

(1)

(1)

QIA Define the following terms:

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Differential medium Are media designed to bring out visible differences among microorganisms. Eg. MAC

Fungicide: An agent capable of killing fungi

Supportive medium: Media used for the general purpose. These media sustain the growth of many microorganisms.

Sterilant: An agent used to destroy micro-organisms; a disinfectant

Refraction: when a ray of light bends at the interface passes from one medium to another

QIB State True or False

05

- 1) Mannitol Agar is an ordinary medium. **FALSE**
- 2) Specific culture media finds use in identification of organisms. **TRUE**
- 3) Tetracycline is effective only against gram positive organisms. **FALSE**
- 4) Moist heat kills micro-organisms by coagulating their proteins. **TRUE**
- 5) Dark-field microscope uses an annular diaphragm. **FALSE**

QIC Give one example for each of the following:

05

- 1) Sterilizing gas: Ethylene oxide, hydrogen peroxide, betapropiolactone
- 2) Enriched medium **Blood agar**
- 3) Antibiotic damaging Cell wall: **Penicillin, Cephalosporin**
- 4) Acidic dye: **Eosin, Congo red, Nigrosin**
- 5) A sulphur compound used as a macronutrient. **Sulphate**

QID Select the correct alternative and rewrite the following:

05

- 1) Chocolate agar is used for the cultivation of bacteria.
- 2) Numerical aperture of a lens is $n \sin \theta$.
- 3) Steam Arnold apparatus is used to carry out Tyndallization process.
- 4) Lysol is made of mixture of phenolics.
- 5) Endospore staining requires a heat treatment during its staining procedure.)

QII. Answer briefly any two of the following:

20

- 1) Explain diagrammatically freeze drying technique to preserve cultures. Give the significance of preservation. **Pelczar, 5th ed. 142.**
- 1) Give a brief account on mode of action and applications of Halogens as disinfectants. **Prescott 7th pg 161-162, Pelczar, 5th ed. 498, 495-496.**
- 2) Differentiate between brightfield and phase-contrast microscopy. [basic structure, in BF-image is created by the objective and ocular lenses together, PC-differences in RI converted to contrast, use of annular diaphragm produces hollow cone of light, the undeviated light passing thru phase ring is advanced by $\frac{1}{4}$ wavelength, the deviated light will be $\frac{1}{2}$ wavelength out of phase, background formed by undeviated light-is bright, specimen by deviated light with internal contrast, Internal structures seen in unstained prep].

Q III A Answer briefly any three of the following:

18

- 1) Explain lens function, refractive index, focal point and focal length. [Prescott 7th pg17,18]
- 2) Diagrammatically explain how a dark-field stop works in a dark-field Microscopy. [Prescott 21]
- 3) How does fixation of smear happen? Why is fixation necessary prior to staining? [Modi 247]
- 4) Discuss the hypothesis of Gram staining. [Modi 253-254]
- 5) State the principle and method to stain metachromatic granules in bacteria? [Modi 265]
- 6) Flagella staining (Modi 268)

Q III B. Do as directed any two of the following:

02

- 1) Name a common chromophore group. Azo, Nitro, Azoxy, thiocarbonyl, Imino
- 2) Name an objective which has maximum working distance: 10X
- 3) Name a triphenylmethane dye that is inhibitory in low concentrations to Gram-positive organisms. Crystal violet, Malachite Green.
- 4) Simple staining. Applying a single stain to a fixed smear in a single application.

QIV A Answer any three of the following:

18

- 1) Explain the disc diffusion method for evaluation of antimicrobial compounds. Pelczar, 5th ed.505,536
- 2) Discuss the difference between depth filters and membrane filters. [Prescott 7th pg156]
- 3) Explain the principle, working and precautions while using autoclave for sterilization. [Prescott 7th pg 153]
- 4) How can low temperatures be used to control microorganisms? [Prescott 7th pg155]
- 5) When cells are placed in hypotonic and hypertonic solution Pelczar, 5th ed.480
- 6) Justify 'radiation sterilization has several applications.' [Prescott 7th pg156-157]

QIVB Do as directed any two of the following:

02

- 1) One application of incineration. To completely kill, to burn
- 2) HEPA High Efficiency Particulate Air Filter
- 3) What is achieved during sanitation? In sanitization, the microbial population is reduced to levels that are considered safe by public health standards.
- 4) Turbidity: Haziness or cloudiness of a fluid is turbidity.

QVA. Answer any three of the following:

18

- 1) Blood agar plate with reference to its use and mechanism of action. Prescott, 8th ed.149
- 2) Differentiate between spread plate and pour plate technique. Prescott, 8th ed. 150-15
- 3) Brief account of phototrophs, chemotrophs and their types. Prescott, 8th ed. 139
- 4) Discuss giving suitable examples various groups of microorganisms with respect to relationship to oxygen. Brock, 11th ed.161
- 5) Write a summary of the general laboratory techniques carried out by microbiologists. [Prescott 160]
- 6) Represent diagrammatically any six forms of elevation shown by a bacterial colony. [Prescott 116]

QVB Do as directed any two of the following:

02

- 1) example of a medium used to grow bacteria. **NB, Mac, Tryptic soy broth, any ans**
- 2) Name a medium that suppresses growth of Gram positive organisms. **MacConkey agar**
- 3) Define growth factors. **[Prescott 7th pg105]**
- 4) role of peptone in NB. **[source of organic nitrogen]**
