DE-2911
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) Fill up strictly the details of section No. 1 to 5 on your answer book.

(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 तर्क अंगणी अग्नियुक्त युजनाच्या आपेक्ष
O.M.R. Sheet-ची खाली अपेक्ष

Important instructions to fill up O.M.R. Sheet
is given back side of provided O.M.R. Sheet.

DE-2911_D ] 1 [ Contd...
1. In Stainless steel Water Distillation Apparatus, collected steam is cooled by
   (A) Cooling coil
   (B) Heating Coil
   (C) None of these
   (D) Condenser

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

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

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

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

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

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

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

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

10. A common balance is used to find out the _________ of a substance by
    comparing it with known masses.
    (A) Molecular size
    (B) Horizontal Balance
    (C) Mass
    (D) Molecular Weight
11 Maximum displacement of the wave in Upper direction from the position of equilibrium is called as
   (A) Wave length  
   (B) Though 
   (C) Crest 
   (D) Wave diameter 

12 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) A→B→C→D→E→F 
   (B) B→A→F→C→D→E 
   (C) B→F→D→C→A→E 
   (D) C→D→A→B→E→F 

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

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

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

16 Following is NOT component of pH meter.
   (A) Reference Electrode 
   (B) Glass Electrode 
   (C) Volt meter 
   (D) Wavelength selector 

DE-2911_D ] 3 [ Contd...
17. Give the full form of: OD
   (A) Optical Derivative
   (B) Optical Density
   (C) Optical Diversity
   (D) Organic Densitometry

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

35 Which following type of Filter is used in Colorimeter to get monochromatic light?
   (A) Membrane Filter  
   (B) Cellulose Acetate Filter  
   (C) None of these  
   (D) Glass Filter
36 Centrifuge accelerate the sedimentation process by using ______.
   (A) Horizontal force
   (B) Relative force
   (C) Centrifugal force
   (D) Magnetic force

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

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

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

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

   \[
   \frac{0.5 \lambda}{\text{NA}_{objective} + \text{NA}_{condensor}}
   \]
   (A) \[\text{lambda}\]
   \[
   \frac{\lambda}{\text{NA}_{objective} + \text{NA}_{eyepiece}}
   \]
   (B) \[\text{lambda}\]
   \[
   \frac{\lambda}{\text{NA}_{objective} + \text{NA}_{condensor}}
   \]
   (C) \[\text{lambda}\]
   \[
   \frac{0.5 \lambda}{\text{NA}_{objective} + \text{NA}_{eyepiece}}
   \]
   (D) \[\text{lambda}\]
41 Which is the main component of Centrifuge?
   (A) Tachometer
   (B) Voltmeter
   (C) Ivory Scale
   (D) Phototube

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

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

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

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

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

47 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) 450 X
   (C) 10 X
   (D) 1000 X

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

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

50 RPM of the centrifuge can be calibrated by using
   (A) Speedometer
   (B) RPM calibrator
   (C) Tachometer
   (D) Revolutionometer