THEMI HILL SECONDARY SCHOOL
BIOLOGY REVISION QUESTIONS
FORM FOUR 2020

1. Factors that control traits are called ……..
   a) Gene
   b) Pure breeds
   c) Recessive
   d) Parents

2. The "TT' in genetics means……
   a) Two dominant alleles
   b) Two recessive alleles
   c) At least one dominant allele
   d) One dominant and one recessive

3. An organism's physical appearance is its
   a) Genotype
   b) Phenotype
   c) Codominance
   d) Heterozygous

4. What does codominance mean
   a) Bot allele are dominant
   b) Both allele are recessive
   c) The allele are neither dominant nor recessive
   d) Each allele is both dominant and recessive

5. The best definition of mutation is
   a) Any change that is harmful to an organism
   b) Any change in a gene or chromosome
   c) Any change that is helpful to an organism
   d) Any change in the phenotype of a cell

6. The different forms of a gene are called
   a) Alleles
   b) Factors
   c) Masks
   d) Traits

7. An organism's genotype is its
   a) Genetic make up
   b) Feather color
   c) Physical appearance
   d) Stem height

8. Which of the following trait is controlled by a gene with multiple alleles
   a) Straight hairline
   b) Smile dimples
   c) Widor peak
   d) Blood type

9. Which nitrogen in RNA is not past of DNA?
   a) Adenine
   b) Guanine
   c) Cytosine
   d) Uracil

10. Sex – linked genes are genes on
    a) The X chromosomes only
    b) The Y chromosomes only
    c) The X and Y chromosomes
    d) All 23 pairs of chromosomes

Match the phrase in LIST A with the response in **LIST B** by writing the number of correct response from **LIST B**

LIST A	LIST B
11. Genetic disorder characterized by failure of blood clotting	i. Mutation
12. A cross between individuals with homozygous state	ii. Sex linked
13. The possession of characteristics which are different from the parent.	iii. ???????????
14. A unit of inheritance which determine a specific characteristic	iv. Dominant gene
15. A gene that influence characteristic over another gene when in heterozygous	v. Albinism
16. Characteristics that can be passed from one parent to off spring through sexual reproduction	vi. Genotype
17. External appearance for a given characteristics as a result of influence by a gene	vii. Phenotype
18. The possession of a genetic disorder caused by abnormality a sex chromosome	viii. Test cross
19. A male genetic disorder due to non disjunction	ix. Lock
20. Occurs when a segment of chromosome breaks off and become attached to another chromosomes	x. Haemophilia
21. Occurs when a past of chromosomes breaks off	xi. Homozygous
22. Occurs when a part of chromosome repeated twice	xii. Back cross
23. Genetic make up of a given gene which determine a given characteristic	xiii. ???????????
24. Occurs when a part of chromosome breaks off and become reattached with the gene in reverse order	xiv. Gene
25. A disorder resulting from lack of melanin pigment	xv. Codominance
26. A sudden genetic change which can be inherited.	xvi. ……..ferterly syndrome
27. Condition when an organism have more than two sets of chromosome	xvii. Tuner's syndrome
28. Loss or gain of single chromosome	xviii. Deletion
29. Universal donor	xix. Reversion
30. Universal recipient	xx. Duplication
	xxi. Translocation
	xxii. Aneuploidy
	xxiii. Polyploid
	xxiv. AB and O
	xxv. AB
	xxvi. A
	xxvii. O
	xxviii. B
	xxix. Incomplete dominance

31. Define the term genetic and variation

Define the following terms

32. Chromosome
33. Monohybrid inheritance
34. Test cross
35. Pure live
36. Agglutination
37. Incomplete dominance
38. Complete dominance
39. Codominance
40. First filial generation

Write “True” for correct statement and “False” for incomplete statement

41. Inheritance of blood groups is an example of multiple allelism ……..
42. Hairy ears and nose is among sex linked characters ……..
43. Inheritance in which both alleles from the parents are equally shown is known as monohybrid inheritance ……
44. All genetic materials are double helix stand……
45. Multiple Allelism occurs when it produces different characteristic phenotypically…….
46. Environmental factors have no effect on variation of living organism ……
47. All people has ability to roll their tongue regardless of their genes inherited ……
48. Incapability of blood can lead to death ……
49. Some mutations are beneficial to living organism …….
50. Super male and super female have extra X and Y chromosomes respectively ……..
51. What are the types of heredity materials
52. Explain the nature of heredity materials
53. Explain the difference between ribose and deoxyribose sugar
54. Draw a well structure of DNA
55. Draw a structure of RNA
56. What are the functions of DNA
57. What are the functions of RNA
58. Mention the major types of RNA
59. Explain the differences between DNA and RNA
60. RNA can work as DNA. Explain
61. Somatic cells are diploid ??????? gametes are haploid. Explain
62. With examples explain the application of genetics
63. Briefly explain how genetics brings about variation
64. Give reasons why Mendel used garden pea plants and not other plant
65. Using examples explain how codominance and incomplete dominance occurs.
66. State Mendel First law of inheritance
67. The female carriers homogametic while male carries heterogametic chromosomes. Explain
68. Explain the significance of DNA replication.
69. Mendel succeeded in his experiment where others failed. What was the secret behind Mendes success?
70. Differentiate a dominant character from recessive character
71. What is the Mandel's basic monohybrid ratio?

72. Give examples of sex linked traits
73. With the aid of cross, explain the concept of Haemophilia
74. Why Haemophilic female are rare in nature?
75. With the aid of a cross, explain the concept of color blindness
76. With examples, differentiate between sex limited character and sex influenced traits.
77. What are the main features of characters which show continuous variation?
78. What are two types of variation?
79. With examples, explain what is continuous variation
80. With examples explain what is dis continuous variation
81. The ability to taste pherylthiocarbomide (PTC) is controlled in human by a single dominant allele (T). A woman non-taster manners a man taster and the had tree children, two boy taster and a girl non taster. All the grand parents were tasters. Explain the above result using genetic crosses.
82. In an experiment a pure breed while rabbit was crossed with pure bred grey rabbit. All the off spring were white.
    a) Use a monohybrid cross to explain this
    b) If the F_1 generation was selfed, what would be the phenotype and genotype of the F_2 generation.
83. A pure purple flowered pea plant was crossed with pure white plant. Off-springs of F_1 were phenotypically purple flowered. When F_1 was selfed a mixture of purple pea flowered and white pea plant were produced at an approximate ratio of 3:1. Work out the genotype and genotypic ration from the information above.
84. A cross between plants with round seeded, and wrinkled seeds results in F_1 plants with rounded seeds. F1 individuals were selfed. Total number of plants produced were 6000 plants
    a) Construct genetic diagram to show cross F_1 and F_2
    b) If the plant with round seeds were 1500
    i) How many plants were having wrinkled seeds?
    ii) How many homozygous round seeds plants?
    iii) How many plants were heterozygous?

85. In an experiment conducted in single factor inheritance, individuals which were mole homozygous tall married a female who was homozygous dwarf. The gen for tall was dominant over dwarf. Use the crosses to find out probability of phenotypic results and the ration in the F_1 and F_2 generation.
86. One of the causes of dwarfism in man is the inheritance of dominant allele D the allele for normal height is d. given the genotype of Mussa a man suffering from Dwarfasim is Dd. Work out the genotype and phenotype ratio of off springs if he marries
    a) Normal woman
    b) A dwarf woman

87. In a certain cross red flowered plants were crossed with white flowered plants and the F_1 progeny were all red flowered. When the member of the F_1 were selfed out of 1210 F_2 plants, 898 were red flowered plants.
    i) Which characters was dominant?
    ii) Using genetic symbols. Work out the genetics of the two crosses above
    iii) In F_2 generation how many plants were
    a) Homozygous dominant
    b) Homozygous recessive

88. Two pure breeding flies one with long wings and another with short wings were crossed. All the F_1 generation flies had long wings.
    a) Explain the results of the cross
    b) Work out the genotype and phenotype of F_2

89. How the sex of an individual determined in human being?
90. When a certain variety of black chicken is crossed with a white chicken. All the resulting off-springs have black and white feathers.
    a) Explain this results
    b) Using diagrams illustrate results for F_1 and F_2 generation.

91. What is the importance of crossing over?
92. The new born babies were accidentally mixed up in hospital. Blood test reveals the followings:-

Baby 1 – Type O
Baby 2 – Type A
Mr. Aron – Type A
Mr. Aron – Type AB
Mr. John – Type B
Mr. John – Type B

Using the information above determine which baby belong to which parent.

93. A man who was blood group O married a woman who has blood group A
    i) What is the probability of their first child having blood group O if both parents are homozygous?
    ii) Assume the mother is heterozygous what is the probability of their first child having blood group O

94. Anna is a woman who is married to Johan. They once had a child kitto. Who one day discovered their parents being un bad terms Johan is claiming that Kitto is an illegimate child but Anna is opposing the case. Blood group test revealed that Johan is a blood group A. Anna's mother is of blood group B and her farther is of blood group type AB. Using this information. If Kitto has blood group "O".
    a) Suggest possible genotype of Anna, show how you deduce the genotype.
    b) Show clearly whether Kitto is or not an illegimate child of the said family.

???(a) Who is an albino?
    (b) explain the problems faced by albino under the following guidelines
    i) Vision
    ii) Exposure to sun light

95. A man is accused of being a farther of a child. In court, he swears he never slept with the child's mother. The judge order a blood group test for all the parents. The man's blood type is A, the mother is B and baby is "O"
    a) Could this man be the father of the child? Explain
    b) What do you think the judge will do next

96. In a separate paternity, a Type "O" woman accuses a Type "A" man of being the father of her type AB child. After double checking that the blood type data are correct, you throw the case

out of the case and have the woman held for questioning. Why?

97. In laboratory experiment, red colored plants were crossed with white coloured plants. F_1 generation were then selfed to produce F_2.
    i) Assuming red color is dominant work out on genetic cross for F_1 generation
    ii) Give the phenotypic and genetic ratio of F_2

98. In the experiment conducted on single factor inheritance, individuals which were male homozygous tall married a female who was homozygous dwarf. The gene for tall was dominant over dwarf. Use this crosses to find out possibility of the phenotypic result and the ration in the ???????????????? generation
99. Differentiate Test cross from Back cross
100. The Biology students at Themi Hill secondary performed experiment with the aim of providing the mendelian experiment on single factor inheritance that they were taught in class. They decided to use mice's coat fur. In the experiment pure bread (homozygous) black fur mouse (male) was mated with a female pure bread brown fur. The gene for black fur colour was dominant over the gene for brown fur colour. Use crosses to show the possibilities of the results in the F_1,

Define the following terms

101. Gene
102. Phenotype
103. Genotype
104. Back cross
105. Allele
106. Epistasis
107. Self cross
108. A bean plant can bear either terminal or axial flowers. When a terminal flowered plant (T) is pollinated with an axial flowered plant (T) the off-spring produced were 200 terminal flowered and 210 axial flowered.
    Work out for the genotype of the parents
109. A colour blind woman marries a man with normal vision. What percentage of a colour blind and normal children would be expected from such a marriage?
110. What is the genotype of the off-spring produced when an albino male marries a female who is heterozygous for albinism?
111. In a certain species, two homozygous individual mated and resulting off-springs in F1 was heterozygous with the same phenotype. However in F2 a new homozygous phonotype was obtained which looked different from the parent F1. With the help a diagrams, Explain how individuals with different phenotype in F2 were obtained.
112. Mr. and Mrs. Joel who were married 10 years ago happen to have four children. The last child was an albino and Mr. Joel claimed that his wife cheated on her. Using genetic symbols, work out the genotype of Mr. and Mrs. Joel so as to educate Mr. Joel how he could get an albino in his generation.
113. Use the words "homozygous" "heterozygous" "dominant" and recessive (where suitable) to describe the following gene combination.
    i) Bb
    ii) BB
    iii) Bb

114. A married couple has four girls but no boys. Does this mean that the husband produces X-chromosomes only? Explain

115. In an experiment, a variety of garden peas having a smooth seeds coat was crossed with a variety having a wrinkled seed coat. All the seeds in F1 generation were selfed and the total number in generation was 7324.
   - Using appropriate letter symbols, work out the genotype of the F1 generation.
   - From the information above, write the total number of wrinkled seeds in the F2 generation