

Sl. NO. Subject and Credit hrs.: Principles of Genetics (MGPB0501, 2-1-0)
MCQ Type

1. Which one of the following statements not true in relation to inheritance of acquired character
This theory was first proposed by Weismann
Character acquired by individuals of one generation are transmitted by next generation
This theory was first proposed by Lamarck
This theory was disproved by Weismann
2. The term genetics was coined by
Bateson
Johansson
Mendel
Watson and Crick
3. The idea of preformation theory was replaced by a more acceptable view called
Epigenesis
Pangensis
Both of the above
None of these above
4. Charls Darwin was a
German Botanist
English Naturalist
French Biologist
Dutch Biologist
5. Preformation theory was given by
Swammerdam and Bonnet
Wolff
Charles Darwin
Weismann
6. Mendel born in the year
15th July, 1822
22nd July, 1922
22nd July, 1822
20th July, 1822
7. Which one of the following is most accepted theory
Germplasm theory
Pangensis theory
Preformation theory
Epigenesis theory
8. The book “Genetics: A Conceptual Approach” was written by
Watson & Crick
R W Allard
Benjamin A. Pierce
Benjamin Steven

9. In which of the following areas, application of genetics is/are
 Drug discovery
 Microbial biology
 Agricultural industry
All of the above
10. Which of the following is/ not a major subdiscipline of genetics
 Population genetics
 Molecular genetics
Industrial genetics
 Transmission genetics
11. Which is not a characteristic of the model organism
Long generation time
 Large but manageable progeny
 Adaptive to laboratory experiment
 Inexpensive propagation
12. Which is/are not a model genetic organism
 Zebrafish
Zea mays
 Bread mold
None of these above
13. The cell theory was proposed by
 Rudolf Virchow
Schleiden and Schwann
 Robert Hooke
 Theophrastus
14. Which one of the following theories is correct in relation to heredity concept
 Pangenesis theory
 Preformation theory
Germplasm theory
 None of these above
15. Choose the incorrect statement (s)
 Cell is the fundamental unit of life
 Gene is the fundamental unit of heredity
 Multiple forms of genes called alleles
Evolution is nongenetic changes
16. What are some of the implications of all organism having similar genetic systems?
 That all life forms are genetically related
 That research finding on one organism's gene function can often be applied to other organisms
 That genes from one organism can often exist and thrive in another organism
All of these above
17. Which one of these following early concepts of heredity is/ are incorrect
 Mendelian inheritance
 Cell theory

Epigenesis theory

None of these above

18. In cell cycle, what is the thread that connect the two socks of a pair in blind men's riddle

Chromatids of the chromosome

Cohesin

Centromeres of chromosome

Spindle apparatus

19. Prokaryotic cell devoid of

Cytoskeleton

Histone protein

Membrane bound organelles

Linear DNA molecule

20. Diploid cells have

Two chromosomes

Two sets of chromosomes

One set of chromosomes

Two pairs of homologous chromosomes

21. What would be the result if a chromosome did not have a kinetochore?

Spindle microtubules tightly attached to the chromosome and cell not divide

Spindle microtubules not attached to the chromosome and resulting cells missing a chromosome

Centromeres of the chromosome will be lost

All of these above

22. The constricted region of the chromosome where kinetochores is form is referred as

Primary constriction

Spindle apparatus

Kinetochore apparatus

Centromere

23. Which one the following is/ are not essential elements for functional chromosome

A centromere

A pair of telomeres

Origin of replication

Spindle microtubules

24. Which one of the following check points ensure that each chromosome is aligned on metaphase plate

G1/S checkpoint

G2/M checkpoint

Spindle assembly checkpoint

All of these above

25. Ageing of human cell is due to

Loss in chromosome number

Loss in activity of chromosome

Loss in telomeres

Loss in spindle microtubules

26. Which is not an assumption of Hardy-Weinberg Principle
- Random mating population
 - Evolutionary forces
 - Mendelian population
 - None of the above**
27. How many generations of random mating required for achieving disequilibrium population to equilibrium population
- Five generation
 - Three generation
 - Half of the base life of population
 - One generation**
28. A population is said to be in equilibrium only when
- $P = q = 1$
 - $P + q = 1$**
 - $P - q = 1$
 - $P > q$
29. Which one of the following is the not a feature of prometaphase
- Nuclear envelop disintegrates
 - Spindle microtubules anchor to kinetochores
 - Chromosomes align on the metaphase plate**
 - All of these above
30. Crossing over takes place in
- Leptotene
 - Pachytene**
 - Diploleptene
 - Zygotene
31. Which is the correct order of stages in cell cycle
- G1-S-Prophase-Metaphase-Anaphase**
 - S-G1-Prophase-Metaphase-Anaphase
 - Prophase-S-G1-Metaphase-Anaphase
 - S-G1-Anaphase-Prophase-Metaphase
32. The number of chromosomes and DNA molecules per cell is 4 at G1 phase. Then what will be number of chromosome number and DNA molecules at anaphase
- 8 and 8**
 - 4 and 8
 - 8 and 4
 - 4 and 4
33. Homologous pairs of chromosome line up on the metaphase phase in which of the following stages of cell cycle
- Metaphase II
 - Metaphase I**
 - Anaphase I
 - Prophase I
34. Which of the following events takes place in metaphase II

- Chromosome pair
 Chromosome contract
 Homologous pairs of chromosomes lines up on the equatorial plate
Individual chromosomes line up on the metaphase plate
35. A secondary spermatocyte has 24 chromosomes. How many chromosomes will be found in the primary spermatocyte that gave rise to it
 12
 36
48
 24
36. Which of the following factors did not contribute to Mendel's success in his study of heredity?
 His use of the pea plant
His study of plant chromosome
 His adoption of an experimental approach
 His use of mathematics
37. An individual organism possessing two of the same alleles at a locus
Homozygous
 Homogeneous
 Genotypes
 Heterozygous
38. Which statement is true in relation to principles of segregation
 Each individual organism possesses two alleles encoding a trait
 Alleles separate when gametes are formed
 Alleles separate in equal proportion
All of these above
39. If an F1 plant of homozygous dominant round seed and homozygous recessive wrinkled seed is backcrossed to the parent with round seeds. What proportion of the progeny will have wrinkled seed?
 $\frac{3}{4}$
 $\frac{1}{4}$
 $\frac{1}{2}$
Zero
40. How did Mendel know that each of his pea plants carried two alleles encoding a characteristic?
Because the traits for both alleles appeared in the F2 progeny
 Because each traits separate independently
 Because alleles of the traits separate independently
 All of these above
41. Rediscovery of Mendel' principles of inheritance in the year
 1856
 1865
1900
 1866

42. The term genotype, phenotype was given by
 Bateson
Johansson
 Mendel
 Watson and Crick
43. The idea of preformation theory was replaced by a more acceptable view called
Epigenesis
 Pangenesis
 Both of the above
 None of these above
44. G J Mendel was a
 German Botanist
 English Naturalist
 French Biologist
Monk Priest
45. Which scientist is related to preformation theory
 Weismann
 Wolff
 Charles Darwin
Swammerdam and Bonnet
46. Mendel presented his research in the year
8th March, 1865
 8th February, 1866
 8th April, 1866
 8th March, 1866
47. Which one of the following is most accepted theory
Germplasm theory
 Pangenesis theory
 Preformation theory
 Epigenesis theory
48. On which crop, Mendel fails to demonstrate his results
 Field pea
 Garden pea
Hawkweed
 Tobacco
49. In case of dihybrid, what is the expected genotypic ratio in F₂?
1:2:2: 4:1:2: 1:2:1
 1:2:1: 4:1:2: 1:2:1
 1:2:1: 4:1:2: 1:2:2
 1:2:1: 4:2:2: 1:2:1
50. In case of dihybrid crosses, what will be test cross ratio
 1:1
1:1:1:1
 9:3:3:1

- 3:1
51. Which is not a characteristic of the model organism
- Long generation time**
 Large but manageable progeny
 Adaptive to laboratory experiment
 Inexpensive propagation
52. Which is/are not a model genetic organism
- Zebrafish
Zea mays
 Arabidopsis
Sweet potato
53. The cell theory was proposed by
- Rudolf Virchow
Schleiden and Schwann
 Robert Hooke
 Theophrastus
54. Which one of the following theories is correct in relation to heredity concept
- Pangenesis theory
 Preformation theory
Germplasm theory
 None of these above
55. Choose the incorrect statement (s)
- Cell is the fundamental unit of life
 Gene is the fundamental unit of heredity
 Multiple forms of genes called alleles
Evolution is nongenetic changes
56. What are some of the implications of all organism having similar genetic systems?
- That all life forms are genetically related
 That research finding on one organism's gene function can often be applied to other organisms
 That genes from one organism can often exist and thrive in another organism
All of these above
57. Choose the incorrect match (s)
- Preformation theory- Swammerdam and Bonnet
 Germplasm theory- Weismann
 Theory of pangenesis- Charls Darwin
Epigenesis theory- Sutton and Boveri
 Spindle apparatus
58. Choose the correct ones in regard to Prokaryotic cell
- Present of cytoskeleton**
 Absence of histone protein
 Absence of membrane bound organelles
 Presence of circular DNA molecule

59. Diploid cells have
Two chromosomes
Two sets of chromosomes
One set of chromosomes
Two pairs of homologous chromosomes
60. What would be the result if a chromosome did not have a kinetochore?
Spindle microtubules tightly attached to the chromosome and cell not divide
Spindle microtubules not attached to the chromosome and resulting cells missing a chromosome
Centromeres of the chromosome will be lost
All of these above
61. The constricted region of the chromosome where kinetochores is form is referred as
Primary constriction
Spindle apparatus
Kinetochore apparatus
Centromere
62. Which one the following is/ are essential elements for functional chromosome
A centromere
A pair of telomeres
Origin of replication
All of these above
63. Which one of the following check points ensure that each chromosome is aligned on metaphase plate
G1/S checkpoint
G2/M checkpoint
Spindle assembly checkpoint
All of these above
64. Which one of the following protect and stabilized the chromosome
Telomere
Centromere
Kinetochore
Primary constriction
65. Which is/are an assumption of Hardy-Weinberg Principle
Random mating population
Absence of evolutionary forces
Large population
All of these above
66. Chiasma terminalization is completed in which phase of meiosis-I
Leptotene of Prophase-I
Zygotene of Prophase-I
Diplotene of Prophase-I
Diakinesis of Prophase-I
67. Which one of the following is the not a feature of zygotene of prophase-I
The chromosomes continue to condense

Homologous chromosomes pair up and begin synapsis and a very close pairing association

Homologous pairs of chromosomes line up on the equatorial plate

All of these above

68. Crossing over takes place in

Leptotene

Pachytene

Diplotene

Zygotene

69. The number of chromosomes and DNA molecules per cell is 6 at G1 phase. Then what will be number of chromosome number and DNA molecules at anaphase

6 and 6

4 and 8

8 and 4

12 and 12

70. Choose the correct match (s) in relation to meiosis II

Metaphase II- Homologous chromosomes line up on the metaphase plate

Anaphase II- Two chromosomes of each homologous pair separate and move toward opposite poles.

Metaphase II-Individual chromosomes line up on the metaphase plate.

Prophase I- Chiasma terminalization

71. Which of the following events takes place in metaphase II

Chromosome pair

Chromosome contract

Homologous pairs of chromosomes lines up on the equatorial plate

Individual chromosomes line up on the metaphase plate

72. A secondary spermatocyte has 48 chromosomes. How many chromosomes will be found in the primary spermatocyte that gave rise to it

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96

36

24

73. Which of the following factors did not contribute to Mendel's success in his study of heredity?

His use of the pea plant

His study of plant chromosome

His adoption of an experimental approach

His use of mathematics

74. An individual organism possessing two of the different alleles at a locus

Homozygous

Homogeneous

Genotypes

Heterozygous

75. Which statement is true in relation to principles of segregation
Each individual organism possesses two alleles encoding a trait
Alleles separate when gametes are formed
Alleles separate in equal proportion
All of these above
76. If an F1 plant of homozygous dominant round seed and homozygous recessive wrinkled seed is backcrossed to the parent with round seeds. What proportion of the progeny will have wrinkled seed?
 $\frac{3}{4}$
 $\frac{1}{4}$
 $\frac{1}{2}$
Zero
77. Choose the incorrect match (s)
At anaphase I, shugoshin protect the cohesion at the centromeres from the action of separase
Sister chromatids separate at anaphase I
Spindle microtubules are made up tubulin protein
Progression through the cell cycle is regulated at key transition point known as checkpoint

NOTE: Bold one is correct answer