MSc(HS/2Yr)(Biotechnology)

1. Which organism is known as work horse of Biotechnology
A) Drosophila B) Bacillus C) Mouse D) E. coli

2. Zebra fish is the best model organism to study
A) Development studies B) Protein -protein interaction studies
C) DNA -protein interaction studies D) Protein production

3. Ames test is used to study
A) Cell division B) DNA replication C) Mutagenicity D) Pollution

4. The nick translation is carried out by
A) DNA polymerase I B) DNA polymerase II
C) DNA polymerase III D) DNA topoisomerase

5. Hoogsteen base pairing was recognized in
A) B DNA B) Z DNA C) Triple helix D) RNA

6. DNA as a transforming agent was confirmed by
A) Grifith B) Avery et al
C) Hershey and chase D) Watson and Crick

7. White eye of drosophila is X linked recessive character. If a red eyed male is mated with white eyed female, what percentage of the males will be white eyed
A) 0% B) 25% C) 50% D) 100%

8. Hardy and Weinberg equation is used to study
A) Epistasis B) Abberations C) Bacterial genetics D) Population genetics

9. FISH technique is used to
A) DNA sequencing
B) Northern blotting
C) Localize gene on chromosome in *in situ* condition
D) Identify a chromosome

10. In native PAGE the migration of protein depends on
A) Size of protein B) Size and shape of protein
C) Charge of protein D) Size, shape and charge of protein

11. Biomarker is
A) Color coding of chromosomes
B) A molecule specifically produced under diseased condition
C) A marker that is genetically inherited
D) A molecule in the genome

12. The absorbance of a protein sample at 280nm can be measured by
A) Colorimeter B) Spectrophotometer C) pH meter D) Electrophoresis

13. After centrifugation which type of rotor will collect pellet in the centre of the tube
A) Vertical rotor B) Spinwin C) Swinging bucket D) Angle head rotor

14. The ampicillin resistance gene on a vector allows bacteria containing vector to grow in the presence of ampicilin as it
A) Does not allow ampicillin to enter in the bacteria
B) degrades ampicillin
C) proliferates cell growth
D) changes the target of ampicillin

15. The DNA synthesis takes place during
A) G1 phase B) S phase C) G2 phase D) M phase

16. The distance between -10 and -35 region of prokaryotic promoter is important for it's proper binding with
A) DNA polymerase B) RNApolymerase
C) Sigma factor D) Transcription factor

17. In the Meselson-Stahl DNA replication experiment, what percent of the DNA was composed of one light strand and one heavy strand after two generation of growth in N-14 containing growth media?
A) 100 B) 75 C) 50 D) 25

18. For the DNA strand 5'- TTCGCAATGCCATTA-3' the correct complementary strand will be
A) 5'-TAATGGCATTGCGAA-3' B) 3'-TAATGGCATTGCGAA-5'
C) 5'-UAAUGGCAUUGCGAA-3' D) 3'-UAAUGGCAUUGCGAA-5'

19. The overall source of energy for photosynthesis is:
A) Energy of electron transport in the thylakoid membrane
B) Energy released when water is oxidized and oxygen is produced
C) Energy from the hydrolysis of ATP
D) Light energy from the sun

20. Holiday junctions are formed during
A) Replication B) Transcription C) Recombination D) Conjugation

21. Isoscizomers are the restriction enzymes which
A) Show 50% homology in the recognition site
B) Restriction enzymes specific to the same recognition sequence
C) Show no homology in recognition sequence
D) Are GC rich

22. First human health care product from recombinant DNA technology to reach the market was developed and licensed by

A) Glaxosmithkline and Genentech B) Genentech
C) Glaxosmithkline D) Eli Lilly and Genentech

23. The process of bacteria taking up naked DNA from environment is known as

A) Transformation B) Transduction C) Replication D) Transcription

24. The absorbance of an undiluted DNA sample at A_{260} is 2.0. What is the concentration of DNA of the sample?

A) 20 µg/ml B) 50 µg/ml C) 100 µg/ml D) 200 µg/ml

25. EF-Tu is a factor used in

A) Replication B) Transcription C) Translation D) Termination

26. Km of an enzymatic reaction remains same as in control in the presence of

A) Non competitive inhibitor B) Competitive inhibitor
C) Uncompetitive inhibitor D) Irreversible inhibitor

27. In lysogenic cycle

A) A bacteriphage genome causes break down of host cell
B) A bacteriphage genome gets integrated into host genome
C) A bacteriophage secretes DNA degrading enzyme
D) A bacteriophage gets replicated in high number in the host

28. An overall result of photosynthesis in plants is the use of electrons from water to reduce:

A) Glucose B) Carbon dioxide C) Oxygen D) Chlorophyll

29. The purpose of heat inactivation of serum in animal cell culture is

A) To activate growth hormones B) To inactivate any bacteria present
C) To inactivate complement system D) To remove unwanted proteins

30. The BOD of waste water is related to the presence of

A) Organic material B) Inorganic material C) Bacteria D) Fungus

31. Quoram sensing system

A) Senses signals from environment
B) Senses compounds secreted by bacteria itself
C) Senses photosynthesis
D) Senses respiration

32. The cell surface marker on cytotoxic T cell is

A) CD4 B) CD7 C) CD8 D) CD9

33. Mycoplasma is a

A) Bacteria B) Fungus C) Algae D) protozoa

34. Transposase facilitate

A) Replication B) Transcription
C) General recombination D) Site specific recombination

35. Self reactive antibodies are not found in serum due to the

A) Self reactive B cells are killed by CD8 T cells
B) Self reactive B cells are changed into IgE and secreted out
C) Self reactive B cells are not generated
D) B cells stimulated via surface bound antibody in the absence of T cell commit suicide

36. Anaphylaxis can be triggerred by cross-linking of IgE receptors on

A) Monocytes B) Mast cells C) B-cells D) Eosinophil

37. Which of the following is caused by DNA virus?

A) Typhoid B) Measules C) Small pox D) Yellow fever

38. Whole genome shotgun sequencing depends on

A) Rapidly sequencing of thousands of small randomly cloned fragments
B) Sequence only large fragments
C) Sequence only fragments cloned in BAC
D) Sequence only fragments cloned in YAC

39. Hybrid dysgenesis in drosophila refers to the high rate of mutation in germ line cells resulting from a cross of

A) P strain females (females with autonomous P elements) with P strain males
B) males with autonomous P elements (P Strain/P cytotype) and M strain females
C) P strain females (females with autonomous P elements) with M strain males (lack P element)
D) M strain male and M strain female

40. The acquisition energy by glucose fermentation requires

A) Electron transport of electrons from NADH
B) Substrate level phosphorylation
C) Long chain fatty acid oxidation
D) NADPH

41. RNA interference (RNAi) or Post-Transcriptional Gene Silencing (PTGS) is a conserved biological response to

A) DNA- RNA hybrid B) Methylated double stranded DNA
C) Single stranded DNA D) Double-stranded RNA

42. A culture of E coli was grown in the presence of ^{32}P isotope. After 24 h the radioactivity will be present in which fraction of the cell?

A) DNA B) Protein C) Lipid D) Enzyme

43. Phage display is a technique in which

A) Gene of interest is cloned in phage in front of strong promoter
B) gene encoding a protein of interest is inserted into a phage coat protein gene
C) Gene is cloned in a phagemid
D) Gene is cloned in a cosmid

44. Choose the correct statement for continuous reactor at steady state

A) Substrate, product and biomass change with time
B) Substrate, product and biomass do not change with time
C) product and biomass change with time
D) only product change with time

45. Secondary structure of protein can be determined by

A) CD spectroscopy B) Fluorescence spectroscopy
C) Fluorescence microscopy D) 2D gel electrophoresis

46. A plasmid can be eliminated from a cell by

A) Transformation B) Curing C) Electroporation D) Transduction

47. Homologous DNA undergo…. recombination

A) Site specific B) Replicative C) General D) Mutagenic

48. The environmental pollutants might result in death of river bed due to the

A) Excess of sediments at bottom B) Abundance of toxic material
C) Excess algae D) Depletion of oxygen

49. Milk is pasteurized by keeping it at

A) 53°C for 30 min B) 63°C for 30 min
C) 73°C for 30 min D) 83°C for 30 min

50. DNA repair machinery distinguishes the newly synthesized DNA from parental DNA by

A) New strands are methylated while old strands are not
B) New strands are acetylated while old strands are not
C) Old strand is methylated while new is not
D) Old strand is acetylated while new is not

51. Bacterial rRNA sequencing approach gives information about

A) Morphology of bacteria
B) Drug resistance
C) The species to which this rRNA containing bacteria is closely related to
D) Types of ribosomes produced by bacteria

52. RNA can be used as a template in PCR reaction after reverse transcription into

A) cDNA B) tRNA C) rRNA D) Ribozyme

53. tRNA donates aminoacid to the growing chain at
A) A site B) P site C) M site D) B site

54. The function of molecular chaperones is
A) Translocation of protein B) Termination of protein synthesis
C) Post translational modifications D) Protein folding

55. Tetracycline inhibits the growth of bacteria by binding to
A) 40S ribosomal subunit B) 60S ribosomal subunit
C) 30S ribosomal subunit D) 50S ribosomal subunit

56. Inactive protein form of an enzyme is
A) Apoenzyme B) Co enzyme C) Holoenzyme D) Cofactor

57. RNA guided genome editing is possible through
A) RNAi B) CRISPR-Cas C) Activation tagging D) Knock outs

58. International transport of GMOs is regulated by
A) Cartegena protocol to the convention on biological diversity
B) Universal declaration on bioethics and human rights
C) Geneva Declaration
D) Declaration of human genome and human rights

59. In plant tissue culture, embryoid formation from pollens is due to
A) Cellular totipotency B) Organogenesis
C) Double fertilization D) Test tube culture

60. A trangenic crop which may help is solving night blindness in developing countries is
A) Bt soyabean B) Golden rice
C) Flavr savr tomatoes D) Starlink maize

61. A short fragment of DNA has 50 A and 50 C bases. Total number of nucleotide in the DNA fragment is
A) 50 B) 100 C) 150 D) 200

62. A nucleoside is
A) A nucleotide without sugar B) A nucleotide without phosphate
C) A nucleotide without Nitrogenous base D) Nitrogenous base with phosphate

63. All publicly available sequence of protein is available in
A) Gene Bank B) EML C) DDBJ D) TrEMBL

64. The use of information that is of commercial value are protected by
A) Institutional law B) Public forum

C) Intellectual property rights D) Institutional property rights

65. DNA protein binding can be studied with help of
A) Sothern hybridization B) FISH
C) Pulse field gel electrophoresis D) Gel shift assay

66. Reversed phase HPLC utilizes
A) A hydrophobic stationary phase and a polar mobile phase
B) A hydrophobic stationary phase and a non-polar mobile phase
C) A hydrophilic stationary phase and a non-polar mobile phase
D) A hydrophilic stationary phase and a polar mobile phase

67. Conformational variation between B and Z forms of DNA is partially due to
A) Rotation of glycosidic bond B) Loss of hydrogen bonds
C) Lack of hydrophobic interaction D) Increase in humidity

68. Which of the following growth media would you expect to result in synthesis of high levels of mRNA for the enzymes of the E. coli lac operon ?
A) High glucose, high lactose B) Low glucose, low lactose
C) High glucose, low lactose D) No glucose, high lactose

69. TATA box and Pribnow box are components of
A) Operators B) Promoters C) Enhancers D) Activators

70. Microarray is used to analyze
A) The genome sequence B) Differential expression of genes
C) Proteome D) Metabolom

71. When a chromosomal DNA is digested with a restriction enzyme, the digested fragments will appear as
A) Discrete single band B) Nearly 3-5 sharp bands
C) Smear D) Ladder

72. Which of these cannot be used for structural proteomics
A) X-ray crystallography B) NMR spectroscopy
C) 2D gel electrophoresis D) Mass spectrometry

73. Glycosylation of newly synthesized protein takes place in
A) Mitochondria B) Nucleus
C) Vacuole D) Endoplasmic reticulum

74. The electron transport chain is located predominantly in the:
A) Outer membrane of the mitochondria
B) Intermembrane space of the mitochondria
C) Inner membrane of the mitochondria

D) Matrix of the mitochondria

75. DNA-RNA hybridization takes place in

A) Southern hybridization
B) Northern hybridization
C) Western hybridization
D) Eastern hybridization

x-x-x