First Year B. Sc. (Sem. I) (Medical Technology)  
Examination  
March / April – 2016  
Basic Laboratory Instruments : MT 02

Time : 2 Hours

[Total Marks : 50]

Instructions :

(1)

(2) There are 50 questions each question carries one (1) mark and all are compulsory.

(3) Read the question carefully before selecting the correct option.

(4) All questions are compulsory.

O.M.R. Sheet भरवा अंगेनी अंगत्नी सूजनावो आपेक्ष  
O.M.R. Sheetँली पार्द्र आपेक्ष हुँ।

Important instructions to fillup O.M.R. Sheet is given back side of provided O.M.R. Sheet.
1. Maximum displacement of the wave in Upper direction from the position of equilibrium is called as
   (A) Wave diameter
   (B) Wave length
   (C) Though
   (D) Crest

2. Following (A, B, C, D, E, F) are the steps of operation of COLORIMETER. Arrange them in proper sequence.
   A. Select and Adjust proper filter.
   B. Switch ON the instrument.
   C. Replace the Blank with Test solution.
   D. Read the Absorbance of test solution and note it down.
   E. Switch OFF the instrument.
   F. Adjust the colorimeter at 100% T (Zero absorbance) by using Blank Solution.
   (A) C → D → A → B → E → F
   (B) A → B → C → D → E → F
   (C) B → A → F → C → D → E
   (D) B → F → D → C → A → E

3. The part which is used to control the amount of light entering in condenser is known as
   (A) Coarse adjustment knob
   (B) Fine adjustment knob
   (C) Iris Diaphragm
   (D) Sub stage Condenser

4. Following which objective lens is known as Oil Immersion lens?
   (A) 10X
   (B) 4X
   (C) 100X
   (D) 45X

5. Under compound microscope, light source is ON but image is observed very dark. This problem may be solved by
   (A) Moving the stage downwards
   (B) Cleaning the eyepiece
   (C) Putting a drop of oil on slide
   (D) Adjusting the iris diaphragm

6. Following is NOT component of pH meter.
   (A) Wavelength selector
   (B) Reference Electrode
   (C) Glass Electrode
   (D) Volt meter
7  Give the full form of : OD
   (A) Organic Densitometry
   (B) Optical Derivative
   (C) Optical Density
   (D) Optical Diversity

8  For care and maintenance of microscope, which should NOT follow?
   (A) Prevent the lens from dust
   (B) Remove eyepiece and objective after use
   (C) Cover the microscope when not in use
   (D) Clean the oil from the lens after use

9  While using oil immersion lens, the lens must
   (A) Be very far from oil surface
   (B) Have 0.5 mm distance from oil surface
   (C) Touch oil surface
   (D) Not be in contact with oil surface

10 Expand the term: RCF
    (A) Revolution Centrifugal Force
    (B) Rational Centrifugal Force
    (C) Radial Centrifugal Force
    (D) Relative Centrifugal Force

11 If lens fails to focus all colors to the same convergence point, this type of aberration is known as
    (A) Astigmatism
    (B) Distortion aberration
    (C) Lateral Color aberration
    (D) Chromatic aberration

12 Color intensity of solution of the solution can be measured by
    (A) pH Meter
    (B) Colorimeter
    (C) Calorimeter
    (D) Intensionometer

13 As per Lambert's Law, when _______ light is passed through color solution, amount of light decreases exponentially with thickness of solution.
    (A) Monochromatic
    (B) Heterochromatic
    (C) Dichromatic
    (D) Polychromatic
14 Arrange light path in Bright field microscopy.
   A. Objective Lens
   B. Occular lens
   C. Specimen
   D. Condenser Lens
   (A) D → C → A → B
   (B) B → D → C → A
   (C) A → B → C → D
   (D) B → A → C → D

15 Why organic solvents should not used to clean the immersion oil from the lens?
   (A) It makes image hazy
   (B) It causes lens reflection
   (C) It dissolve cement holding the lens
   (D) Organic solvents are very costly

16 pH of the Solution-B is 7.0 (Neutral). To make its pH 2, what should be added to Solution-B?
   (A) 1 N HCl
   (B) 1 N NaOH
   (C) 1 N NaCl
   (D) 1 N KCl

17 For the maintenance of Colorimeter, which step(s) should be followed?
   (A) Put OFF the main switch, when instrument is not in use.
   (B) Do not switch ON the instrument during electrical fluctuation.
   (C) Calibrate the instrument Regularly
   (D) All of these

18 Production of ______ can be carried out by Water distillation apparatus.
   (A) Sterile Water
   (B) Mineral Water
   (C) Distilled Water
   (D) Hard water

19 pH meter is used to measure
   (A) Quality of Hydrogen ion in solution
   (B) Intensity of Hydrogen ion in solution
   (C) Concentration of Hydrogen ion in solution
   (D) Density of Hydrogen ion in solution

20 pH of the Solution-A is 3.19, then Solution-A is ________.
   (A) Acidic
   (B) Alkaline
   (C) Neutral
   (D) None of these
21 What is "Limit of Resolution" with reference to light microscopy?
   (A) 0.2 μm
   (B) 0.2 mm
   (C) 0.2 nm
   (D) 0.2 cm

22 In colorimeter, absorption of sample is measured in which sample holder?
   (A) Cuvette
   (B) Pipette
   (C) Micro pipette
   (D) Burette

23 To maintain the pH meter, which step should NOT follow?
   (A) Calibration should checked regularly
   (B) Keep the Electrode Dry
   (C) Wash the electrode with dist. water after and before use
   (D) Scratches should not be formed on electrode

24 Which three solutions are widely used for the calibration of pH meter?
   (A) Standard Solutions of pH 7, 4, 9.2
   (B) Standard Solutions of pH 3, 8, 14
   (C) Standard Solutions of pH 1, 7,14
   (D) Standard Solutions of pH 1, 4, 12

25 Which following type of Filter is used in Colorimeter to get monochromatic light?
   (A) Glass Filter
   (B) Membrane Filter
   (C) Cellulose Acetate Filter
   (D) None of these

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26 Centrifuge accelerate the sedimentation process by using ______.
   (A) Magnetic force
   (B) Horizontal force
   (C) Relative force
   (D) Centrifugal force

27 Which component is used to control the speed in centrifuge?
   (A) Rheostat
   (B) Tachometer
   (C) Lid
   (D) Rotor

28 The objective lens magnifies the specimen and produce the image, this image is known as
   (A) Real Image
   (B) Resolved Image
   (C) Virtual Image
   (D) High quality image

29 How %T (Transmittance) can be converted to Absorbance (A)?
   (A) A=2–%T
   (B) A= 2 + %T
   (C) A= 2 X %T
   (D) A= 2 / %T

30 Total Resolution of Microscope (d_{microscope}) can be calculated by using

\[
\frac{0.5 \lambda}{NA_{objective} + NA_{eyepiece}}
\]

(A) \[
\frac{0.5 \lambda}{NA_{objective} + NA_{condensor}}
\]

(B) \[
\frac{\lambda}{NA_{objective} + NA_{eyepiece}}
\]

(C) \[
\frac{\lambda}{NA_{objective} + NA_{condensor}}
\]

(D)
31. Which is the main component of Centrifuge?
   (A) Phototube
   (B) Tachometer
   (C) Voltmeter
   (D) Ivory Scale

32. In Ultracentrifuge, maximum RCF can be achieved up to _____.
   (A) 1,00,000 X g
   (B) 12,000 X g
   (C) 3,000 X g
   (D) 25,000 X g

33. To maintain centrifuge, following should be avoided
   (A) Balancing of the centrifuge tubes
   (B) Labeling of the centrifuge tube
   (C) To stop the centrifuge by hand while rotor is still rotating
   (D) Closing of the lid

34. Following which operation can be carried out by Centrifuge?
   (A) Separation of Sediment in Urine
   (B) Separation of Plasma or Serum from RBC
   (C) Separation of Sediment in Urine and Separation of Plasma or Serum from RBC both
   (D) None of these

35. Which is the component of Electronic Balance?
   (A) Ivory Scale
   (B) Leveling screw
   (C) Null Detector
   (D) Phototube

36. The light source in Colorimeter is generating ______ light.
   (A) Polychromatic
   (B) Monochromatic
   (C) Infra Red
   (D) Ultra Violet

37. If the ocular of a microscope is 10X and the objective is set at 100X, then what is the total magnification of the microscope?
   (A) 100 X
   (B) 100 X
   (C) 450 X
   (D) 10 X

38. In Fixed angle rotor, the tubes are positioned at ______ to the vertical axes.
   (A) 25° to 40°
   (B) 90°
   (C) 180°
   (D) 210°

39. Water Bath is utilized to carry out a chemical reaction at specific ________.
   (A) Temperature
   (B) Pressure
   (C) pH
   (D) Rotation

40. RPM of the centrifuge can be calibrated by using
   (A) Revolutionometer
   (B) Speedometer
   (C) RPM calibrometer
   (D) Tachometer
41 In Stainless steel Water Distillation Apparatus, collected steam is cooled by
   (A) Condenser
   (B) Cooling coil
   (C) Heating Coil
   (D) None of these

42 Monocular Microscope refers to
   (A) Microscope with one ocular lens
   (B) Microscope with only one objective lens
   (C) Microscope with camera
   (D) Microscope with Two ocular and one objective lens

43 Colorimetric determination can be carried out, if solution is
   (A) Colorless
   (B) Colored
   (C) Fluorescent
   (D) Having precipitate

44 In Calomel Electrode, which of the metal or metal salt is used?
   (A) Mercury
   (B) Lead
   (C) Chromium
   (D) Nickel

45 _______ first described about units of pH.
   (A) Robert Koch
   (B) Sorensen
   (C) Pasteur
   (D) Newton

46 What should not be selection criteria, while selecting the centrifuge?
   (A) Type of Rotor
   (B) Total number of buckets to hold tubes
   (C) Maximum RCF obtained
   (D) Total cost and color of Centrifuge

47 \[ \text{RCF} = R \times (\text{RPM})^2 \times 118 \times 10^{-7}; \] Here, meaning of "R"?
   (A) Radius of Rotor
   (B) Radius of Centrifuge
   (C) Radius Centrifuge Tube
   (D) None of these

48 When a ray of light passes from one medium to another medium, it bent at
   the surface, this phenomena is known as
   (A) Refraction
   (B) Frequency
   (C) Bending
   (D) Amplitude

49 What is true about Monopan Balance?
   (A) Used to weigh only Liquids
   (B) Used to weigh only Solids
   (C) Having Single pan
   (D) None of these

50 A common balance is used to find out the ________ of a substance by
   comparing it with known masses.
   (A) Molecular Weight
   (B) Molecular size
   (C) Horizontal Balance
   (D) Mass