1.) Identify the mismatch

a.	Alkaline phosphatase	Remove phosphate
b.	DNA polymerase I	Nick translation
c.	S1 endonuclease	Cleave only ss DNA
d.	DNase I	Cleave only ds DNA

2.) Genes related through descent from a common ancestral gene are called

a. Orthologous
b. Homologous
c. Heterologous
d. Paralogous

3.) Which of the following is a signalling receptor

a. Mannose receptor
b. Toll like receptor
c. Scavenger receptor
d. LPS receptor

4.) Which types of probes are used in forensic sciences

a. Multi locus probes
b. Single locus probes
c. RNA probes
d. Both a and b

5.) GFP protein was isolated from

a. *Arabidopsis thaliana*
b. *Aequoria victoria*
c. *C. elegans*
d. *Drosophila melanogaster*

6.) The group associated with first man made recombined molecule

a. Daniel Nathan, Arber, Kary Mullis
b. Paul Berg, Annie chang, Boyer, Stanley Cohen
c. Howard Temin, Sydney Brenner, PhilipSharp
d. Tim Hunt, Paul Nurse, Leyland Hartwels

7.) Karyotheca is

a. Nucleus
b. Nucleolus
c. Nuclear membrane
d. Nuclear pore

8.) Which of the following is possessed only by some bacteria, not by eukaryotes
   a. Cilia
   b. Flagella
   c. Capsule
   d. Centriole

9.) For glycoprotein, most commonly used probe is
   a. Antibody
   b. Lectin
   c. Antigen
   d. Interferone

10.) Independently folded functional unit of a protein is called as
   a. Motif
   b. Fold
   c. Domain
   d. Module

11.) Which of the following is known as Royal disease
   a. Sickle cell anaemia
   b. Haemophilia
   c. Colour blindness
   d. Alzheimer disease

12.) A mapping method for identifying markers linked to trait of our interest in a natural population is
   a. Linkage mapping
   b. Associative mapping
   c. Physical mapping
   d. Transcriptome mapping

13.) Rice grains are deficient in
   a. Lysine
   b. Glycine
   c. Alanine
   d. Isoleucine

14.) Variations in clonally reproducing crop arises from
   a. Genetic recombination
   b. Chromosomal segregation
   c. Alternative splicing
   d. Mutations

15.) Source of dwarfing genes in wheat is
   a. Ganga 101
   b. Norin 10
   c. Dee-goo-woo-gen
   d. Sonalika

16.) Administration of DPT vaccine would stimulates which one of the following types of immunity
   a. Artificial active
   b. Artificial passive
   c. Natural active
   d. Natural passive

17.) Engineering plants using chitinase gene leads to development
   a. Viral resistance
   b. Fungal resistance
   c. Bacterial resistance
   d. Cold tolerance

18.) The genetic map for three genes A, B, C is as following
   A-B 10 map units
   B-C 5 map units
   A-C 15 map units
   In an individual of genotype AbC/aBc the percentage of gametes expected to be of ABC is
   a. 0.5
   b. 5
   c. 15
   d. 50

19. Transgenic organisms carry the Transgene in
   a.) Every cell
   b.) Gametes only
   c.) Somatic cells only
   d.) The cells that originally get it

20. Restriction enzymes are involved in following genetic engineering techniques except:
   a.) Cloning DNA into vector
   b.) Mapping studies
   c.) Identification of genetic markers

d.) PCR

21. Which of the following pair of base sequence could form a short stretch of normal double helix of DNA:
    a.) 5'- AGCT-3' with 5'-TCGA-3'
    b.) 5'- AATT-3' with 5'-TUAA-3'
    c.) 5'- GCGC-3' with 5'-TATA-3'
    d.) 5'- ATGC-3' with 5'-GCAT-3'

22. A gene showing co dominance:
    a.) has one allele dominant to other
    b.) has alleles tightly linked on the same chromosome
    c.) has alleles expressed at the same time in development
    d.) has both alleles independently expressed in heterozygote

23. Which of the following enzymes aid in uncoiling DNA?
    a.) DNA gyrase
    b.) DNA helicase
    c.) Single strand binding protein
    d.) All of the above

24. P53 protein is associated with all of the following except:
    a.) tumor suppression
    b.) programmed cell death
    c.) transcription
    d.) post transcriptional modifications

25. Resolving power of a microscope is determined by:
    a.) wave length of light source
    b.) refractive index of the medium
    c.) half angle of the objective lens
    d.) all of the above

26. If an individual of genotypes AaBbCcDd is test crossed, how many different phenotypes can appear in the progeny?

    a. 16

    b. 8

    c. 32

d. 64

27. Which of the following are correct?

P. classical Mendelian traits are qualitative in nature
Q. qualitative traits show discontinuous variations
R. qualitative traits are polygenic traits
S. qualitative traits are referred to as metric traits

a. P and Q

b. P and S

c. Q and R

d. R and S

28. In a population that is in equilibrium, the proportion of individuals showing the dominant trait at a given locus having two alleles is 84%. The frequency of the recessive allele in the population is

a. 0.4

b. 0.3

c. 0.2

d. 0.16

29. Streaming of protoplasm is absent in

a. Parenchyma and collenchymas cells

b. Bacterial cells and vessels

c. Cells of higher plants

d. Cells of hydrilla

30. Chemolithotrophs are those bacteria which can utilize

a. Inorganic material as the energy source

b. light as the energy source

c. organic compound as the energy source

d. crude oil as carbon source

31. Cell membrane of archeobacteria differs from eubacteria due to presence of

    a. Ether linkage instead of ester linkage between fatty acid/ aliphatic chain and glycerol

    b. Branched hydrocarbon chain instead of unbranched hydrocarbon chain

    c. Ribitol instead of glycerol in phospholipid

    d. Both a and b

32. Virusoid is

    P. a satellite nucleic acid
    Q. a non-coding RNA
    R. a ribozyme
    S. a viroid with capsid

    a. P and Q

    b. Q and R

    c. P, Q and R

    d. P, Q, R and S

33. Which of the following cells play a major role in defense against parasitic micro organism and constitute 1-3% of the white blood cell population.

    a. Macrophages

    b. Neutrophils

    c. Eosinophils

    d. Basophils

34. The replicative polymerase in *E. coli* is
    a. DNA polymerase I
    b. DNA polymerase II
    c. DNA polymerase III

d. DNA polymerase IV

35. Reverse transcriptases are encoded by retroviruses. The only enzyme from the mammalian cells with reverse transcriptase like activity is
    a. Telomerase
    b. Ribonuclease
    c. Ribozyme
    d. Caspase

36. Which of the following genome feature increases as the complexity of an organism increases?
    P. genome size
    Q. number of genes
    R. density of genes in the genome
    S. average size of individual genes

    a. P, Q
    b. P, S
    c. P, Q, S
    d. R, S

37. About 25-35 bp upstream of the transcriptional start site in most plant genes is a short sequence, which serves as the site of assembly of the transcriptional initiation complex called
    a. CAAT box
    b. GC box
    c. TATA box
    d. Repressor

38. Enhancers can be located
    P. upstream of the promoter
    Q. downstream of the promoter
    R. within the promoter
    S. far from promoter

    a. P, Q
    b. P, R
    c. P, S
    d. P. Q, S

39. Mature eukaryotic mRNAs have 5’ cap that is residue of

a. 2-methylguanosine
b. 3-methylguanosine
c. 5-methylguanosine
d. 7-methylguanosine

40. Splicing of pre-mRNA
P. within the nucleus
Q. is self catalyzed process
R. involve snRNP
S. is similar to pre tRNA intron splicing

a. P and Q
b. P and R
c. R and S
d. P and S

41. In the RNAi regulatory pathway, the DICER enzyme cleaves
a. RNA polymerase into non-functional pieces
b. Single-stranded DNA into repetitive sequences
c. Double-stranded RNA into short strands
d. mRNAs of genes to be repressed

42. Zinc finger protein and helix-turn-helix proteins are
a. Types of DNA-binding proteins
b. Involved in the control of translation
c. Subunits of RNA polymerase
d. Members of metal binding proteins

43. The forces that mainly maintain the three-dimensional structure of a protein
a. Non-covalent
b. Covalent
c. Coordinate
d. Covalent and non-covalent

44. Most abundant protein in human body is
a. Haemoglobin
b. Keratin
c. Collagen
d. Immunoglobulin

45. If a solution of double stranded DNA is heated above its melting temperature, its absorbance will
    a. Decrease
    b. Increase
    c. Remain unchanged
    d. Initially increase and then decrease

46. Which of the following glycerophospholipid is the major lipid of mitochondrial membrane?
    a. Phosphotidyl choline
    b. Lecithin
    c. Phosphotidyl inositol
    d. Cardiolipin

47. During in vitro DNA replication, which of the following components is not required?
    a.) Single stranded DNA
    b.) A primer containing 3'-OH
    c.) DNA helicase to separate the strands
    d.) Nucleotide precursors

48. The technique used to locate specific genes in chromosomes is
    a. Colony Hybridization
    b. Insitu Hybridization
    c. dot blot technique
    d.western blotting

49. The antibody present in breast milk
    a. IgG
    b. IgM
    c. IgA
    d. IgD

50. The plasmid used by Cohen & Boyer for their transformation experiment was
    a.) pSC 101
    b.) pUC 18
    c.) pBR 322
    d.) *E. coli* Plasmids

1-d	26.-a
2.-d	27.-a
3.-a	28.-a
4.-b	29.-b
5.-b	30.-a
6.-b	31.-b
7.-c	32.-c
8.-c	33.-c
9.-b	34.-c
10.-c	35.-a
11.-b	36.-c

12.-b 13.-a 14.-d 15.-b 16.-a 17.-b 18.-a 19.-a 20.-d 21.-d 22.-d 23.-d 24.-d 25.-d	37.-c 38.-d 39.-d 40.-b 41.-c 42.-a 43.-a 44.-c 45.-b 46.-d 47.-c 48.-b 49.-c 50.-a