

**MICROBIOLOGY****Paper II****Time Allowed: Three Hours****Maximum Marks- 100**

**Note:** Attempt all questions in serial order. Answer Section-A and Section-B in separate answer books. All parts of a question should be answered together. Illustrate your answer with suitable diagram where required. Figures in parenthesis indicate marks allotted to a question.

**Section-A**

- Q1.** Write in detail the clinical picture, pathogenesis, diagnosis and management of tuberculosis (20)
- Q2.** Write briefly on: (4x5)
- Causes of Viral pneumonia
  - Dengue virus
  - Covid vaccines
  - Rabies
- Q3.** Multiple Choice Questions: (10x1)
- XDR tuberculosis is defined as**
    - Resistance to Rifampicin and Isoniazid
    - ☒ MDR plus resistance to any fluoroquinolones plus resistance to any injectable second line anti tubercular drug
    - Resistance to all second line anti tubercular drugs
    - Resistance to any fluoroquinolones and resistance to all injectable second line anti tubercular drugs
  - Mutations in katG gene of Mycobacterium tuberculosis are responsible for resistance to**
    - Isoniazid
    - ☒ Rifampicin
    - Pyrazinamide
    - Streptomycin
  - What would be the phenotype of cells infected with HIV-1 during primary stage of the infection?**
    - CD4/ CXCR4
    - CD8/ CXCR4
    - ☒ CD4/ CCR5
    - CD8/ CCR5
  - The following viruses replicate in the nucleus**
    - ☒ Herpesviruses
    - Poxviruses
    - Picornaviruses
    - Paramyxoviruses
  - The following is not a "slow virus" disease**
    - Creutzfeldt-Jacob disease
    - Subacute Sclerosing Panencephalitis (SSPE)
    - ☒ Herpes Simplex Encephalitis
    - Progressive multifocal leucoencephalopathy (PML)

6. Bacteriophages are readily counted by the process of:

- a) Immunoassays
- b) Plaque assays
- c) Tissue culture
- d) Electron Microscopy

7. Which of the following statement about Hepatitis C virus is FALSE?

- a) Is associated with hepatocellular carcinoma
- b) May respond to interferon therapy
- c) Has one stable genotype only
- d) May cause chronic infection

8. Which of the following statements is FALSE

- a) Dengue virus infection result from bites by Aedes mosquitoes
- b) Cases of dengue haemorrhagic fever usually result from reinfection by a different serotype of dengue virus
- c) Pigs act as the reservoir for dengue virus
- d) Dengue antibodies cross react with Japanese encephalitis virus antibodies

9. According to WHO, which of the following is a bad clinical practice in management of dengue cases?

- a) Assessment and follow-up of patients with non-severe dengue and careful instruction of warning signs to watch out for
- b) Administration of acetylsalicylic acid (aspirin) or ibuprofen
- c) Clinical assessment of the haemodynamic status before and after each fluid bolus
- d) Giving intravenous fluid volume just sufficient to maintain effective circulation during the period of plasma leakage for severe dengue

10. Which of the following viruses can cause a self-limiting acute febrile illness with rash in immune-competent children but has been associated with transient aplastic crises in persons with sickle cell disease?

- a) Measles
- b) Human Parvovirus B19
- c) Rubella
- d) Herpes simplex

### Section-B

Q1. Describe parasitic infections of immune-compromised host. Discuss in detail structure, life cycle, pathogenesis and diagnosis of any one of them. (20)

Q2. Write short notes on: (4x9)

- 2 (a) Candidiasis
- 2 (b) Dimorphic fungi
- 2 (c) Mucormycosis
- 2 (d) Subcutaneous fungal infections - ~~Rhizopus~~

Q3. Multiple Choice Questions: (10x1)

1. In malaria, the form of plasmodia that is transmitted from mosquito to human is the

- a) Sporozoite
- b) Gametocyte
- c) Merozoite
- d) Hypnozoite



1. Trophozoites, Schizonts and gametocytes of all the malarial parasites are seen in the peripheral blood smear EXCEPT

- a) *Plasmodium vivax*
- b) *Plasmodium falciparum*
- c) *Plasmodium malariae*
- d) *Plasmodium ovale*

3. Which of the following statements regarding *Plasmodium falciparum* is FALSE

- a) Causes more severe disease in pregnancy
- b) Is associated with recurrent relapses after initial treatment because of liver hypnozoites
- c) Is the only malarial parasite causing greater than 20% parasitaemia
- d) Infection may be associated with thrombocytopenia

4. Congenital Toxoplasmosis manifest as

- a) Microcephaly
- b) Micro-ophthalmus
- c) Hepatosplenomegaly
- d) ALL of the above

5. Which is the smallest tape worm infecting man

- a) *Taenia saginata*
- b) *Taenia solium*
- c) *Hymenolpis nana*
- d) *Diphyllobothrium latum*

6. Superficial fungal infection of hair shaft is called

- a) Pitiriasis
- b) Piedra
- c) Ring worm
- d) Thrush

7. Which of the following is NOT a predisposing factor for mucormycosis?

- a) Injection drug use
- b) Desferoxamine therapy
- c) Diabetic ketoacidosis
- d) Patients on isavuconazole

8. Each of the following statements concerning *Candida albicans* is correct EXCEPT

- a) *C. albicans* is a budding yeast that forms pseudohyphae when it invades tissue
- b) *C. albicans* causes thrush
- c) *C. albicans* is transmitted primarily by respiratory aerosol
- d) Impaired cell mediated immunity is an important predisposing factor to disease

9. Infection with dermatophyte is most often associated with

- a) Intravenous drug abuse
- b) Inhalation of the organism from contaminated bird feces
- c) Adherence of the organism to skin moist by perspiration
- d) Fecal-oral transmission

10. Fungal cells that reproduce by budding are seen in the infected tissues of patients with

- a) Candidiasis, cryptococcosis, and sporotrichosis
- b) Mycetoma, candidiasis and mucormycosis
- c) Tinea corporis, tinea unguium, and tinea versicolor
- d) Sporotrichosis, mycetoma and aspergillosis