



RAN - 2003000201030065



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**F. Y. B. Sc. (Sem. - I) Examination**

**March - 2023**

**MB-102 : Fundamental of Microscopy (Microbiology)**

**[ Total Marks: 50**

**સૂચના : / Instructions**

(1)

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.

**Fill up strictly the details of signs on your answer book**

Name of the Examination:

**F. Y. B. Sc. (Sem. - I)**

Name of the Subject :

**MB-102 : Fundamental of Microscopy (Microbiology)**

Subject Code No.: **2003000201030065**

Seat No.:

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Student's Signature

- (2) This exam contains 50 multiple choice questions. Each question carries 1 mark.  
(3) All questions are compulsory.

***O.M.R. Sheet ભરવા અંગેની અગત્યની સૂચનાઓ આપેલ***

***O.M.R. Sheetની પાછળ છાપેલ છે.***

***Important instructions to fillup O.M.R. Sheet  
are given on back side of the provided O.M.R. Sheet.***

**SET - 2**

**Multiple Choice Questions**

- Q. 1.** Select correct statement about confocal microscope from the following?
- A) Confocal microscope use laser beam.
  - B) Major component of the confocal microscope is an aperture placed above the objective lens.
  - C) Aperture eliminate stray light from parts of the specimen that lie below and above the plane of focus.
  - D) All of the above.
- Q. 2.** What is/are the application of confocal microscope?
- A) Study of biofilm.
  - B) Observation of viruses.
  - C) Observation of viroid.
  - D) Observation of DNA structure.
- Q. 3.** What is the best resolution of transmission electron microscope?
- A) 5 nm
  - B) 50 nm
  - C) 0.05 nm
  - D) 0.5 nm
- Q. 4.** Select the correct statement from the following for transmission electron microscope.
- A) Wavelength of electrons is 100000 times longer than light use for illumination in electron microscope.
  - B) Wavelength of electrons is 100000 times shorter than light use for illumination in electron microscope.
  - C) Phase ring is use in transmission electron microscope.
  - D) Electromagnetic lens is not used in transmission electron microscope.
- Q. 5.** What should be the thickness of the specimens used for observation in transmission electron microscope?
- A) 1-2 nm
  - B) 10-20 nm
  - C) 0.1-1 nm
  - D) 20-100 nm



- Q. 11.** \_\_\_\_\_ microscope measures surface features of an object by moving sharp probe over the object surface?
- A) Phase contrast microscope
  - B) Dark field microscope
  - C) Scanning electron microscope
  - D) Scanning probe microscope
- Q. 12.** Gerd Binning and Heinrich Rohrer has invented \_\_\_\_\_ microscope
- A) Phase contrast microscope
  - B) Scanning tunneling microscope
  - C) Fluorescence microscope
  - D) Dark field microscope
- Q. 13.** What is the medium of travel of electron in Transmission electron microscope?
- A) Air
  - B) Water
  - C) Solid surface
  - D) High vacuumed
- Q. 14.** In shadowing technique (sample preparation technique in electron microscopy) specimen is coated with thin film of platinum at \_\_\_\_\_ angle.
- A) 90°
  - B) 60°
  - C) 45°
  - D) 80°
- Q. 15.** Select correct sentences from the following about dyes.
- A) Dye is a compound that contain chromophore group as well as auxochrome group.
  - B) Dye is a compound that only contain chromophore group.
  - C) Dye is a compound that only contain Auxochrome group.
  - D) Dye is a compound that neither contain chromophore group nor auxochrome.





- Q. 28.** What is resolving power?
- A) It is ability to magnify the object.
  - B) It is ability to minimize the object.
  - C) It is ability to separate distinctly two small elements in the structure of an object that are a short distance apart.
  - D) None of the above
- Q. 29.** Which among the following is type /types of objective lens?
- A) Achromatic
  - B) Apochromatic
  - C) Fluorite
  - D) All of the above
- Q. 30.** The depth of focus of an objective is depend upon
- A) Only Numerical aperture
  - B) Only Magnification
  - C) Both Numerical aperture and magnification
  - D) Only Resolution
- Q. 31.** What is the refractive index of mineral oil at 25 °C?
- A) 1.33
  - B) 1.47
  - C) 1.51
  - D) 1.55
- Q. 32.** Select the correct sentence regarding working distance from the following?
- A) Working distance is the distance between front lens of the objective and mirror.
  - B) Working distance is always greater than equivalent focus of objective.
  - C) The working distance can easily determine by noting the number of complete turns of the micrometer screw (fine adjustment) require to raise the objective from the surface of the slide to a point where microscope is in sharp focus.
  - D) Working distance is the distance between front lens of the objective and condenser.





- Q. 44.** On what basis image is formed in phase contrast microscope?
- A) Based on electron dense and electron bright region.
  - B) Based on differences in light intensity after light pass from specimen that provide contrast.
  - C) Based on interaction between fluorescence compound and specimen.
  - D) Based on secondary electron generated from the surface of specimen.
- Q. 45.** What is the common use of the phase contrast microscope from the following?
- A) It is used to observe shape of the living cells.
  - B) It is used to observe microbial motility.
  - C) It is used to detect bacterial structure such as endospore and inclusions.
  - D) All of the above.
- Q. 46.** Which microscope is similar to differential interference contrast microscope?
- A) Scanning tunneling microscope
  - B) Atomic force microscope
  - C) Phase contrast microscope
  - D) Confocal microscope
- Q. 47.** Select correct statement / statements about differential interference contrast microscope from the following?
- A) It creates an image based on differences in refractive indices and thickness of the specimen.
  - B) In this microscope two beams of plane-polarized light at right angles to each other are generated by prisms.
  - C) A live and unstained specimen can be observe using this microscope.
  - D) All of the above
- Q. 48.** What is the function of exciter filter in fluorescence microscope?
- A) Remove short wavelength light.
  - B) Remove short as well as long wavelength light.
  - C) Remove long wavelength light.
  - D) It generate light

**Q. 49.** What is the function of barrier filter in fluorescence microscope?

- A) Blocks ultraviolet radiation but allows visible light.
- B) Blocks visible light but allows ultraviolet radiation
- C) Allow and block visible light simultaneously.
- D) Allow and block ultraviolet light simultaneously.

**Q. 50.** Which fluorochrome compound is used to stains DNA?

- A) Rhodamine
  - B) Methylene blue
  - C) Acridine orange
  - D) Saffranin
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**SPACE FOR ROUGH WORK**