RAVI MATHS TUITION CENTER , CHENNAI- 82. WHATSAPP - 8056206308

Heredity And Evolution MCQ TEST

10th Standard

Science

46 x 1 = 46

1) 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

2) 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

3) In evolutionary terms, we have more in common with

(a) A Chinese school-boy. (b) A chimpanzee (c) A spider (d) A bacterium

4) Exchange of genetic material takes place in

(a) vegetative reproduction (b) asexual reproduction (c) sexual reproduction (d) budding

5) Two pink coloured flowers on crossing resulted in 1 red, 2 pink and 1 white flower progeny. The nature of the cross will be

(a) double fertilisation (b) self pollination (c) cross fertilisation (d) no fertilisation

6) A cross between a tall plant (TT) and short pea plant (tt) resulted in progeny that were all tall plants because

(a) tallness is the dominant trait (b) shortness is the dominant trait (c) tallness is the recessive trait

(d) height of pea plant is not governed by gene 'T' or 't'

7) Which of the following statement is incorrect?

(a) For every hormone there is a gene (b) For every protein there is a gene

(c) For production of every enzyme there is a gene. (d) For every molecule of fat there is a gene.

8) If a round, green seeded pea plant (RR yy) is crossed with wrinkled, yellow seeded pea plant, (rr YY) the seeds produced in FI generation are

(a) round and yellow (b) round and green (c) wrinkled and green (d) wrinkled and yellow

9) In human males all the chromosomes are paired perfectly except one. This/these unpaired chromosome is/are.

(i) large chromosome
(ii) small chromosome
(iii) Y - chromosome
(iv) X - chromosome

(a) (i) and (ii) (b) (iii) only (c) (iii) and (iv) (d) (ii) and (iv)

10) The maleness of a child is determined by

(a) the X chromosome in the zygote (b) the Y chromosome in zygote

(c) the cytoplasm of germ cell which determines the sex. (d) sex is determined by chance

11) A zygote which has an X - chromosome inherited from the father will develop into a

(a) boy (b) girl (c) X - chromosome does not determine the sex of a child (d) either boy or girl

12) Select the incorrect statement

(a) Frequency of certain genes in a population change over several generations resulting in evolution.

(b) Reduction in weight of the organism due to starvation is genetically controled.

(c) Low weight parents can have heavy weight progeny

(d) Traits which are not inherited over generations do not cause evolution.

13) New species may be formed if
(i) DNA undergoes significant changes in germ cells
(ii) chromosome number changes in the gamete
(iii) there is no change in the genetic material
(iv) mating does not take place

(a) (i) and (ii) (b) (i) and (iii) (c) (ii), (iii) and (iv) (d) (i), (ii) and (iii)

14) Two pea plants one with round green seeds (RRyy) and another with wrinkled yellow (rrYY) seeds produce F_1 progeny that have round, yellow (RrYy) seeds. When F_1 plants are selfed, the F_2 progeny will have new combination of characters. Choose the new combination from the following:
(i) Round, yellow
(ii) Round, green
(iii) Wrinkled, yellow
(iv) Wrinkled, green

(a) (i) and (ii) (b) (i) and (iv) (c) (ii) and (iii) (d) (i) and (iii)

15) A basket of vegetables contains carrot, potato, radish and tomato. Which of them represent the correct homologous structures?

(a) Carrot and potato (b) Carrot and tomato (c) radish and carrot (d) radish and potato

16) Select the correct statement

(a) Tendril of a pea plant and phylloclade of Opuntia are homologous.

(b) Tendril of a pea plant and phylloclade of Opuntia are analogous

(c) Wings of birds and limbs of lizards are analogous

(d) Wings of birds and wings of bat are homologous

17) From the list given below, select the character which can be acquired but not inherited

(a) colour of eye (b) colour of skin (c) size of body (d) nature of hair

18) The two versions of a trait (character) which are brought in by the male and female gametes are situated on

(a) copies of the same chromosome (b) two different chromosomes (c) sex chromosomes

(d) any chromosome

19) Select the statements that describe characteristics of genes
(i) genes are specific sequence of bases in a DNA molecule
(ii) a gene does not code for proteins
(iii) in individuals of a given species, a specific gene located on a particular chromosome
(iv) each chromosome has only one gene.

(a) (i) and (ii) (b) (i) and (iii) (c) (i) and (iv) (d) (ii) and (iv)

20) In peas, a pure tall plant (TT) is crossed with a short plant (tt). The ratio of pure tall plants to short plants in F_2 is

(a) 1 : 3 (b) 3 : 1 (c) 1 : 1 (d) 2 : 1

21) The number of pair (s) of sex chromosomes in the zygote of humans is

(a) one (b) two (c) three (d) four

22) The theory of evolution of species by natural selection was given by

(a) Mendel (b) Darwin (c) Morgan (d) Lamarck

23) Some dinosaurs had feathers although they could not fly but birds have feathers that help them to fly. In the context of evolution this means that

(a) reptiles have evolved from birds (b) there is no evolutionary connection between reptiles and birds

(c) feathers are homologous structures in both the organisms (d) birds have evolved from reptiles.

24) Which one of the following is not one of the direct conclusions that can be drawm from Mendel's experiment?

(a) Only one parental trait is expressed

(b) Two copies of each trait is inherited in sexually reproducing orgainsm

(c) For recessive trait to be expressed, both copies should be identical

(d) Natural selection can alter frequency of an inherited trait

25) Which one is a possible progeny in F_2 generation of pure breed tall plant with round seed and short plant with wrinkled seeds?

(a) Tall plant with round seeds (b) Tall plant with wrinkled seeds (c) Short plant with round seed

(d) All of the above

26) A section of DNA providing information for one protein is called

(a) Nucleus (b) Chromosomes (c) Trait (d) Gene

27) Which of the following is a totally impossible outcome of Mendel's Experiment (cross breeding pure breed tall and short pea plants)

(a) 3 tall 1 short plant (b) 24 tall and 8 short plants (c) 8 tall and 0 short plants

(d) 4 tall plants and 1 medium-height plant.

28) Which of the following is controlled by genes?

(i) Weight of a person (ii) Height of a person

(a) only 1 (i) (b) only (ii) (c) both (i) and (ii) (d) Sometimes (i) and sometimes (ii)

29) Which one of the following is present in the nucleus?

(a) Gene (b) DNA (c) Chromosomes (d) All of these

30) Amongst which of the following animals, sex of the offsprings not genetically determined

(a) Humans (b) Snails (c) Birds (d) Dogs

31) What is the probability that a human progeny will be a boy

(a) 50% (b) 56% (c) 47.34% (d) It varies

32) Who have a perfect pair of sex chromosomes

(a) Girls only (b) Boys only (c) Both girls and boys (d) It depends on many other factors

33) There is an inbuilt tendency of variation during reproduction because of-

(i) Errors in DNA copying (ii) Sexual reproduction

(a) only (i) (b) only (ii) (c) both (i) and (ii) (d) none of them

34) Which one of the following gives a survival advantage and thus alters frequency of inherited trait.

(i) natural selection (ii) genetic drift

(a) only (i) (b) only (ii) (c) both (i) and (ii) (d) none of these

35) If we breed a group of squirrels and surgically remove their tails, then amongst the progeny of these tailless squirrels

(a) All have no tail (b) All have a tail (c) Some of them have tails (d) Cannot be determined

36) With whom we associate theory of evolution

(a) Charles Darwin (b) Mendel. (c) Stanley Miller (d) Harold Urey

37) Formation of 2 independent species due to genetic drift, geographical isolation, natural selection is specifically referred as-

(a) Evolution (b) Classification (c) Speciation (d) Reproduction

38) Which of the following can be called a characteristic?

(a) Plants can photosynthesise (b) We have 2 eyes (c) Mango tree is multicellular (d) All of these

39) If A and B have n characteristics common while A and C have n/2 characteristics common, then which of the two organisms are more closely related?

(a) A and C (b) A and B (c) Characteristics need to be known (d) None of these

40) Homologous organs have

(a) Same structure, same function (b) Different structure, different function

(c) Same structure, different function (d) Same function, different structure

41) Analogous organs have

(a) Same structure, same function (b) Different structure, different function

(c) Same structure, different function (d) Same function, different structure

42) Fossils helps

(a) To study evolution (b) To understand climatic conditions in past

(c) For a hierarchy of organisms (classification (d) They help in all the above

43) How can we know how old fossils are:

(a) Fossils found closer to surface are recent than those found much below

(b) Detecting ratios of isotopes (c) Studying its characteristics (d) All of these

44) Which one of the following strongly indicates that bird and dinosaurs are closely related?

(a) They both have feathers (b) They both respire (c) They both reproduce (d) They both have eyes

45) Wild cabbage is being cultivated for thousands of years and humans have generated broccoli, cauliflower, kala etc. from it. This is an example of

(a) Natural selection (b) Genetic drift (c) Geographic isolation (d) Artificial selection

46) Organism A recently carne into existence while B was formed millions of years ago. What does this indicate?

(i) A is more efficient than B (ii) A is more complex than B.

(a) Only (i) (b) Only (ii) (c) Both (i) and (ii) (d) Either (i) or (ii)

28 x 1 = 28

47) **Assertion:** Every germ cell will take one chromosome from each pair of parents.

Reason: These chromosomes may be either from maternal or paternal origin.

Codes

(a) If both assertion and reason are true and the reason is correct explanation of assertion.

(b) If both assertion and reason are true but reason is not a correct explanation of assertion.

(c) If assertion is true and reason is false.

(d) If both assertion and reason are false.

48) **Assertion:** Women has perfect pairs of chromosomes

Reason: Men has mismatched pair of chromosomes.

Codes

(a) If both assertion and reason are true and the reason is correct explanation of assertion.

(b) If both assertion and reason are true but reason is not a correct explanation of assertion.

(c) If assertion is true and reason is false.

(d) If both assertion and reason are false.

49) **Assertion:** Natural selection in a population of organisms leads to variation.

Reason: It results in adaptations in the population of organisms to fit their environment better.

Codes

(a) If both assertion and reason are true and the reason is correct explanation of assertion.

(b) If both assertion and reason are true but reason is not a correct explanation of assertion.

(c) If assertion is true and reason is false.

(d) If both assertion and reason are false.

50) **Assertion:** The beetles reduced in size due to starvation for many generations.

Reason: This leads to evolution of beetles.

Codes

(a) If both assertion and reason are true and the reason is correct explanation of assertion.

(b) If both assertion and reason are true but reason is not a correct explanation of assertion.

(c) If assertion is true and reason is false.

(d) If both assertion and reason are false.

51) **Assertion:** Evolution took place due to natural selection

Reason: This also leads to variations which is seen in the species.

Codes

(a) If both assertion and reason are true and the reason is correct explanation of assertion.

(b) If both assertion and reason are true but reason is not a correct explanation of assertion.

(c) If assertion is true and reason is false.

(d) If both assertion and reason are false.

52) **Assertion:** Darwin's theory of evolution tells us how life evolved from simple to more complex forms.

Reason: Mendel's experiments give us the mechanism for the inheritance of traits from one generation to the next.

Codes

(a) If both assertion and reason are true and the reason is correct explanation of assertion.

(b) If both assertion and reason are true but reason is not a correct explanation of assertion.

(c) If assertion is true and reason is false.

(d) If both assertion and reason are false.

53) **Assertion:** A DNA can change the number of chromosomes in it.

Reason: Two cells with different number of nucleus cannot fuse.

Codes

(a) If both assertion and reason are true and the reason is correct explanation of assertion.

(b) If both assertion and reason are true but reason is not a correct explanation of assertion.

(c) If assertion is true and reason is false.

(d) If both assertion and reason are false.

54) **Assertion**: A green beetle cannot reproduce with the red beetle.

Reason: .The beetles of different colours have different number of chromosomes

Codes

(a) If both assertion and reason are true and the reason is correct explanation of assertion.

(b) If both assertion and reason are true but reason is not a correct explanation of assertion.

(c) If assertion is true and reason is false.

(d) If both assertion and reason are false.

55) **Assertion**: In humans, height is a trait which shows variation.

Reason: Some humans are very tall, some have medium height whereas others are short heighted.

Codes:

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

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

(c) A is true but R is false

(d) A is false but R is true.

56) **Assertion:** Accumulation of variation in a species increases the chances of its survival in changing environment.

Reason: Accumulation of heat resistance in some bacteria ensure their survival even when temperature in environment rises too much.

Codes:

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

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

(c) A is true but R is false

(d) A is false but R is true.

57) **Assertion:** Traits like tallness and dwarfness in pea plant are inherited independently.

Reason: When a homozygous tall pea plant is crossed with dwarf pea plant, medium sized pea plant is obtained in F_1 generation.

Codes:

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

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

(c) A is true but R is false

(d) A is false but R is true.

58) **Assertion**: Pea plant is considered ideal for hybridisation experiments.
Reason: Pea is self pollinating plant with short life cycle and bears visible contrasting traits.
Codes:
(a) Both A and R are true and R is correct explanation of the assertion
(b) Both A and R are true but R is not the correct explanation of the assertion
(c) A is true but R is false
(d) A is false but R is true.

59) **Assertion:** Monohybrid cross deals with inheritance of one pair of contrasting characters.
Reason: Dihybrid cross deals with inheritance of two pairs of contrasting characters.
Codes:
(a) Both A and R are true and R is correct explanation of the assertion
(b) Both A and R are true but R is not the correct explanation of the assertion
(c) A is true but R is false
(d) A is false but R is true.

60) **Assertion:** When pea plants (pureline) having round yellow seeds are crossed with pureline plants having wrinkled green seeds, then all pea plants obtained in F_1 generation bear wrinkled green seeds.
Reason: Round and yellow seeds are dominant to wrinkled and green seeds.
Codes:
(a) Both A and R are true and R is correct explanation of the assertion
(b) Both A and R are true but R is not the correct explanation of the assertion
(c) A is true but R is false
(d) A is false but R is true.

61) **Assertion:** If blood group of both mother and father is 'O' then the blood group of children will also be O.
Reason: Blood group in humans is determined by many alleles of a gene viz. $I^{A,}$ I^{B}, I^{O}.
Codes:
(a) Both A and R are true and R is correct explanation of the assertion
(b) Both A and R are true but R is not the correct explanation of the assertion
(c) A is true but R is false
(d) A is false but R is true.

62) **Assertion:** In some reptiles, the temperature at which fertilised egg is incubated before hatching plays a role in determining sex of offspring.
Reason: In turtle, high incubation temperature above 33°C leads to development of female offspring whereas in lizards high incubation temperature results in male offspring.**Codes:**
(a) Both A and R are true and R is correct explanation of the assertion
(b) Both A and R are true but R is not the correct explanation of the assertion
(c) A is true but R is false
(d) A is false but R is true.

63) **Assertion:** In humans, male (or father) is responsible for sex of the baby which is born.
Reason: Y chromosomes are present in only male gametes or sperms.
Codes:
(a) Both A and R are true and R is correct explanation of the assertion
(b) Both A and R are true but R is not the correct explanation of the assertion
(c) A is true but R is false
(d) A is false but R is true.

64) **Assertion:** If mother is homozygous for black hair and father has red hair then their child can inherit black hair.
Reason: Gene for black hair is recessive to gene for red hair in humans.
Codes:
(a) Both A and R are true and R is correct explanation of the assertion
(b) Both A and R are true but R is not the correct explanation of the assertion
(c) A is true but R is false
(d) A is false but R is true.

65) **Assertion:** Selfing of a plant for several generations helps plant breeders to obtain pure breeding varieties.
Reason: Pure breeding plants are heterozygous for many traits.
Codes:
(a) Both A and R are true and R is correct explanation of the assertion
(b) Both A and R are true but R is not the correct explanation of the assertion
(c) A is true but R is false
(d) A is false but R is true.

66) **Assertion:** A tall plant which always produces tall offsprings is considered heterozygous for height and is represented by genotype (Tt).
Reason: A tall plant which always produces tall offspring is homozygous dominant and will always produce only one type of gamete (T).
Codes:
(a) Both A and R are true and R is correct explanation of the assertion
(b) Both A and R are true but R is not the correct explanation of the assertion
(c) A is true but R is false
(d) A is false but R is true.

67) **Assertion:** A geneticist crossed two plants and got 50% tall and 50% dwarf progenies.
Reason: This cross follows Mendelian law as one of the parent plant might be heterozygous.
Codes:
(a) Both A and R are true and R is correct explanation of the assertion
(b) Both A and R are true but R is not the correct explanation of the assertion
(c) A is true but R is false
(d) A is false but R is true.

68) **Assertion:** A heterozygous tall plant when crossed with homozygous dwarf plant will produce tall and dwarf plants in the ratio of 3 : 1.
Reason: A heterozygous tall plant will produce two types of gametes, i.e., one with T and other with t whereas homozygous dwarf plant produce all gametes with t only.
Codes:
(a) Both A and R are true and R is correct explanation of the assertion
(b) Both A and R are true but R is not the correct explanation of the assertion
(c) A is true but R is false
(d) A is false but R is true.

69) **Assertion:** In human males all the chromosomes are perfectly paired except X and Y chromosomes.
Reason: X and Y are sex chromosomes.
Codes:
(a) Both A and R are true and R is correct explanation of the assertion
(b) Both A and R are true but R is not the correct explanation of the assertion
(c) A is true but R is false
(d) A is false but R is true.

70) **Assertion:** A child which has inherited X chromosome from father will develop into a girl child.
Reason: Girl child inherits X chromosome from father and Y chromosome from mother.
Codes:
(a) Both A and R are true and R is correct explanation of the assertion
(b) Both A and R are true but R is not the correct explanation of the assertion
(c) A is true but R is false
(d) A is false but R is true.

71) **Assertion:** Genes present in every cell of an organism control the traits of the organisms.
Reason: Gene is specific segment of DNA occupying specific position on a chromosome.
Codes:
(a) Both A and R are true and R is correct explanation of the assertion
(b) Both A and R are true but R is not the correct explanation of the assertion
(c) A is true but R is false
(d) A is false but R is true.

72) **Assertion:** In grasshoppers, females are heterogametic and males are homogametic.
Reason: In grasshoppers, male has only one sex chromosome (XO) whereas the female has sex chromosomes (XX).
Codes:
(a) Both A and R are true and R is correct explanation of the assertion
(b) Both A and R are true but R is not the correct explanation of the assertion
(c) A is true but R is false
(d) A is false but R is true.

73) **Assertion:** Round green seeds in pea can be represented by RRyy of Rryy.
Reason: Round yellow seeds and green wrinkled seeds are parental combinations whereas round green and wrinkled yellow are recombinants.
Codes:
(a) Both A and R are true and R is correct explanation of the assertion
(b) Both A and R are true but R is not the correct explanation of the assertion
(c) A is true but R is false
(d) A is false but R is true.

74) **Assertion:** If mother has two dominant alleles for black hair and father has two recessive alleles for blonde hair then their child will inherit one dominant allele from mother and one recessive allele from father and will have black hair.
Reason: Progeny inherits one genes for each trait from its parents but the trait shown by progeny depends on inherited alleles.
Codes:
(a) Both A and R are true and R is correct explanation of the assertion
(b) Both A and R are true but R is not the correct explanation of the assertion
(c) A is true but R is false
(d) A is false but R is true.

10 x 4 = 40

75) Sex determination is the method by which distinction between males and females is established in a species. The sex of an individual is determined by specific chromosomes. These chromosomes are called sex chromosomes or allosomes. X and Y chromosomes are called sex chromosomes. The normal chromosomes other than the sex chromosomes of an individual are known as autosomes.
(i) In XX-XO type of sex determination
(a) females produce two different types of gametes
(b) males produce two different types of gametes
(c) females produce gametes with Y chromosome
(d) males produce gametes with Y chromosome.
(ii) A couple has six daughters. What is the possibility of their having a girl next time?
(a) 10% **(b) 50%**
(c) 90% **(d) 100%**
(iii) Number of autosomes present in liver cells of a human female is
(a) 22 autosomes **(b) 22 pairs**
(c) 23 autosomes **(d) 23 pairs.**
(iv) XX-XO type of sex determination and XX-XY type of sex determination are the examples of
(a) male heterogamety **(b) female heterogamety**
(c) male homogamety **(d) both (b) and (c).**
(v) Select the incorrect statement.
(a) In male grasshoppers, 50% of sperms have no sex chromosome
(b) Female fruitfly is heterogametic
(c) Human male produces two types of sperms 50% having X chromosome and 50% having Y chromosomes
(d) In turtle, sex determination is regulated by environmental factors.

76) Gregor Mendel conducted hybridisation experiments on garden peas for seven years and proposed the laws of inheritance in living organisms. He investigated characters in the garden pea plant that were manifested as two opposing traits, e.g., tall or dwarf plants, yellow and green seeds, etc.

(i) Among the seven pairs of contrasting traits in pea plant as studied by Mendel, the number of traits related
to flower, pod and seed respectively were

(a) 2,2,2 **(b) 2,2,1**

(c) 1,2,2 **(d) 1,1,2.**

(ii) The colour based contrasting traits in seven contrasting pairs, studied by Mendel in pea plant were

(a) 1 **(b) 2**

(c) 3 **(d) 4.**

(iii) Refer to the given table of contrasting traits in pea plants studied by Mendel.

Character	Dominant trait	Recessive trait
(i) Seed colour	 Yellow	 Green
(ii) Flower colour	 Violet	 White
(iii) Pod shape	 Full	 Constricted
(iv) Flower position	 Axial	 Terminal

Which of the given traits is correctly placed?

(a) (i), (ii) and (iii) only

(b) (ii), (iii) and (iv) only

(c) (ii) and (iii) only

(d) (i), (ii), (iii) and (iv)

(iv) Some of the dominant traits studied by Mendel were

(a) round seed shape, green seed colour and axial flower position

(b) terminal flower position, green pod colour and inflated pod shape

(c) violet flower colour, green pod colour and round seed shape

(d) wrinkled seed shape, yellow pod colour and axial flower position.

(v) Which of the following characters was not chosen by Mendel?

(a) Pod shape **(b) Pod colour**

(c) Position of flower **(d) Position of pod**

77) Mendel crossed tall and dwarf pea plants to study the inheritance of one gene. He collected the seeds produced as a result of this cross and grew them to generate plants of the first hybrid generation which is called the first filial progeny or F_1: Mendel then self pollinated the tall F_1 plants and he obtained F_2 generation.

(i) In garden pea, round shape of seeds is dominant over wrinkled shape. A pea plant heterozygous for round shape of seed is selfed and 1600 seeds produced during the cross are subsequently germinated. How many seedlings would have non-parental phenotype?

(a) 1600 **(b) 1200**

(c) 400 **(d) 800**

(ii) If 'A' represents the dominant gene and 'a' represents its recessive allele, which of the following would be the most likely result in the first generation offspring when Aa is crossed with aa ?

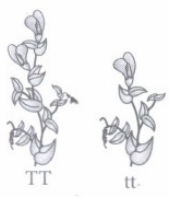
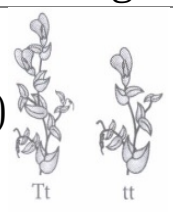
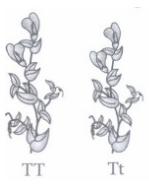
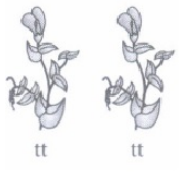
(a) All will exhibit dominant phenotype.

(b) All will exhibit recessive phenotype.

(c) Dominant and recessive phenotypes will be 50% each.

(d) Dominant phenotype will be 75%.

(iii) Which of the following crosses will give tall and dwarf pea plants in same proportions?

A) 	B) 
c) 	D) 

(iv) What result Mendel would have got, if he self pollinated a homozygous tall F_2 plant?

(a) TT and Tt

(b) All Tt

(c) All TT

(d) All tt

(v) In plant, tall phenotype is dominant over dwarf phenotype, and the alleles are designated as T and t, respectively. Upon crossing one tall and one dwarf plant, total 250 plants were obtained, out of which 124 displayed tall phenotype and rest were dwarf. Thus, the genotype of the parent plants were

(a) TT x TT

(b) TT x tt

(c) Tt x Tt

d) Tt x tt.

78) The cross that include the inheritance of two pairs of contrasting characters simultaneously is referred as dihybrid cross. Mendel chose pure breeding plants for yellow and green seeds and round and wrinkled shape of seeds. He cross pollinated the plant having yellow round seeds with plant having green wrinkled seeds. All the plants produced in F_1 generation were having, yellow round seeds. The plants raised from these seeds were self pollinated, that resulted in production of plants having four phenotypically different types of seeds.

(i) When a cross is made between a yellow round seeded plant (YyRr) and a yellow wrinkled seeded plant (Yyrr), what is true regarding the proportions of phenotypes of the offsprings in F_1 generation?

	Proportion of yellow wrinkled seeds	**Proportion of green wrinkled seeds**
(a)	**3/8**	**1/8**
(b)	**2/8**	**1/8**
(c)	**1/8**	**3/8**
(d)	**2/8**	**2/8**

(ii) How many types of gametes can be produced by YYrr?

(a) 1 **(b) 2**
(c) 3 **(d) 4**

(iii) In Mendelian dihybrid cross, when heterozygous tall plant with green seeds are self crossed the progenies are

(a) TtYy, TtYY, TTYy **(b) Ttyy, TTyy, ttyy**
(c) ttYy, ttyy **(d) Ttyy, TTyy**

(iv) When round yellow seeded heterozygous pea plants are self fertilised, the frequency of occurrence of RrYY genotype among the offsprings is

(a) 9/16 **(b) 3/16**
(c) 2/16 **(d) 1/16.**

(v) The percentage of yr gamete produced by YyRr parent will be

(a) 25% **(b) 50%**
(c) 75% **(d) 12.5%.**

79) In human, the allele for brown eyes (B) is dominant over that for blue eyes (b). A brown eyed woman marries a blue eyed man, and they have six children. Four of the children are brown eyed and two of them are blue eyed.

(i) What is the genotype of blue eyed offspring?

(a) BB **(b) Bb**
(c) bb **(d) Cannot be determined**

(ii) What is the woman's genotype?

(a) BB **(b) Bb**
(c) bb **(d) Cannot be determined**

(iii) The ovum, produced by the mother carries the gene regarding eye colour is

(a) BB **(b) Bb**
(c) B or b **(d) B only.**

(iv) The ratio of brown eyed children to blue eyed children in this family is 2 : 1, which deviates from typical phenotypic ratios for monohybrid inheritance. What might be the reason?

(a) Gametes carrying the brown eyed allele are more viable then those with the blue eyed allele.
(b) A different pattern of inheritance other than monohybrid inheritance is involved.
(c) Not all of their babies survived childbirth, thus causing a distortion in the actual ratio.
(d) The actual ratio differs from the expected ratio because the sample size is too small.

(v) What is the gene carried by of the man's sperm regarding the eye colour?

(a) BB **(b) Bb**
(c) b only **(d) b or B.**

80) Purebred pea plant with smooth seeds (dominated characteristic) were crossed with purebred pea plant with wrinkled seeds (recessive characteristic). The F_1 generation was self pollinated to give rise to the F_2 generation.

(i) What is the expected observation of the F_1 generation of plants?

(a) 1/2 of them have smooth seeds and 1/2 of the have wrinkled seeds.

(b) 1/4 of them have wrinkled seeds and 3/4 of them have smooth seeds.

(c) 3/4 of them have wrinkled seeds and 1/4 of them have smooth seeds.

(d) All of them have smooth seeds.

(ii) What is the expected observation of the F_2 generation of plants?

(a) 1/2 of them have smooth seeds and 1/2 of them have wrinkled seeds.

(b) 1/4 of them have wrinkled seeds and 3/4 of them have smooth seeds.

(c) 3/4 of them have wrinkled seeds and 1/4 of them have smooth seeds.

(d) All of them have smooth seeds.

(iii) If a genotype consists of different types of alleles, it is called

(a) homozygous **(b) heterozygous**

(c) monoallelic **(d) uniallelic**

(iv) The alternative form of gene is called

(a) dominant character **(b) recessive character**

(c) alternative genes **(d) allele.**

(v) Which of the following will be the genotypic ratio of given F_2 generation?

(a) 1: 3 **(b) 3: 1**

(c) 1: 2 : 1 **(d) 1: 1 : 1**

81) In fruittlies, the gene for wing shape has two alleles, an unusual allele for curled wings (c) and the normal allele for straight wings (C). The given phenotypes are observed for each genotype.

Genotype	**Phenotype**
CC	Normal, straight wings
Cc	Wings curled up at the ends, has difficulty flying
cc	Unable to hatch from egg

(i) Which of the following crosses would produce live offspring from 50% of the eggs?

(a) CC x Cc **(b) CC x CC**

(c) CC x cc **(d) Cc x cc**

(i) (d)

(ii) (a)

(iii) (a): 25% of the total number of eggs will not hatch (genotype cc). 50% of the offspring will be curlywinged (Cc) and 25% of the offspring are straightwinged (CC).

(iv) (c)

(v) (b) (ii) Which of the following crosses would be able to produce offspring that would fly normally from 50% of the egg?

(a) CC x Cc **(b) Cc x Cc**

(c) CC x cc **(d) Cc x cc**

(iii) Two curly winged flies are crossed, and they produce 150 eggs. What is the proportion of straight-winged flies expected among the live offspring?

(a) 25% **(b) 33%**

(c) 50% **(d) 75%**

(iv) Normal straight winged flies are self crossed and they produce 120 eggs. What is the proportion of curly winged flies expected among the live offspring?

(a) 25% **(b) 75%**

(c) 0% **(d) 100%**

(v) Which of the following crosses would be able to produce offspring that has curled wings only?

(a) CC x Cc **(b) CC x cc**

(c) Cc x Cc **(d) Cc x cc**