

1. Gene and cistron words are sometimes used synonymously because–
  - (a) One cistron contains many genes
  - (b) One gene contains many cistrons
  - (c) One gene contains one cistron
  - (d) One gene contains no cistron
  
2. A gene containing multiple exons and at least one intron is termed as :-
  - (a) split gene
  - (b) operator gene
  - (c) synthetic gene
  - (d) epistatic gene
  
3. Gene which is responsible for the synthesis of a polypeptide chain is called :-
  - (a) Promotor gene
  - (b) Structural gene
  - (c) Regulator gene
  - (d) Operator gene
  
4. Which is true for tryptophan operon :-
  - (a) It is the example of inducible operon
  - (b) It is example of repressible operon
  - (c)  $on \xrightarrow{\text{repressor}} off$
  - (d) (b) and (c) both are correct
  
5. Which is true for repressible operon :-
  - (a)  $Off \xrightarrow{\text{Inducer}} on$
  - (b) Inactive repressor + Co-repressor = active repressor
  - (c) Active repressor + Inducer = inactive repressor
  - (d)  $On \xrightarrow{\text{Inducer}} off$
  
6. What does "lac" refer to, in what we call the lac operon :-
  - (a) Lactose
  - (b) Lactase
  - (c) Lac insect
  - (d) The number 1,00,000
  
7. Which of the following is not produced by E.Coli in the lactose operon –
  - (a)  $\beta$  galactosidase
  - (b) Thiogalactoside transacetylase
  - (c) Lactose dehydrogenase
  - (d) Lactose permease
  
8. A functional complex comprising a cluster of genes including structural gene, a promoter gene, an operator gene and a regulator gene was discovered by :-
  - (a) Beadle and Tatum (1958)
  - (b) Watson and crick (1953)
  - (c) Jacob and Monad (1961)
  - (d) Britten and Davidson (1961)
  
9. Who explained the operon model for the first time
  - (a) Francois Jacob
  - (b) Jacques Monod
  - (c) Francois Jacob and Jacques Monod
  - (d) Beadle & Tatum

10. The accessibility of promoter regions of prokaryotic DNA by RNA polymerase is in many cases regulated by the interaction of some protein with sequences termed as –
- (a) Promoter
  - (b) Operator
  - (c) Regulator
  - (d) Cistron
11. Regulation of lac operon by repressor is referred to as–
- (a) Positive regulation
  - (b) Negative regulation
  - (c) Both(a) and (b)
  - (d) None
12. Which is incorrect
- (a) i-gene codes for the repressor of lac operon
  - (b) z-gene codes for the beta-galactosidase
  - (c) y-gene codes for transacetylase
  - (d) three gene products are required for metabolism of lactose
13. Which is the primary step for regulation of gene expression.
- (a) Transport of m-RNA from nucleus to the cytoplasm
  - (b) Translational level
  - (c) Processing level
  - (d) Transcriptional level
14. Find out the correct sequence of structural gene in lac operon
- (a) y, a, z
  - (b) a, z, y
  - (c) z, y, a
  - (d) z, a y
15. Who experimentally proved that DNA is the basic genetic material?
- (a) J. D Watson
  - (b) H.G. Khorana
  - (c) Alfred Griffith
  - (d) Hershey & Chase
16. DNA was first discovered by
- (a) Beadle and Tatum
  - (b) Watson and Crick
  - (c) Friedrich Miescher
  - (d) A. Kornberg
17. A nucleoside is
- (a) purine / pyrimidine + phosphate
  - (b) purine / pyrimidine + sugar
  - (c) pyrimidine + purine + phosphate
  - (d) Purine + sugar + phosphate
18. The two strands of DNA are
- (a) Similar in nature and complementary
  - (b) Antiparallel and complementary
  - (c) Always single stranded
  - (d) Rarely double stranded
19. In which of the following, double stranded RNA is present?
- (a) bacteria
  - (b)  $\phi$  x 174
  - (c) retrovirus
  - (d) reovirus

20. Regarding to features of double helix structure of DNA which of the following is wrong
- (a) Two polynucleotide chains have antiparallel polarity
  - (b) The bases in two strands are paired through phosphodiester bonds
  - (c) Adenine form two hydrogen bonds with thymine
  - (d) The pitch of the helix is 3.4 nm
21. In a given sample of nucleic acid G + A content is not equal to C + T. This indicates that sample is
- (a) GC rich
  - (b) AT rich
  - (c) single-stranded DNA
  - (d) double-stranded DNA
22. The haploid content of human DNA is
- (a)  $3.3 \times 10^9$  bp
  - (b)  $3.3 \times 10^9$  kbp
  - (c)  $4.6 \times 10^6$  bp
  - (d) 48502 bp
23. Histone proteins are rich in
- (a) Tryptophan, Lysine
  - (b) Arginine, Lysine
  - (c) Histidine, Arginine
  - (d) Histidine, Tryptophan
24. Which was first genetic material?
- (a) RNA
  - (b) DNA
  - (c) Protein
  - (d) Both (a) and (b)
25. The length of DNA molecule greatly exceeds the dimensions of the nucleus in the eukaryotic cells. How is this DNA accomodated?
- (a) Super coiling in nucleosomes
  - (b) DNase digestion
  - (c) Through elimination of repetitive DNA
  - (d) Deletion of non-essential genes
26. Which of the following is not a criteria for determination of genetic material
- (a) Ability of replication
  - (b) Chemically and structurally stable
  - (c) It should be non mutable
  - (d) Ability to expres itself in form of Mendelian characters
27. Choose the incorrect one:
- (a) Nucleosomes in chromatin are seen as "beads on string structure".
  - (b) Nucleosome in a histone octamer.
  - (c) Nucleosome is present in both prokaryotic & eukaryotic DNA.
  - (d) A typical nucleosome contains 200 bp. of DNA helix.
28. Which is incorrect regarding nucleosome?
- (a) A typical nucleosome contain 200 bp of DNA helix
  - (b) Histone are rich in the basic amino acid residue lysines & arginines
  - (c) The packaging of chromatin at higher level require additional set of proteins that collectively are referred to as Non-histone chromosomal (NHC) protein
  - (a) a only
  - (b) a & c both

(c) c only

(d) None

29. Which is incorrect for t-RNA

- (a) t-RNA has an anticodon loop that has bases complementary to the codon of m-RNA
- (b) t-RNA are specific for each amino acid
- (c) Three t-RNA are present for stop codon
- (d) In actual structure, the t-RNA is a compact molecule which looks like inverted L.

30. Chargaff's rules are applicable to

- (a) Single stranded RNA
- (b) Single stranded DNA and RNA
- (c) Single stranded DNA
- (d) Double stranded DNA.

1. (c)
2. (a)
3. (b)
4. (d)
5. (b)
6. (a)
7. (c)
8. (c)
9. (c)
10. (b)
11. (b)
12. (c)
13. (d)
14. (c)
15. (d)
16. (c)
17. (b)
18. (b)
19. (d)
20. (b)
21. (c)
22. (a)
23. (b)
24. (a)
25. (a)
26. (c)
27. (c)
28. (d)
29. (c)
30. (d)