

**GOVERNMENT OF MIZORAM
PUBLIC HEALTH ENGINEERING
DEPARTMENT**

**COMPETITIVE EXAMINATION FOR RECRUITMENT TO
THE POST OF ANALYST (LAB)
(JUNE-2026)**

PAPER-III

Full Marks : 200
Time Allowed : 3 Hours

Signature of Invigilator _____

CODE :

(For official use)

SUBJECT	MARK CARRIED BY EACH QUESTION	NO. OF CORRECT ANSWERS	MARKS OBTAINED
Technical Subject	2		
TOTAL			

Signature of Examiner : _____

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All questions carry 2 marks each.

Put a tick (✓) mark against the correct answer in the space given in each question.

If a candidate gives more than one answer to one question, it will be treated as wrong answer even if one of the given answers happens to be correct.

1. The basic unit of heredity is:

- (a) Chromosome ()
- (b) Nucleus ()
- (c) **Gene** ()
- (d) Ribosome ()

2. Which nitrogenous base is present in RNA but absent in DNA?

- (a) **Uracil** ()
- (b) Guanine ()
- (c) Cytosine ()
- (d) Adenine ()

3. The process by which green plants prepare food is called:

- (a) Respiration ()
- (b) Digestion ()
- (c) Fermentation ()
- (d) **Photosynthesis** ()

4. The site of protein synthesis in the cell is:

- (a) Lysosome ()
- (b) Golgi body ()
- (c) **Ribosome** ()
- (d) Mitochondria ()

5. Which blood group is known as the universal donor?

- (a) AB positive ()
- (b) O positive ()
- (c) **O negative** ()
- (d) A negative ()

6. Which of the following is a sex-linked disease?

- (a) Diabetes mellitus ()
- (b) Tuberculosis ()
- (c) Hypertension ()
- (d) **Haemophilia** ()

7. Which organ filters blood in the human body?

- (a) Heart ()
- (b) Lungs ()
- (c) Liver ()
- (d) **Kidney** ()

8. The normal human body temperature is:
- (a) 35°C ()
 - (b) 36°C ()
 - (c) **37°C** ()
 - (d) 39°C ()
9. The causative organism of tuberculosis is:
- (a) Virus ()
 - (b) **Bacteria** ()
 - (c) Protozoa ()
 - (d) Fungus ()
10. The process of formation of gametes is called:
- (a) Mitosis ()
 - (b) Budding ()
 - (c) Fertilization ()
 - (d) **Meiosis** ()
11. The vector responsible for Zika Virus transmission is:
- (a) Culex mosquito ()
 - (b) **Aedes mosquito** ()
 - (c) Female Anopheles mosquito ()
 - (d) Cockroach ()
12. Which hormone regulates blood glucose level?
- (a) Thyroxine ()
 - (b) Adrenaline ()
 - (c) **Insulin** ()
 - (d) Estrogen ()
13. The largest organ in the human body is:
- (a) Liver ()
 - (b) **Skin** ()
 - (c) Heart ()
 - (d) Brain ()
14. Which gas is essential for photosynthesis?
- (a) Oxygen ()
 - (b) Nitrogen ()
 - (c) Hydrogen ()
 - (d) **Carbon dioxide** ()
15. The study of microorganisms is called:
- (a) Botany ()
 - (b) Zoology ()
 - (c) **Microbiology** ()
 - (d) Genetics ()

16. Which vitamin is produced in the skin by sunlight?

- (a) Vitamin A ()
- (b) Vitamin B12 ()
- (c) Vitamin C ()
- (d) **Vitamin D** ()

17. The genetic code is present in:

- (a) Lipids ()
- (b) Vitamins ()
- (c) **DNA sequence** ()
- (d) Carbohydrates ()

18. Which blood vessel carries oxygenated blood from the lungs to heart?

- (a) Pulmonary artery ()
- (b) Aorta ()
- (c) Vena cava ()
- (d) **Pulmonary vein** ()

19. A person with low haemoglobin is suffering from:

- (a) Diabetes ()
- (b) **Anaemia** ()
- (c) Hypertension ()
- (d) Jaundice ()

20. The functional unit of kidney is:

- (a) Neuron ()
- (b) Alveolus ()
- (c) Osteon ()
- (d) **Nephron** ()

21. Which microorganism is used in curd formation?

- (a) Virus ()
- (b) **Lactobacillus** ()
- (c) Protozoa ()
- (d) Fungi ()

22. The green pigment in plants is:

- (a) Haemoglobin ()
- (b) Melanin ()
- (c) Carotene ()
- (d) **Chlorophyll** ()

23. Which blood cells help in body defence?

- (a) RBC ()
- (b) **WBC** ()
- (c) Plasma ()
- (d) Platelets ()

24. The process of breakdown of food to release energy is called:

- (a) Digestion ()
- (b) Circulation ()
- (c) Photosynthesis ()
- (d) **Respiration** ()

25. The genetic material present in most organisms is:

- (a) RNA ()
- (b) **DNA** ()
- (c) Lipid ()
- (d) Protein ()

26. Which disease is caused by deficiency of insulin?

- (a) Asthma ()
- (b) **Diabetes mellitus** ()
- (c) Anaemia ()
- (d) Tuberculosis ()

27. The human heart has:

- (a) 2 chambers ()
- (b) 3 chambers ()
- (c) 5 chambers ()
- (d) **4 chambers** ()

28. Which of the following is an example of biotechnology?

- (a) Boiling water ()
- (b) Photosynthesis ()
- (c) Blood circulation ()
- (d) **Production of insulin using bacteria** ()

29. The causative organism of AIDS is:

- (a) Streptococcus ()
- (b) **Human Immunodeficiency Virus** ()
- (c) Mycobacterium ()
- (d) Plasmodium ()

30. The main function of red blood cells is:

- (a) **Transport oxygen** ()
- (b) Blood clotting ()
- (c) Digestion ()
- (d) Fight infection ()

31. Which part of the cell controls all activities?

- (a) Cytoplasm ()
- (b) **Nucleus** ()
- (c) Mitochondria ()
- (d) Cell membrane ()

32. Which one is a water-borne disease?

- (a) Rabies ()
- (b) Dengue ()
- (c) Measles ()
- (d) **Cholera** ()

33. The universal recipient blood group is:

- (a) **AB positive** ()
- (b) A positive ()
- (c) B positive ()
- (d) O negative ()

34. Crossing over during meiosis occurs in:

- (a) Metaphase I ()
- (b) **Prophase I** ()
- (c) Telophase I ()
- (d) Anaphase II ()

35. Which component of the ecosystem acts as decomposer?

- (a) Grass ()
- (b) **Bacteria and fungi** ()
- (c) Carnivores ()
- (d) Herbivores ()

36. Which of the following have the same significant figures?

- i. 0.00253
- ii. 1.0003
- iii. 15.0
- iv. 163

Choose the correct answers from the options given below

- (a) ii and iii only ()
- (b) i, ii and iii only ()
- (c) **i, iii and iv only** ()
- (d) iii and iv only ()

37. What is the mass of 0.5 mole of ozone molecule?

- (a) 14g ()
- (b) **24g** ()
- (c) 12g ()
- (d) 18g ()

38. Which of the following statements are not true regarding compounds?

- i. Compounds show the properties of constituent substances
- ii. Only elements can react to form compounds
- iii. The composition of each compound is always fixed
- iv. Compounds can be separated by physical and chemical methods

Choose the correct answers from the options given below

- (a) i, ii, iii ()
- (b) ii, iii, iv ()
- (c) **i, ii, iv** ()
- (d) i, iii, iv ()

39. Which is not the use of baking soda in the kitchen?

- (a) As an ingredient in antacids ()
- (b) As a leavening agent ()
- (c) In fire extinguishers ()
- (d) **For food colouring** ()

40. Which of the following is a noble gas?

- (a) Nitrogen ()
- (b) **Neon** ()
- (c) Chlorine ()
- (d) Bromine ()

41. The metallic character _____ down the group and _____ across a period

- (a) **increases, decreases** ()
- (b) decreases, increases ()
- (c) increases, increases ()
- (d) decreases, decreases ()

42. Which one of the following is the most electronegative element in the periodic table?

- (a) N ()
- (b) Cl ()
- (c) **F** ()
- (d) None of the above ()

43. If an element forms an ion with a charge of -2, what does this indicate about its valency?

- (a) The element has gained 2 protons ()
- (b) The element has gained 2 electrons in the nucleus ()
- (c) **The element has gained 2 electrons** ()
- (d) The element has lost 2 electrons ()

44. The general formula for alkanes is:

- (a) C_nH_{2n-2} ()
- (b) **C_nH_{2n+2}** ()
- (c) C_nH_{3n-3} ()
- (d) C_nH_{2n} ()

45. Which of the following is the first member of alkyne homologous series?
(a) **Ethyne** ()
(b) Ethene ()
(c) Propyne ()
(d) Methane ()
46. Which of the following is most basic?
(a) Ammonia ()
(b) Aniline ()
(c) **Ethyl amine** ()
(d) None of the above ()
47. What is the formula for formic acid?
(a) C_2H_6O ()
(b) **$HCOOH$** ()
(c) $C_2H_4O_2$ ()
(d) None of the above ()
48. _____ reacts in the presence of an acid or base to give back alcohol and carboxylic acid-
(a) Ethanol ()
(b) Methanol ()
(c) **Esters** ()
(d) Ketones ()
49. The equilibrium constant for the reaction depends on:
(a) Initial concentration ()
(b) Catalyst ()
(c) **Temperature** ()
(d) Pressure only ()
50. According to Le Chatelier's principle, increasing pressure favors:
(a) Side with more moles of gas ()
(b) **Side with fewer moles of gas** ()
(c) Both sides equally ()
(d) No effect ()
51. In an exothermic reaction, increase in temperature
(a) Increases product formation ()
(b) **Favors backward reaction** ()
(c) Has no effect ()
(d) Increases equilibrium constant ()
52. In a chemical equation, the arrow head points towards
(a) **Product** ()
(b) Solvent ()
(c) Reactants ()
(d) Reaction conditions ()

53. The oxidation number of oxygen in most compounds is:

- (a) +1 ()
- (b) -1 ()
- (c) -2 ()
- (d) 0 ()

54. In the reaction $\text{CuO} + \text{H}_2 \rightarrow \text{Cu} + \text{H}_2\text{O}$, the substance reduced is:

- (a) H_2 ()
- (b) H_2O ()
- (c) Cu ()
- (d) **CuO** ()

55. Reduction can also be defined as:

- (a) Addition of oxygen ()
- (b) Removal of hydrogen ()
- (c) **Addition of hydrogen** ()
- (d) Increase in oxidation number ()

56. In electrochemical cells, oxidation occurs at:

- (a) Cathode ()
- (b) **Anode** ()
- (c) Salt bridge ()
- (d) Electrolyte ()

57. Benzene is:

- (a) Saturated hydrocarbon ()
- (b) **Aromatic hydrocarbon** ()
- (c) Aliphatic hydrocarbon ()
- (d) Cycloalkane only ()

58. Which of the following compounds is a saturated hydrocarbon?

- (a) Benzene ()
- (b) Propane ()
- (c) Propyne ()
- (d) **Cyclohexane** ()

59. Which hydrocarbon undergoes substitution reaction easily?

- (a) Alkene ()
- (b) Alkyne ()
- (c) **Alkane** ()
- (d) All equally ()

60. Which of the following is an example of a solution of a solid in a liquid

- (a) Soda-Water ()
- (b) Vinegar ()
- (c) **Tincture of iodine** ()
- (d) Brass ()

61. Particles of a suspension _____ when left undisturbed.
- (a) Float ()
 - (b) Dissolve ()
 - (c) **Settle Down** ()
 - (d) Evaporate ()
62. Which of the following statements best differentiates a compound from a solution?
- (a) A compound can be separated by physical methods, while a solution cannot. ()
 - (b) **A compound has a fixed composition and definite properties, unlike a solution.** ()
 - (c) Compounds are always liquid, but a solution can be in any state. ()
 - (d) Compounds are mixtures of two or more elements, while solutions are mixture of compounds only. ()
63. Can suspension particles be separated by filtration?
- (a) No ()
 - (b) Only Sometimes ()
 - (c) **Yes** ()
 - (d) Only if heated ()
64. The SI unit of conductivity is:
- (a) ohm ()
 - (b) **siemens per meter** ()
 - (c) volt ()
 - (d) ampere ()
65. The standard electrode potential is measured under:
- (a) **1 atm pressure and 1 M concentration** ()
 - (b) 2 atm pressure only ()
 - (c) 25 M concentration ()
 - (d) Vacuum conditions ()
66. The standard hydrogen electrode has electrode potential:
- (a) +1 V ()
 - (b) -1 V ()
 - (c) **0 V** ()
 - (d) 0.5 V ()
67. Faraday's first law of electrolysis states that mass deposited is proportional to:
- (a) Resistance ()
 - (b) Voltage ()
 - (c) **Quantity of electricity passed** ()
 - (d) Temperature ()
68. The rate of a chemical reaction generally increases with:
- (a) Decrease in temperature ()
 - (b) **Increase in temperature** ()
 - (c) Decrease in concentration ()
 - (d) Addition of inert gas only ()

69. The unit of rate of reaction is:

- (a) $\text{mol L}^{-1} \text{s}^{-1}$ ()
- (b) $\text{mol}^2 \text{L}^{-2}$ ()
- (c) second ()
- (d) atm ()

70. Half-life of a first-order reaction is:

- (a) Dependent on initial concentration ()
- (b) **Independent of initial concentration** ()
- (c) Zero ()
- (d) Infinite ()

71. The stain commonly used for acid-fast bacilli is:

- (a) **Ziehl-Neelsen stain** ()
- (b) Leishman stain ()
- (c) India ink stain ()
- (d) Gram stain ()

72. Which anticoagulant is commonly used for ESR estimation?

- (a) EDTA ()
- (b) **Sodium citrate** ()
- (c) Citrate phosphate ()
- (d) Heparin ()

73. The anticoagulant commonly used in haematology is:

- (a) Formalin ()
- (b) Alcohol ()
- (c) Heparin ()
- (d) **EDTA** ()

74. Which instrument is used to sterilize laboratory media?

- (a) Incubator ()
- (b) Hot air oven ()
- (c) **Autoclave** ()
- (d) Centrifuge ()

75. The normal pH of blood is approximately:

- (a) **7.4** ()
- (b) 6.2 ()
- (c) 8.5 ()
- (d) 7.5 ()

76. Gram-positive bacteria appear:

- (a) Red ()
- (b) Pink ()
- (c) Green ()
- (d) **Purple** ()

77. The instrument used to separate blood components is:
- (a) Microscope ()
 - (b) Incubator ()
 - (c) **Centrifuge** ()
 - (d) Spectrophotometer ()
78. The anticoagulant heparin acts by:
- (a) Destroying RBCs ()
 - (b) Increasing glucose ()
 - (c) Digesting protein ()
 - (d) **Preventing clot formation** ()
79. The main purpose of hand washing in laboratory practice is:
- (a) Improve speed ()
 - (b) **Prevent infection** ()
 - (c) Reduce paperwork ()
 - (d) Save water ()
80. The microscope objective commonly used first for focusing is:
- (a) 100x oil immersion ()
 - (b) 40x objective ()
 - (c) 60x objective ()
 - (d) **10x objective** ()
81. The colour of plasma is usually:
- (a) Blue ()
 - (b) Red ()
 - (c) Green ()
 - (d) **Straw coloured** ()
82. A specimen collected for urine culture should preferably be:
- (a) Random urine ()
 - (b) **Midstream urine** ()
 - (c) Catheter waste urine ()
 - (d) Evening urine ()
83. The reagent used in Benedict's test detects:
- (a) **Sugar** ()
 - (b) Fat ()
 - (c) Salt ()
 - (d) None of the above ()
84. A laboratory coat is worn mainly for:
- (a) Decoration ()
 - (b) Comfort ()
 - (c) Fashion ()
 - (d) **Protection** ()

85. The normal adult haemoglobin level is best measured using:

- (a) Thermometer ()
- (b) Sphygmomanometer ()
- (c) Stethoscope ()
- (d) **None of the above** ()

86. The bacterium causing tuberculosis mainly affects the:

- (a) **Lungs** ()
- (b) Liver ()
- (c) Brain ()
- (d) Kidney ()

87. The slide used for blood grouping contains:

- (a) Distilled water **Antisera** ()
- (b) Saline only ()
- (c) Sugar solution ()
- (d) Distilled water ()

88. Which of the following is a biohazard waste?

- (a) Paper box ()
- (b) Plastic chair ()
- (c) Glass window ()
- (d) **Used syringe** ()

89. The study of tissues is called:

- (a) Cytology ()
- (b) Pathology ()
- (c) Anatomy ()
- (d) **Histology** ()

90. Which stain is commonly used in routine histopathology?

- (a) **Haematoxylin and Eosin stain** ()
- (b) Ziehl-Neelsen stain ()
- (c) Leishman stain ()
- (d) Gram stain ()

91. Sputum examination is commonly done for the diagnosis of:

- (a) Diabetes ()
- (b) Hypertension ()
- (c) Anaemia ()
- (d) **Tuberculosis** ()

92. The laboratory department mainly concerned with blood examination is:

- (a) Biochemistry ()
- (b) Cytology ()
- (c) Histopathology ()
- (d) **Haematology** ()

93. The main source of infection in the laboratory is:
- (a) Clean gloves ()
 - (b) **Contaminated specimens** ()
 - (c) Fresh air ()
 - (d) Sterile water ()
94. The normal range of platelet count is approximately:
- (a) 10,000–20,000/mm³ ()
 - (b) 50,000–80,000/mm³ ()
 - (c) 1–2 lakh/mm³ ()
 - (d) **1.5–4 lakh/mm³** ()
95. The fixing solution commonly used in histopathology is:
- (a) Ethanol ()
 - (b) Acetone ()
 - (c) Xylene ()
 - (d) **Formalin** ()
96. The oil used with the oil immersion objective is:
- (a) Coconut oil ()
 - (b) Mustard oil ()
 - (c) Kerosene oil ()
 - (d) **Cedar wood oil** ()
97. The universal precautions in laboratory practice are mainly aimed at preventing:
- (a) **Spread of infection** ()
 - (b) Water shortage ()
 - (c) Electricity failure ()
 - (d) Instrument damage ()
98. The purpose of sterilization is to:
- (a) Increase colour ()
 - (b) **Destroy microorganisms** ()
 - (c) Cool the instruments ()
 - (d) Reduce smell ()
99. A blood smear is commonly stained using:
- (a) Gram stain ()
 - (b) India ink ()
 - (c) Crystal violet only ()
 - (d) **Leishman stain** ()
100. The department dealing with the study of cells is:
- (a) **Cytology** ()
 - (b) Biochemistry ()
 - (c) Microbiology ()
 - (d) Histology ()