ZOO101

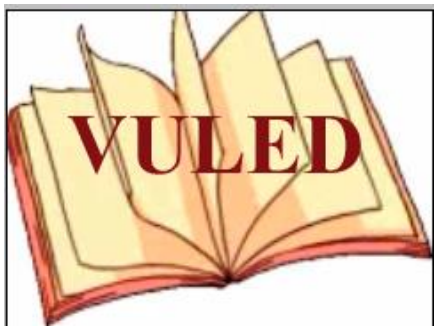
Biological technique

Most important MCQs for midterm Grand quiz December 2020

From lectures 1 to 40

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1) The science of investigating small objects using a microscope is known as…….?

Answer: MICROSCOPY

2) The word microscope is derived from?

Answer: (Greek: mikron = small and skopein = to look)

3) The first Microscope is developing in which year? Answer: 1590

4) .....coined the name microscope for the compound microscope Galileo submitted to the Accademia dei Lincei?

Answer: Giovanni Faber in 1625

5) Galileo Galilei develops the microscope.....?

Answer: In 1609

6) How many general parts of a microscope?

Answer: 14 parts

7) A…… is that part of an optical system, (in a microscope) which is directed to the viewer?

Answer: An eyepiece

•8) An eyepiece converts the real- enlarged-intermediate- image from the objective into……?

Answer: an enlarged- virtual-image

9) The main task of Lens tube in microscope is……..?

Answer: to hold eyepiece

10) The diopter adjustment is a ……on your binocular.

Answer: Control knob

11) An ……is that part of an optical system, which is directed to the object. It´s task is to collect the light rays,that are reflected from the observed item.

Answer: Objective lens

12) The……. serves as a holder for the object plate.

Answer: Clip

13) Cross table is a …….. term?

Answer: Technical term.

14) There are……, which can be used to move the table very precisely.

Answer: Adjusting screws

15) The screws are provided with a ……? Answer: Measuring scale,

16) A …… is an optical lens which renders a divergent beam from a point source into a parallel or converging beam to illuminate an object.

Answer: Condenser

17) How many lenses are present in condenser? Answer: One or two lenses.

18) An ……lens avoids chromatic aberration?

Answer: Aspheric lens

19) With the ……..one can regulate the distance between object and objective?

Answer: Fine focus

20) The fine focus moves the stage only……..? Answer: Minimally

21) Like the fine focus, the ……..also moves the stage to regulate the difference between object and objective?

Answer: Coarse focus

22) The early microscopes used ……mirrors to refrect light on the objects.

Answer: Concave

23) Most microscopes operate with……light.

Answer: LED

24) The base of microscope guarantees the necessary……to the microscope.

Answer: Stability

25) Luminous-field diaphragm can be used to ……?

Answer: Reduce the illumination and adapt it to the size of the object

26) How many types of microscope?

Answer: Two

27) …….microscopes use a single lens to magnify an object and cannot reach high magnification…….?

Answer: Simple light microscopes

28) Compound light microscope has a higher……power?

Answer: Magnification

29) The simplest microscope of all is a ……?

Answer: Magnifying glass

30) Microscopes used in homes, schools, and professional laboratories are actually compound microscopes and use at least two lenses to produce a magnified image. True

31) Most compound microscopes can magnify by……, or …… times.

Answer 10, 20, 40, or 100.

32) MAGNIFICATION is defined as……? Answer: Degree of enlargement

33) Magnification is depends upon how many factors?

Answer: 3 (Optical tube length 2. Focal length of objective 3. Magnifying power of eye piece)

34) the ……which is a measure of how great a substance slows the speed of light. Answer: Refractive index.

35) ……is the change in direction of a wave passing from one medium to another?

Answer: Refraction

36) ……also called index of refraction, measure of the bending of a ray of light when passing from one medium into another.

Answer: Refractive index

37) In microscopy, the term …….is used to describe the ability of a microscope to distinguish details of given specimen. This is the resolving power of microscope.

Answer: Resolution

38) ……refers to various phenomena that occur when a wave encounters an obstacle or opening?

Answer: Diffraction

39) ……is used to examine a specimen. Answer: Wavelength of light (λ)

40) The smaller is the wavelength of light (λ), the greater is its ability to ……..?

Answer: resolve the points on the object

41) The ……..is the wavelength of light, the greater is its resolving power.

Answer: Smaller

42) ……..is a number that expresses the ability of a lens to resolve fine details in an object being observed.

Answer: Numerical aperture

43) Light diffracted by the specimen is presented as an……..?

Answer: inverted cone of half-angle (α)

44) Higher values of numerical aperture permit increasingly oblique rays to……..?

Answer: enter the objective front lens

45) Most objectives in the magnification range between ……..and …….. (And higher) are designed for use with immersion oil.

Answer: 60x and 100x

46) …..can be defined as the opening in a lens through which light passes to enter the camera. Answer: Aperture

47) Aperture It is expressed in …….numbers. Answer: F-numbers

48)…….. is the distance at which a beam of light will be focused to a single spot.

Answer: Focal length

49) ……is useful for samples which have an intrinsic color.

Answer: Bright field illumination

50) …….is often required to increase contrast, which prevents use of live cells in many situations.

Answer: STAINING

51) Bright-field illumination is useful for samples that have an intrinsic color, for example …….?

Answer: RBCs in animal cells.

52: The practical limit to magnification with a light microscope is around……?

Answer: 1300X

53) The microscopy, where only the specimen is lit by a light or electron beam, and the rest of the specimen field is dark is known as …….?

Answer: Dark field microscopy

"If you believe and thought you can do something, so just simply do it".

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Important MCqs from lectures from 7 to 18

54) Phase contrast microscopy first described in……?

1934

55) Who was awarded Nobel Prize in physics in 1953?

Fritz Zernike

56) Phase-contrast microscopy is particularly important in…….?

Biology.

57) Phase-contrast microscopy is particularly important in biology and It reveals many……?

Cellular structures

58) Phase Contrast Microscope based on the……?

Answer: Wavelength (nature) of light rays

59) Different shade of grey are distinguished to our eyes Principle Phase Contrast Microscope due t o …..?

Differences in amplitude of light rays.

60)…… converts invisible small phase changes caused by the cell component in to visible intensity changes.

Ans: PCM

61) When diffracted and surrounding waves do not over lap, this condition is known as …..?

Answer: Out of phase

62) In a Phase contrast microscope, one set of light rays comes directly from the……?

Answer: light sources s. waves

63) Light passing through one material & into another material of slightly different refractive index or thickness will undergo a change in……?

Answer: phase.

64) Phase contrast is obtained with the help of the ……?

Answer: Phase ring

65) …….is the ratio of Velocity of light in air to that of in given medium.

Answer: Refractive index (μ)

66) How many types of Phase contrast microscopy?

Two main (positive and negative)

67) Light can be considered a form of wave motion consisting of …….?

Answer: sinusoidal waves

68) ……..is a technique for obtaining high resolution images of biological and non-biological specimens.

Answer: Electron microscopy (EM)

69) The high resolution of EM images results from the use of…….?

Answer: electrons

70) ……provide key information on the structural basis of cell function and of cell disease.

Answer: EM images

71) In …….developed the electromagnetic lens.

1926 HANS BUSCH

72) The first prototype electron microscope, capable of four-hundred-power magnification, was developed in 1931 by the physicist ……..and the electrical engineer ……?

Answer: ERNST RUSKA & MAX KNOLL

73)…… produced the first commercial electron microscope in 1938

Answer: Siemens

74) How many types of electron microscope?

Answer: 2 Transmission EM (TEM), Scanning EM (SEM).

75) The very best light microscopes have a resolution limit of about …….?

Answer: 0.2 µm,

76) Viruses are too small to be seen with……?

Answer: light microscopes

78) The probability of electron scattering is determined by the…… of the specimen atoms.

Answer: density (atomic number)

79) Two other important techniques for preparing specimens are …….?

Answer: negative staining and shadowing.

80) In shadowing, a specimen is coated with a thin film of platinum or other heavy metal by evaporation at an angle of about ……. from horizontal?

Answer: 45°

81) The key feature of fluorescent microscopy is that it employs reflected rather than …….?

Answer: transmitted light

82) ……..include a set of a compatible excitation filter, emission filter, and dichroic beam splitter; – An excitation filter selects the wavelengths to excite a particular dye within the specimen.

Answer: Optical filters

83) (TIRFM) Stands for?

Answer: Total internal reflection fluorescence microscopy

84) …….is an optical device that splits a beam of light in two.

Answer: Beam splitter

85) A xenon arc lamp is a highly specialized type of ……..?

Answer: GAS discharge lamp,

86) Sigma and pi bonds are chemical……?

Answer: covalent bonds

87) Sigma bonds are formed by……?

Answer: end-to-end overlapping

88) sigma bonds are……. than pi bonds.

Answer: stronger

89) To observe the sample through a fluorescence microscope, it should be first labeled with a fluorescent dyes/substance known as a …….?

Answer: fluorophore.

90) The emission spectrum is usually …….than the excitation spectrum.

Answer: sharper

91) ……..is a critical tool for academic and pharmaceutical research, pathology, and clinical medicine.

Answer: Fluorescence microscopy.

92) Fluorescence microscope is used to tracing the location of a specific ……in the specimen

Answer: protein

93) Confocal microscopy was pioneered by …..in 1955.

Answer: Marvin Minsky

94)…….is the science in which we have some measurement of the dimensions of an object being observed under the microscope.

Answer: Micrometry

95) How many Types of Micrometers?

Answer: Two (stage micrometer and 2. ocular meter or ocular micrometer)

96) The ocular micrometer is a glass disc with 100 equal divisions or lines on it but with no absolute value

Answer: 100

97) ……the comparison of measurement values delivered by a device under test with those of a calibration standard of known accuracy

Answer: calibration

1) Your attitude, not your aptitude, will determine your altitude

2) If you think education is expensive, try ignorance

ZOO101 from 18 to 40

98) It is the process of preserving the tissues in the natural condition

Answer: Fixation

In fixation, poorly fixed specimens are more…… to section than the well fixed ones

Answer: difficult

100) commonly used fixatives are ……..?

Answer: alcohol, formalin, glutaraldehyde

101) the commonly used fixatives ……% formalin or ……% glutaraldehyde is used

Answer: 10% and 2.5% glutaraldehyde

102) fixatives should be ……and non-allergenic

Answer: Non-toxic

103) commonly used Coagulant fixative are …….%ethanol, 80% methanol.

Answer: 50-60%

104) picric acid and trichloroacetic acid are …….?

Answer: Acidic coagulants

105) ……..can penetrate hydrophobic domains of proteins

Answer: Trichloroacetic acid (Cl3CCOOH)

106) Bouin solution is a preparation of 5%……., 9% formaldehyde, and 1.5% picric acid in aqueous solution

Answer: acetic acid,

107) a ……is a physical or chemical agent that changes the genetic material, usually DNA, of an organism and thus increases the frequency of mutations above the natural background level.

Answer: mutagen

108) …….is a measured quantity of explosive material, which may either be composed solely of one ingredient or be a mixture containing at least two substances.

Answer: explosive charge

109) An ……is a reactive substance that contains a great amount of potential energy that can produce an explosion if released suddenly,

Answer: explosive (or explosive material)

110) ……is a Powerful reducing agent.

Answer: Formaldehyde

111) ……is also commonly used and will depolymerise back to formalin when heated,

Answer: Para formaldehyde

112) The formaldehyde…….. can also be used as a fixative for cell smears.

Answer: vapor

113) ……penetrate poorly and produce tissue shrinkage.

Answer: mercurials

114) Zenker's fixative is a……..?

Answer: Mercurials such as

115) Zenker's fixative is named after……, a German histologist, who died in 1894

Answer: Konrad Zenker

116) Fixation methods can be grouped in ……numbered.

Answer: Two. Physical methods & chemical methods.

117) ……..is convenient to process sample sizes not larger than 2 mm so that freezing is homogeneous through all the tissue thickness, including the inner parts.

Answer: Quick freezing

118) ……..is always a good practice in quick freezing

Answer: Cryoprotection

119) ……is a good heater because temperature rises quite homogeneously and immediately through the sample

Answer: Microwave

120) in immersion, volume of the fixative needs to be ……..than the volume of the sample.

Answer: 10 to 20 times larger

121) common duration for most of the fixatives is ….?

Answer: 24 hours

122) in Perfusion, The fixative solution is introduced through…

Answer: the vascular system.

123) How many Types of Knives?

Answer: Four: (STEEL KNIVES ♣ GLASS KNIVES ♣ DIAMOND KNIVES ♣ SAPPHIRE KNIVES)

124) ……blades are used to prepare sections of animal or plant tissues for light microscopy histology.

Answer: Steel

125)….. are used in an ultramicrotome to cut ultrathin slices of samples for electron and light microscope applications.

Answer: Glass knives

126) A diamond knife is a very sharp knife in which the edge is made from diamond, invented by Humberto FernándezMorán in ……?

Answer: 1955

127) Micron settings for section thickness can range from …. to ….microns on most microtomes.

Answer: 1 to 60

128) …….requires great care as tissues of the diagnostic importance can easily be lost or the block surface may be damaged.

Answer: Sectioning

129) the term "microtome" was coined in 1839 by…….

Answer: Chevalier.

130) Microtomy and ……." is a great training aid for new microtomists and is an excellent refresher for experienced operators.

Answer: Paraffin Section Preparation

131) Blade is fixed at ……position in rotary microtone

Answer: horizontal

132) cryomicrotome is used for cutting……?

Answer: frozen tissues.

133) an ……..arranged in a cryostat and used to prepare thin sections of frozen tissue for microscopic examination.

Answer: microtome

134) in cryomicrotome, the temperature inside the cryostat is about …….Celsius.

Answer: -20° to -30°

135) the….. is the instrument that has the arrangement to freeze the tissue and also to cut the frozen tissue for microscopic section.

Answer: cryostat

136) The firm ice within the tissue acts as …….to Tissue Preparation for cryomicrotome

Answer: embedding media

137) ……medium is used to, hold the tissue over the chuck in cryomicrotomy?

Answer: Embedding medium

138) Presently ……..(Tissue-Tek) is used as embedding medium in cryomicrotomy?

Answer: optimum cutting temperature (OCT) compound

139) (OCT) stands for

Answer: optimum cutting temperature (OCT) compound

140) A ……is an instrument used to cut thin slices of material (although, usually thicker slices than those cut in paraffin embedded samples using a microtome).

Answer: vibratome

141) the morphology of neuron dendritic trees is difficult to image in thin sections (4 to 10 μm), and we may also need to visualize dendrites after …….?

Answer: Immunohistochemistry

142) another feature of the vibratome is that all the cutting is done in an aqueous solution, usually a ……..solution.

Answer: buffer or saline

143) The fluorescent intercalating dye used in Electrophoresis is …….?

Answer: ethidium bromide is

144)…. gels are most effective for separating small fragments of DNA (5- 500 bp)

Answer: Polyacrylamide

145) age of Polyacrylamide run in a vertical configuration in a constant ….?

Answer: electric field.

146) DNAs from …….bp to several mega bases in length can be separated on agarose gels of various concentrations and configurations

Answer: 50.

147) As size of DNA fragment increases the percentage of gel composition have to be ……?

Answer: decreased.

148) agarose gels cast with ……of agarose (0.1-0.2% w/v) are capable of resolving extremely large DNA molecules.

Answer: low concentrations

149) • In 1984, when Schwartz and Cantor developed……?

Answer: pulsed-field gel electrophoresis (PFGE)

150) pulsed-field gel electrophoresis (PFGE) STANDS FOR

Answer: pulsed-field gel electrophoresis (PFGE)

151) commercially prepared agarose polymers are believed to contain galactose residues per chain.

Answer: 800

152) Agarose is not ……

Answer: homogeneous:

153) Lower grades of agarose may be contaminated with other polysaccharides,…….?

Answer: salts and proteins

154) Molecules of double stranded DNA migrate through gel matrices at rates that are inversely Rate of migration of DNA proportional to the ……..of the number of base pairs.

Answer: log10

155) Intercalation of …….causes a decrease in the negative charges of the double standard DNA and an increase in both its stiffness and Rate of migration of DNA length

Answer: Ethidium Bromide

156) to obtain maximum Rate of migration of DNA resolution of DNA fragments …… kb in size, agarose gels should be run at no more than 5-8 V/cm.

Answer: >2 kb

157) Name the buffers used in electrophoresis of native, double-stranded DNA.

Answer: Tris-acetate and EDTA (pH 8.0; TAE) (also called E buffer),

• Tris-borate (TBE)

• Trisphosphate (TPE) at a concentration of 50 mM (pH 7.5-7.8)

158) double standard linear DNA fragments migrate 10% faster through TAE than through …

Answer: TBE or TPE

159) Ethidium bromide is also called as……?

Answer: 6x Gel-loading buffer

160) Power supply device capable of up to…….

Answer: 500 V and 200 mA.

161) in gel electrophoresis voltage is ……..?

Apply a voltage of 1-5 V/cm (measured as the distance between the positive and negative electrodes).

162) If ethidium bromide is present in the gel and electrophoresis buffer, examine the gel by ….light

Answer: UV light

163) ……is a fluorescent dye ,most convenient and commonly used ,contains a tricyclic Detection of DNA in Agarose gel planar group that intercalates between the stacked bases of DNA.

Answer: Ethidium Bromide

164) UV radiation at …. nm is absorbed by the DNA and transmitted to the dye and at 302 nm and 366 nm is absorbed by Detection of DNA in Agarose gel the bound dye itself.

Answer: 254 nm

165) ……can be used to detect both single- and double-stranded nucleic acids (both DNA and RNA)?

Answer: Ethidium Bromide

166) Ethidium Bromide inhibits Detection of polymerization of the……?

Answer: acrylamide

167) electrophoretic mobility of linear dsDNA reduced by…… % in the presence of the dye?

Answer: 15%

168) the fluorescence enhancement is ….. times greater than equivalent Ethidium Bromide DNA complex.

Answer: > 1000

169) Photography is carried out with …….filters

Answer: green or yellow

170) Most commercially available devices (transilluminators) emit UV light at ……?

Answer: 302 nm

Ended

'If YOU hAve PotEntiaL, No wAy of TenStioN, jUsT TakE AcTiOn'.

Az Qalem: Zainab