MUDRA LIFE SCIENCES

VOLUME-05

PART B & C

MODEL QUESTION BANK FOR THE TOPICS:

8. INHERITANCE BIOLOGY

UNIT-4

1. What causes mutations?

(a) Colchicine (b) Cosmic rays

(c) Gamma rays (d) Crossing over

2. Lampbrush chromosomes are seen during

(a) Meiotic metaphase (b) Mitotic metaphase

(c) Mitotic prophase (d) Meiotic prophase

3. Number of chromosomes can increase or decrease due to

(a) Mutation (b) Genetic repetition

(c) Nondisjunction (d) All the above

4. The area of unwinding and separation of DNA strands during replication is called

(a) Origin (b) Initiation point

(c) Primer (d) Replicating fork

5. Topoisomerase is involved in

(a) Producing RNA primer

(b) Joining the DNA segments

(c) Producing nick in DNA

(d) Separation of DNA strands.

6. In DNA replication, the primer is

(a) Small deoxyribonucleotide primer

(b) Small ribonucleotide primer

(c) Helix destabilising proteins

(d) Enzyme taking part in joining nucleotide to their complementary template bases.

7. DNA strand is synthesized in the direction

(a) 5’ 3’ (b) 3’ 5’

(c) V 4’ (d) 6’—V

8. Okazaki segments are

(a) Small segments of RNA

(b) Small peptides

(c) Small DNA segments

(d) Small DNA segments formed over DNA template running in 3' - 5' direction.

9. Okazaki fragments are joined by

(a) DNA polymerase III (b) DNA ligase

(c) DNA polymerase II (d) DNA polymerase I

10. Okazaki fragments give rise to

(a) Master strand (b) Sense strand
(c) Lagging strand (d) Leading strand

11. Error that occur during division of somatic cells (mitosis) result in an individual with more than one karyotype. Such an individual is termed as

(a) Aneuploid (b) Monosomatic

(c) Mosaic (d) Metacentric

12. Polyploidy is observed

(a) Rarely in plants, but frequently in animals.

(b) Rarely in animals but frequently in plants,

(c) Frequently in plants and animals

(d) None of these

13. Absence of one copy of specific chromosome in a cell is termed as

(a) Nullisomy (b) Monosomy

(c) Disomy (d) Trisomy

14. Non-disjunction refers to

(a) Formation of aneuploid gametes from errors at both first and second divisions of meiosis.

(b) Two homologous chromosomes fail to separate at meiosis I.

(c) A centromere fails to split at metaphase of meiosis II.

(d) All of these.

15. In the case of trisomy 21, an affected child will also inherit a normal copy of chromosome 21 from their other parent and thus will have three copies of chromosome. This is a case of

(a) Disjunction (b) Non-disjunction

(c) Aneuploidy (d) Polyploidy

16. The nucleus of a cell divides by mitosis while in parallel the cytoplasm divides by

(a) Meiosis (b) Cytokinesis

(c) Mitosis (d) Splices

17. If there is no cell division the organism will

(a) Survive for quite long period

(b) Death will quickly ensure

(c) Growth rate increase

(d) None

18. If plant with four homologous pairs of chromosomes, AA, BB, CC and DD is self fertilized. Which of the following chromosome coordinates would you expect to find in its offsprings?

(a) AB

(b) CD

(c) AB CD

(d) AA BB CC DD

19. In a zygote that begins with a complement of two homologous chromosome pairs A and a and B and b, which of the following chromosome compliments would you expect to find in its somatic cells during growth?

(a) Aa BB (b) Aa Bb

(c) AA Bb (d) AA BB

20. In a cross between two varieties A and B, A provides the pollen while B provides the ova and one gets some results. What would happen if the pollen is provided by B and ova by A?

(a) Results will be altered,

(b) Results will remain same.

(c) Both of these

(d) None of these

21. In the F_1 generation of a cross between the two varieties the trait which is hidden will be in F_2 generation.

(a) Remain hidden (b) Reappear

(c) Both (d) None of these

22. The trait which disappears in F_1-generation but reappears in F_2 will occur at a frequency of total number.

(a) 1/2 (b)l/3

(c) 1/4 (d) 3/4

23. An inherited factor that determines the biological characteristics of an organism is called

(a) Gene (b) Alleles

(c) Chromosome (d) Chromatid

24. Mitosis can produce

(a) Intra-chromosomal recombination

(b) Inter-chromosomal recombination

(c) Both

(d) None of these

25. A man with blue eyes marries a brown-eyed woman whose mother had blue eyes. What proportion of the children would be expected to have blue eyes?

(a) 1/4 (b)l/2

(c) 3/4 (d) 1

26. A blue-eyed man marries a brown-eyed woman. The first child is blue eyed. What is the man's genotype?

(a) B/B (b) b/b

(c) B/b (d) None

27. Variations in cross-over frequencies

(a) Dependent on genetic but not environmental factors.

(b) Occurs between different gene pairs both in different organisms and in the same organism.

(c) Cannot always be attributed to a change in distance between the two pairs of genes.

(d) Is directly connected with variation in chiasma frequency.

28. A drug colchicine derived from a crop growing in the Middle East, inhibits spindle formation when applied to cells during mitosis. The separation of chromatids occur at anaphase, but they remain within the nuclear envelope. When the nucleus is reconstituted it contains four sets of homologous chromosomes. It is an

(a) Autotetraploidy (b) Allotetraploidy

(c) Autotriploidy (d) None of these

29. Autotetraploids are

(a) Unstable genetically (b) Stable genetically

(c) Sterile (d) None

30. Autotetraploids become established if they reproduce

(a) Sexually (b) Asexually

(c) Cloning (d) All

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