Question Paper

Exam Date & Time: 28-Dec-2024 (10:20 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

SECOND PROFESSIONAL YEAR (PY II) MBBS DEGREE EXAMINATION - DEC 2024/JAN 2025
SUBJECT: MI 201THP1: MICROBIOLOGY - PAPER I
(CBME SCHEME)

Marks: 80 **Duration:** 160 **mins.**

MCQ

Answer all the questions.

1. A 30-year-old farmer was brought to the emergency department with complaints of shortness of breath, itchy raised rashes on skin, swollen throat and tongue, headache, dizziness, and nausea. On examination, he had a weak thready rapid pulse. The family member who had brought him said that the patient had been bitten by bees 2 hours back while he was working with the beehive.

1A)	What is the most probable diagnosis?	(2)
1B)	Describe the pathogenesis of this condition.	(3)
1C)	What are the cellular mediators that bring about this condition, and what are their actions?	(3)
1D)	Mention the treatment and prophylaxis of this condition.	(2)

2. A 12- year old boy presents with pain and tender swelling of both knees and ankles, and shortness of breath. On examination, the knees had a palpable effusion, and there were multiple small, subcutaneous nodules over the bony prominences. The knee joint aspirate was clear, straw coloured and culture negative. Chest X-ray showed mild congestive heart failure. The parents said that the child had a sore throat 3 weeks earlier, for which they had not sought treatment.

2A)	What is the most probable diagnosis and etiological agent?	(2)
2B)	What is the pathogenesis of this disease?	(3)
2C)	Describe the diagnosis of this disease.	(3)
2D)	Describe the treatment and prophylaxis of this disease. (1+1 = 2 marks)	(2)

3. **Write short notes on:**

3A)	Explain how horizontal gene transfer between bacteria is effected through the medium of bacteriophages. What is its significance.	(4)
3B)	What are pili? What are the different types of pili and their clinical significance?	(4)

3C)	A 30-year-old lady is suspected to have urinary tract infection. What is the specimen that should be collected for culture, to identify the causative agent? How would you instruct the patient regarding collection of the specimen?	(4)
3D)	Explain the kind of culture media that is required for the cultivation of fastidious pathogens.Give examples.	(4)
3E)	What are inclusion bodies? Explain with examples.	(4)
3F)	Classify fungal infections with examples.	(4)
3G)	What are the biological effects of Complement?	(4)
3H)	What are the complications of falciparum malaria?	(4)
3I)	What is Mantoux test? Describe its indications, performance, and interpretation.	(4)
3J)	Outline the investigation plan for a case of suspected acute bacterial pneumonia.	(4)
3K)	A 6 year old child from a remote rural region is brought by his parents to hospital with fever, sore throat, difficulty in swallowing, and a toxic look. On examination, a white membrane is seen covering the tonsils, which bled on attempts at removal. The parents seem to have no awareness of immunization procedures. How could this disease have been prevented?	(4)
3L)	A 7 year old boy presents with fever and bilateral painful swelling of parotid glands. What is the most probable diagnosis? Describe the pathogenesis and complications of this disease.	(4)
3M)	With respect to prevention of device-associated infections (DAI), describe the components of Care Bundle Approach for Central lines.	(4)
3N)	A 25 year old pregnant lady who is otherwise healthy visits the antenatal clinic for a regular check-up. Name and describe the NACO Strategy/ Algorithm to be used for detecting HIV infection in this lady.	(4)
3O)	Define opportunistic infections. List 4 risk factors for opportunistic infections, with examples.	(4)

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Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

SECOND MBBS DEGREE EXAMINATION – DEC'24/JAN'25

SUBJECT: MICROBIOLOGY – PAPER I (ESSAY)

(OLD REGULATION - 2018-19 & PRIOR BATCH)

Saturday, December 28, 2024

Time: 10:20 – 13:00 Hrs. Maximum Marks: 80

✍ **Answer all questions.**

✍ **Essay questions:**

1. Define and classify hypersensitivity. Describe the mechanism and clinical significance of Anaphylaxis.

(3+7 = 10 marks)

2. A 35-year-old man presented to the medicine OPD with cough and hemoptysis. He gave history of evening rise of temperature, chest pain, loss of appetite and weight loss for the past three months. Chest X-ray examination revealed a cavitary lesion in the upper lobe of the lung. Sputum examination showed acid fast bacilli.

2A. What is the most probable diagnosis?
2B. Explain the pathogenesis of the above disease condition
2C. Describe the laboratory diagnosis of this disease.
2D. Add a note on drug resistance in the causative agent

(1+4+4+1 = 10 marks)

3. **Write short notes on:**

3A. Koch`s postulates
3B. Bacterial endospore
3C. Principle and uses of Autoclave
3D. ELISA -Principle and uses.
3E. Immunoglobulin M
3F. Passive immunity
3G. Cytokines
3H. Pathogenesis and laboratory diagnosis of Rheumatic fever.
3I. List four bacteria causing diarrhea.
3J. Laboratory diagnosis of bacterial meningitis.
3K. Enumerate four sexually transmitted bacterial infections
3L. Enumerate different types of food poisoning and their causative agents.
3M. Definition and prevention of Health care associated infections.
3N. Laboratory diagnosis of Typhoid fever
3O. Name four bacterial zoonotic infections

(4 marks × 15 = 60 marks)

Question Paper

Exam Date & Time: 30-Dec-2024 (10:20 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

SECOND MBBS DEGREE EXAMINATION - DEC 2024/JAN 2025
SUBJECT: MICROBIOLOGY - PAPER II
(CBME SCHEME)

Marks: 80 **Duration: 160 mins.**

Answer all the questions.

Answer all the questions.

Draw neat labeled diagram wherever necessary.

1. A 31-year-old man presents with history of severe watery diarrhea of 36 hours' duration which has increasingly progressed to about one episode of liquid stools every hour. The stool appears clear with small mucus flakes. He had one episode of vomiting. He is afebrile and appears lethargic. Microscopic examination of the stool sample confirms the clinical suspicion.

1A)	What is the likely diagnosis and the causative agent?	(1)
1B)	Discuss the pathogenesis of this clinical condition.	(3)
1C)	Plan laboratory investigations to confirm the clinical diagnosis in this case.	(4)
1D)	Briefly discuss the immuno-prophylaxis for this infection.	(2)

2. A 21-year-old college student presents with superficial skin lesion on the medial aspect of his right upper thigh of 15 days' duration. The lesion has progressively increased in size and is accompanied by itching. On examination, few well circumscribed, scaly, erythematous annular plaques with an inflammatory advancing margin were noted. The organism grew several weeks after inoculation of the clinical specimen on to sabouraud dextrose agar.

2A)	What is the likely clinical diagnosis and what are the probable etiological agents for this presentation?	(2)
2B)	What are the different modes of transmission for acquiring the pathogen?	(2)
2C)	Classify this infection based on the involvement of different anatomical sites.	(2)
2D)	Discuss the process of sample collection and laboratory workup for this illness.	(4)

3. **Write short notes on:**

3A)	Helicobacter pylori infection was suspected by a Gastroenterologist in a patient with acid-peptic disease. Plan laboratory investigations for confirming the clinical suspicion.	(4)
3B)	Characteristic non bile stained ova of a helminthic parasite were noted in the stool sample from a 6-year-old girl child with severe iron deficiency anaemia. Name the likely etiological agent and	(4)

	infective form and explain briefly the life cycle of this parasite.	
3C)	Discuss the pathogenesis and laboratory diagnosis of pseudomembranous colitis.	(4)
3D)	Discuss the samples to be collected and their microscopic examination for diagnosis of lepromatous leprosy.	(4)
3E)	Discuss the pathogenesis of cutaneous larva migrans.	(4)
3F)	A spherical, budding yeast was noted in a CSF sample from an immuno-compromised individual. What is the likely infectious agent? Discuss the laboratory diagnosis of this infection.	(4)
3G)	Among the arboviral infections prevalent in India, list two which cause encephalitis and two which cause hemorrhagic fevers and mention their vectors for transmission.	(4)
3H)	Discuss the pathogenesis and laboratory diagnosis for a suspected cestode parasitic infection in a 45-year-old lady with adult onset seizures. Rice-grain calcification was also seen on X-ray of lower limbs.	(4)
3I)	Plan laboratory investigations for a 35-year-old man presenting with urethral discharge and with history of sexual exposure.	(4)
3J)	Role of non-specific and specific tests for syphilis in terms of disease diagnosis and prognosis.	(4)
3K)	List any four human oncogenic viruses, mention the type of nucleic acid in their core and the neoplasms caused by them.	(4)
3L)	Name any four specific infection control practices to prevent catheter associated urinary tract infections.	(4)
3M)	Plan laboratory work up for a HIV sero-positive patient with suspected Toxoplasmosis.	(4)
3N)	Discuss the Ante mortem and Postmortem laboratory diagnosis of Rabies.	(4)
3O)	Discuss the choice of samples and laboratory tests to be ordered and their interpretation in patients with suspected leptospirosis based on disease duration.	(4)

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Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

SECOND MBBS DEGREE EXAMINATION – DEC'24/JAN'25

SUBJECT: MICROBIOLOGY – PAPER II (ESSAY)

(OLD REGULATION - 2018-19 & PRIOR BATCH)

Monday, December 30, 2024

Time: 10:20 – 13:00 Hrs. Maximum Marks: 80

✍ **Answer ALL the questions.**

1. A 20-year-old college student presented with intermittent high-grade fever with chills and rigors. On examination he had pallor. Peripheral smear done as a part of laboratory work-up showed parasitic gametocytes.

1A. What is the probable diagnosis and etiological agent?

1B. Explain the life cycle and pathogenesis of the disease.

1C. Explain the laboratory diagnosis of the disease.

1D. Write two measures to prevent the disease.

(2+3+4+1 = 10 marks)

2. Describe the pathogenesis and laboratory diagnosis of human rabies. Add a note on prophylaxis**.**

(4+3+3 = 10 marks)

3. **Write short notes on:**

3A. List any four parasitic disease and their causative agents in which man act as intermediate host.

3B. Clinical features and laboratory diagnosis of Cryptococcal meningitis.

3C. Inclusion bodies

3D. Oral candidiasis

3E. Laboratory diagnosis of Giardiasis.

3F. List four viruses causing diarrhea.

3G. Laboratory diagnosis of HIV infection.

3H. Rhinosporidiosis.

3I. Laboratory diagnosis of eumycetoma.

3J. List four intestinal nematodes with infective forms.

3K. Laboratory diagnosis of visceral leishmaniasis.

3L. Antigenic shift and drift.

3M. Laboratory diagnosis cysticercosis.

3N. Hydatid cyst.

3O. Laboratory diagnosis of Hepatitis B

(4 marks × 15 = 60 marks)