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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)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ FIRST YEAR B. SC. (SEM. I) (MEDICAL TECHNOLOGY)

Name of the Subject :

☛ BASIC LABORATORY INSTRUMENTS : MT 02

☛ Subject Code No. : 2 9 1 1 ☛ Section No. (1, 2,.....) : Nil

Seat No. :

Student's Signature

(૨) પ્રશ્ન પત્રમાં કુલ ૫૦ પ્રશ્નો છે, બધાજ ફરજિયાત છે. દરેક પ્રશ્નનો (૧) એક ગુણ છે.

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

(૩) દરેક પ્રશ્નનો કાળજીપૂર્વક અભ્યાસ કરી સાચો વિકલ્પ પસંદ કરો.

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

(૪) બધા જ પ્રશ્નો ફરજિયાત છે.

(4) All questions are compulsory.

***O.M.R. Sheet* ભરવા અંગેની અગત્યની સૂચનાઓ આપેલ *O.M.R. Sheet*ની પાછળ છાપેલ છે.**

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

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

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

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

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

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

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

7 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) 10 X (B) 1000 X
(C) 100 X (D) 450 X

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

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

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

11 In Stainless steel Water Distillation Apparatus, collected steam is cooled by
(A) None of these
(B) Condenser
(C) Cooling coil
(D) Heating Coil

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

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

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

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

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

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

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

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

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

21 Maximum displacement of the wave in Upper direction from the position of equilibrium is called as
(A) Crest
(B) Wave diameter
(C) Wave length
(D) Though

22 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) $B \rightarrow F \rightarrow D \rightarrow C \rightarrow A \rightarrow E$
(B) $C \rightarrow D \rightarrow A \rightarrow B \rightarrow E \rightarrow F$
(C) $A \rightarrow B \rightarrow C \rightarrow D \rightarrow E \rightarrow F$
(D) $B \rightarrow A \rightarrow F \rightarrow C \rightarrow D \rightarrow E$

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

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

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

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

27 Give the full form of : OD
(A) Optical Diversity
(B) Organic Densitometry
(C) Optical Derivative
(D) Optical Density

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

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

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

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

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

33 As per Lambert's Law, when _____ light is passed through color solution, amount of light decreases exponentially with thickness of solution.
(A) Polychromatic
(B) Monochromatic
(C) Heterochromatic
(D) Dichromatic

34 Arrange light path in Bright field microscopy.
A. Objective Lens
B. Occular lens
C. Specimen
D. Condenser Lens
(A) $B \rightarrow A \rightarrow C \rightarrow D$
(B) $D \rightarrow C \rightarrow A \rightarrow B$
(C) $B \rightarrow D \rightarrow C \rightarrow A$
(D) $A \rightarrow B \rightarrow C \rightarrow D$

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

36 pH of the Solution-B is 7.0 (Neutral). To make its pH 2, what should be added to Solution-B?
(A) 1 N KCI
(B) 1 N HCI
(C) 1 N NaOH
(D) 1 N NaCI

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

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

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

40 pH of the Solution-A is 3.19, then Solution-A is _____.
(A) None of these
(B) Acidic
(C) Alkaline
(D) Neutral

41 What is "Limit of Resolution" with reference to light microscopy?

(A) 0.2 cm

(B) 0.2 μm

(C) 0.2 mm

(D) 0.2 nm

42 In colorimeter, absorption of sample is measured in which sample holder?

(A) Burette

(B) Cuvette

(C) Pipette

(D) Micro pipette

43 To maintain the pH meter, which step should NOT follow?

(A) Scratches should not be formed on electrode

(B) Calibration should checked regularly

(C) Keep the Electrode Dry

(D) Wash the electrode with dist. water after and before use

44 Which three solutions are widely used for the calibration of pH meter?

(A) Standard Solutions of pH 1, 4, 12

(B) Standard Solutions of pH 7, 4, 9.2

(C) Standard Solutions of pH 3, 8, 14

(D) Standard Solutions of pH 1, 7,14

45 Which following type of Filter is used in Colorimeter to get monochromatic light?

(A) None of these

(B) Glass Filter

(C) Membrane Filter

(D) Cellulose Acetate Filter

46 Centrifuge accelerate the sedimentation process by using _____.

(A) Centrifugal force

(B) Magnetic force

(C) Horizontal force

(D) Relative force

47 Which component is used to control the speed in centrifuge?

(A) Rotor

(B) Rheostat

(C) Tachometer

(D) Lid

48 The objective lens magnifies the specimen and produce the image, this image is known as

(A) High quality image

(B) Real Image

(C) Resolved Image

(D) Virtual Image

49 How %T (Transmittance) can be converted to Absorbance (A)?

(A) A= 2 / %T

(B) A=2–%T

(C) A= 2 + %T

(D) A= 2 X %T

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

(A) $\frac{\lambda}{NA_{objective} + NA_{condensor}}$

(B) $\frac{0.5\lambda}{NA_{objective} + NA_{eyepiece}}$

(C) $\frac{0.5\lambda}{NA_{objective} + NA_{condensor}}$

(D) $\frac{\lambda}{NA_{objective} + NA_{eyepiece}}$