (C), (D) and (E) out of which ONLY ONE is correct.**

- (A) Statement-1 is True, Statement-2 is True; Statement-2 is a correct explanation for Statement-1.
- (B) Statement-1 is True, Statement-2 is True; Statement-2 is NOT a correct explanation for Statement-1.
- (C) Statement -1 is True, Statement-2 is False. (D) Statement -1 is False, Statement-2 is True.
- (E) Statement -1 is False, Statement-2 is False.

Q.6 **Statement 1** : Chromosomes are known as hereditary vehicles.

Statement 2 : The chromosomes are capable of self-reproduction and maintaining morphological and physiological properties through successive generations.

Q.7 **Statement 1** : Ear muscles of external ear in man are poorly developed.

Statement 2 : These muscles are useful which move external ear freely to detect sound efficiently.

Q.8 **Statement 1** : Although living organism always arise from other living organism, life should certainly have had a beginning.

Statement 2 : 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.

Q.9 **Statement 1** : The establishment of reproductive isolations in an event of biological significance.

Statement 2 : In the absence of reproductive isolation species can merge back into single population.

Q.10 **Statement 1** : DNA finger printing is a method in which polymerase chain reaction followed by DNA probe is used.

Statement 2 : A DNA finger print is inherited and therefore, resembles that of parents.

Q.11 **Statement 1** : The birds have large, light spongy bones with air sacs.

Statement 2 : These adaptations help them during flight.

EXERCISE - 5

PREVIOUS YEARS COMPETITION PROBLEMS

Q.1 Term 'genetics' was given by –

- (A) Mendel (B) Morgen (C) Bateson (D) Boveri

Q.2 The resemblance of individuals to their progenitors is called –

- (A) Heredity (B) Genetics (C) Evolution (D) None of these

Q.3 Who out of the following was of the strong opinion that acquired characteristics are inherited –

- (A) Lamarck (B) Lysenko (C) Mendel (D) Huxley

Q.4 A complete set of chromosomes inherited as a unit from one parent, is known as –

- (A) Karyotype (B) Gene pool (C) Genome (D) Genotype

- Q.5** Mendel is famous for his work on –
 (A) Pisum (B) Drosophila (C) Neurospora (D) Oenothera
- Q.6** Mendel chose pea plants because –
 (A) They were cheap (B) They were having seven pairs of contrasting characters
 (C) They were easily available (D) Of great economic importance
- Q.7** An allele is said to be dominant if –
 (A) It is expressed only in heterozygous combination
 (B) It is expressed only in homozygous combination
 (C) It is expressed in both homozygous and heterozygous condition
 (D) It is expressed only in second generation
- Q.8** Which of the following is dominant character according to Mendel –
 (A) Dwarf plant and yellow fruit (B) Terminal fruit and wrinkled seed
 (C) White testa and yellow pericarp (D) Green coloured pod and rounded seed
- Q.9** Mendel formulated some laws which are known as –
 (A) Laws of germplasm (B) Laws of origin of species
 (C) Laws of recapitulation (D) Laws of inheritance
- Q.10** The first law of Mendel –
 (A) Law of inheritance (B) Law of variation
 (C) Law of independent assortment (D) Law of segregation
- Q.11** In Mendelism, linkage was not observed due to –
 (A) Mutation (B) Independent assortment (C) Synapsis (D) Crossing over
- Q.12** Normal maize has starchy seed which remain smooth when dry. A mutant form has sugary seeds which go crinkled when dry. When a mutant was crossed with a normal plant, an F₁ was produced which had smooth seeds. What would be the relative ratios of the different seed types, if the F₁ was allowed to self–
 (A) 1 smooth : 3 sugary (B) 3 smooth : 1 sugary
 (C) 1 smooth : 1 sugary (D) All sugary
- Q.13** If a homozygous red-flowered plant is crossed with a homozygous white-flowered plant, the offspring would be –
 (A) Half red-flowered (B) Half white-flowered (C) All red-flowered (D) Half pink-flowered
- Q.14** When one gene pair hides the effect of the other unit, this phenomenon is referred as –
 (A) Dominance (B) Mutation (C) Epistasis (D) None of the above

EXERCISE - 6

PREVIOUS YEAR BOARD QUESTIONS

- Q.1** What is a gene ?
- Q.2** Write the scientific term used for science of heredity and variation.
- Q.3** Define inheritance.
- Q.4** Name the scientist who proposed the theory of natural selection.
- Q.5** One of the examples of two analogous organs can be the wing of parrot and
 (a) flipper of whale (b) foreleg of horse (c) front leg of frog (d) wings of housefly
- Q.6** What are analogous organs ?
- Q.7** Name the naturalist who put forward the theory of natural selection along with Darwin.
- Q.8** Define the terms : (i) Analogous organs (ii) Sex chromosome
- Q.9** What is meant by analogous organs ? Taking a suitable example, explain how they support the theory of Organic Evolution.
- Q.10** Mention any four details that can be inferred about organisms from their fossils.
- Q.11** What are fossils ? Of what interest are fossils to the evolutionary biologists ?