

**SECTION C : PREVIOUS YEARS' EXAMINATION QUESTIONS**

1. R and Y genes of Maize lie very close to each other. When RRY<sub>2</sub> and rry<sub>2</sub> genotypes are hybridized, F<sub>2</sub> generation will show (2007)
  - (A) Segregation in 9:3 : 3:1
  - (B) Segregation in 3 : 1 ratio
  - (C) Higher number of parental types
  - (D) Higher number of recombinant types
2. **Assertion :** Phenylketonuria is a recessive hereditary disease caused by failure of the body to oxidize an amino acid phenylalanine to tyrosine because of an defective enzyme. (2007)

**Reason:** It results in presence phenylalanine in urine.
3. Sickle cell anaemia is (2009)
  - (A) Characterised by elongated sickle-like RBCs with a nucleus
  - (B) Caused by substitution of valine by glutamic acid in beta globulin chain of haemoglobin
  - (C) Caused by a change in a single base pair of DNA
  - (D) An autosomal linked dominant trait.
4. Select the incorrect statement from the following. (2009)
  - (A) Baldness is a sex-limited trait
  - (B) Linkage is an exception to the principle of independent assortment
  - (C) Galactosemia is an inborn error of metabolism
  - (D) Small population size results in random genetic drift in a population
5. Alzheimer disease in humans is associated with the deficiency of (2009)
  - (A) Glutamic acid
  - (B) Dopamine
  - (C) Gamma amino butyric acid

(D) Acetylcholine

6. Point mutation is (2009)

(A) Loss of gene

(B) Change in a base of gene

(C) Addition of a gene

(D) Deletion of a segment of gene

7. Human blood grouping is ABO instead of ABC because O in it refers to (2009)

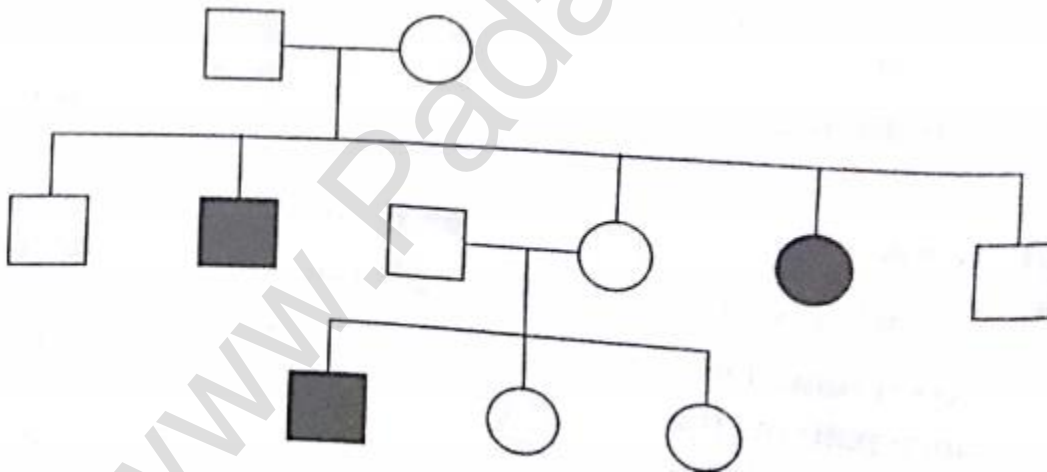
(A) No antigen A or B on RBCs

(B) Other antigens besides A and B

(C) Over dominance of its gene over A and B

(D) One antibody only either anti-A or anti-B.

8. Study of pedigree chart. What does it show? (2009)







(A) Inheritance of a condition like phenylketonuria as an autosomal recessive trait

(B) Inheritance of a recessive sex-linked disease like haemophilia

(C) Inheritance of sex-linked inborn error of metabolism like phenylketonuria

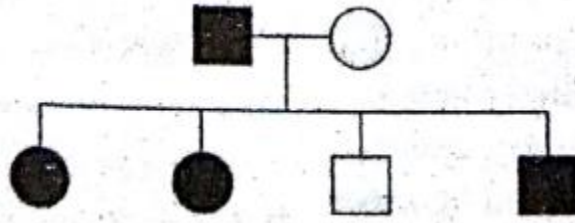
(D) Pedigree chart is wrong as this is not possible

9. Out of seven characters in Pea plant studied by Mendel, the number of flower based characters was **(2009)**
- (A)1 (B)3  
(C)4 (D)2
10. What type of sex determination is found in Grasshopper?
- (A)XX—XY (B)ZW—ZZ  
(C)ZZ—ZY (D)XX—XO
11. Select the correct statement from the ones given below with respect to dihybrid cross. **(2010)**
- (A)Genes far apart on the same chromosome show very few recombinations.  
(B)Genes loosely linked in the same chromosome  
(C)Tightly linked genes on the same chromosome show very few recombinations.  
(D)Tightly linked genes on the same chromosome show higher recombination's.
12. Which one of the following symbols and its representation, used in human pedigree analysis is correct? **(2010)**
- (A)  = unaffected male  
(B)  = unaffected female  
(C)  = male affected  
(D)  = mating between relatives
13. Which one of the following cannot be explained on the basis of Mendel's Law of Dominance? **(2010)**
- (A)Out of one pair of factors, one is dominant and the other recessive  
(B)Alleles do not show any blending and both the characters recover as such in F<sub>2</sub> generation  
(C)Factors occurs in pairs  
(D)Discrete unit controlling a particular character is called a factor

14. In *Antirrhinum* two plants with pink flowers were hybridized. The  $F_1$  plants produced red. Pink and white flowers in ratio of 1 : 2 : 1. What could be genotype of the parent plants? RR is red, rr is white (2010)

- (A)rr (B)Rr  
(C)RR (D)rrrr

15. Study the pedigree chart of certain family given here and select the correct conclusion. (2010)



- (A) The female parent is heterozygous.  
(B) The parents could not have had a normal daughter for this character.  
(C) The trait under study could not be colour blindness.  
(D) The male parent is homozygous dominant.

16. Fruit fly *Drosophila melanogaster* was found to be very suitable for experimental verification of chromosome theory of inheritance by Morgan and his colleagues because (2010)

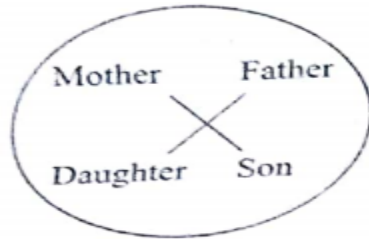
- (A) It reproduces parthenogenetically  
(B) Smaller female is easily distinguishable from large male  
(C) A single mating produces two young flies  
(D) It completes life cycle in about two weeks

17. Which one correctly determines the sex? (2011)

- (A) XO condition in Turner's syndrome determines female sex  
(B) Homozygous XX produce male in *Drosophila*  
(C) Homozygous ZZ determine female sex in birds  
(D) XO determines male sex in Grasshopper

18. Which external trait determines sex correctly? (2011)
- (A) Female Cockroach—Anal cerci
- (B) Male shark—Claspers on pelvic fins
- (C) Female *Ascaris*—Curved pad on first digit of hind limb.
- (D) Male Frog – Copulatory pad on first digit of hind limb.
19. All the seven children of a couple are males. What is the probability that the eighth child will also be a male? (2011)
- (A)  $1/2$  (B)  $1/4$
- (C)  $1/8$  (D)  $1/16$
20. **Assertion:** A genetist crossed two plants. He got 50% tall and 50% dwarf plants in the progeny. (2011)
- Reason:** One parent was heterozygous tall while the other was dwarf.
21. **Assertion:**  $Hb^S Hb^S$  is homozygous condition of sickle cell anaemia. (2012)
- Reason:** It occurs due to substitution of glutamic acid by valine at sixth position in  $\beta$ -chain of haemoglobin.
22. Both husband and wife have normal vision though their fathers were colour blind. The probability of their daughter becoming colour blind is
- (A) 0% (B) 25%
- (C) 50% (D) 75%
23. What is the example of sex linked disorder? (2012)
- (A) Phenylketonuria (B) Sickle cell anaemia
- (C) Haemophilia (D) Thalassemia

24. What is the example of inheritance pattern shown? (2012)



(A) Phenylketonuria

(B) Sickle cell anaemia

(C) Haemophilia

(D) Thalassemia

25. Turner's syndrome is (2012)

(A) Case of monosomy

(B) Cause of sterility in females

(C) Absence of Barr body

(D) All the above

26. A test cross is performed to know (2012)

(A) Genotype of  $F_2$  dominants

(B) Linkage between two traits

(C) Number of alleles of a gene

(D) Success of intervarietal and interspecific cross.

27. Haemoglobins of normal and sickle cell patient are subjected to electrophoresis. They will show (2012)

(A) Same mobility

(B) Different mobility

(C) No mobility

(D) Haemoglobin of patient does not move.

28. Both alleles express in heterozygote when they are (2012)
- (A) Recessive (B) Lethals  
(C) Semidominant (D) Codominant
29. Among seven pairs of traits studied by Mendel. The number of traits related to flower, pod and seed were (2012)
- (A) 2, 2, 2 (B) 2, 2, 1  
(C) 1, 2, 2 (D) 1, 1, 2
30. All are dominant traits studied by Mendel (2012)
- (A) Axial flower, green pod, green seed  
(B) Green pod, inflated pod, axial flower  
(C) Yellow seed, violet flower, yellow pod  
(D) Round seed, constricted pod, axial flower
31. In the cross  $YYRR \times yyrr$ , the number of green coloured seeds in  $F_2$  generation is (2012)
- (A) 8/16 (B) 6/16  
(C) 4/16 (D) 2/16
32.  $F_2$  generation has genotypic and phenotypic ratio of 1 : 2 : 1. It is (2012)
- (A) Codominance  
(B) Dihybrid cross  
(C) Monohybrid cross with complete dominance  
(D) Monohybrid cross with incomplete dominance
33. If both parents are carriers for thalassemia, which is an autosomal recessive disorder, what are the chances of pregnancy resulting in an affected child (2013)
- (A) 25% (B) 100%  
(C) No chance (D) 50%

34. Which idea is depicted by a cross in which the  $F_1$  generation resembles both the parents?  
(2013)
- (A) Inheritance of one gene
  - (B) Codominance**
  - (C) Incomplete dominance
  - (D) Law of dominance
35. Which of the following cannot be detected in a developing foetus by amniocentesis?  
(2013)
- (A) Down syndrome
  - (B) Jaundice**
  - (C) Klinefelter syndrome
  - (D) Sex of the foetus
36. The correct statement with regard to Haemophilia is (2013)
- (A) It is a dominant disease**
  - (B) A single protein involved in the clotting of blood is affected
  - (C) It is a sex-linked disease
  - (D) It is a recessive disease
37. If two persons with 'AB' blood group marry and have sufficiently large number of children, these children could be classified as 'A' blood group : 'AB' blood group : 'B' blood group in 1 : 2 : 1 ratio. Modern technique of protein electrophoresis reveals presence of both 'A' and 'B' type proteins in 'AB' blood group individuals. This is an example of (2013)
- (A) Partial dominance
  - (B) Complete dominance
  - (C) Codominance**
  - (D) Incomplete dominance
38. Which of the following statements is not true of two genes that show 50% recombination frequency? (2013)
- (A) The genes show independent assortment



(B) If the genes are present on the same chromosome, they undergo more than one crossovers in every meiosis

(C) The genes may be on different chromosomes

(D) The genes are tightly linked

**39. Assertion:** Only a boy child could be born with a substitution of glutamic acid by valine on 6<sup>th</sup> codon of  $\beta$ -chain of haemoglobin (2013)

**Reason:** The gene for above mutation occurs on Y-chromosome.

**40.** Fruit colour in squash is an example of (2014)

(A) Inhibitory genes

(B) Recessive epistasis

(C) Dominant epistasis

(D) Complementary genes

**41.** A man whose father was colour blind marries a woman who had a colour blind mother and normal father. What percentage of male children of this couple will be colour blind? (2014)

(A) 75%

(B) 25%

(C) 0%

(D) 50%

**42.** In a population of 1000 individuals 360 belong to genotype AA, 480 to Aa and the remaining 160 to aa. Based on this data, the frequency of allele A in the population is (2014)

(A) 0.7

(B) 0.4

(C) 0.5

(D) 0.6

**43.** A human female with Turner's syndrome (2014)

(A) Is able to produce children with normal husband

(B) Has 45 chromosomes with XO.

(C) Has one additional X chromosome

(D) Exhibits male characters

44. Linkage refers to (2015)

(A) Co-inheritance of two alleles of the same gene

(B) Attached X-chromosomes in *Drosophila*

(C) Co-heritance of two different genes

(D) Role of sex-chromosomes in sex-determination.

45. Pleiotropy refers to a situation where (2015)

(A) A gene affects on specific trait only

(B) A gene affects more than one seemingly unrelated traits

(C) Many small genes affect a single trait

(D) A single gene masks the effect of another gene

46. Klinefelters's syndrome is caused due to (2015)

(A) Presence of an additional copy of the chromosome number 21

(B) Absence of one of X-chromosome, i.e., 45 with XO

(C) Presence of an additional copy of X-chromosome resulting into a karyotype of 47, XXY

(D) Presence of an additional copy of chromosome number 17.

47. ABO blood grouping provides a good example of (2015)

(A) Co-dominance

(B) Incomplete dominance

(C) Multiple alleles

(D) Law of dominance

48. A colour blind man marries a normal woman (without any history of colour blindness in her family). What proportion of their sons will be colour blind? (2015)

(A) 50%

(B) 25%

(C) 12.5%

(D) 0%

49. Haemophilia is more common in males than females, because it is

(A) Dominant autosomal

(B) Dominant X-linked

(C) Recessive X-linked

(D) X-linked.

50. A person with Klinefelter's syndrome has chromosomes (2015)

(A) XX

(B) XY

(C) XYY

(D) XXY

51. Gregor Mendel selected Pea plant for his genetic experiment, because (2015)

(A) Many pure varieties of pea are available

(B) The reproductive organs of pea plant are enclosed by petals and generally self-pollination and fertilization takes place & accidentally too there is no possibility of hybridization

(C) The hybrids obtained by reproduction of two different varieties are fertile.

(D) All of the above statements are correct.

52. "Sickle cell anaemia is a molecular disease". This statement was proposed by

(A) Daniel Branton

(B) Svedburg

(C) Linus Pauling

(D) Donald Voet

53. In his classic experiments on pea plants, Mendel did not use (2015)

(A) Pod length

(B) Seed shape

(C) Flower position

(D) Seed colour

54. Which of the following biomolecules does have a phosphodiester bond (2015)

(A) Monosaccharides in a polysaccharide

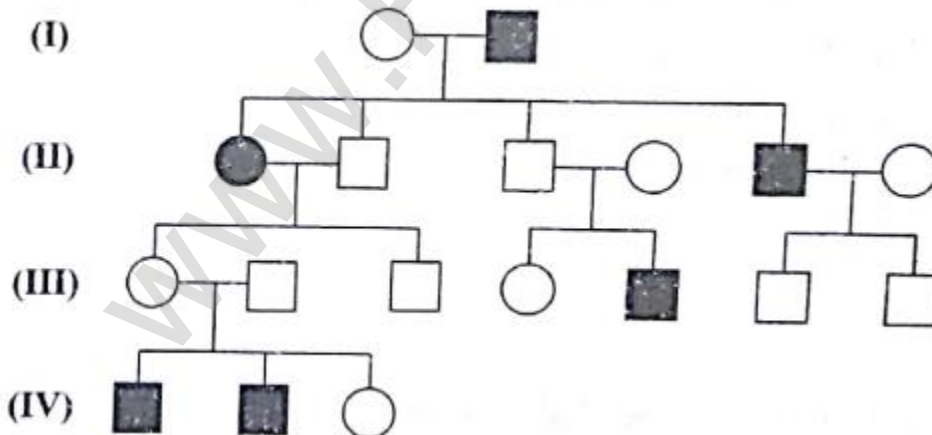
(B) Amino acids in a polypeptide

(C) Nucleic acids in a nucleotide

(D) Fatty acids in a diglyceride

55. In the following human pedigree, the filled symbols represent the affected individuals.

Identify the type of given pedigree (2015)



(A) X-linked recessive

(B) Autosomal recessive

(C) X-linked dominant

(D) Autosomal dominant.

56. A gene showing codominance has (2015)
- (A) Alleles tightly linked on the same chromosome
  - (B) Alleles that are recessive to each other
  - (C) Both alleles independently expressed in the heterozygote
  - (D) One allele dominant on the other
57. The term “linkage” was coined by (2015)
- (A) T. Boveri
  - (B) G. Mendel
  - (C) W. Sutton
  - (D) T.H.Morgan
58. A population will not exit in Hardy—Weinberg equilibrium if
- (A) There is no migration
  - (B) The population is large
  - (C) Individuals mate selectively
  - (D) There are no mutations
59. An abnormal human body with 'XXX' sex chromosomes was born due to (2015)
- (A) Fusion of two ova and one sperm
  - (B) Fusion of two sperms and one ovum
  - (C) Formation of abnormal sperms in the father
  - (D) Formation of abnormal ova in the mother

60. Multiple alleles are present

(A) At the same locus of the chromosome

(B) On non-sister chromatids

(C) On different chromosomes

(D) At different loci on the same chromosome.

61. How many pairs of contrasting characters in pea plants were studied by Mendel in his experiments? (2015)

(A) Eight

(B) Seven

(C) Five

(D) Six

62. In sea urchin DNA, which is double stranded, 17% of the bases were shown to be cytosine. The percentage of the other three bases expected to be present in this DNA are (2015)

(A) G-17%, A-33%, T-33%

(B) G-8.5%, A-50%, T-24.5%

(C) G-34%, A-24.5%, T-24.5%

(D) G-17%, A-16.5%, T-32.5%

63. A man with blood group 'A' marries a woman with blood group 'B'. What are all the possible blood groups of their offsprings? (2015)

(A) A, B, AB and O

(B) O only

(C) A and B only

(D) A, B and AB only

64. Which of the most common mechanism of genetic variation in the population of a sexually-reproductive organism? (2015)

(A) Genetic drift

(B) Recombination

(C) Transduction

(D) Chromosomal aberrations

65. Alleles are (2015)

(A) Different molecular forms of a gene

(B) Heterozygotes

(C) Different phenotype

(D) True breeding homozygotes

66. Pick out the correct statements. (2016)

(a) Haemophilia is a sex-linked recessive disease

(b) Down's syndrome is due to aneuploidy

(c) Phenylketonuria is an autosomal recessive gene disorder

(d) Sickle cell anaemia is an X-linked recessive gene disorder

(A) (a), (c) and (d) are correct

(B) (a), (b) and (c) are correct

(C) (a), (d) are correct

(D)(b), (d) are correct

67. A tall true breeding garden pea plant is crossed with a dwarf true breeding garden pea plant.

When the F1 plants were selfed, the resulting genotypes were in the ratio of **(2016)**

(A) 3 : 1 :: Tall : Dwarf

(B) 3 : 1 :: Dwarf : Tall

**(C) 1 : 2 : 1 :: Tall homozygous : Tall heterozygous : Dwarf**

(D) 1 : 2 : 1 : Tall heterozygous : Tall homozygous : Dwarf

68. Match the terms in Column –I with their description in Column-II and choose the correct option. **(2016)**

**Column I**

**Column II**

- |                           |  |
|---------------------------|--|
| (a) Dominance             | (i) Many genes govern a single character                               |
| (b) Codominance           | (ii) In a heterozygous organism only one allele expresses itself       |
| (c) Pleiotropy            | (iii) In a heterozygous organism both alleles express themselves fully |
| (d) Polygenic inheritance | (iv) A single gene influence many characters                           |

Code:

(A) a—iv, b—I, c—ii, d—iii

(B) a—iv, b—iii, c—iv, d—ii

(C) a—ii, b—iii, c—iv, d—i

**(D) a—ii, b—iii, c—iv, d—i**

69. In a testcross involving Pi dihybrid flies, more parental-type offspring were produced than the recombinant-type offspring. This indicates

**(A) The two genes are linked and present on the same chromosome**



- (B)Both of the characters are controlled by more than one gene
- (C)The two genes are located on two different chromosomes
- (D)Chromosomes failed to separate during meiosis

70. Which of the following most appropriately describes haemophilia? (2016)

- (A)Chromosomal disorder
- (B)Dominant gene disorder
- (C)Recessive gene disorder
- (D)X-linked recessive gene disorder**

71. The gene for ABO blood group is located on (2016)

- (A)Chromosome 4
- (B)Chromosome 7
- (C)Chromosome 9**
- (D)Chromosome 11

72. Down syndrome is one of the most common chromosome abnormalities in humans. It occurs (2016)

- (A)When there is an extra copy of chromosome 21**
- (B)When there is an extra copy of chromosome 22
- (C)When there is an extra copy of chromosome 11
- (D)When there is an extra copy of chromosome 09

**SECTION D: CHAPTER END TEST**

1. A ten year patient is found to have slanting eyes with epicanthic fold, hypertelorism, dysplastic ears, mongoloid face and protruding tongue. The patient is suffering from
  - (A) Down's syndrome
  - (B) Klinefelter's syndrome
  - (C) Turner's syndrome
  - (D) Cri-du-chat syndrome
  
2. Phenomenon of an allele of one gene suppressing the activity of allele of another gene is called
  - (A) Dominance
  - (B) Epistasis
  - (C) Suppression
  - (D) Inactivation
  
3. Where are barr bodies found?
  - (A) Ova
  - (B) Sperms
  - (C) Somatic cells of man
  - (D) Somatic cells of woman
  
4. Which one shows complementary gene interaction ratio of 9 : 7?
  - (A) Four o'clock plant
  - (B) Feather colour in Fowl
  - (C) Flower colour in Sweet Pea

(D)Fruit shape in Shepherd's purse

5. Longest chromosomes occur in

(A)*Lilium*

(B) *Zea mays*

(C)*Allium*

(D) **Trillium**

6. Diagrammatic representation of chromosomes is

(A)Karyotype

(B) **Idiogram**

(C)Chromosome map

(D)Phenogram

7. Accumulation of protein amyloid  $\beta$ -peptide, in human brain causes

(A)Addison's disease

(B)Huntington's disease

(C) **Alzheimer's disease**

(D)Parkinson's disease

8. Barr body occurs in

(A) **Interphase cell of female mammal**

(B)Interphase cell of male mammal

(C)Prophase cell of male mammal

(D)Prophase cell of female mammal

9. Barr body is observed in

(A)Basophils of male

(B) **Neutrophils of female**

(C)Basophils of female

(D)Eosinophils

10. Genes for cytoplasmic male sterility in plants are located in

(A)Chloroplast genome

**(B)Mitochondrial genome**

(C)Nuclear genome

(D)Cytosol

11. Genic balance of sex determination was proposed by

(A)Bridges

(B)Mendel

**(C)Balbiani**

(D)Morgan

12. The two eukaryotic organelles responsible for cytoplasmic inheritance are

(A)Lysosomes and mitochondria

(B)Chloroplasts and lysosomes

**(C)Mitochondria and chloroplasts**

(D)Mitochondria and Golgi complex

13. Most likely reason for development of resistance in insects against pesticides is

(A)Genetic recombination

(B)Acquired heritable changes

**(C)Random mutations**

(D)Directed mutations

14. Which of the following discoveries resulted in Noble Prize?

- (A) Recombination of linked genes
- (B) X-rays induce sex-linked recessive lethal mutations**
- (C) Genetic Engineering
- (D) Cytoplasmic inheritance

15. Colchicine was discovered by

- (A) Flemming
- (B) Blackeslee**
- (C) Dumas
- (D) Muller

16. Number of linkage groups in *Pisum Sativum* is

- (A) 4
- (B) 5
- (C) 7**
- (D) 10

17. Human chromosomes have been grouped on the basis of size and centromere into types

- (A) 5
- (B) 6
- (C) 7**
- (D) 10

18. Genic balance theory holds good in case of

- (A) Humans
- (B) *Drosophila***
- (C) Grasshopper
- (D) *Allium cepa*

19. Number of Barr bodies in XXXX female would be

- (A) 4
- (B) 3**

(C)2

(D)1

20. Inheritance would be extranuclear in case of

(A) Killer *Amoeba*(B) Killer *Paramecium*(C) Killer *Euglena*(D) Killer *Hydra*

21. Genes located on differential region of Y-chromosome are called

(A) XY linked genes

(B) Holandric genes

(C) Autosomal genes

(D) Mutant genes

22. Exchange of segments between non-homologous chromosomes is

(A) Translocation

(B) Inversion

(C) Crossing over

(D) Tetrasomy

23. A fruitfly exhibiting both male and female traits is

(A) Heterozygous

(B) Gynandromorph

(C) Hemizygous

(D) Gynander

24. Out of A—T, G—C pairing, bases of DNA may exist in alternate valency state owing to arrangement called

(A) Analogue substitution

(B) Tautomerisational mutation

(C) Frame-shift mutation

(D) Point mutation

25. The term eugenics was first applied by

- (A) Urey
- (B) Lederberg
- (C) Galton
- (D) Morgan.

26. Which crop variety is not due to induced mutations?

- (A) Reimei of Rice
- (B) Prabhat of Arhar
- (C) Sharbati Sonora of Wheat
- (D) Aruna of Castor

27. Lethal genes are

- (A) Causative for appearance of ancestral traits
- (B) Always recessive
- (C) Genes present on different chromosomes
- (D) Killer in homozygous state

28. Pure line is connected with development of

- (A) Homozygosity
- (B) Heterozygosity
- (C) Homozygosity and self-assortment
- (D) Heterozygosity and linkage.

29. If BB represents barr body and  $Y_0$  Y—body, XXY or Klinefelters syndrome has

- (A)BB—1,  $Y_0$ —0 (B)BB—1,  $Y_0$ —1  
(C)BB—0,  $Y_0$ —1 (D)BB—2,  $Y_0$ —1

30. Down's syndrome is due to

- (A)Crossing over  
(B)Linkage  
(C)Sex-linked inheritance  
(D)Nondisjunction of chromosomes

31. In Down's syndrome of a male child, the sex complement is

- (A)XO (B)XY  
(C)XX (D)XXY

32. In a cross between AABB x aabb, the ratio of  $F_2$  genotypes between AABB, AaBB, Aabb and aabb would be

- (A)9 : 3 : 3 : 1 (B)2 : 1 : 1 : 2  
(C)1 : 2 : 2 : 1 (D)7 : 5 : 3 : 1

33. Mendel's principles are related to

- (A)Evolution (B)Reproduction  
(C)Variations (D)Heredity



34. If  $F_1$  generation has all tall plants and ratio of  $F_2$  generation 3 tall : 1 dwarf, it proves

(A) Law of independent assortment

(B) Law of segregation

(C) Law of dominance

(D) Incomplete dominance

35. Who studied sex-linked inheritance for first time?

(A) Morgan

(B) Khorana

(C) Pasteur

(D) Von Helmont

36. Sex chromosomes of birds are

(A) ZZ—ZW

(B) ZZ—WW

(C) XX—XY

(D) XO—XX

37. Sex chromosomes of a female bird are

(A) XO

(B) ZZ

(C) ZW

(D) XX

38. Which is correct?

(A) Birds have ZZ (female) —ZW (male) sex determination

(B) *Drosophila* has XX—XY sex determination

(C) Henking discovered Y-chromosome

(D) Grasshoppers show XX—XY sex determination

39. The substance which causes of definite change in genes is called

(A) Mutagen

(B) Toxin

(C) Cytotoxin

(D) Alkaloid

40. Mutations are responsible for

(A) Extinction of organism

(B) Variations in population

(C) Increase in population

(D) Maintaining genetic continuity

41. Smallest segment of genetic material affected by mutation is

(A) Recon

(B) Cistron

(C) Muton

(D) Exon

42. Sickle cell anaemia has not been eliminated from African population as

(A) It is controlled by dominant genes

(B) It is controlled by recessive genes

(C) It is not a fatal disease

(D) It provides immunity against malaria

43. Probability of male child haemophilic father and normal mother becoming haemophilic is

(A) 0%

(B) 25%

(C) 50%

(D) 100%

44. Deficiency of VIII factor leads to

(A) Haemophilia A

(B) Haemophilia B

(C) Haemophilia C

(D) Haemophilai D

45. Match the columns

**Column I**

**Column II**

1. Sickle cell anaemia

a. 7<sup>th</sup> chromosome

2. Phenylketonuria

b. 4<sup>th</sup> chromosome

3. Cystic fibrosis

c. 11<sup>th</sup> chromosome

4. Huntington's disease

d. X-chromosome

5. Colour blindness

e. 12<sup>th</sup> chromosome

(A) 1—a, 2—c, 3—d, 4—b, 5—e

(B) 1—e, 2—e, 3—a, 4—b, 5—d

(C) 1—b, 2—c, 3—d, 4—e, 5—a

(D) 1—b, 2—a, 3—c, 4—e, 5—d

46. Select the correct bases of DNA, RNA and amino acid of beta chain causing sickle cell anaemia.

**DNA**

**RNA**

**Amino acid**

(A) CAC—GUG

GAG

Glutamic acid

(B) CAC—GTG

GUG

Valine

(C) CTC—GAG

GUG

Valine

(D) CTC—GAG

GUG

Glutamic acid

47. Sickle cell anaemia is due to mutation of

(A) CTC to CAC

(B) CTG—CAG

(C) CAG—CTC

(D) CGC—CAC

48. Hereditary disease in which urine turns black on exposure due to presence of homogentisic acid is

(A) Ketonuria

(B) Phenylketonuria

(C) Haematuria

(D) Alkaptonuria

49. In XO type of sex determination

(A) Females produce two types of gametes

(B) Males produce two types of gametes

(C) Females produce gametes with Y-chromosome

(D) Males produce gametes with Y-chromosome

50. Mendel's law of independent assortment can be demonstrated by

(A) Test cross

(B) Back cross

(C) Monohybrid cross

(D) Dihybrid cross