

# Sikkim Public Service Commission

## Written Examination for the post of Specialist (Senior Grade) - Microbiology

Time Allowed: 3 hours & 30 minutes

PAPER – II

Maximum Marks: 300

### INSTRUCTIONS TO CANDIDATES

*Read the instructions carefully before answering the questions: -*

1. This Test Booklet consists of 16 (sixteen) pages and has 100 (hundred) printed questions.
2. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS BOOKLET DOES NOT HAVE ANY UNPRINTED, TORN OR MISSING PAGES OR ITEMS. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
3. Use only Black Ball Point Pen to fill the OMR Sheet.
4. Please note that it is the candidate's responsibility to fill in the Roll Number carefully without any omission or discrepancy at the appropriate places in the OMR ANSWER SHEET as well as on SEPARATE ANSWER BOOKLET for Conventional Type Questions. Any omission/discrepancy will render the Answer Sheet liable for rejection.
5. Do not write anything else on the OMR Answer Sheet except the required information. Before you proceed to mark in the OMR Answer Sheet, please ensure that you have filled in the required particulars as per given instructions.
6. This Test Booklet is divided into 4 (four) parts – Part-I, Part-II, Part-III and Part-IV.
7. All four parts are Compulsory.
8. Part-I consists of Multiple-Choice Questions. The answers for these questions have to be marked in the OMR Answer Sheet provided to you.
9. Parts II, III and IV consists of Conventional Type Questions. The answers for these questions have to be written in the Separate Answer Booklet provided to you.
10. After you have completed filling in all your responses on the OMR Answer Sheet and the Answer Booklet(s) and the examination has concluded, you should hand over the OMR Answer Sheet and the Answer Booklet(s) to the Invigilator only. You are permitted to take the Test Booklet with you.
11. **Marking Scheme**  
THERE WILL BE **NEGATIVE MARKING** FOR WRONG ANSWERS MARKED BY A CANDIDATE IN THE OBJECTIVE TYPE QUESTIONS
  - (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, one-third of the marks assigned to the question will be deducted as penalty.
  - (ii) If a candidate gives more than one answer, it will be treated as a wrong answer even if one of the given answers happens to be correct and there will be same penalty as above to the question.
  - (iii) If a question is left blank. i.e., no answer is given by the candidate, there will be no penalty for that question.

**DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO**

**PART - I**  
**(Multiple Choice Questions)**

Choose the correct answer for Questions 1 to 75 from the given options. Each question carries 2 marks.  
[75 x 2 = 150]

1. Safety in handling the pathogens in a microbiology laboratory is ensured with the use of a Bio-Safety Cabinet (BSC). How does a Class IIA BSC differ from Class IIB BSC?
  - (a) In class IIA, the air is HEPA filtered with 100 % recirculation of filtered air in the cabinet while in class IIB only 30% air is recirculated.
  - (b) In class IIA, the air is HEPA filtered with only 30% recirculation of filtered air in the cabinet while in class IIB 70% air is recirculated.
  - (c) In class IIA, the air is HEPA filtered with 100% of filtered air is exhausted out of the cabinet while in class IIB only 30% air is exhausted.
  - (d) In class IIA, the air is HEPA filtered with 70 % recirculation of filtered air in the cabinet while in class IIB only 0% air is recirculated.
2. A 12-year-old boy had history of flu like illness with headache, fever, myalgia and tiredness for last 5 days. Later, he developed intensely red rash over the cheeks and lacey rashes over trunk and extremities. Lab investigations reveal hemolytic anemia and transient aplastic crisis. History is suggestive of 'Fifth disease'; which of the following is NOT a classic childhood exanthem?
  - (a) Human Parvovirus 19 causing Erythema Infectiosum.
  - (b) Rubella virus causing Rubella.
  - (c) Human Herpesvirus 6 causing Roseola.
  - (d) Echovirus 16 causing Boston exanthem.
3. An immunocompromised patient had subcutaneous abscess. Pus sample was sent to lab for fungus culture that grew white yeasty colonies. Wet mount preparation showed budding yeast cells of varying sizes with prominent capsule suggestive of -
  - (a) *Candida albicans*
  - (b) *Cryptococcus neoformans*
  - (c) *Sporothrix schenckii*
  - (d) *Histoplasma capsulatum*
4. Kirby-Bauer disc diffusion is used to detect antimicrobial susceptibility. How many antibiotic discs should be placed on a 100 mm diameter petri dish?
  - (a) Eight discs
  - (b) Seven discs
  - (c) Six discs
  - (d) Five discs
5. A 20-year-old female patient developed the signs & symptoms of toxic shock syndrome (TSS). Toxic shock syndrome Toxin 1 is known to be associated with menstruation associated TSS but in cases of non-menstruation associated TSS which Staphylococcal Enterotoxin is most prevalent?
  - (a) Enterotoxin A
  - (b) Enterotoxin B
  - (c) Enterotoxin E
  - (d) Enterotoxin F
6. A neonate with complaints of irregular feeding and seizures was admitted as a suspected case of neonatal meningitis. Group B Streptococcus is known to cause neonatal meningitis which can be differentiated from other streptococci by which of the following test?
  - (a) Trehalose fermentation
  - (b) PYR test
  - (c) Hippurate hydrolysis
  - (d) Novobiocin susceptibility



7. A young female had history of mucopurulent discharge from the cervix. A high vaginal swab from the endocervix was sent for culture and *Chlamydia trachomatis* was isolated. Which serovar of *Chlamydia trachomatis* are responsible for her infection?
- Serovar D
  - Serovar C
  - Serovar B
  - Serovar A
8. In the history of discovery of microbes, which pathogen was discovered by Weichselbaum in 1887?
- Bartonella bacilliformis*
  - Neisseria meningitidis*
  - Streptococcus pyogenes*
  - Streptococcus pneumoniae*
9. A patient suspected of pyogenic meningitis was admitted to neurology ward where lumbar puncture was done to collect C.S.F. which was sent to the laboratory for culture. It was not feasible to put culture immediately. How can this specimen be best stored in lab till it is processed?
- Store at 4°C in refrigerator.
  - Store in incubator at 37°C.
  - Store at room temperature of 25°C to 30°C
  - Store at -20°C in freezer
10. A 10-year-old boy presented to OPD with fever, pain in throat and difficulty in swallowing. On examination a necrotic membrane in supraglottic region was seen. Diphtheria was suspected; which of the following about diphtheria toxin is true?
- Toxin is produced due to lysogenic phage conversion.
  - The toxin has got two subunits A and B which act by inhibiting enzyme polymerase in the host cell.
  - Toxin production is not affected by the concentration of Iron and Magnesium in the medium.
  - Toxigenic strains cannot revert to Non toxigenic strain.
11. Motility in bacteria is due to flagella and it is characteristic in nature. Which of the following organism has got a slow TUMBLING motility at 25°C?
- Chromobacterium violaceum*
  - Leptospira icterohemorrhagiae*
  - Listeria monocytogenes*
  - Legionella pneumophila*
12. Which of the following infectious agent is not the cause of an indicator disease of HIV / AIDS?
- Cytomegalovirus disease
  - Kaposi's sarcoma
  - Legionnaires disease
  - Extrapulmonary cryptococcosis
13. A young sexually promiscuous female developed chronic diarrhoea, excessive weight loss. Lab investigations established the diagnosis of HIV AIDS. The criteria of full-blown AIDS as per CD 4 T-cell counts are-
- < 800 CD4 cells/ $\mu$ l
  - < 600 CD4 cells/ $\mu$ l
  - < 400 CD4 cells/ $\mu$ l
  - < 200 CD4 cells/ $\mu$ l
14. Which of the following drugs belong to Integrase inhibitors used in therapy against HIV AIDS?
- Nelfinavir
  - Raltegravir
  - Nevirapine
  - Atazanavir
15. Which of the following combination is correct?
- Ebola virus should be handled in BSL 3 lab only.
  - Marburg virus should be handled in BSL 4 lab only.
  - Nipah virus can be handled in BSL 2 lab.

- (d) Dengue and Chikungunya viruses need to be handled in BSL 1 lab.
16. In bacteriology, the culture media should be quality checked before putting in use. Amino acid Arginine should be tested with standard strains of-
- (a) Esch coli and Proteus mirabilis
  - (b) Klebsiella oxytoca and Proteus mirabilis
  - (c) Enterobacter cloacae and Proteus vulgaris
  - (d) Klebsiella pneumoniae and Proteus mirabilis
17. Which of the following is true?
- (a) Plasma sterilizers use Hydrogen peroxide and peracetic acid mixture
  - (b) Plasma sterilizers' efficacy is tested by using Bacillus atrophaeus.
  - (c) Plasma sterilizers operate at 60°C.
  - (d) Plasma sterilizers' cycle completes in 4-5 hours.
18. In Koch's postulates one of the criteria is that for the causative organism of a disease it should be possible to re-isolate the organism in pure culture from the lesions produced in the experimental animals. Which of the following is an EXCEPTION?
- (a) Bartonella bacilliformis
  - (b) Neisseria gonorrhoeae
  - (c) Ehrlichia chaffeensis
  - (d) Mycobacterium leprae
19. Human Papilloma Viruses (HPV) are known causes of cervical cancers. Which of the following is most common cause of such cancers?
- (a) HPV 16
  - (b) HPV 17
  - (c) HPV 18
  - (d) HPV 11
20. Borrelia are spirochaetes causing relapsing fever. The phenomena of new febrile episode is caused due to-
- (a) Borrelia rapidly undergo antigenic shift which produces newer antigens and fever relapses.
  - (b) Borrelia produces different types of toxins which cause relapses of fever.
  - (c) Borrelia produces relapses of fever in response to the antibodies produced by the host.
  - (d) Borrelia antigens are poorly immunogenic which leads to repeated episodes of fever.
21. The food borne botulism is the result of production of a powerful neurotoxin. The incidence of infant botulism is more than adult botulism. It may be explained as-
- (a) C. botulinum easily establishes itself in infant gut in absence of competition with bowel microbes.
  - (b) C. botulinum toxin is comparatively lethal to infants.
  - (c) C. botulinum cannot produce toxins in the gut of adults.
  - (d) Mortality rate in infant botulism is much higher than in adults.
22. Which of the following is true?
- (a) C. welchii besides causing food poisoning and gas gangrene can also cause Toxic shock syndrome.
  - (b) C. tetani produces tetanospasmin which can reversibly bind to gamma aminobutyric acid and cause spastic paralysis.
  - (c) C. tetani produces heat stable tetanolysin (hemolysin).
  - (d) C. welchii produces alpha, epsilon and iota toxins and all are responsible for increasing vascular permeability.
23. A 40-year-old male patient who had attended a conference last week, complains of fever and chills, dry non-productive cough, headache and pneumonia. He is suspected to have Legionnaires disease. Which is the sensitive diagnostic test for it?



- (a) Gram staining of clinical specimen.  
 (b) Legionella specific antigen in urine.  
 (c) Legionella specific antibodies in serum.  
 (d) Legionella culture on Blood agar medium.
24. Which of the following is NOT true of the Legionella?
- (a) Legionella are slender, pleomorphic gram-negative bacilli  
 (b) Legionella can be isolated on special media i.e., BCYE supplemented with L-Cysteine and Iron  
 (c) Legionella are treated with Beta lactam antibiotics as the drug of choice  
 (d) Legionella are obligate intracellular pathogens
25. Which of the following is TRUE?
- (a) Haverhill fever is caused by Streptobacillus moniliformis.  
 (b) Pontiac fever is caused by F. tularensis.  
 (c) Oroya fever is caused by Brucella melitensis.  
 (d) Trench fever is caused by Bartonella henselae.
26. Oncogenic viruses cause carcinomas. Which of the following statement is correct?
- (a) Kaposi's sarcoma related virus is HHV 8 affects lymphocytes and other cells  
 (b) Kaposi's sarcoma is due to HHV 6 and affects lymphocytes  
 (c) Kaposi's sarcoma is common in AIDS patient and is due to HHV 7  
 (d) Kaposi's sarcoma is common in AIDS patient and is due to HHV 4
27. A 40-year-old male patient came to Gastro OPD with complaints of gastric hyperacidity and pain in epigastric region. Microbiological investigation showed H. pylori. What is the mechanism by which this organism invades the gut mucosa?
- (a) It creates vacuoles in epithelial cells by producing an exotoxin coded by VacA gene.  
 (b) It has CagA gene that encodes for type IV secretin system that transfers CagA proteins into cells that facilitates cell invasion  
 (c) Outer membrane proteins encoded by BabA gene mediates adherence to epithelial cells and cell invasion  
 (d) IceA gene associated with cell invasion and development of cell apoptosis
28. A 12-year-old boy having fever and pain in ear is suspected of having otitis media. Throat swab was sent for culture that yielded growth of gram-negative diplococci. The organism was oxidase positive. Which biochemical test is used to differentiate Neisseria from Moraxella?
- (a) Microdase test  
 (b) Butyrate disc test  
 (c) Catalase test  
 (d) Leucine aminopeptidase test
29. Which of the following statement is NOT correct?
- (a) MRSA screen agar uses Oxacillin and 2% to 4% NaCl.  
 (b) Methicillin resistance is better detected by Cefoxitin 30µg disc.  
 (c) Vancomycin intermediate susceptible Staph aureus (VISAs) are always susceptible to Teicoplanin  
 (d) Vancomycin resistant Staph aureus is having MIC  $\geq 16\mu\text{g/ml}$
30. Which of the following Mycobacteria cause Lady Windermere's syndrome in post-menopausal women?
- (a) Mycobacterium tuberculosis complex.  
 (b) Mycobacterium avium complex.  
 (c) Mycobacterium kansasii.  
 (d) Mycobacterium gordonae.

31. In CSF examination there was suspicion of fungal etiology; which of the following findings in CSF suggests a fungal cause?
- Polymorphonuclear neutrophils-very high, monocytes-variable, Glucose low and Protein -high.
  - Polymorphonuclear neutrophils-absent, monocytes-absent, Glucose and Protein -low.
  - Polymorphonuclear neutrophils-very high, monocytes-high, Glucose-elevated and Protein -high.
  - Polymorphonuclear neutrophils and monocytes -variable, Glucose -normal and Protein -normal.
32. In a case of septicaemia, blood culture is advised. Considering automated blood culture systems, in which of the following systems does the color of CO<sub>2</sub> sensor turn green to yellow indicating a positive culture?
- VersaTREK blood culture systems
  - BacT/ALERT 3D blood culture systems
  - BD BACTEC blood culture systems
  - Spticheck blood culture systems
33. SARS CoV2 has got several genetic variants which can cause different waves of epidemics. Variants are detected by DNA sequencing. Which of the following is true?
- Sanger's traditional method of sequencing is an example of pyrosequencing.
  - In Sanger's method of sequencing incorporation of dideoxynucleotides terminates strand elongation.
  - In Sanger's sequencing the added nucleotide in DNA strand is detected by change in pH of the medium.
  - In Sanger's sequencing the basic technology involved is sequencing by synthesis using capillaries.
34. A 50-year-old male patient complaining of chronic bronchitis came to OPD. He was a known immunocompromised HIV positive case. His sputum sent to lab for microscopy was reported to have gram positive filamentous rod shaped to coccoid forms which were acid fast too. What is the most probable organism?
- Streptococcus* spp.
  - Actinomyces* spp.
  - Nocardia* spp.
  - Dermatophilus* spp.
35. Spirochaetes and Spiral organisms are motile due to endoflagella; which of the following is an EXCEPTION to it?
- Treponema*
  - Leptospira*
  - Spirillum*
  - Borrelia*
36. There are different mechanisms by which bacteria exhibit resistance; in case of Fluoroquinolones the mechanism of resistance is due to-
- Active efflux of the antibiotic from the bacterial cell
  - Altered cell wall binding proteins
  - Altered DNA gyrase enzyme
  - Altered porin channels
37. Romana's sign indicates unilateral painless oedema of the eyelid due to the parasite-
- Trypanosoma cruzi*
  - Trypanosoma brucei*
  - Leishmania chagasi*
  - Leishmania mexicana*
38. Which is the infective form of *Cystoisospora belli*?
- Trophoblast
  - Tachyzoites
  - Merozoites
  - Sporulated Oocyst
39. There is intrinsic bacterial resistance against Aminoglycosides but in the case of



- Acquired high level aminoglycoside resistance (HLR) it is mediated through-
- Alerted membrane transport
  - Aminoglycoside modifying enzymes
  - Active efflux of the antibiotics
  - Altered porin channels
40. Mycotoxicosis is a type of food poisoning that occurs due to toxins produced by various fungi; which of the following statement is TRUE for Mycotoxicosis?
- In Yellow Rice disease, Aflatoxins cause Hepatitis
  - In Balkan Endemic Nephropathy, Ochratoxin causes chronic nephritis
  - Ergotism is caused due to contaminated Pea nuts which have got Ergot alkaloids
  - Cardiac Beriberi is caused by Fumonisin
41. Microsporidia are single-celled obligately intracellular fungal parasites causing infections in immunocompromised hosts causing disseminated infections. Which of the Microsporidial spp. commonly causes localised Keratitis?
- Encephalitozoon intestinalis.
  - Trachipleistophora spp.
  - Enterocytozoon bienusi.
  - Nosema spp.
42. In the ongoing Pandemic of SARS CoV2, there were many cases of so-called Black fungus. This was due to the mucormycosis; how is Mucor differentiated from Lichtheimia?
- Lichtheimia has got Rhizoids which are absent in Mucor.
  - Lichtheimia has sporangiophore while Mucor has conidiophore.
  - Lichtheimia has got sporangiophore which are devoid of spores.
  - Mucor has internodal Rhizoids.
43. Which of the following statements regarding Rhinosporidium seeberi is NOT correct?
- In Rhinosporidiosis, polypoidal nasal lesions are seen.
  - Rhinosporidium seeberi is genomically confirmed as a fungus.
  - Rhinosporidium seeberi is non cultivable on synthetic media.
  - Rhinosporidial polyps histopathologically show one of the two developmental forms, a larger sporangia and a smaller Trophocyte.
44. Superantigens are produced by Staph aureus which induces production of various cytokines by activating which of the following cells?
- NK cells
  - B cells
  - T cells
  - Dendritic cells
45. Rickettsia is transmitted through arthropod vectors; which of the following is transmitted by Mites?
- Rickettsia rickettsii
  - Rickettsia siberica
  - Rickettsia conorii
  - Rickettsia akari
46. In SARS CoV2 virus, there have been frequent genetic changes which led to appearance of new variants; which viral gene has seen mutations affecting the transmissibility of the virus?
- N gene
  - E gene
  - S gene
  - Orf gene
47. Antibiotic Stewardship programme is the programme that-
- monitors the usage of antibiotics.
  - regulates the antibiotic production.
  - promotes the use of antibiotics.
  - approves the research on antibiotics.

48. Which of the following is NOT a major Healthcare associated infection?
- (a) Central line Associated blood stream infections
  - (b) Surgical Site Infection
  - (c) Catheter Associated UTI
  - (d) Reproductive Tract Associated infections
49. Bio Medical Waste Rules, 2016 is for proper disposal of infectious waste generated at health care facility. Which color codes are appropriate for discarding?
- (a) **Yellow bag** - catheter, canula; **Red bag** - organs, soiled dressings; **Blue container** - needles.
  - (b) **Yellow bag** - organs, soiled dressings; **Red bag** - catheters, canula, plastic disposables; **Blue container** - Broken glass.
  - (c) **Yellow bag** - catheter, canula; **Red bag** - organs, soiled dressings; **Blue container** - broken glass.
  - (d) **Yellow bag** - organs, soiled catheter, canula; **Red bag** - dressings; **Blue container** - needles.
50. There are different organisms contaminating the supply of water; which of the following statements is correct?
- (a) Coliforms other than Esch. coli are the most sensitive indicator.
  - (b) Bacteriophages indicate non fecal water contamination.
  - (c) Thermotolerant Esch. coli indicates recent contamination.
  - (d) Fecal streptococci is not an indicator of fecal pollution.
51. Various types of food items are associated with food poisonings; which is the typical food associated with *Bacillus cereus*?
- (a) Meat
  - (b) Poultry
  - (c) Fried rice
  - (d) Vegetables
52. As per the Spaulding classification, devices which come in contact with mucous membranes or minor skin breaches are categorised into-
- (a) Non- critical
  - (b) Critical
  - (c) Semi-critical
  - (d) Moderately critical
53. In bacterial identification by Matrix Assisted Laser Desorption Ionization-Time of Flight method, the matrix used is the chemical compound -
- (a) Cyano-hydroxy-butyric acid
  - (b) Cyano-carboxy-phthalic acid
  - (c) Cyano-deoxy-benzoic acid
  - (d) Cyano-hydroxy-cinnamic acid
54. Various typing methods are used for molecular typing; which is a non-amplification-based technique for this?
- (a) Microarrays
  - (b) Restricted Fragment Length Polymorphism (RFLP)
  - (c) Amplified Fragment Length Polymorphism (AFLP)
  - (d) Next Generation Sequencing
55. By Northern blotting technique we can analyse -
- (a) Proteins
  - (b) DNA
  - (c) Polysaccharides
  - (d) RNA
56. Which antibiotic is suitable for VRE and MRSA?
- (a) Polymyxin
  - (b) Gramicidin
  - (c) Daptomycin
  - (d) Aztreonam
57. *Entamoeba histolytica* can be cultured on-
- (a) N.N.N. medium
  - (b) Boeck & Drbohlav's medium
  - (c) RPMI 1640 medium
  - (d) Charcoal agar medium



58. *Wuchereria bancrofti* and *Brugia malayi* have microfilaria. Which is the feature of microfilaria of *Brugia malayi*?
- Size is more than 300  $\mu\text{m}$
  - No nuclei in the tail region
  - Small cephalic space
  - Prominent excretory pore
59. What is optimum habitat of parasite *Schistosoma hematobium*?
- Vesical and pelvic venous plexuses
  - Mesenteric veins draining ileocaecal region
  - Portal venous system
  - Inguinofemoral lymphatics
60. Which target antigen is used for Malarial antigametocyte vaccine?
- Merozoite surface protein
  - Circumsporozoite protein
  - Ookinete specific surface protein
  - Glutamate rich protein
61. Immunological tolerance is the state in which there is no immune response to self-antigens; What is the mechanism?
- If any self-antigens are encountered, they are recognized by the T cells as foreign but are incapable of mounting immune response.
  - If any self-antigens are encountered, they are recognized by the B cells as foreign but are incapable of mounting immune response.
  - During the development of Thymus lymphocytes self-antigens are processed and recognized but these self-reactive immune cells are deleted by apoptosis.
  - Tolerance to self-antigens is mediated through the null cells but they are not immunologically competent.
62. Which of the following is an example of Molecular mimicry?
- Rheumatoid arthritis
  - Acute Rheumatic fever
  - Idiopathic Thrombocytopenic Purpura
  - Myasthenia gravis
63. Pyrexia of unknown origin is classified as per the Durack and Street into the following types -
- Classic, Idiopathic, Nosocomial and HIV associated.
  - HIV associated, Neutropenic, Antibiotic associated and Nosocomial.
  - Classic, Antibiotic associated, Idiopathic and Neutropenic.
  - Classic, Nosocomial, Neutropenic and HIV associated.
64. Which cryo-preserved can be used for preservation of micro-organisms at  $-70^{\circ}\text{C}$ ?
- Inulin
  - Barium chloride
  - Glycerol
  - Pyrogallol
65. The pathogenesis of prion diseases is due to-
- Prion proteins which get internalised into host cells become modified which lack an immune response by host
  - Prion proteins are inert and mount aggravated immune response causing the tissue damage
  - Prions code for genes that gets merged with host cell DNA and produce tissue damage
  - Prion cause disease by activating the alternate complement pathway
66. Which of the following is true regarding the HBV infection?
- Simple carriers have high titers of HBe antigen and low levels of HBsAg
  - Super carriers have high titers of HBsAg and HBe antigen

- (c) Simple carriers only have HBsAg and DNA polymerase  
(d) Super carriers have low HBsAg and high levels of anti Hbe Ag and Anti HBS antibodies
67. Which of the following is an agent of Eumycetoma?  
(a) Streptomyces somaliensis  
(b) Actinomadura madurae  
(c) Nocardia spp.  
(d) Pseudallescheria boydii
68. Amsel's criteria are used to diagnose Bacterial vaginosis; it includes all EXCEPT-  
(a) pH of vaginal discharge > 4.5  
(b) A negative Whiff's test  
(c) Thin watery foul-smelling vaginal discharge  
(d) Presence of Clue cells
69. Which is the pre-analytic quality indicator in the process of Quality assurance?  
(a) Completeness of Requisition forms  
(b) Compliance to Turn Around Time  
(c) Lab performance in External Quality Assurance Scheme  
(d) Errors/incomplete lab reports
70. SARS CoV2 and Hantaviruses fall into which risk group of pathogens-  
(a) Group 1  
(b) Group 2  
(c) Group 3  
(d) Group 4
71. Which statement regarding the Bioweapons is correct-  
(a) Category C pathogens are of highest priority pathogens related to National security  
(b) Category B pathogens are of lowest priority pathogens related to National security  
(c) Category D pathogens are of lowest priority pathogens related to National security  
(d) Category A pathogens are of highest priority pathogens related to National security
72. Which parasite is associated with the Granulomatous amoebic encephalitis in immunocompromised patients?  
(a) Naegleria fowleri  
(b) Acanthamoeba culbertsoni  
(c) Balamuthia mandrillaris  
(d) Sappinia diploidea
73. Food poisoning within 4-6 h is indicative of which organism?  
(a) C. perfringens  
(b) V. cholerae  
(c) S. aureus  
(d) Salmonella enteritidis
74. Who among the following is NOT a Nobel laureate?  
(a) Stanley B. Prusiner.  
(b) Cesar Milstein.  
(c) Kary B. Mullis.  
(d) Clemens von Pirquet.
75. Which ova do not float in hypertonic saline solution?  
(a) Enterobius vermicularis  
(b) Unfertilised ova of Ascaris  
(c) Trichuris trichiura  
(d) Ancylostoma duodenale



**PART - II****(Conventional Type Questions)**

Answer any 10 (ten) from Questions 76 to 88. Each question carries 5 marks.

[10 x 5 = 50]

76. Describe lysogenic conversion in bacteria and draw a labeled diagram.
77. Give a brief account of Detection of Beta lactamase production by bacteria.
78. Enumerate various typing methods used in the bacterial identification in microbiology laboratory.
79. Define various methods of drug sensitivity available for Mycobacteria.
80. Enumerate various immunological tests to find the hypersensitivity to microbes.
81. Draw a labeled diagram of bacteriophage.
82. Enumerate various cell lines used in culture of various bacteria and viruses.
83. Define antigenic shift and drift in viruses and their effects.
84. Enumerate various vaccines available for Rabies.
85. Differentiate the bacterial Endotoxin and exotoxins.
86. Draw a labeled diagram of Immunoglobulin molecule.
87. Draw a flow diagram of alternate pathways of Complement activation.
88. Enumerate various oncogenic viruses.

**PART - III****(Conventional Type Questions)**

Answer any 5 (five) from Questions 89 to 96. Each question carries 10 marks.

[5 x 10 = 50]

89. Define the role of laboratory animals in Microbiology.
90. Define uses of various types of Microscopies available in Microbiology.
91. Write briefly about Major Histocompatibility Complex and its role in immune response.
92. Discuss role of Infection Control Committee in curtailing the spread of Hospital Acquired Infections.
93. Write in short about various components of Quality Assurance in Microbiology.
94. Write a short note about 'Bioterrorism Today'.
95. Write briefly about newer anaerobic culture techniques.
96. Elaborate the role of Human microbiome in human health.

**PART - IV****(Conventional Type Questions)**

Answer any 2 (two) from Questions 97 to 100. Each question carries 25 marks.

[2 x 25 = 50]

97. Describe automation in a modern Microbiology laboratory.
98. Discuss various molecular methods used in identification of microbes.
99. Discuss the measures applied for total safety in Microbiology laboratory.
100. Discuss the methods used in investigation of an outbreak and measures to control its spread in community.

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