

Common P.G. Entrance Test 2021
Bioinformatics

Total Questions: 70

Time: 90 Minutes

There will be no negative marks

1. Which of the following is the most abundant protein in leaves?
 - a) Chlorophyll a/b binding protein
 - b) ATP synthase
 - c) Ribulose-1,5 bisphosphate carboxylase
 - d) Globulins

2. Which of the following proteins in the photosynthetic electron-transport chain is not a transmembrane protein?
 - a) ATP Synthase
 - b) LHC
 - c) PSII
 - d) Ferredoxin

3. The reaction of the Krebs cycle:
 - a) Take place in the cytosol of eukaryotic cells.
 - b) Generate ATP also by the substrate phosphorylation
 - c) Are important for the metabolism of carbohydrates but no other molecules.
 - d) Both a and b

4. Development of embryo from gametophyte without the intervention of the gamete is known as:
 - a) Apospory
 - b) Apogamy
 - c) Apomixis
 - d) Aposporogamy

5. Which one of the following can be considered to be dead mechanical tissue?
 - a) Aerenchyma
 - b) Collenchyma
 - c) Parenchyma
 - d) Sclerenchyma

6. Which of the following information would tell whether a cell is prokaryotic or eukaryotic?
 - a) The presence or absence of a rigid wall
 - b) Whether or not the cell is partitioned by internal membranes
 - c) The presence or absence of ribosomes
 - d) Whether or not the cell carries out cellular metabolism

7. In ciliates, the process that produces genetic variation through the exchange of nuclei is:
- Mixotrophy
 - Endosymbiosis
 - Meiosis
 - Conjugation
8. The Protozoans that cause malaria in humans are:
- Radiolarians
 - Trichosomes
 - Sporozoans
 - Dinoflagellates
9. The very first vertebrates were:
- Cartilaginous fish
 - Fishes with jaws
 - Amphibians
 - Jawless fish
10. The development of adult characteristics in a molting insect is promoted by:
- Thyroxine
 - Ecdysone
 - Juvenile hormone
 - A pheromone
11. Rapid but non-antigen specific immune responses are produced by the:
- Adaptive Immune system
 - Innate Immune system
 - Leukocytes
 - Lymphatic System
12. Mostly the antibodies are synthesized by:
- Central lymphoid organs
 - Peripheral lymphoid organs
 - Primary lymphoid organs
 - Macrophages
13. There are five classes of the antibodies (IgM, IgD, IgG, IgE, IgA). What determines the class to which and antibody belongs?
- Structure of the light chain
 - Variable region of the antibody
 - Structure of the heavy chain constant region
 - Stage of the infection

- 14.** All humans start producing antibodies only after they are:
- Infected with pathogen
 - Immunized with an antigen
 - Exposed to an antigen
 - None of the above
- 15.** The Oral Polio Vaccine (OPV) administered to children in India, is:
- Inactivated polio vaccine
 - Live attenuated poliovirus
 - Subunit vaccine specific for oral route
 - Recombinant subunit vaccine
- 16.** Transcription is the transfer of genetic information from:
- DNA to RNA
 - tRNA to mRNA
 - DNA to mRNA
 - mRNA to tRNA
- 17.** Meiosis II is similar to mitosis in which way:
- Sister Chromatids separates during anaphase
 - The daughter cells are diploid
 - Homologous chromosomes synapse
 - DNA replicates before the division
- 18.** Hershey and Chase experiment proving DNA as the genetic material was based on the principle:
- Transduction
 - Transformation
 - Transcription
 - Translation
- 19.** Genes whose products are constantly needed by the cell for cellular activity are called:
- Structural genes
 - Metabolic genes
 - Constitutive genes
 - Smart Genes
- 20.** A DNA molecule that has the ability to replicate autonomously is called:
- Plasmid
 - Chromosome
 - Genome
 - Replicon
- 21.** The bacterial enzyme that changes positively supercoiled DNA into negatively supercoiled DNA is:

- a) DNA helicase
 - b) DNA Gyrase
 - c) Single Strand binding protein
 - d) Polymerase
- 22.** Satellite DNA consists of:
- a) Extrachromosomal DNA
 - b) Short repetitive nucleotide sequences
 - c) Ribosomal RNA genes
 - d) Single gene regions
- 23.** The synthesis of mRNA on DNA template is:
- a) Bidirectional with the help of primer
 - b) Unidirectional with the help of primer
 - c) Unidirectional
 - d) Bidirectional
- 24.** Full expression of *lac operon* requires:
- a) Lactose and cAMP
 - b) Allolactose and cAMP
 - c) Lactose
 - d) Allolactose
- 25.** A DNA mutation that results in no change in protein product produced is termed as:
- a) Missense mutation
 - b) Nonsense mutation
 - c) Silent Mutation
 - d) Frameshift Mutation
- 26.** Which of the following is an imino acid?
- a) Histidine
 - b) Glycine
 - c) Cysteine
 - d) Proline
- 27.** The high solubility of amino acids in water is due to:
- a) Presence of side chain
 - b) Dipolar ion structure
 - c) Unipolarity
 - d) The hydrophilic nature of the amino group
- 28.** On a Ramchandran plot the entries for hemoglobin would be clustered around
- a) All four corners

- b) The extended chain confirmation
 - c) The left handed α -helix conformation
 - d) The right handed α -helix conformation
- 29.** The forces that maintain the three dimensional structure of a protein is mainly:
- a) Non-covalent
 - b) Covalent
 - c) Coordinate
 - d) Covalent and non-covalent
- 30.** Most abundant protein in the human body?
- a) Hemoglobin
 - b) Myosin
 - c) Trypsin
 - d) Troponin
- 31.** A double stranded DNA has 30% Thymine. The percentage of cytosine is:
- a) 30%
 - b) 20%
 - c) 60%
 - d) 15%
- 32.** Melting temperature of DNA is the temperature at which:
- a) DNA melts completely
 - b) 50% of the DNA is denatured
 - c) 80% of the DNA is denatured
 - d) None of the above
- 33.** DNA is a genetic material can be evidenced by the fact that:
- a) Chromosomes are made up of DNA
 - b) DNA is not present in cytoplasm
 - c) Transformation and transduction in bacteria are caused by DNA only
 - d) DNA is concentrated in nucleus
- 34.** DNA sequencing by Sanger's method involves the use of:
- a) Ribonucleotide
 - b) 3'- deoxyribonucleotide
 - c) 2', 3'-dideoxyribonucleotide
 - d) Fluorodinitrobenzene
- 35.** Chargaff's rule state that:
- a) in RNA, A=U, and in DNA, A=T

- b) G=C in both RNA and DNA
 - c) $(A+T)/(G+C)$ is always 1
 - d) $A+G/T+C=1$
- 36.** Which of the following genotype represents heterozygous condition?
- a) TT
 - b) tt
 - c) Tt
 - d) RR
- 37.** How many types of gametes are possible from a diploid organism having genotype AaBBCC?
- a) 2
 - b) 6
 - c) 3
 - d) 10
- 38.** A gene which hides the action of another gene is termed as:
- a) Co-dominant gene
 - b) Epistatic gene
 - c) Hypostatic gene
 - d) Lethal gene
- 39.** If a man of blood group AB marries a woman of blood group A whose father was of blood group O, to what different blood groups can this man and woman expect their children to belong?
- a) A, AB, B
 - b) A, AB
 - c) AB, O
 - d) A, O, B
- 40.** A cross between F₁ hybrid and its homozygous recessive parent is called:
- a) Out cross
 - b) Monohybrid Cross
 - c) Test cross
 - d) Dihybrid Cross
- 41.** A virion is a:
- a) Naked, infectious piece of RNA
 - b) Complete, Infectious virus particle
 - c) Nucleic acid without a capsid
 - d) A naked, infectious piece of DNA
- 42.** Which of the following is an example of chemolithoautotroph?
- a) Sulphur-oxidizing bacteria

- b) Hydrogen bacteria
 - c) Nitrifying bacteria
 - d) All of these
- 43.** Which of the following sequence has helped in identifying eukaryotes, eubacteria and archaeobacterial cell types?
- a) Signature Sequence
 - b) Signal Sequence
 - c) Shine-Dalgarno Sequence
 - d) Amino Acid Sequence
- 44.** Which of the following has its antiviral action attributed to the interference of protein synthesis?
- a) Amantadine
 - b) Interferons
 - c) Acycloguanosine
 - d) 5'-iododeoxyuridine
- 45.** Which of the following is not the biofertilisers producing bacteria?
- a) Nostoc
 - b) Anabaena
 - c) Clostridium
 - d) Both (a) and (b)
- 46.** Proteins are separated in SDS –electrophoresis on the basis of their:
- a) Size
 - b) Charge
 - c) Amino acid composition
 - d) Charge and Shape
- 47.** Molecular weight of an unknown protein can be found out by:
- a) Electrophoresis
 - b) Ion-Exchange chromatography
 - c) Affinity chromatography
 - d) None of the above
- 48.** A reporter gene is used to:
- a) Identify regulatory sequences from the upstream regions of other genes
 - b) Determine if a protein binds to a given sequence element.
 - c) Determine if a gene contains introns.
 - d) Determine the stability of a protein
- 49.** The polymerase enzyme used in PCR is:
- a) DNA polymerase I

- b) Taq polymerase
 - c) Reverse Transcriptase
 - d) DNA polymerase II
- 50.** Which of the following technique is used to inactive a gene by altering the DNA?
- a) Homologous recombination
 - b) Antisense nucleic acid blocks
 - c) Antibody microinjection
 - d) Introduction of dominant inhibitory mutants
- 51.** Chi square is zero when:
- a) Expected frequency is lesser than the observed frequency
 - b) Expected frequency is equal to the observed frequency
 - c) Expected frequency is double that of the observed frequency
 - d) Expected frequency is greater than the observed frequency
- 52.** For drawing a frequency polygon of a continuous frequency distribution, we plot the points whose ordinates are the frequency of the respective classes and abscissa are respectively:
- a) Upper limits of the classes
 - b) Lower limits of the classes
 - c) Class marks of the classes
 - d) Upper limits of preceding classes
- 53.** In a survey of 278 women, 195 were found to be working. If a women is selected at random, the probability that she is not working is:
- a) $83/278$
 - b) $195/278$
 - c) $112/278$
 - d) 1
- 54.** Which of the following is not an event?
- a) Getting no head when two coins are tossed simultaneously
 - b) Getting an even number when a die is rolled
 - c) Drawing a ball from an urn containing balls of different colours
 - d) Selecting a student having less than 40% marks in Mathematics
- 55.** Mode is the:
- a) Least frequent value
 - b) Middle most value
 - c) Most frequent value
 - d) None of these
- 56.** Which of the following tools used to compare two sequence?
- a) EMBOSS

- b) Rasmol
 - c) BLAST
 - d) FASTA
57. Who created the first bioinformatics database?
- a) Pearson
 - b) Dayhoff
 - c) Richard Durbin
 - d) Needleman-Wunsch
58. The computational method that try to find the best matching between two molecules, a receptor and ligand is known as:
- a) Molecular docking
 - b) Molecular matching
 - c) Molecular fitting
 - d) Molecular affinity check
59. Which of the following is a structural database?
- a) EMBL
 - b) Genebank
 - c) PDB
 - d) DDBJ
60. Which of the following is the first molecular biology server?
- a) NCBI
 - b) ExPASy
 - c) EBI
 - d) RCSB
61. If $125^x = \frac{25}{5^x}$ then x is equal to:
- a) $\frac{1}{2}$
 - b) 2
 - c) 3
 - d) 1
62. The angles of a triangle are in the ratio 3:5:4. The smallest angle of the triangle is:
- a) 60°
 - b) 30°
 - c) 50°
 - d) 45°
63. A chord is at a distance of 8 cm from the centre of a circle of radius 17 cm. The length of the chord is:
- a) 25 cm
 - b) 12.5 cm
 - c) 30 cm
 - d) 9 cm
64. The length of altitude of an equilateral triangle having side 8 cm is:
- a) $4\sqrt{3}$ cm

- b) $4\sqrt{2}$ cm
 - c) $4\sqrt{5}$ cm
 - d) 8 cm
- 65.** The ratio of radii of two spheres is 4:3. The ratio of their volumes is:
- a) 64:27
 - b) 27:64
 - c) 16:9
 - d) 9:16
- 66.** A gas can be converted into liquid state by applying:
- a) High pressure and high temperature
 - b) Low pressure and low temperature
 - c) Low pressure and high temperature
 - d) High pressure and low temperature
- 67.** Which of the following will show Tyndall effect?
- a) Salt solution
 - b) Copper sulphate solution
 - c) Starch solution
 - d) Sugar Solution
- 68.** The gases exert more pressure on the walls of the container because:
- a) Particles in gaseous state move randomly at high speed
 - b) Particles in gaseous state are tightly packed
 - c) Particles have low kinetic energy
 - d) Particles have large mass
- 69.** A girl is carrying a school bag of 3 kg mass on her back and moves 200 m on a leveled road. The work done against the gravitational force will be ($g = 10 \text{ m/s}^2$):
- a) $6 \times 10^3 \text{ J}$
 - b) 6 J
 - c) 0.6 J
 - d) Zero
- 70.** The value of acceleration due to gravity:
- a) is same on equator and poles
 - b) is least on poles
 - c) is least on equator
 - d) increases form pole to equator

