HARAMAYA SPECIAL BOARDING SECONDARY SCHOOL

Grade 11 Biology work sheet from Unit-4(Genetics)

I. Choose the Best Answer from the Given Alternatives

1. Suppose genotype BB produces blue. Bb produces pink, and bb produces white flowers. Which of the following crosses is expected to produce all the three types of flowers?

A. Bb x bb B. Bb x Bb C. BB x bb D. bb x bb

2. It you have a chicken of the genotype Dd Rr, the possible gametes that it can produce are:

A. DR, Dr, dR and dr C. DD. Dd, DR and Dr

B. RR, RD, RD and Rd D. Dd, DR, dD and Dr

3. After having six daughters, the chance that the parents will produce a son is:

A. 50% B. 75% C. 25% D. 100%

4. Which of the following alternatives is the correct sequence of the three meiotic events?

A. Pairing of homologous chromosomes → separation of sister chromatids → separation of homologous chromosomes.

B. Separation of sister chromatids → pairing of homologous chromosomes → separation of homologous chromosomes.

C. Separation of homologous chromosomes → separation of sister chromatids →pairing of homologous chromosomes

D. Pairing of homologous chromosomes → separation of homologous chromosomes → separation of sister chromatids.

5. Natinael is left handed. His parents are both right hands. If right handedness ® is dominant aver left handedness(r) what were the genotypes of the parents?

A. RR x rr B. Rr x Rr C. RR x rr D. rr x rr

6. When a DNA replicates the two daughter DNAs contain?

A. Two old nucleotide chain each

B. One nucleotide chain each

C. Two new nucleotide chains each

D. One old and one new nucleotide chains each.

7. If one imagines the DNA molecules as a tiny “ladder”, the crossbars of the ladder are made up of?

A. Bases B. Sugar C. Sugar & phosphate D. phosphate & base

8. A nucleotide is made up of?

A. 4. carbon sugar, a phosphate group & a nitrogen containing base

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B. 5- carbon sugar, and a nitrogen containing base
C. 5- carbon sugar, a phosphate group & a nitrogen containing base
D. 4- carbon sugar and a phosphate group.
9. Two pure breeding long winged and shot winged fruit flies were crossed and produced all long winged F1. The F2 long winged and short winged flies. Among 1000 of the F2 flies we expect?
A. 500 long and 500 short C. 250 long and 750 short
B. 400 long and 600 short D. 750 long and 250 short
10.Suppose 1600 pea plants are produced from Tt x tt cross, how many of them are expected to be tall?
A. 800 B. 1400 C. 400 D. 1200
11.In the above cross (Q 10), how many of the plants are expected to be TT?
A. 600 B. 800 C. 600 D. None
12.If one of the chains of a DNA molecule has ACGT bases, the corresponding bases on the other chain are?
A. TGCT B. TCGA C. TGCA D. TCGT
13.The number of nucleotide chains that make a molecule of DNA is?
A. Many B. four C. two D. three
14.The two halves of a replicated chromosome are called?
A. Chromatids B. centromeres C. spindles D. centrioles
15.Meiosis produces four daughter cells from each diploid mother cell. The number of sets of chromosomes in each daughter cell is?
A. 4 B. ¼ C. ½ D. 1
16.Which of the following is not taking place in mitosis?
A. Separation of sister chromatids
B. Separation of homologous chromosomes
C. Chromosome replication
D. Division of the cytoplasm
17. Which of the following is true about Sex determination in birds?
A. They have the hetero zygotic x & y chromosomes.
B. Males have hetero zygotic A & Z chromosomes
C. Females have the homo zygotic WW chromosomes
D. They have the hetero zygotic W & Z chromosomes
18.How many amino acids are there in all known proteins?
A. About 10 B. About 35 C. About 20 D. About 46
19.If a codon on a messenger RNA is CCC. What is the complementary anticodon on the transfer RNA?
A. UUU B. GGG C. CCC D. AAA
20.Which of the following is the sex chromosome Constitution of human males?
A. XX B. XY C. ZZ D. ZW
21.When Mendel crossed a tall pea plant with a short plant, the F1 Progeny were all tall. What F1 did he obtain when he made the reciprocal cross?

A. Short plants C. Extra tall plants
B. Tall plants D. Plants of average height

22.Among the following ABO blood group genotypes, which one produces two types of antigens?
A. IAIO B. IB IO C. IA IB D. IB IB

23.Which of the plants with the following genotypes is heterozygous?
A. BBYY B. BbYy C. bbyy D. YYBB

24.If in a DNA molecule consisting of 1000 bases there are 300 adenine bases, how many guanine bases, how many guanine bases will be present?
A. 200 B. 400 C. 600 D. 700

25.If it is known that the total amount or DNA in a cell is 300 units and that adenine a lone contributes 70 or these units, how many units go to cytosine?
A. 40 units B. 70 units C. 80 units D. 35 units

26. The ultimate source of genetic variation is?
A. Selection B. genetic drift C. mutation D. migration

27.During meiosis, which process makes the four chromatids of a homologous pair of chromosomes genetically different from one another?
A. Independent assortment C. Linkage
B. Segregation D. crossing over

28.One goat is heterozygous, long hair (Rr), and its mate carries homozygous short hair (rr). What is the probability of the offspring having short hair?
A. 25% B. 50% C. 75% D. 100%

29. During meiosis, crossing over is important to increase variation of gametes with regard to alleles that are ?
A. Dominant and heterozygote C. recessive and homozygote
B. Independently segregated D. linked and not assorted independently

30.In which phase of meiosis does pairing of chromosomes and exchange of segments take place?
A. Prophase II B. prophase I C. Anaphase II D. Anaphase I

31.Among the following statements, which one is correct about mutations? Mutations
A. are accidents that occur spontaneously & randomly during DNA replication
B. that occur in somatic cells can pass on to the next generation
C. are changes in genetic composition of a population
D. that occur in sex cells are completely harmless

32.If the particular triplet of bases in the sense strand or DNA is AGT, then the corresponding codon for the transcribed mRNA with be ____.?
A. ACU B. UGA C. UCA D. AGU

33. The nucleotides that build up the DNA molecule contain the following bases EXCEPT?
A. Guanine B. adenine C. cytosine D. uracil

34.What is the complementary strand for a DNA strand having the following sequence of bases?
5'- AGGTTACTGAGCT-3'
A. 3'- TCCAATGACTCGA-5'

B. 5'- TCCAATGACTCGA-3'
C. 3'- UCCAAUGACUCGA-5'
D. 5'- UCCAAUGACUCGA-3'

35. Which of the following bases are the triplets of codes in the mRNA that cease translation and the ribosome folds the polypeptide into its final structure?

A. ATT, ATC and ACT C. CCC, UUA and GUU
B. UAA, UAG and UGA D. TAA, TAG and TGA

36.Consider the following disordered events of transcription

I. RNA polymerase crosses a stop sequence in the gene.
II. RNA polymerase reads the antisense DNA strand and builds mRNA.
III. mRNA molecule detaches from DNA and the DNA rejoin.
IV. RNA polymerase binds to the promoter which signals the DNA to unwind.

Which one is the correct sequence of events during transcription?

A. I → IV → III→ II C. IV → I → II→ III
B. IC → II → I→ III D. I → IV → II→ III

37.Which type of chromosome mutation causes the human genetic defect known as trisomy 16?

A. Chromosome inversion C. Deletion
B. Translocation D. Duplication

38.Which one of the following is commonly called the code of lite?

A. Cell B. organelle C. DNA D. Nucleus

39.What is the function of DNA polymerase?

A. It hydrolyzes the DNA molecule
B. It converts the DNA molecule to RNA.
C. It joins two RNA molecules to form DNA
D. It forms DNA by joining nucleotides

40.Which of the following are the two major constituents of eukaryotic chromosomes?

A. DNA & RNA C. DNA & Carbohydrate
B. DNA & Protein D. RNA & Lipid

41.Which of the following is true about mutations that occur in normal body cells?

A. They never lead to cancerous cells.
B. They never pass to the next generations.
C. They never damage the affected cells.
D. There is no way that they kill the affected cells.

42.What is the process called when two bacteria directly contact cell to cell and exchange their genetic information?

A. Conjugation B. Transformation C. Co-transformation D. Transduction

43.For what purpose do molecular biologists use the technology known as polymerase chain reaction or PCR?

A. To insert DNA in to plasmids C. To multiply copies of DNA molecule
B. To insert plasmid in to bacteria D. To produce DNA from RNA

44.What is the base found in RNA in place of thymine of DNA?

A. Cytosine B. Guanine C. Thymine D. uracil

45.A cow was found to yield much higher milk then any of the breeds of the parental cattle. What could be the most probable reason for this?

A. Dominant genes C. Recessive genes

B. Hybrid vigour D. Co-dominance genes

46.Which molecule in the cell is the constituent of the gene?

A. Nucleic acid B. protein C. Lipid D. carbohydrate

47. Which or the following is true?

A. Recessive alleles are only expressed in the homozygote

B. Dominant alleles are expressed only in the heterozygote

C. Recessive alleles are expressed in the heterozygote

D. Genetically modified organisms are never used to manufacture vaccines.

48.Which of the following groups of animals have males with ZZ and females with Z W sex chromosome constitution?

A. Grasshoppers B. Birds C. Mammals D. Honey bees

49.Which of the following techniques is used to separate DNA fragments according to their Size on a gel?

A. Southern blotting C. Radioactive labeling

B. Electrophoresis D. Digestion by restriction enzyme

50.In some crosses of maize, the progeny produces better yield than the parents. What is this phenomenon known as?

A. Dominance C. Hybrid vigour

B. Heterozygosity D. Inbreeding depression

51.Which molecules carry the instructions for protein synthesis?

A. Carbohydrate & Lipids C. DNA and RNA

B. Amino acids D. Enzymes

52.During protein synthesis, where in the cell does transcription take place?

A. Ribosome C. Endoplasmic reticulum

B. Nucleus D. Golgi apparatus

53.In protein synthesis, what is produced during transcription?

A. Protein B. m RNA C. DNA D. Polypeptide

54.What is a perfect flower?

A. A flower with petals and pistil. C. A flower with stamens and pistil.

B. A flower with stamens and sepal. D. A flower with sepals and petals.

55.Which of the following is NOT a term used to describe organisms that have had foreign genes added to them?

A. Genetically modified organisms

B. Transgenic organisms

C. Genetically engineered organisms

D. Pathogenic organisms

56.Which field studies the way in which individual traits of organisms are transmitted from one generation to the next?

A. Genetics B. Ecology C. Evolution D. morphology

57.Which of the following pairs of individuals have identical DNA finger prints?

A. Father and Son C. Brother and sister

B. Mother and daughter D. Monozygotic twins

58.Which of the following types of chromosome mutations gives rise to an extra chromosome?

A. Inversion B. Translocation C. Deletion D. Non-disjunction

59.Before making crosses, which part of the flower did Mendel remove to avoid self-pollination?

A. Stigma B. ovule C. ovary D. stamens

60. Which of the following is the correct F2 phenotypic ratio of a monohybrid cross?

A. 1 : 2 B. 1 : 1 C. 3 : 1 D. 2 : 2

61.One of the following is an important cause of gene mutation.

A. Old age B. Alcoholic drinks C. Smoking D. Radiation

62.How many chromosomes do humans inherit from each of their parents?

A. 23 chromosomes C. 46 chromosomes

B. 23 pairs of chromosomes D. 46 pairs of chromosomes

63.Which of the following is NOT true about the gene called SRY?

A. It is found on the Y-chromosome

B. It determines maleness

C. Testes develop in its presence

D. Females have two copies of this gene

64.The sheep 'dolly' is an example of which biotechnological manipulation of animals by human?

A. Transgenic animal C. cloned animal

B. Genetically engineered animal D. Hybrid animal

65.In a cross between heterozygotes, what proportion is expected to be homozygous recessive?

A. 25% B. 50% C. 75% D. 100%

66.Gene silencing is the function of one of the following molecules

A. Ds RNA B. m RNA C. Si RNA D. t RNA

67.Which process is held responsible for chronic myelogenous leukemia?

A. Translocation B. Translation C. Transcription D. Duplication

68.Two parents of genotype Aa are cross-bred. The alleles show complete dominance. What proportion or the OH spring will phenotypically look like their parents?

A. 0 B. ¼ C. ½ D. ¾

69.In which of its contents RNA differs from DNA?

A. Deoxy ribose and guanine C. Ribose and thymine

B. Ribose and uracil D. phosphate and adenine

70.In some human liver cells there are 92 chromosomes per cell. What is the ploidy level of such cells?

A. Haploid B. Diploid C. Tetraploid D. Hexaploid

71. Which one of the following choices shows the end products of a mitotic cell division?

A. Gametes and ordinary cells
B. Four genetically different cells.
C. Two genetically different cells. D. Two genetically identical cells.
72.What exactly happens during a substitution mutation?
A. One base is replaced by a different base.
B. An extra base is added during DNA replication
C. A base is missed out during DNA replication
D. Changes occur in the arrangement or structure of a chromosome.
73.Which one of the following is NOT a mutation?
A. DNA replication to form two daughter DNAs.
B. Gain of an extra chromosome by a cell.
C. Deletion of a base pair from DNA
D. Loss of a chromosome by a cell
74.What do geneticists call the genotype in which the two alleles of a pair are identical?
A. Dominant B. Recessive C. Homozygous D. Heterozygous
75.To which major area of relevance and applications of biology is the production of transgenic organisms related?
A. Agriculture B. Environment C. Biotechnology D. Medicine
76. In DNA cloning technology, which of the following molecules serves as a vector of gene of interest to be transferred to bacterial host?
A. Bacterial DNA B. plasmid DNA C. Nuclear DNA D. mitochondrial DNA
77.Which parts of the angiosperm flower are both essential for the success of hybridization experiments?
A. Sepal and petal C. pollen and filament
B. Stamen and petal D. Gynoecium and androecium
78.Which of the following pairs of molecules can give information about how much two species are evolutionary related to one another?
A. DNA and proteins C. Lipids and carbohydrates
B. Starch and cellulose D. Carbohydrates & proteins
79.As was shown by Greg or Mendel garden pea, what percentage of the F2 generation of a monohybrid cross has the recessive phenotype?
A. 75% B. 50% C. 25% D. 12.5%
80.Hemophilia is a sex-linked recessive trait in humans If a father and a son are both hemophiliacs, but the mother is not hemophiliacs, her genotype must be
A. Xh xh B. Xh xh C. xH xH D. xhy
81.The stop of mitosis in which chromosomes ine up a long the equatorial plane of the cell is called
A. Prophase B. Metaphase C. Anaphase D. Telophase
82.Across between two individuals that differ with respect to the alleles they carry for a single locus is
A. Genotypic cross C. Dihybrid Cross
B. Phenotypic cross D. Monohybrid cross

83.Which of the following sequences represents the correct change in number of chromosomes during fertilization?

A. n+n → 2n B. 2n → 2n C. n + n D. 2n → n+n

84. How many kinds of gametes can an individual with genotype Aa Bb Cc Dd produce?

A. 16 B. 32 C. 64 D. 8

85.If allowed to self -pollinate, which of the following pea genotype would produce progeny with 9: 3: 3: 1 phenotype ratio?

A. RR Yy B. RrYy C. RR YY D. Rryy

86.If pea plants with round yellow heterozygous seeds are self-fertilized and produced 4800 seeds, how many round green seeds will be produced? (Hint: round yellow seed is dominant)

A. 4800 B. 300 C. 900 D. 2700

87.Suppose two heterozygous rounds yellow (RrYy x RrYy) pea plants were crossed and 128 seeds were produced, how many of the seeds re expected to be heterozygousround yellow?

A. 64 seeds B. 32 seeds C. 96 seeds D. 128 seeds

88.Suppose a cell having 32chromosomes is divided by meiosis. Each of the four resulting daughter cells would contain?

A. 32 chromosome B. 16 chromosome C. 8 chromosome D. 64 chromosome

89.Red-green colour blindness is due to x-linked gene and determined by the recessive alleles. Which one of the following is true about this condition?

A. It is much more common in females

B. It affects males due to alleles inherited from the father.

C. Females inherit on allele from each parent and become affected

D. Expressed in both sexes equally if the parents are carriers

90.Which form of mutation is responsible for the disease known as leukemia?

A. Duplication B. Insertion C. inversion D. Deletion

91.If you wanted to determine whether an Ox is a hybrid or a pure dominant for a given trait, it should be crossed with a?

A. Hybrid cow C. close relative

B. Cow with a recessive trait D. cow with a pure dominant trait

92.Transfer of a gene or genes through a virus is called?

A. Transformation B. Genetic engineering C. transduction D. conjugation

93.If a cell containing 40 chromosomes divides by mitosis and the resulting cell divide by meiosis, the number of chromosomes of the resulting cells would be?

A. 20 B. 40 C. 80 D. 10

94.The fact that DNA is the genetic material located on chromosomes and not the proteinaceous histones was proved by the following evidence?

A. Only changes in the composition of DNA result in a change of the characteristic individual.

B. Certain external factors such as ultra-violet rays change the characteristics of both DNA and the individual, and not that of histones.

C. Only DNA doubles in quantity before every cell division
D. All of the above
95.Protein synthesis in the cells requires the following condition?
A. Transfer RNA that is carrying the cade message from the DNA must recognize messenger RNA that carries specific amino acids.
B. Messenger RNA carrying the code message from the DNA must recognize the transfer RNA that carries specific amino acids.
C. Ribosomes to which transfer RNA is attached moves along the transfer RNA as it reads the DNA code.
D. In the nucleus, the code message in the DNA is transferred to mitochondria RNA
96.When is reverse transcriptase a useful enzyme? When:
A. An RNA virus converts its RNA to DNA.
B. There are no host cells present.
C. Spikes are forming in the new virus
D. Nutrients are scarce
97.In what way do retro viruses differ from the other RNA viruses?
B. They copy RNA to DNA C.Their genetic material is RNA
C. They are parasitic D. They are smaller in size
98.Which of the following does not describe the genetic code?
A. Triplet B. Degenerate C. Overlapping D. universal
99.The chart that shows the hereditary history of humans over many generations is called?
A. pyramid B. pedigree C. punnett square D. karyotype