MIZORAM PUBLIC SERVICE COMMISSION

COMMON COMPETITIVE EXAMINATION FOR GROUP 'B' NON-GAZETTED (TECHNICAL)

LABORATORY TECHNICIAN UNDER H&FW DEPARTMENT, GOVERNMENT OF MIZORAM, NOVEMBER-2024

PAPER-III (TECHNICAL SUBJECT)

Time Allowed : 2 hours FM : 100

All questions carry equal mark of 1 each.
Attempt all questions.

1. Lungs are enclosed within-
(a) Pericardium (b) Periosteum
(c) Pleural membrane (d) Perichondrium

2. The maximum amount of urea is present in-
(a) Dorsal aorta (b) Hepatic vein
(c) Renal vein (d) Hepatic portal vein

3. Heartbeat originates from-
(a) Papillary muscles (b) SA node
(c) AV node (d) Purkinje fibres

4. Which of the following is known as the powerhouse of the cell?
(a) Nucleus (b) Proteins
(c) Centrioles (d) Mitochondria

5. The absorption of fructose by intestinal mucosa is-
(a) Co-transport mechanism (b) Simple diffusion
(c) Facilitated transport (d) Active transport

6. Which of the following is synthesized and stored in the liver cells?
(a) Galactose (b) Lactose
(c) Glycogen (d) Both a and b

7. Corpus luteum is the source of secretion of-
(a) LH (b) Estradiol
(c) Estrogen (d) Progesterone

8. Excretory unit of kidney is-
(a) Bowman's capsule (b) Glomerulus
(c) Nephron (d) Henle's loop

9. Heart rate is influenced by the cardiac centre in the-
(a) Thalamus (b) Cerebellum
(c) Medulla oblangata (d) Cerebral cortex

10. Which of the following is the master gland of the endocrine system?
(a) Pituitary (b) Thyroid
(c) Pineal (d) Adrenal

11. Which of the following is not responsible for the denaturation of proteins?
(a) Heat (b) Charge
(c) pH (d) Organic solvents

12. Which one of these is not a classified form of conjugated proteins?
(a) Lipoproteins (b) Glycoproteins
(c) Metalloproteins (d) Complete proteins

13. Which of the following diseases is caused by protein deficiency?
(a) Anaemia (b) Kwashiokar
(c) Hypothyroidism (d) All of the above

14. Compounds that have the same structural formula but different spatial configuration are called-
(a) Epimers (b) Anomers
(c) Stereoisomers (d) Optical isomers

15. One of the following is an enzyme required for glycolysis pathway :
(a) Pyruvate carboxylase (b) Pyruvate kinase
(c) Fructose -6-phosphatase (d) Phosphokinase

16. In carbohydrate metabolism all of the following hormones is involved except:
(a) Glucagon (b) ACTH
(c) Vasopressin (d) Insulin

17. Invert sugar is-
(a) Galactose (b) Mannose
(c) Fructose (d) Hydrolytic product of sugar

18. Hexokinase is classified as-
(a) Oxidoreductase enzyme (b) Transferases enzyme
(c) Hydrolase enzyme (d) Lyase enzyme

19. Which one is described as vitamin in search of disease?
(a) Vitamin A (b) Vitamin C
(c) Vitamin E (d) Vitamin H

20. The enzymes of TCA cycle are located in-
(a) Cytosol (b) Mitochondrial matrix
(c) Cytosomal fraction of the cell (d) Liver

21. Gluconeogenesis is regulated by-
(a) ACTH (b) Glucagon
(c) Progesterone (d) Insulin

22. Which of the following test is specific for ketone bodies?
(a) Rothera's test (b) Gammelin's test
(c) Hay's test (d) Fouchet's test

23. Which molecule is the final electron acceptor in the electron transport chain?
(a) NAD+ (b) FAD
(c) Oxygen (d) Water

24. Which of the following is known as "Body building food"?
(a) Carbohydrates (b) Proteins
(c) Fats (d) Vitamins

25. Fatty acids can be transported into and out of cell membrane by-
(a) Active transport (b) Facilitated transport
(c) Osmosis (d) Diffusion

26. A triose sugar is
(a) Glycerose (b) Ribose
(c) Erythrose (d) Fructose

27. Which of the following is not a reducing sugar?
(a) Lactose (b) Maltose
(c) Sucrose (d) Fructose

28. Lipid content of egg white is -
(a) 12% (b) 33%
(c) 10-11% (d) Traces

29. Dietary fats after absorption appear in the circulation as-
(a) HDL (b) VLDL
(c) LDL (d) Chylomicron

30. Deficiency of which one of the following vitamin causes creatinuria?
(a) Vitamin E (b) Vitamin K
(c) Vitamin A (d) Vitamin B6

31. Multiple form of the same enzymes are called as-
(a) Zymogens (b) Isoenzymes
(c) Proenzymes (d) Pre-enzymes

32. What are the functions of potassium?
(a) Muscle contraction (b) Cell membrane function
(c) Enzyme action (d) All of these

33. The daily requirement of calcium is-
(a) 200 mg (b) 400 mg
(c) 800 mg (d) 600 mg

34. The normal route of calcium excretion is -
(a) Kidney (b) Kidney and liver
(c) Kidney and intestine (d) Kidney, intestine and pancreas

35. Respiratory alkalosis can occur in
(a) Bronchial asthma (b) Collapse of lungs
(c) Hysterical hyperventilation (d) Bronchial obstruction

36. Oncotic pressure of plasma is due to-
(a) Proteins (b) Chloride
(c) Sodium (d) All of these

37. Which of the following is not diagnosed by ELISA?
(a) Syphilis (b) HIV
(c) Lyme disease (d) Flu

38. Which of the following is not a type of data output expected in ELISA assay?
(a) Quantitative analysis
(b) Qualitative analysis
(c) Semi-quantitative analysis
(d) Semi-qualitative analysis

39. Electrophoresis was developed by-
(a) Tswett
(b) Tsvedberg
(c) Tiselius
(d) Sanger

40. What unit is creatinine clearance expressed in?
(a) Grams/litre
(b) Milliliters/minute
(c) Milligrams per deciliter
(d) Liters per hour

41. Bence Jones proteins are derived from-
(a) Alpha globulins
(b) Beta globulins
(c) Delta globulins
(d) Gamma globulins

42. Which of the following compounds is the most effective buffer system at physiological pH?
(a) Bicarbonate buffer
(b) Phosphate buffer
(c) Protein buffer
(d) All of the above

43. The least toxic excretory material is-
(a) Urea
(b) Uric acid
(c) Ammonia
(d) All are equally toxic

44. Which of the following metal helps to transmit nerve signals?
(a) Hydrogen
(b) Potassium
(c) Sodium
(d) Lithium

45. Which tumour marker is associated with melanoma?
(a) Alkaline phosphatase
(b) TRAP
(c) Bombesin
(d) S-100

46. AST is widely distributed in -
(a) Tissue
(b) Cardiac
(c) Renal
(d) Blood

47. pH value less than 7 indicates that the solution is-
(a) Acidic
(b) Basic
(c) Neutral
(d) No effect

48. The C.G.S. unit of heat is-
(a) Calorie
(b) Kelvin
(c) Fahrenheit
(d) Joule

49. Find the pH of 0.1N NaOH solution.
(a) 13
(b) 10
(c) 12
(d) 11

50. A set of values that includes upper and lower limit of a lab test based on a group of otherwise healthy people is known as -
(a) Reference range
(b) Standard deviation
(c) Mean value
(d) Median

51. Long hair in the laboratory must be-
(a) Cut Short.
(b) Held away from the experiment with one hand.
(c) Always gently groomed.
(d) Tied back or kept back entirely out of the way with a hair band.

52. Two organisms which are very closely related to each other have which of the following property?
(a) Similar mol% G+C values.
(b) Different mol% G+C values
(c) Similar mol% G+C values and heteroduplexes are formed
(d) Different mol% G+C values and heteroduplexes are not formed.

53. Spores of *Bacillus Stearothermophilus* are used for determining efficacy of-
(a) Filtration
(b) Hot air oven
(c) Moist heat Sterilization
(d) Flaming

54. Lag phase is also known as -
(a) Period of initial adjustment
(b) Transitional period
(c) Generation time
(d) Period of rapid growth

55. The Gas Pak system is suitable for which of the following?
(a) Aerobic bacteria
(b) Anaerobic bacteria
(c) Facultatively anaerobic bacteria
(d) Microaerophilic bacteria

56. LT toxin is produced by -
(a) S. aureus.
(b) E. coli.
(c) B. anthracis.
(d) C. perfringens.

57. The coagulase is done to differentiate
(a) *Staphylococcus aureus* from *Staphylococcus epidermidis.*
(b) *Staphylococcus epidermidis* from *Neisseria meningitidis.*
(c) *Streptococcus pyogenes* from *Enterococcus faecalis.*
(d) *Streptococcus pyogenes* from *Staphylococcus aureus.*

58. All of the following infections are the common clinical manifestations caused by *N. gonorrhoeae*, EXCEPT:
(a) Genital gonorrhoea in women
(b) Pelvic inflammatory disease in men
(c) Neonatal conjunctivitis
(d) Pharyngitis

59. Which of the following biotypes of *Vibrio cholerae* is prevalent in developing countries?
(a) EL Tor
(b) Classic
(c) Biotype O139
(d) Biotype O138

60. The BCG vaccine is administered for immunity against-
(a) Malaria
(b) Tuberculosis
(c) Jaundice
(d) Hepatitis

61. Which type of autoclaves is mainly used for bulk research work?
(a) Vertical autoclave
(b) Horizontal autoclave
(c) Sterilization pressure cooker
(d) Table top steam sterilizer

62. Which type of filters are commonly used in Laminar Air flows?
(a) Seitz Filter
(b) Membrane Filter
(c) HEPA filter
(d) Sintered Glass Filters

63. Temperature used for hot air oven is-
(a) 100° C for 1 hour
(b) 120° C for 1 hour
(c) 160° C for 1 hour
(d) 60° C for 1 hour

64. What is the primary function of a water bath in a laboratory?

(a) To cool down samples quickly after a chemical reaction.

(b) To measure the resistance value of the water

(c) To incubate samples at a constant temperature over a long period of time

(d) To enable rapid chemical reactions at varying temperatures

65. What color does the fungal cell wall appear when stained with Periodic acid-Schiff stain?

(a) Black (b) Red

(c) It appears colourless (d) Violet

66. Which of the following fungi is a common opportunistic pathogen that can cause meningitis in HIV infected patients?

(a) *Penicillium spp.* (b) *Mucor spp.*

(c) *Candida spp.* (d) *Cryptococcus spp.*

67. Each of the following statements concerning *Candida albicans* is correct except:

(a) *C. albicans* is a budding yeast that forms pseudo hyphae when it invades tissue

(b) *C. albicans* causes thrush

(c) *C. albicans* is transmitted primarily by respiratory aerosol

(d) Impaired cell-mediated immunity is an important predisposing factor to disease

68. One of the routine microscopic laboratory identification methods of the fungal specimens is done by using _____.

(a) 70% KOH mount (b) 50% H2O2

(c) 10% KOH (d) Formalin

69. Infection with dermatophyte is most often associated with -

(a) Intravenous drug abuse.

(b) Inhalation of the organism from contaminated bird faeces.

(c) Adherence of the organism to perspiration moist skin.

(d) Fecal-oral transmission.

70. The cellular immune response is mediated by-

(a) B cells (b) T cells

(c) Plasma cells (d) Endothelial cells

71. Which of the following can provide naturally acquired passive immunity for the new born?

(a) IgD (b) IgG

(c) IgE (d) IgM

72. Delayed type of hypersensitivity is seen in-

(a) Penicillin allergy (b) Contact dermatitis

(c) Arthus reaction (d) Anaphylaxis

73. Incomplete antigens are called-

(a) Immunogens (b) Epitomes

(c) Haptens (d) Paratope

74. How is the positive result indicated in slide agglutination reaction?

(a) Visibility of separate particles (b) Clumping of the particles

(c) Colour change (d) Wavelength difference is seen

75. Biological false reaction in VDRL is related to-

(a) Lepra bacilli (b) Corynebacterium diphtheria

(c) Cl. welchi (d) None of these

76. Which of the following is related to positive WIDAL test?
(a) Titre of 1: 20 or higher for antigens O and H (b) Titre of 1: 40 or higher for antigens O and H
(c) Titre of 1: 80 or higher for antigens O and H (d) Titre of 1: 160 or higher for antigens O and H

77. Which of the following is a first marker appears in serum as an indication of HBV infection?
(a) HBs Ag (b) HBc Ag
(c) HBe Ag (d) All the above at the same time.

78. The correct amount of PPD antigen to use in a tuberculin (Mantoux) skin test is-
(a) 0.05 ml of 5 tuberculin units (b) 0.1 ml of 5 tuberculin units
(c) 0.5 ml of 5 tuberculin units (d) 1 ml of 5 tuberculin units

79. For how many days the fertile chicken eggs should be incubated for the cultivation of viruses?
(a) 1 day (b) 2-4 days
(c) 5-12 days (d) 2-7 days

80. The envelope surrounding the nucleocapsid of some animal viruses is made up of which of the following structures-
(a) Lipoproteins (b) Lipopolysaccharides
(c) Peptidoglycan (d) Chitin

81. Which of the following inclusion bodies are present in the cytoplasm of the Purkinje cells of the cerebellum in the case of rabies infection?
(a) Paschen bodies (b) Guarnieri bodies
(c) Negri bodies (d) Elementary bodies

82. Which of the following causes AIDS in rhesus monkeys?
(a) HIV (b) Spumavirus
(c) Simian Immunodeficiency Virus (SIV) (d) Feline Immunodeficiency Virus (FIV)

83. Kolpik's spots will develop in-
(a) HIV (b) Measles
(c) Mumps (d) Rubella

84. DNA-replication is by the mechanism of-
(a) Conservative (b) Semiconservative
(c) Dispersive (d) None of the above

85. Production of RNA from DNA is called-
(a) Translation (b) RNA splicing
(c) Transcription (d) Transposition

86. The process of DNA replication is affected by an enzyme known as-
(a) Mutase (b) Ligase
(c) Polymerase I (d) Ribonuclease

87. Which characteristics do F-plasmids confer to the host bacterium?
(a) Antibiotic resistance (b) Fluorescent colonies
(c) Conjugative ability (d) Virulence

88. With which of the following enzyme, labelling of antibodies is carried out in Direct ELISA detection technique?
(a) Alkaline Phosphatase (b) Hyaluronidase
(c) Lactase (d) Amylase

89. How can hybridizing bands be located in blotting techniques?

(a) Radiography (b) Autoradiography

(c) UV radiation (d) Infrared radiation

90. The temperature cycles in a polymerase chain reaction are in the order _____.

(a) 95°, 60°, 72° (b) 60°, 72°, 95°

(c) 72°, 60°, 95° (d) 95°, 72°, 60°

91. What are the three main taxonomic groups of helminths that can cause infections in humans?

(a) Viruses, bacteria, and fungi (b) Tapeworms, roundworms and flukes

(c) Protozoa, cestodes, and nematodes (d) Arachnids, crustaceans, and annelids

92. All protozoa required organic materials, which may be particulate or in solution. Such type of nutrition is called-

(a) Holozoic (b) Saprozoic

(c) Phagocytosis (d) Both (a) & (b)

93. *Entamoeba histolytica* can be cultured in-

(a) Diamond's medium (b) CLED medium

(c) NNN medium (d) MacConkey agar

94. Where does liver fluke lives in sheep?

(a) Brain (b) Kidney

(c) Bile ducts (d) Pancreas

95. In malaria infection the rupture of RBCs associated with release of a toxic substance called?

(a) Hypnotoxin (b) Hemozoin

(c) Ascaron (d) Haemotoxin

96. *Leishmania tropica* produces.

(a) Sleeping sickness (b) Dysentery

(c) Oriental sores (d) Kala-azar

97. Amoebic dysentery in man and animals is caused by-

(a) *Entamoeba coli* (b) *E. gingivalis*

(c) *E. histolytica* (d) *Escherichia coli*

98. Motile zygote of Plasmodium occurs in-

(a) Human RBCs (b) Human liver

(c) Gut of female Anopheles (d) Salivary glands of Anopheles

99. The intestinal fluke *Fasciolopsis buski* which causes fasciolopsis resides in-

(a) Small intestine (b) Stomach

(c) Liver (d) Large intestine

100. The intermediate host in the life cycle of Schistosomiasis is -

(a) Snail (b) Dogs

(c) Fish (d) Human Being

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