DPP MCQ TERM I CLASS XII BIOLOGY – Principles of Inheritance & Variation

Q. 1. The genotype of a plant showing the dominant
phenotype can be determined by :
(A) test cross **(B)** dihybird cross
(C) pedigree analysis **(D)** back cross.

Q. 2. F2 generation in a Mendelian cross showed that both genotypic and phenotypic ratios are same as 1 : 2 : 1. It represent a case of :
(A) Co-dominance
(B) Dihybrid cross
(C) Monohybrid cross with incomplete dominance
(D) Monohybrid cross with complete dominance

Q. 3. Which of the following pairs is wrongly matched.

(A) Starch synthesis in pea : Multiple alleles
(B) ABO blood grouping : Co-dominance
(C) Flower colour in Snapdragon : Incomplete dominance
(D) T.H. Morgan : Linkage

Q. 4. A cross between two tall plants resulted in offspring having few dwarf plants. What would be the genotypes of both the parents?
(A) TT and Tt
(B) Tt and Tt
(C) TT and TT
(D) Tt and tt

Q. 5. Person having genotype IA IB would show the blood group as AB. This is because of
(A) pleiotropy.
(B) co-dominance.
(C) segregation.
(D) incomplete dominance.

Q. 12. ZZ / ZW type of sex determination is seen in
(A) Platypus **(B)** snails.
(C) cockroach **(D)** peacock

Q. 13. In a certain taxon of insects some have 17 chromosomes and the others have 18 chromosomes. The 17 and 18 chromosome-bearing organisms are
(A) males and females, respectively.
(B) females and males, respectively.
(C) all males.
(D) all females.

Q. 14. What is the genetic disorder in which an individual has an overall masculine development, Gynaecomastia, and is sterile ?
(A) Turner's syndrome
(B) Klinefelter's syndrome
(C) Down's syndrome
(D) Edward syndrome

Q. 15. A woman has an X-linked condition on one of her X-chromosomes. This chromosome can be inherited by
(A) only daughters
(B) both sons and daughters
(C) only grandchildren
(D) only sons

Q. 16. A human female with Turner's syndrome.
(A) has 45 chromosome with XO.
(B) has one additional X chromosome
(C) exhibits male characters.
(D) is able to produce children with normal husband

Q. 17. In XO type of sex determination
(A) males produce two different types of gametes
(B) females produce two different types of gametes
(C) males produce gametes with Y chromosome.
(D) females produce gametes with Y chromosome

Q. 18. In sickle cell anaemia glutamic acid is replaced by valine. Which one of the following triplets codes for
valine?
(A) G G G **(B)** A A G
(C) G A A **(D)** G U G

(MCQ) TERM 1 www.newtongateacademy.com

Q. 19. If a genetic disease is transferred from a phenotypically normal but carrier female to only some of the male progeny, the disease is
(A) autosomal dominant.
(B) autosomal recessive.
(C) sex-linked dominant.
(D) sex-linked recessive.

Q. 20. Conditions of a karyotype 2n ± 1 and 2n ± 2 are called
(A) aneuploidy.
(B) polyploidy.
(C) allopolyploidy.
(D) monosomy.

Directions : 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.

Q. 1. Assertion (A) : Haemophilia is an autosomal
disorder.
Reason (R) : A haemophilic father can never pass the gene for haemophilia to his son.

Q. 2. Assertion (A) : Sickle cell anaemia is an example
of point mutation.
Reason (R) : It is caused by addition or deletion of
nitrogenous bases in the DNA or mRNA.

Q. 3. Assertion (A) : Grasshopper shows male heterogamety.
Reason (R) : In grasshopper, males have one X only
(XO type).

Q. 4. Assertion (A) : The offspring of a cross made
between the plants having two contrasting characters shows only one character without any blending.
Reason (R): The factor controlling any character is
discrete and independent.

Q. 5. Assertion (A) : Cross of F1 individual with recessive
homozygous parent is test cross.
Reason (R) : No recessive individual are obtained in
the monohybrid test cross progeny.

Q. 6. Assertion (A) : ABO blood group in human being is an example of multiple allelism.
Reason (R) : It has three alleles for the gene 1 *i.e.* IA,
IB, *i*.

Q. 7. Assertion (A) : A cross between a red flowerbearing
plant and a white flower-bearing plant of *Antirrhinum* is a case of incomplete dominance.
Reason (R) : This type of cross produces all plants
having pink flowers.

Q. 8. Assertion (A) : Crossing of F1 hybrid with the
recessive parent is known as test cross.
Reason (R) : Test cross helps to determine the unknown genotype by crossing it with the recessive
parent.

Q. 9. Assertion (A) : The frequency of red-green colour
blindness is many times higher in females than that
in males.
Reason (R) : In females if only one X-chromosome

(MCQ) TERM 1
www.newtongateacademy.com

of female possess allele for colour blind character she becomes the colour blind.

Q. 10. Assertion (A) : The chances of having a child with
Down's syndrome increases if the age of the mother
is between 20 to 25.
Reason (R) : The chances of having a child with Downs syndrome increases with the age of the mother because age adversely affects meiotic chromosome behaviour.

Attempt any four sub-parts from each question.
Each question carries 1 mark.
I. Read the following text and answer the following
questions on the basis of the same :
Down syndrome (sometimes called Down's syndrome) is a condition in which a child is born with an extra copy of their 21st chromosome hence
its other name, trisomy 21. The affected individual mental retarded, short statured with small round, head, furrowed tongue and partially open mouth, Physical, psychomotor and mental development is retarded.
Q. 1. The number of chromosomes a child with Down syndrome has is
(A) 45 **(B)** 46
(C) 47 **(D)** 48

Q. 2. Down syndrome is
(A) Sex-linked **(B)** Chromosomal
(C) dominant **(D)** recessive

Q. 3. One of this trait is seen in a person with Down syndrome
(A) Upward slant eye **(B)** Baldness
(C) Short stature **(D)** Long neck

Q. 4. Down Syndrome is an extra copy which chromosome
(A) 22nd chromosome
(B) 21st chromosome
(C) 45th chromosome
(D) 47th chromosome

Q. 5. Down syndrome is caused due to
(A) bacterial infection
(B) a chromosomal abnormality lack of oxygen supply to the brain during birth
(C) Viral infection
(D) a chromosomal abnormality

II. Read the following text and answer the following
questions on the basis of the same :
Sickle cell anaemia is a genetic disorder where the body produces an abnormal haemoglobin called haemoglobins. Red blood cells are normally flexible
and round, but when the haemoglobin is defective, blood cells take on a "sickle" or crescent shape. Sickle cell anaemia is caused by mutations in a gene
called HBB.
It is an inherited blood disorder that occurs if both the maternal and paternal copies of the HBB gene are defective. In other words, if an individual receives just one copy of the defective HBB gene, either from mother or father, then the individual has no sickle cell anaemia but has what is called "sickle cell trait". People with sickle cell trait usually
do not have any symptoms or problems but they can pass the mutated gene onto their children. Three inheritance scenarios can lead to a child having sickle cell anaemia :
— Both parents have sickle cell trait
— One parent has sickle cell anaemia and the other has sickle cell trait
— Both parents have sickle cell anaemia
Q. 1. Sickle cell anaemia is a/an
_____
disease.
(A) X linked **(B)** autosomal dominant
(C) autosomal recessive **(D)** Y linked
.
Q. 2. If both parents have sickle cell trait, then there
is _____of the child having sickle cell anaemia.

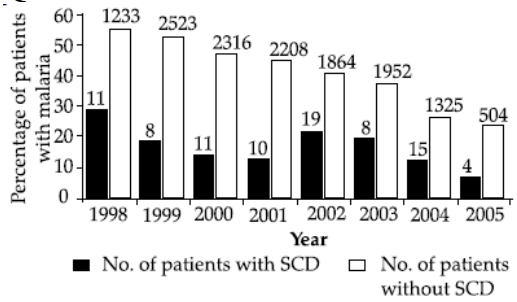
(MCQ) TERM 1 www.newtongateacademy.com

(A) 25 % risk **(B)** 50 % risk
(C) 75% risk **(D)** No risk

Q. 3. If both parents have sickle cell trait, then there is _____of the child having sickle cell trait.
(A) 25 % risk **(B)** 50 % risk
(C) 75% risk **(D)** No risk

Q. 4. If one parent has sickle cell anaemia and the other has sickle cell trait, there is _____that their children will have sickle cell anaemia and _____will have sickle cell trait.
(A) 25 % risk, 75% risk **(B)** 50 % risk, 50% risk
(C) 75% risk, 25% risk **(D)** No risk

Q. 5.



The following statements are drawn as conclusions from the above data (Kenya).

I. Patients with SCD (Sickle Cell Disease) are less likely to be infected with malaria.
II. Patients with SCD (Sickle Cell Disease) are more likely to be infected with malaria.
III. Over the years the percentage of people infected with malaria has been decreasing.
IV. Year 2000 saw the largest percentage difference between malaria patients with and without SCD.

Choose from below the correct alternative.

(a) only I is true (b) I and IV are true
(c) III and II are true (d) I and III are true

(MCQ) TERM -1 www.newtongateacademy.com