

03/24

The West Bengal University of Health Sciences
MBBS 2nd Professional Examination (New Regulation) March - April 2024

Subject: Microbiology

Full Marks: 100

Paper: I

Time: 3 hours

Attempt all questions. The figures in the margin indicate full marks.

1. a) A 8 year old child presented to pediatric OPD with swollen, red and tender joint which migrate from one joint to another. Past H/O sore throat 3 weeks back was reported. On auscultation, murmur was heard over the mitral valve area. 2+5+3+5
 - i) What is the clinical diagnosis and etiological agent?
 - ii) Enlist different toxins and enzymes produced by this organism.
 - iii) Describe the pathogenesis disease.
 - iv) Mention serological tests to be done for this etiological agent with significant titre of these tests.
- a) A diabetic 60 year old lady was admitted to an ICU following a road traffic accident where she was placed on a ventilator. An initial chest x-ray was reported as normal. Five days after admission the patient's condition deteriorated. She developed an elevated temperature, neutrophilia and signs of bilateral basal consolidation in the chest. 1+2+2+6+4
 - i) What is the clinical diagnosis?
 - ii) Name the likely aetiological agents.
 - iii) Describe the factors leading to the development of pneumonia in this condition.
 - iv) Discuss in brief the laboratory diagnosis of this case.
 - v) Enumerate the types of hospital acquired infections.
2. a) Name the various methods of horizontal gene transfer. Discuss in detail about mechanism of conjugation. 3+7
- b) What are the different components of innate immunity? How does it differ from adaptive immunity? Describe in brief the components of adaptive immunity. 4+2+4
- c) Write down the laboratory diagnosis of intestinal amoebiasis. 10
3. Write short notes on : 5+5
 - a) Bacterial capsule.
 - b) Demonstration of respect for patient's sample.
4. Explain the following statements: 5 x 4
 - a) Motility helps in the laboratory diagnosis of syphilis.
 - b) Antibiotic stewardship is a priority for proper patient management.
 - c) Mutation may be induced by various chemical agents.
 - d) Infusion of a sterile solution containing endotoxin may causes serious illness.
 - e) Culture is very important for the species identification in a case of dermatophytosis.

5. Choose the correct option for each of the following:

- a) Lysogenic conversion has got role in pathogenicity of:
i) *Vibrio Cholerae*.
ii) ETEC.
iii) *Mycobacterium tuberculosis*.
iv) *Enterococcus faecalis*.
- b) L-form and spheroplasts are sensitive to:
i) Bacitracin.
ii) Vancomycin.
iii) Cefoperazone.
iv) Tetracyclin.
- c) All the following automated systems can perform antimicrobial susceptibility testing, except:
i) VITEK 2.
ii) MALDI-TOF.
iii) Phoenix.
iv) Micro scan Walkaway.
- d) How is Crimean congo haemorrhagic fever virus transmitted to humans?
i) Body fluids of infected rodents.
ii) Droplet nuclei.
iii) Consumption of contaminated water.
iv) Bite of infected ticks.
- e) Which of the following paramyxoviruses has a surface glycoprotein lacking hemagglutinin activity?
i) Mumps.
ii) Measles.
iii) Respiratory syncytial virus.
iv) Parainfluenza virus type 1.
- f) Following bacteria, usually does not cause infective endocarditis, beyond 6 month of age:
i) *Enterococcus faecium*.
ii) *Streptococcus bovis*.
iii) *Staphylococcus aureus*.
iv) *Listeria monocytogenes*.
- g) Heat-labile toxin of ETEC acts by which of the following mechanisms?
i) Attachment and effacement.
ii) Activation of adenylyl cyclase.
iii) Aggregative adherence.
iv) Ribosomal dysfunction.
- h) Sometimes, the plasmid may integrate with chromosomal DNA of bacteria and such plasmids are called as:
i) Episomes.
ii) Vectors.
iii) Transfer factors.
iv) Cosmids.
- i) A mother states that she has observed her 3 year old son scratching his anal area frequently. The most likely causative agent for this condition is
i) *T. vaginalis*.
ii) *E. vermicularis*.
iii) *A. lumbricoides*.
iv) *N. americanus*.
- j) Spirochete shows all types of motility except:
i) Corkscrew.
ii) Gliding.
iii) Flexion-Extension.
iv) Translatory.