



BRAINWARE UNIVERSITY

Term End Examination 2021 - 22

Programme – Bachelor of Science in Medical Lab Technology

Course Name – Special Techniques in Laboratory Science

Course Code - BMLT603

(Semester VI)

Time allotted : 1 Hrs.15 Min.

Full Marks : 60

[The figure in the margin indicates full marks.]

Group-A

(Multiple Choice Type Question)

1 x 60=60

Choose the correct alternative from the following :

- (1) In which chromatography the stationary phase in a narrow tube mobile phase is forced under a pressure

a) Column chromatography	b) Planar chromatography
c) Liquid chromatography	d) Gas chromatography
- (2) Which force is involved in the Chromatography ?

a) Hydrogen bonding	b) London force
c) Electric static force	d) All of the above
- (3) Ion exchange chromatography is based on the _____

a) Electrostatic attraction	b) Electrical mobility of ionic species
c) Adsorption chromatography	d) Partition chromatography
- (4) Chromatography with solid stationary phase is called _____

a) circle chromatography	b) Square chromatography
c) solid chromatography	d) adsorption chromatography
- (5) A combination of paper chromatography and electrophoresis involves _____

a) Partition chromatography	b) Electrical mobility of the ionic species
c) Both (a) and (b)	d) None of these
- (6) The pattern on the paper in chromatography is called

a) chroming	b) Chroma
c) Chromatograph	d) Chromatogram
- (7) In reverse phase chromatography, the stationary phase is made _____

a) Non-polar	b) Polar
c) Both a and b	d) None of these
- (8) Thin layer chromatography is _____

a) Partition chromatography	b) Electrical mobility of ionic species
c) Adsorption chromatography	d) None of the above

- (9) Which of the following is used as a spraying reagent in paper chromatography?
- a) conc. HCl
 - b) NaCl solution
 - c) Ninhydrin solution
 - d) CuSO₄ solution
- (10) In which type of chromatography, the stationary phase is held in a narrow tube and the mobile phase is forced through it under pressure?
- a) Planar chromatography
 - b) Column chromatography
 - c) Liquid chromatography
 - d) Gas chromatography
- (11) In chromatography, the stationary phase can be _____ supported on a solid.
- a) Solid or liquid
 - b) Liquid or gas
 - c) Solid only
 - d) Liquid only
- (12) What is Eluent ?
- a) It is a liquid solution
 - b) is a liquid solution that is a result from Elution.
 - c) It is a solvent that used for separation of absorbed material from stationary phase.
 - d) None of these
- (13) In chromatography, which of the following can the mobile phase be made of?
- a) Solid or liquid
 - b) Liquid or gas
 - c) Gas only
 - d) Liquid only
- (14) Chromatogram is _____
- a) Solute concentration vs Elution time
 - b) Solute concentration vs Elution volume
 - c) A and B
 - d) None of the above
- (15) HPLC is an abbreviation for?
- a) High Profit Liquid Chromatography
 - b) High Pressure Liquid Chromatography
 - c) Higher Performance Low Chromatography
 - d) Higher Profit Low Chromatography
- (16) Which of the following techniques is used to study the three-dimensional structure of a molecule?
- a) Infra-red spectroscopy
 - b) Mass spectrometry
 - c) UV-visible spectroscopy
 - d) X-ray crystallography
- (17) Which technique is not used to separate nucleic acids of size greater than 25 kb?
- a) SDS-PAGE
 - b) Pulsed-field electrophoresis
 - c) 2D- gel electrophoresis
 - d) None of these
- (18) Which type of gel is used for large nucleic acids?
- a) acrylamide
 - b) cellulose
 - c) agarose
 - d) sephadex
- (19) Which of the following is a primary factor that dictates how far a protein will migrate during SDS-PAGE?
- a) Degree of tertiary structure
 - b) Degree of secondary structure
 - c) Size
 - d) Number of subunits
- (20) Which of the following is true about SDS-PAGE?
- a) Staining with ethidium bromide allows visualization of results
 - b) It separates proteins by charge
 - c) The main ingredient in the gel is agarose
 - d) It requires a protein-denaturing gel
- (21) Which of the following techniques would be most useful to study gene expression?
- a) Western blot
 - b) Eastern blot
 - c) Northern blot
 - d) Southern blot
- (22) Which spectroscopy is working on principle of the emissions radiation ?
- a) Flame photometry
 - b) Mass spectroscopy.

- c) uv spectroscopy
- (23) Antigen is sandwiched within two antibodies in
- a) Indirect ELISA
b) Sandwich ELISA
c) Direct ELISA
d) Competitive ELISA
- (24) In ELISA, Horseradish Peroxidase(HRP) is:
- a) Antigen
b) Antibody
c) Chromogen
d) Enzyme
- (25) Epitope signifies:
- a) Antibody binding site
b) Antibody binding site
c) Antigen-antibody interaction
d) All of these
- (26) Which of the following types of spectroscopy can tell us the most about the carbon framework of an organic compound?
- a) UV-visible spectroscopy
b) Infra-red spectroscopy
c) NMR spectroscopy
d) Mass spectrometry
- (27) Which of the following drugs effect caspases?
- a) Oblimersom
b) Pikan083
c) Tenovin
d) Apoptin
- (28) There are two types of scattering in FACS
- a) Forward scattering
b) side scatter
c) Backward scatter
d) Both a and b
- (29) The identity and chemical properties of an atom are determined by _____
- a) critical temperature
b) critical freezing point
c) melting temperature
d) number of protons
- (30) Which of the following is radioactive?
- a) hydrogen sulfide
b) vimentin
c) tritium
d) deuterium
- (31) The half life of a radioisotope is _____
- a) half the time taken for complete decay
b) half the time taken for half the decay
c) time taken for complete decay
d) time taken for half the decay
- (32) Which of the following emitted particles consists of two protons?
- a) alpha
b) beta
c) gamma
d) zeta
- (33) Liquid scintillation spectrometry is a method of detecting _____
- a) X-rays
b) α -emitters
c) β -emitters
d) Gamma-rays
- (34) Which pair of isotopes are likely to result in the greatest isotope effect?
- a) Nitrogen-14 and nitrogen-15
b) Carbon-12 and carbon-14
c) Carbon-12 and carbon-13
d) Hydrogen and deuterium
- (35) Which of the following detection methods is not commonly used to detect isotopically labelled drug metabolites?
- a) Infra red spectroscopy
b) Nuclear magnetic resonance spectroscopy
c) Scintillation counting (detection of radioactivity)
d) Mass spectrometry
- (36) Which of the following isotopes has the shortest half life?
- a) Carbon-14
b) Fluorine-18
c) Carbon-11
d) Tritium
- (37) What is detected during positron emission tomography (PET)?

- a) Positrons
c) Neutrons
- b) Electrons
d) Photons
- (38) When two atomic nuclei combine it is called as
a) Chain reaction
c) Nuclear decay
- b) Nuclear fusion
d) Nuclear fission
- (39) The number of protons or atomic number is reduced to 2 by which form of radioactive decay?
a) a. Beta-decay
c) a. Alpha decay
- b) a. Gamma decay
d) a. None of the above
- (40) A nuclide of the element plutonium ${}_{94}\text{Pu} 242$. What is the number of neutrons in its nucleus?
a) 242
c) 148
- b) 336
d) 94
- (41) The age of fossil when C-14: C-12 in bone is one fourth of ratio in bone of living animal and half-life of C-14 is 5732 years is
a) 100 years
c) 1000 years
- b) 11460 years
d) 1200 years
- (42) To trace the path of phosphorus, the isotope of phosphorus which is added to the fertilizers, is
a) Phosphorus-31
c) Phosphorus-33
- b) Phosphorus-32
d) Phosphorus-34
- (43) In nuclear power plants, energy is released
a) quickly
c) normally
- b) slowly
d) very quickly
- (44) Sodium 24 is used clinically to examine
a) blood circulation
c) lipid profile
- b) lung function
d) kidney function
- (45) Rubidium 82 is used in typically as
a) convenient PET agent for myocardial perfusion
c) glucose monitoring
- b) diagnosis of coronary artery diseases
d) All of these
- (46) I-111 is typically used for
a) brain studies
c) colon transit studies
- b) infections studies
d) All of these
- (47) Iron 59 is generally used for
a) diagnosis of anaemia
c) both a and b
- b) Pregnancy disorder
d) colorectal cancer
- (48) Water content in human body can be detected through
a) Fe 54
c) C14
- b) I-111
d) H3
- (49) Chronic Leukemia is treated by
a) ${}^{137}\text{Cs}$
c) ${}^{67}\text{Ga}$
- b) ${}^{131}\text{Cs}$
d) ${}^{60}\text{Co}$
- (50) Becquerel is a
a) unit of light energy
c) Types of radiation
- b) unit of radioactivity
d) half-life of radioisotope
- (51) Radioisotope used for the treatment of polycythemia:
a) ${}^{32}\text{P}$
c) ${}^{60}\text{Co}$
- b) ${}^{131}\text{I}$
d) ${}^{90}\text{Y}$

- (52) Which of the following is not an advantage of Syringe type pumps used in High pressure liquid chromatography?
- a) Independent of viscosity
b) Pulse-less flow
c) High pressure capability
d) Unlimited solvent capacity
- (53) Which of the following is not true about solvent programming which is done in high performance liquid chromatography?
- a) It provides unequal bandwidths
b) It provides fast overall separation
c) It provides maximum resolution
d) It provides maximum sensitivity
- (54) Which of the following pulse damper takes up some amount of the pulsation energy which is released to provide smooth pressure without pulsations?
- a) Flexible bellows or compressible gas passed through tee column
b) Flexible inert diaphragm
c) Electronic pulse damper
d) Electrical pulse damper
- (55) Which of the following is not a characteristic of the syringe pump used in high pressure liquid chromatography?
- a) Pressure capability is high
b) Maintenance is frequent
c) Limited reservoir capability
d) Slight change of flow rate when extremely high pressure compresses the solvent
- (56) Which of the following cannot be done to reduce ripple in High pressure liquid chromatography?
- a) Using bellows
b) Using restrictors
c) Using long nylon tube between pump and column
d) Avoiding the use of the solvent pump
- (57) A primary role for antibodies in resistance to bacterial infection is
- a) Antibody dependent cell mediated cytotoxicity
b) Lysis of infected host cells
c) Activation of the alternative complement pathway
d) Opsonisation for increased uptake by phagocytic cells
- (58) The enzyme that uses RNA as a template to produce a DNA copy is called:
- a) DNA ligase
b) reverse transcriptase
c) DNA polymerase
d) a restriction enzyme
- (59) In blue-white screening, what do blue colonies represent?
- a) cells that have not taken up the plasmid vector
b) cells with recombinant plasmids containing a new insert
c) cells containing empty plasmid vectors
d) cells with a non-functional lacZ gene
- (60) Which technique is used to separate protein fragments based on size?
- a) polyacrylamide gel electrophoresis
b) Southern blot
c) agarose gel electrophoresis
d) polymerase chain reaction