**Principles of inheritance and variations**

1. Organism of pure line is that which produces individuals of

(a) Dominant characters

(b) Recessive characters

(c) Its own characters

(d) Intermediate type

1. When heterozygous tall plants are self-pollinated, then tall and dwarf plants are obtained. This explains

(a) Law of purity of gamete

(b) Segregation of law

(c) Division in spores

(d) Independent assortment

1. In Mendelism, the linkage was not observed due to

(a) Mutation

(b) Independent assortment

(c) Synapsis

(d) Crossing over

1. From a cross Aa BB × aa BB, which of the following genotypic ratio will be obtained in F1 generation?

(a) 1 Aa BB : 1 aa BB

(b) 1 Aa BB : 3 aa BB

(c) 3 Aa BB : 1 aa BB

(d) All Aa BB : No aa BB

1. In sweet peas, genes C and P are necessary for colour in flowers. The flowers are white in the absence of either or both the genes. What will be the percentage of coloured flowers in the offspring of the cross Cc pp × cc Pp?
2. 100%

(b) 75%

(c) 25%

(d) 50%

1. How many different types of genetically different gametes will be produced by a heterozygous plant having the genotype AABbCc?
2. 2

(b) 4

(c) 6

(d) 9

1. In a plant, red fruit (R) is dominant over yellow fruit (r) and tallness (T) is dominant over shortness (t). If a plant with RRTt genotype is crossed with a plant that is rrtt, then

(a) 75 per cent will be tall with red fruit

(b) All the offspring will be tall with red fruit

(c) 25 per cent will be tall with red fruit

(d) 50 per cent will be tall with red fruit

1. In Mendelian dihybrid cross, how many individuals are homozygous dominant for both the genes in F2 generation?

(a) 1/16

(b) 2/16

(c) 4/16

(d) 6/16

1. If a child has O type of blood group and the father has B type, then the genotype of the father will be

(a) *I OI O*

(b) *I AI B*

(c) *I OI B*

(d) *I BI B*

1. Who discovered X-body but could not explain its significance?
2. Mendel

(b) Morgan

(c) Henking

(d) De vries

1. Male is homogametic in
2. Drosophila

(b) Human

(c) Fowl

(d) All of these

1. Which of the below column A and B represents genes and chromosomes?

A B

1. Occur in pairs. Occur in pairs.

2. Segregate at the time of gamete formation Segregate at the time of gamete

such that only one of each pair is formation and only one of each pair is

transmitted to a gamete. transmitted to a gamete.

3. Independent pairs segregate independently One pair segregates independently

of each other. of another pair.

(a) A: Gene, B: Gene

(b) A: Chromosome, B: Chromosome

(c) A: Gene, B: Chromosome

(d) A: Chromosome. B; Gene

1. The method for analyzing inheritance pattern of traits in human being is

(a) DNA finger printing

(b) Control cross

(c) Pedigree analysis

(d) All of these

1. Predict from the following chart



(a) Character is dominant and carried by x chromosome.

(b) Character is carried by y chromosome.

(c) Character is sex-linked recessive.

(d) Character is autosomal recessive.

1. The pedigree shows the occurrence of albinism which is a recessive trait. If person 4 is homozygous, the carrier for the trait is



(a) 1, 4, 5 and 6

(b) 5 and 6

(c) 1, 2 and 3

(d) 1, 2, 5 and 6

1. Which of the given pedigree shows inheritance of autosomal recessive gene? What is the genotype of given parents?



(a) AA, aa

(b) Aa, AA

(c) aa, aa

(d) Aa, Aa

1. Failure of segregation of chromatids during cell division cycles results in the gain or loss of a chromosome(s) called

(a) Aneuploidy

(b) Polyploidy

(c) Trisomy

(d) Nullisomy

1. Gynaecomastia is seen in case of

(a) Down’s syndrome

(b) Klinefelter’s syndrome

(c) Turner’s syndrome

(d) All of these

1. Langdon down described Down’s syndrome in which year

(a) 1866

(b) 1890

(c) 1852

(d) 1953

1. Which of the following is genetically dominant in man?

(a) Colour blindness

(b) *Rh* positive

(c) Haemophilia

(d) Albinism

1. Which karyotype present monosomy?

(a) 2n + 1

(b) 2n – 2

(c) 2n – 1

(d) 2n + 2

1. Find out the total number of Mendelian disorder from the following: *Cystic Fibrosis, Haemophilia, Sickle cell anaemia, Colour blindness, Thalessemia, Phenylketonuria*

(a) 4

(b) 5

(c) 6

(d) 3

1. Which enzyme is defective in PKU?

(A) DOPA Enzyme (A) Melanin

(B) Tyrosine Enzyme (B) Thyroxin

(C) Phenylalanine Enzyme (C) Tyrosine

(D) Tyrosine Enzyme (D) Homogentisic acid

(a) Enzyme (A)

(b) Enzyme (B)

(c) Enzyme (C)

(d) Enzyme (D)

1. Probability of which of the following is extremely rare?

(a) Carrier female in haemophilia

(b) Carrier male in haemophilia

(c) Affected male in haemophilia

(d) Affected female in haemophilia

1. Diseased phenotype in sickle cell anaemia is shown by which of the following genotype?

(a) *HbA HbA*

(b) *HbS HbS*

(c) *HbA HbS*

(d) All of above

1. Variation in DNA is due to

(a) Mutation

(b) Recombination

(c) Both (a) and (b)

(d) None of these

1. Find out the correct statement.

(a) UV radiation can cause mutation in organism.

(b) Chromosomal aberration are commonly observed in cancer cells.

(c) Mutation is a phenomenon which results in the alteration of DNA sequences and

results in changes in the genotype and the phenotype of an organism.

(d) All the above

1. A pleiotropic gene is one which

(a) Affects one character

(b) Affects more than one characters

(c) Both (a) and (b)

(d) None of these

1. The shape of seed depends on starch granules size; so inheritance of seed shape shows

\_\_\_\_\_\_\_\_ relationship, while inheritance of starch grains show \_\_\_\_\_\_\_\_.

(a) Dominant recessive, codominance

(b) Incomplete dominance, codominance

(c) Dominant-recessive, incomplete dominance

(d) Codominance, incomplete dominance

1. If yellow body, white eyed drosophila is crossed with wild brown body red eyes drosophila. Then what would be the frequency of recombinants in F1 generation?

(a) 100%

(b) 1.3%

(c) 98.7%

(d) 0%