PAPER II- METHODS IN BIOTECHNOLOGY

QUESTIONS BANK

Class - F.Y.B.Sc. 2007-2008

Unit I- Biophysical Chemisrty

Q.1 A) Define/ Explain

1) pH

2) Buffer

3) Specific Gravity

4) Surface Tension

5) Sedimentation

6) Filtration

7) Stoichiometry

8) Adsorption

9) Distillation

B) Multiple Choice Questions

1) Bond angle of H-O-H Is-------

a) 104.5^{o}C b) 105.4^{o}C C) 104^{o}C d)105^{o}C

2) H_2O carries ----------

a)Positive charge b)negative Charge c)no net charge d)none of the above

3) Melting point of water is------

a) 0^{o}C b) 10^{o}C c)100^{o}C d)50^{o}C

4) pH range is in between-----

a) 0-14 b)1-14 c)0-7 d)1-7

5) pH of lemon juice is--------

a)acidic b)basic c)neutral d)none of the above

6) Buffers has the ability to

a) Change in pH b)resist change in pH c)no resist to change in pH d)all of the above

7) Force of gravity tends to move particles in a liquid unidirectionally downward to increase their concentration progressively is called----

a) Specific gravity b) Density c) Viscosity d) Sedimentation

Q.2- Answer the following/short notes (4 marks)

1) Specific gravity

2) Sedimentation

3) Filtration

4) Viscosity

5) Stoichiometry

6) Surface tension

7) Adsorption

8) Distillation

9) Physical & chemical properties of water

Q.3- Answer the following (6 marks)

1) Physiological buffer

2) Buffer preparation (Phosphate buffer)

3) Henderson-Hasselbalch equation

Q.4- Answer the following. (12 marks)

1) Principle, working & Biological significance of-

a) Water distillation plant

b) Filtration

Unit II- Microscopy

Q.1-A) Define/ Explain (2 marks)

1) Microscope

2) Microscopy

3) Magnification

4) Resolution

5) Numerical aperture

B) Multiple Choice Questions

1) The ratio of diameter of lenses to its focal length is referred as---

a) Magnification b) resolution c) Numerical aperture d) none of the above

2) _____ is the ability to reveal closely adjacent points as separate & distinct.

a) Magnification b) resolution c) Numerical aperture d) none of the above

3) If green light of wavelength 500nm objective with NA 1.4 is used, then the resolution will be-----

a)178X b)178nm c)178m d) None of the above

4) _____ controls the intensity of light entering in microscope.

a) Iris Diaphragm b) Mirror c) Condenser d) All of the above

5) In _____ type of microscope, the field surrounding a specimen appears black, while the object itself is brightly illuminated.

a) Compound microscope b)Phase contrast microscope

c) Dark field microscope d) Fluorescence microscope

Q.2- Answer the following/short notes (4 marks)

1) Numerical Aperture

2) Microtome & ultramicrotome

Q.3- Answer the following (12marks)

1) Principle, construction, working & applications of-

a) Compound microscope

b) Phase contrast microscope

c) Dark field microscope

d) Fluorescence microscope

e) Transmission electron microscope

b) Scanning electron microscope

Unit III- General Staining Techniques

Q.1-A) Define/ Explain (2 marks)

1) Stain

2) Staining

3) Acidic Stain

4) Basic Stain

5) Intensifier

6) Fixative

7) Mordant

B) Multiple Choice Questions

1) Use of single stain to color the bacteria is commonly called as-------

a)Monochrome staining b)Gram staining c)Differential Staining d)all of the above

2) A substance that forms an insoluble complex with stain & serves to fix the color to bacterial cell is called---------

a) Mordant b) Intensifier c) Fixative d) none of the above

3) In Gram Staining, Gram's iodine is act as-------

a) Counter stain b) primary stain c) Secondary stain d) Mordant

4) A stain which on ionization gives positively charged molecules is referred as _____

a)Acidic Stain b) Basic Stain c)Anionic Stain d) Basic mordant

5) The ---- charged group of bacterial cell surface produces attraction between basic stain.

a) Negative b) Positive c) Neutral d) All of the above

6) From the following, --------is referred as differential staining technique.

a)Monochrome staining b)Gram staining c) Lactophenol cotton blue Staining d)all of the above

7) In Gram Staining Safranin is act as----------

a) Primary stain b) Mordant c)Counter stain d) decolorizer

8) In Gram Staining, Differentiation of microorganisms based on---------

a) Cell wall b) Plasma membrane c) Capsule d) All of the above

Q.2- Answer the following/short notes (4 marks)

1) Acid fast staining

2) Smear preparation

Q.3- Answer the following (6 marks)

1) Principle & procedure of-

a) Monochrome staining

b) Gram staining

c) Lactophenol cotton blue Staining

d) KOH

e) Double staining of vascular tissues

f) WBC staining

Unit IV Cell measurement

Q.1-A) Define/ Explain(2 marks)

1) Stage micrometer

2) Ocular micrometer

3) Growth

4) Micrometry

B) Multiple Choice Questions

1) Basic unit of bacterial measurement is -----

a) Micrometer b)Nanometer c) Milimeter d) All of the above

2) Basic unit used for virus measurement is -----

a) Micrometer b) Nanometer c) Milimeter d)All of the above

3) 1 meter is equal to---

a)10^{9} b)10^{-9} c)10^{6} d)10^{-6}

4) Each division of stage micrometer equal; to---------

a) 0.01mm b)1 μm 3)0.1mm d) None of the above

5) Breed methods --------

A) Direct microscopic count method b) Indirect microscopic count method
c) Turbidometric method d)none of the above

6) The Petroff- Hausser counting chamber consist of-----

a)25 squares b)100 squares c)50 squares d)none of the above

7) For the direct enumeration of bacterial cells in suspension ---------- method is used.

a)TVC b) Turbidometric method c) Electronic method d)all of the above

Q.2- Answer the following/short notes (4 marks)

1) Breed method

b) Turbidometric method

c) Electronic counting method

Q.3- Answer the following (6 marks)

1) Stage micrometer and occular micrometer

Q.4- Answer the following (12marks)

1) Measurement of growth by

a) Cell number

b) Cell mass

Unit V- Isolation & cultivation technique

Q.1-A) Define/ Explain(2 marks)

1) Culture

2) Pure culture

3) Auxenic culture

4) Mixed culture

5) Isolation

B) Multiple Choice Questions

1) A culture containing only one kind of microorganism is called------

a) Culture b)pure culture c) Auxenic culture d)all of the above

2) Culture containing more than one kind of microorganism is called------

a)culture b)pure culture c)Auxenic culture d)all of the above

3) Add 1ml of given sample into 99ml of sterile saline, this leads to------- dilution of sample.

a)$1:10^{1}$ b)$1:10^{2}$ c)$1:10^{-2}$ d) none of the above

4) To maintain the bacterial population in a--------- growth phase is referred as continuous culture.

a) Lag phase b)log phase c) stationary phase d) death phase

5) Slide culture technique is used for--------

a)Bacterial isolation b)fungi cultivation c)virus cultivation d)all of the above

6) From the following =---------- type of media is used for fungi cultivation

a)Nutrient agar b)MacConkey's agar c) Sabouraud's agar d)all of the above

7) Macintosh Jar is used for----------

a) Anaerobes cultivation b) Anaerobes cultivation c)fungi cultivation d)all of the above

8)-------- technique is used for virus cultivation.

a) chick embryo technique b)Slide culture technique c0canndle method d)all of the above

9) --------- mainly used for culture of some viruses.

a) Amniotic Cavity b) allontoic cavity c) chorioallontoic cavity d) yolk sac

Q.2- Answer the following/short notes (4 marks)

1) Batch culture

2) Continuous culture

Q.3- Answer the following (6 marks)

1) Streak plate

2) Spread plate

3) Pour plate

4) Anaerobic cultivation-

a) MacIntosh Jar

b) Candle method

Q.4- Answer the following (12marks)

1) Chick embryo technique

2) Slide culture technique

Unit VI- Sterilization and disinfection

Q.1-A) Define/ Explain(2 marks)

1) Sterilization

2) Disinfection

3) Antiseptic

4) Sanitization

5) Aseptic condition

B) Multiple Choice Questions

1) To maintain sterile condition is referred as------

a)Aseptic technique b)septic technique c)disinfection d)all of the above

2) -------- is referred as non ionizing radiations.

a)UV rays b) X rays c) Gamma rays d) cathode rays.

3) The absorption of UV light is leads with-----

a)Formation of T-T dimer b)Formation of purine dimer c)Breakdown of DNA strand d)all of the above

4) In Laminar air flow -------- type of filter is located.

a)membrane filter b) Seitz Filter c)HEPA d)all of the above

5) ---------- is referred as biological indicator of autoclave.

a)*Bacillus stearothermophilus b)Bacillus subtilis c)Bacillus megatorium d)Bacillus cereus*

6) The process of killing or removal of organisms capable of causing infection is called as_____

a)sterilization b) sanitization c)disinfection d)antisepsis

7) The process that reduces the bacterial count to safe levels as may judged by the public health is referred as----------

a)sterilization b) sanitization c)disinfection d)antisepsis

Q.2- Answer the following/short notes (4 marks)

1) Characteristic of ideal disinfectant.

2) Mode of action of disinfectant

a) Alcohol

b) Phenolic compound

c) Halogen

d) Heavy metal

e) H_2O_2

f) Detergent

Q.3- Answer the following (6 marks)

1) Biological indicators of sterilization

2) Radiations- Ionizining, Nonionizing

Unit VII

Q.1-A) Define/ Explain (2 marks)

1) Taxanomy

2) Classification

3) Binomial Nomenclature

4) Taxa

5) Species

B) Multiple Choice Questions

1) The art of biological classification is known as-------

a)Taxonomy b)Classification c) Identification d) Nomenclature

2) The arrangement of organisms into groups based on mutual similarity is referred as--
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a)Taxonomy b)Classification c) Identification d) Nomenclature

3) The assignments of names of taxonomic groups in agreement with the published rules is referred as----

a) Taxonomy b) Classification c) Identification d) Nomenclature

4) Groups of potentially interbreeding natural populations which are reproductively isolated from other such groups is refereed as----

a)Species b) kingdom c) Genus d)all of the above

5) ---------- type of classification is also known as Adanson Classification

a)Numerical taxonomy b) Chemotaxonomy c) Molecular taxonomy d)none of the above

6) Molecular taxonomy determined by DNA base composition based on ------

a) % of G+C b) % of A+T c) % of A+T+G+C d)all of the above

7) In naming of bacteria, the first name refers to ---------

a) Species b) strain c) genus d) none of the above

8) In molecular taxonomy, ribotyping based on--------asd

a) 5s rRNA b) 16s r RNA c)23s rRNA d)none of the above

Q.2- Answer the following/short notes (4 marks)

1) Binomial nomenclature rules

Q.3- Answer the following (6 marks)

1) Mole G+C
2) DNA-DNA hybridisation
3) Ribotyping

Q.4- Answer the following (12marks)

1) Numerical taxonomy
2) Chemotaxonomy
3) Molecular taxonomy

Unit VIII

Q1 A) Multiple Choice Questions

1) pH meter standardized with-------

a) pH 7 b) pH 0 c) pH 14 D) all of the can be used.

2) Colorimeter is applied only in relation to---------

a)UV light b)X rays c)Visible light c)none of the above

3) The amount of light absorbed by a material is proportional to the concentration of the absorbing solution is referred as------

a) Beer's law b) Boger-lambert law c)Poiseuille's law d)all of the above

4) Separation of small molecule can be done by---------

a) Viscometer b) Centrifugation c) flow cytometry d) spectrophotometer

5) Capillary flo9w in viscometer is based on----

a) Beer's law b) Boger-lambert law c)Poiseuille's law d)none of the above

6) Fluorescent substance is used in--------

a)Viscometer b) Centrifugation c) flow cytometry d) spectrophotometer

Q.3- Answer the following (principle & application)(6 marks)

1) pH meter

2) Colorimeter

3) Viscometer

4) Centrifugation

5) Flow cytometry

6) Spectrophotometer

7) Polarimeter

8) Laminar air flow