

Subject Code: P13

Duration : 2 Hrs.

2) Marking on the OMR sheet for more than one option for a question will be rendered invalid.

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- 5 A clinical condition associated with the infection of fish by pathogenic *Pseudomonas* sp. is
- A) Exophthalmia
 - B) Damaged gills
 - C) Spinal deformities
 - D) Haemorrhagic septicaemia
- 6 The nucleic acid of virus contains
- A) Only DNA
 - B) Only RNA
 - C) Both DNA and RNA
 - D) Either DNA or RNA
- 7 Development of SPF fish stock refers to a fish that
- A) Is free from a group of pathogens
 - B) Is resistant to a specific pathogen
 - C) Does not contain a specific pathogen
 - D) Is not susceptible to infection
- 8 A bloom forming toxic dinoflagellate responsible for fish kills in mariculture system is a species of
- A) *Microcystis*
 - B) *Gonyaulax*
 - C) *C. Lyngbya*
 - D) Actinomycetes
- 9 The toxic component in bacterial endotoxin is
- A) Lipid A portion of lipopolysaccharide
 - B) 'O' antigenic portion of lipopolysaccharide
 - C) both lipid 'A' and 'O' antigenic portion of lipopolysaccharide
 - D) Protein component of lipopolysaccharide
- 10 A disease outbreak in fish can be considered 'acute' when the
- A) Disease develops slowly with less severity
 - B) Disease persists for long time
 - C) Disease begins suddenly and progresses rapidly
 - D) it always results in mortality

- 18** Prolonged use of antibiotics in aquaculture system could result in
- A) Development of resistance to antibiotics by pathogens
 - B) Development of resistance by the fish
 - C) Complete elimination of pathogen from culture system
 - D) Development of antibodies in fish
- 19** One of the indications of onset of disease in fish culture system is
- A) Change in water colour
 - B) Increase in inorganic nutrient level
 - C) Increased feed intake
 - D) Decreased feed intake
- 20** The statement which refers to horizontal transfer of disease is
- A) Pathogen is transferred from parent to young ones
 - B) Fishes acquiring pathogen from the pond environment
 - C) Fishes acquiring pathogen from any source during culture operation
 - D) All of the above
- 21** Viruses with icosahedral symmetry are characterized by the presence of
- A) 20 equilateral triangular faces
 - B) 40 equilateral triangular faces
 - C) Varying number of equilateral triangular faces
 - D) Long, rod shaped arrangement
- 22** The antibody production during secondary immune response differs from the primary response in that
- A) More antibodies are produced more quickly
 - B) Less antibody is produced more quickly
 - C) More antibodies are produced more slowly
 - D) The antibody produced is of low specificity
- 23** A technique that can be used for the enumeration of viable bacteria in a broth culture is
- A) Estimation of DNA concentration
 - B) Microscopic count
 - C) Plate count
 - D) Determining total cell mass

- 31** Presence of tuft of flagella on one or either end of bacterial cell is referred to as

 - A) Peritrichous
 - B) Multitrichous
 - C) Lophotrichous
 - D) Amphitrichous

32 Conjugation process in bacteria involves

 - A) Viruses that multiply within bacteria
 - B) One live recipient cell and one dead donor cell
 - C) Large concentration of glucose molecules
 - D) Two live bacteria

33 A substance which is mixed with the antigen to enhance antibody response is

 - A) Hapten
 - B) Complement
 - C) Adjuvant
 - D) Immunogen

34 The tail fibres of phages are associated with

 - A) Attachment of virus
 - B) Penetration of virus
 - C) Assembly of virus
 - D) Lysis of the virus

35 Immunoglobulins are

 - A) Antigens
 - B) Antibodies
 - C) Antibiotics
 - D) antiseptics

36 An effective method for the sterilization of antisera before use is by

 - A) Boiling for 5 minutes
 - B) Holding at 56°C for 30 minutes
 - C) Steaming at atmospheric pressure for 20 minutes
 - D) Passing through 0.2 micron membrane filter

37 The dark field microscope differs from the bright field microscope in having a special

 - A) Ocular system
 - B) Fine adjustment
 - C) Condenser system
 - D) Objective lens

- 38 A phage mediated transfer of any part of chromosome from donor bacterium to another bacterium is called
- A) Generalized transduction B) Restricted transduction
- C) Specialised transduction D) Conjugation
- 39 Prophages represent
- A) Mature virions B) virulent phase of virus
- C) Lytic phase of virus D) Lysogenic phase of virus
- 40 Gram negative bacteria differ from Gram positive type in having
- A) Affinity to crystal violet B) Thin murein wall
- C) Lipopolysaccharide membrane D) Spore coat
- 41 Superantigens are those which
- A) Are exceptionally large antigen molecules B) Cause a vaery large antibody response
- C) Attach specifically to B-cell antigens D) Attach to a large number of T-cell causing cytokine release
- 42 Infectious pancreatic necrosis virus belongs to the group of
- A) Herpesviruses B) Iridoviruses
- C) Birnaviruses D) Adenoviruses
- 43 Cyanobacterial member that causes bloom in fish culture ponds is the specie of
- A) *Euglena* B) *Skeletonema*
- C) *Microcystis* D) *Chlamydomonas*
- 44 Metabolically injured bacterial cells fail to grow on
- A) Enrichment media B) Selective media
- C) Repair media D) Enriched media

- 45 The white tail disease of cultured *Macrobrachium* is caused by
- A) Nodavirus
 - B) Protozoan parasite
 - C) Vibrios
 - D) Fungi
- 46 Western blotting is a technique used for the detection of
- A) DNA using oligo probes
 - B) Proteins using antibodies
 - C) RNA using oligo probes
 - D) Detection of both RNA and DNA
- 47 A palindrome sequence refers to the
- A) Nucleotide sequence of mRNA which reads identical forwards and backwards
 - B) Nucleotide sequence of the complimentary DNA strand which reads identical forwards and backwards
 - C) Nucleotide sequence of plasmid vector
 - D) Aminoacid sequence of an enzyme
- 48 Which one of the following bacterial cell component is associated with pathogenicity?
- A) Ribosomes
 - B) Mesosome
 - C) Cell membrane
 - D) Capsule
- 49 The antibiotic penicillin is effective against bacteria because it affects
- A) Protein synthesis
 - B) Cell wall synthesis
 - C) DNA replication
 - D) Plasma membrane properties
- 50 The process in which a part of DNA from dead bacterial cell is incorporated into DNA of living bacterial cell is referred to as
- A) Transduction
 - B) Conjugation
 - C) Transformation
 - D) Replication
- 51 Enteric red mouth disease of cultured fish is caused by
- A) *Streptococcus* sp.
 - B) *Saprolegnia* sp.
 - C) *Yersinia ruckeri*
 - D) IPNV

- 52 The slime on the fish skin is rich in
- A) Nucleotide B) Lipoprotein
- C) Glycopeptide D) Dipeptide
- 53 Which one of the following RNA virus is responsible for mortality of cultured penaeid shrimp.
- A) YHV B) WSSV
- C) MBV D) HPV
- 54 The DNA of a prokaryotic organism is
- A) Linear and single-stranded B) Linear and double-stranded
- C) Circular and single-stranded D) Circular and double-stranded
- 55 The natural habitat of *Escherichia coli* is
- A) Domestic sewage B) Intestine of warm blooded animals
- C) Natural aquatic environment D) Terrestrial environment
- 56 The human pathogenic bacteria naturally associated with the marine coastal waters is
- A) *Bacillus cereus* B) *Streptomyces* sp
- C) *Vibrio parahaemolyticus* D) *Salmonella* sp
- 57 Antibiotics produced by microorganisms are
- A) Primary metabolites B) Secondary metabolites
- C) Both primary and secondary metabolites D) Harmful to the microorganism producing it
- 58 Endogenous antigens are recognized by
- A) Cytotoxic T cells in association with MHC I on antigen presenting cells B) Helper T cells in association with MHC I on antigen presenting cells
- C) Cytotoxic T cells in association with MHC II on antigen presenting cells D) Helper T cells in association with MHC II on antigen presenting cells

- 59 Bacterial cells have shortest generation time during
- A) Lag phase of growth
 - B) Log phase of growth
 - C) Stationary phase of growth
 - D) Death phase of growth
- 60 After alcohol treatment during Gram staining procedure
- A) Gram positive bacteria retain crystal violet
 - B) Gram negative bacteria retain crystal violet
 - C) All bacteria lose crystal violet
 - D) All bacteria retain crystal violet
- 61 The ribosomal subunit present in cyanobacteria is
- A) 30S
 - B) 40S
 - C) 60S
 - D) 70S
- 62 An enzyme commonly used while performing ELISA is
- A) Pectinase
 - B) Amylase
 - C) Polymerase
 - D) Alkaline phosphatase
- 63 Gas bubble disease is associated with
- A) Nitrogen & Oxygen
 - B) Nitrogen & Hydrogen
 - C) Oxygen & Hydrogen
 - D) Both B & C
- 64 One of the natural sources of polymerase enzyme used in polymerase chain reaction is from
- A) *Escherichia coli*
 - B) *Aspergillus niger*
 - C) *Bacillus cereus*
 - D) *Thermus aquaticus*
- 65 Which of the following RNA is short lived
- A) t-RNA
 - B) m-RNA
 - C) r-RNA
 - D) both t-RNA and r-RNA

- 66** In MPN method of detection of microorganisms in foods, one of the criteria to be met is
- A) All inoculated MPN tubes should show growth of microorganisms
 - B) No growth to be seen in any of the inoculated MPN tubes
 - C) One tube in each dilution of sample inoculated should be positive
 - D) At least one of the tubes inoculated should be negative for growth
- 67** Bacteriocins are
- A) Pigments produced by some bacteria
 - B) Antibiotics produced by some bacteria
 - C) Proteins produced by some bacteria
 - D) Enzymes released by some bacteria
- 68** Monoclonal antibodies are
- A) Single parent type against many antigens
 - B) Single parent type against specific antigens
 - C) Mixed parent types against many antigens
 - D) Mixed parent type against specific antigen
- 69** The enzyme involved in the formation of RNA on DNA is
- A) DNA polymerase
 - B) Endonuclease
 - C) Topoisomerase
 - D) RNA polymerase
- 70** Restriction endonucleases are involved in
- A) DNA repair
 - B) DNA replication
 - C) DNA cleavage
 - D) DNA synthesis
- 71** Antiserum is rich in
- A) Antigens
 - B) Steroids
 - C) Antibodies
 - D) Albumins

- 72 Interferons are active against
- A) Bacteria
 - B) Virus
 - C) Protozoa
 - D) Bacteriophage
- 73 In Bacteria, ribosomes are present
- A) In the cytoplasm
 - B) On the endoplasmic reticulum
 - C) On the nuclear membrane
 - D) On the cell wall
- 74 Purine bases present in DNA include
- A) Adenine and uracil
 - B) Adenine and guanine
 - C) Adenine and thymine
 - D) Adenine and cytosine
- 75 If there are 10^3 bacterial cells at the middle of log phase and the generation time of the cells is 30 minutes, how many cells will there be in 2 hours later?
- A) 2×10^3
 - B) 4×10^3
 - C) 8×10^3
 - D) 1.6×10^4
- 76 An effective method for protecting fishes against bacterial diseases is through the use of
- A) Chemotherapeutic agents
 - B) Sanitizers
 - C) Vaccines
 - D) Bioremediators
- 77 The 'O' of *E. Coli* O157:H7 refers to the
- A) Biotype
 - B) Serotype
 - C) Phage type
 - D) Ribotype
- 78 An aquatic fungi pathogenic to fish is
- A) *Aspergillus*
 - B) *Microcystis*
 - C) *Nisseria*
 - D) *Aphanomyces*

- 79 The EUS problem is more prevalent during
- A) Winter season
 - B) Summer season
 - C) Rainy season
 - D) All through the year
- 80 The cell wall of fungi is composed of
- A) Cellulose
 - B) Chitin
 - C) Cellulose or chitin
 - D) Hemicelluloses
- 81 Tissue macrophage are mature
- A) B cells
 - B) T cells
 - C) NK cells
 - D) Monocytes
- 82 *Myxobolus cerebralis* is an
- A) Intercellular parasite
 - B) Intracellular parasite
 - C) Sub-cellular parasite
 - D) None of the above
- 83 *Lymphocystis* virus is
- A) RNA virus
 - B) DNA virus
 - C) Enveloped virus
 - D) Latent virus
- 84 WSSV virus is a
- A) Enveloped virus
 - B) Non enveloped virus
 - C) RNA virus
 - D) None of the above
- 85 Spring viremia of carps is caused by
- A) Rabdovirus
 - B) Yellow tail virus
 - C) Ranavirus
 - D) Iridovirus

- 86 Gill hyperplasia is caused by
- A) *Mycobacterium* B) *P. aerogenosa*
C) *V. vulnificus* D) None of the above
- 87 Which of the following is used for tissue fixation ?
- A) HCHO B) EDTA
C) NaCl D) None of the above
- 88 Haemorrhagic septicemia is caused by
- A) *Yersenia ruckeri* B) Flavobacterium
C) *Pseudomonas* D) *Aeromonas hydrophilla*
- 89 Blue slime disease is caused by
- A) *Cryptobia* B) Trichodina
C) *Ichthyobodo necator* D) None of the above
- 90 How many types of immunoglobulin are found in teleost fish?
- A) 2 B) 3
C) 4 D) 5
- 91 Addition of microorganisms into the environment is called as
- A) Bioremediation B) Bioaugmentation
C) Biocontrol D) None of the above
- 92 Aggregates of macrophages in haematopoietic tissues of fish having pigment granules
- A) Plasma cell centers B) T helper cells
C) Melanomacrophage centers D) Granulocytes

- 93 Trophont is _____ stage of parasite
- A) Larval B) Egg
C) Resting D) Adult
- 94 Emerging disease of *L.vannamei* is
- A) AHPND B) WSSV
C) WTD D) TSV
- 95 Main envelope protein responsible for infection in WSSV is
- A) VP 15 B) VP 26
C) VP 28 D) VP 19
- 96 Probiotics are mainly active in
- A) Small intestine B) Large intestine
C) Stomach D) All the above
- 97 First established cell line from fish is
- A) RTG-2 B) EPC
C) CHSE D) RTS
- 98 The main feature of prokaryotic organism
- A) Absence of locomotion B) Absence of nuclear envelop
C) Absence of nuclear material D) Absence of protein synthesis
- 99 Which among the following chemicals are sporicide?
- A) Phenolic compounds B) Hypochlorite
C) Alcohols D) Formaldehyde
- 100 The time from phage entry attachment to release is known as
- A) Eclipse period B) Burst size
C) Maturation D) Biosynthesis