

B.Sc. (NEP) - Sem-I
SEC06 - Microbiology : Instrumentation in Microbiology Laboratory

P. Pages : 3

Time : Two Hours



GUG/W/24/15906

Max. Marks : 40

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- 1.** Write a short answer question. (Each question carry 1 mark) **20**
- i) How are Petri plates sterilized before use?
 - ii) What are the common steps for sterilizing glassware using an autoclave?
 - iii) How does an incubator help in the cultivation of microorganisms?
 - iv) Why is it important to use a calibrated thermometer for monitoring incubator temperature?
 - v) What type of heat is used in a hot air oven for sterilization?
 - vi) What role does insulation play in the efficiency of a hot air oven?
 - vii) How does an electron microscope differ from a light microscope?
 - viii) What is resolving power?
 - ix) Why are anaerobic conditions necessary for certain microorganisms?
 - x) What is the role of the catalyst in an anaerobic jar system?
 - xi) What types of gels are commonly used in gel electrophoresis?
 - xii) What is the purpose of the loading dye in gel electrophoresis?
 - xiii) What is the difference between acidic and basic solutions?
 - xiv) What solutions are used to calibrate a pH meter?
 - xv) How does laminar air flow prevent contamination in laboratory settings?
 - xvi) What type of filter is used in laminar air flow systems?
 - xvii) What is the function of a cuvette in a spectrophotometer?
 - xviii) What is the Beer-Lambert law in spectrophotometry?
 - xix) What is mean by supernatant?
 - xx) How does a centrifuge separate substances based on density?

- i) What is the primary function of a conical flask in a microbiology lab?
 - a) Measuring liquids
 - b) Growing microbial cultures
 - c) Storing chemicals
 - d) Separating mixtures
- ii) What precaution should be taken when handling glassware in a microbiology lab?
 - a) Always wear gloves
 - b) Use it while it's still hot
 - c) Avoid using autoclaved glassware
 - d) Do not label glassware
- iii) Which microorganisms typically require incubation at 37°C?
 - a) Psychrophiles
 - b) Thermophiles
 - c) Mesophiles
 - d) Halophiles
- iv) Which of the following is NOT a feature of an incubator?
 - a) Temperature control
 - b) Light exposure control
 - c) Humidity control
 - d) Sterilization chamber
- v) What is the principle of operation of a hot air oven?
 - a) Moist heat sterilization
 - b) Dry heat sterilization
 - c) High pressure sterilization
 - d) Radiation sterilization
- vi) What is the typical temperature used for sterilization in a hot air oven?
 - a) 60°C
 - b) 100°C
 - c) 160-180°C
 - d) 250°C
- vii) Which of the following is the most common type of microscope used in microbiology labs?
 - a) Electron microscope
 - b) Fluorescence microscope
 - c) Light microscope
 - d) Confocal microscope
- viii) What is the role of immersion oil when using the 100x objective lens?
 - a) To increase magnification
 - b) To decrease magnification
 - c) To reduce light refraction
 - d) To enhance contrast
- ix) Which gas is typically removed from an anaerobic jar?
 - a) Nitrogen
 - b) Oxygen
 - c) Carbon dioxide
 - d) Hydrogen
- x) Which of the following is a common application of the anaerobic jar?
 - a) Culturing fungi
 - b) Growing viruses
 - c) Studying anaerobic bacteria
 - d) Storing sterile equipment
- xi) What is the basic principle of gel electrophoresis?
 - a) Separation of molecules by size and charge
 - b) Digestion of DNA
 - c) Amplification of RNA
 - d) Hybridization of proteins

- xii) Which of the following is a dye commonly used to stain DNA in gel electrophoresis?
- a) Methylene blue
 - b) Coomassie blue
 - c) Ethidium bromide
 - d) Crystal violet
- xiii) What does a pH meter measure?
- a) Acidity or alkalinity of a solution
 - b) Concentration of salts
 - c) Temperature of the solution
 - d) Oxygen content in water
- xiv) What is the pH scale range?
- a) 1 to 7
 - b) 0 to 10
 - c) 0 to 14
 - d) -5 to 5
- xv) Laminar air flow cabinets are mainly used for which of the following processes?
- a) Chemical reactions
 - b) Aseptic handling and manipulation of samples
 - c) Measuring pH
 - d) Centrifugation
- xvi) What type of contamination does a laminar air flow cabinet protect samples from?
- a) Chemical
 - b) Dust and microbes
 - c) Radiation
 - d) Noise
- xvii) What is the principle behind UV-visible spectrophotometry?
- a) Measuring pH change
 - b) Measuring light absorption at specific wavelengths
 - c) Reflecting light off a surface
 - d) Generating sound waves
- xviii) Which law relates the absorption of light to the concentration of the absorbing substances?
- a) Boyle's law
 - b) Lambert-Beer's law
 - c) Avogadro's law
 - d) Charles' law
- xix) What is the name of the force that is generated during centrifugation?
- a) Centripetal force
 - b) Gravitational force
 - c) Centrifugal force
 - d) Magnetic force
- xx) In microbiology labs, centrifugation is commonly used for which process?
- a) Measuring optical density
 - b) Pelleting bacterial cells
 - c) Preparing culture media
 - d) Cleaning glassware
