

Reg. No.

MANIPAL ACADEMY OF HIGHER EDUCATION**MELAKA MANIPAL MEDICAL COLLEGE (MANIPAL CAMPUS)****MBBS PHASE – I STAGE – II DEGREE EXAMINATION – MARCH 2018****SUBJECT: MICROBIOLOGY – PAPER I (ESSAY)**

Wednesday, March 14, 2018

Time : 9.00 a.m. - 11.00 a.m.

Max. Marks : 60

- ✓ **Answer all the questions**
- ✓ **Write the question number clearly in the margin**
- ✓ **Draw diagrams wherever appropriate**

1. Describe autoclave under the following headings:
 - 1A. Working principle
 - 1B. Articles sterilized
 - 1C. Sterilization control

(3+1+1 = 5 marks)
2. Draw a labeled diagram of bacterial cell. Describe the structure and functions of the flagella.

(2+4 = 6 marks)
3. Describe the mechanisms of autoimmunity.

(4 marks)
4. A 36 year old male reported to the STD clinic with a painless ulcer on his genitalia which he noticed 2 weeks ago. History revealed that he had promiscuous behavior. Microscopic examination of the exudate from the lesion revealed the presence of spirochetes. The doctor started him on penicillin therapy.
 - 4A. Identify the etiology in this case.
 - 4B. Describe the pathogenesis of this condition.
 - 4C. Explain ONE nonspecific serological test done for the diagnosis of this disease.

(1+3+2 = 6 marks)
5. Classify leprosy based on the immune status of the host and explain the immunological responses seen in each type.

(4 marks)

6. A 29 year old man presented with painful white plaques on his oral mucosa. He gave a history of sexual contact with commercial sex workers. Blood examination revealed leukopenia, CD4+ count was 100 cells/mm³ and he tested positive for a retroviral infection.
- 6A. Name the viral etiology in the aforesaid condition.
- 6B. Give reason for the low CD4 count.
- 6C. Outline the serological diagnosis of the viral infection in this case.
- (1+2+3 = 6 marks)
7. Discuss the antigenic variations seen in influenza virus and emphasize their significance in causing outbreaks.
- (4+2 = 6 marks)
8. Describe the laboratory diagnosis of Cryptococcal meningitis.
- (4 marks)
9. Describe the pathogenesis and prophylaxis of tetanus.
- (3+2 = 5 marks)
10. A 35 year old dairy farmer was hospitalized with fever, headache and joint pain since two weeks. Examination revealed hepato-splenomegaly. Blood culture yielded gram negative coccobacillus.
- 10A. Name this zoonotic disease.
- 10B. Explain the transmission and pathogenesis of this condition.
- (1+4 = 5 marks)
11. Explain the laboratory diagnosis of falciparum malaria.
- (5 marks)
12. Describe the pathogenesis of cholera.
- (4 marks)



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MBBS PHASE – I STAGE – II DEGREE EXAMINATION – MARCH 2018
SUBJECT: MICROBIOLOGY – PAPER II (MTF)

Wednesday, March 14, 2018

Time : 11.30 a.m. - 12.30 p.m.

Max. Marks : 120

INSTRUCTIONS

1. For each statement, select T (True) or F (False) as your choice.
2. Indicate your choice by darkening the appropriate circle in the answer sheet provided.
3. Use only HB or 2B pencils to darken the circle.
4. Leave blank for Don't Know response.
5. Scoring systems is as follows :
 - For every **Correct** response 1 mark is awarded
 - For every **Wrong** response 0.5 mark is deducted
 - For every **Don't Know** response No mark is deducted
6. Indicate your Roll Number (Registration Number) clearly and correctly.
7. Do not write anything in the question paper.
8. The true/false statements are numbered 101 to 160 and 201 to 260 (Total 120 statements).
9. This question paper contains **04** pages. Please make sure that the question paper provided to you has all the pages.

Following pairs correctly match the disinfectants with the articles sterilized

- 101. Glutaraldehyde: Endoscopes
- 102. Methanol: Clinical thermometer
- 103. Ethylene oxide: Inoculation wire loop
- 104. Isopropyl alcohol: Heart lung machine

Louis Pasteur

- 105. Disproved the theory of spontaneous generation
- 106. Invented rabies vaccine
- 107. Introduced solid culture medium
- 108. Discovered *Vibrio cholerae*

Following pairs correctly match the cytokines with their biological functions

- 109. IL-2: B cell growth factor
- 110. IFN gamma: Inhibits phagocytosis
- 111. IL-12: Promotes the development of Th-1 cells
- 112. TNF: Activates macrophages

Delayed type hypersensitivity reaction

- 113. Is exemplified by contact dermatitis
- 114. Is mediated through immune complexes
- 115. Has familial predisposition
- 116. Results in systemic manifestation

Methods of moist heat sterilization include

- 117. Inspissation
- 118. Incineration
- 119. Pasteurization

Acquired immunity

- 120. Of passive type provides long term protection
- 121. Leads to the development of memory cells

- 122. Of artificial passive type is exemplified by placental transfer of IgG
- 123. Has a long lag phase

Complement

- 124. Factor C3b helps in opsonization
- 125. Factor C5a acts as anaphylatoxin
- 126. Deficiency of C1 inhibitor results in hereditary angioedema
- 127. Pathway of alternate type is activated by immune complexes

Graft versus host reaction

- 128. Results due to the host rejecting the graft
- 129. Occurs in immunocompromised host
- 130. Involves the participation of activated cytotoxic T cells

Following pairs correctly match the virulence factors of *Neisseria gonorrhoeae* with its function

- 131. Pili: Attachment to genital epithelial cells
- 132. Capsular polypeptide: prevents phagocytosis
- 133. Outer Membrane Proteins: Inhibit cidal activity of serum

Genital Warts

- 134. Is caused by a RNA virus
- 135. Causing agent remains latent in the sacral ganglion
- 136. Is diagnosed by demonstration of koilocytes
- 137. Causing agent is cultivated using HeLa cell lines

Herpes Simplex Virus-2

- 138. Is an enveloped virus
- 139. Infection is diagnosed by Tzanck's smear
- 140. Causes genital cold sores due to reactivation

Localized pyogenic infections caused by Staphylococcus aureus are due to the following virulence factors

- 141. Coagulase
- 142. Hyaluronidase
- 143. Fibrinolysin

Clostridium perfringens

- 144. Forms terminal spores
- 145. Causes myonecrosis
- 146. Exotoxin inhibits elongation factor-2

Host factors predisposing to UTI include

- 147. Vesico-ureteric reflux
- 148. Spina bifida
- 149. Short urethra in females

Trichophyton species

- 150. Is a dimorphic fungus
- 151. Is identified by demonstration of pencil shaped macroconidia
- 152. Produces cottony growth on Sabouraud's dextrose agar

Trichomonas vaginalis

- 153. Is a protozoan parasite
- 154. Infection leads to malodorous vaginal discharge
- 155. Infection is diagnosed by the demonstration of cysts from vaginal secretions

Clinical manifestations seen in congenital rubella include

- 156. Patent ductus arteriosus
- 157. Deafness
- 158. Cataract

Pseudomonas aeruginosa

- 159. Is a facultative anaerobe
- 160. Produces cytochrome oxidase
- 201. Infection is characterized by the production of anchovy sauce pus
- 202. Produces golden yellow pigments

Mycobacterium tuberculosis

- 203. Produces endotoxin
- 204. Primary infection is characterized by Ghon focus in the lungs
- 205. Purified protein derivative elicits immediate hypersensitivity

Epstein Barr Virus

- 206. Remains latent in dorsal root ganglion
- 207. Causes heterophile positive infectious mononucleosis
- 208. Infection is transmitted through inhalation
- 209. Infection complicates to nasopharyngeal carcinoma

Toxoplasma gondii

- 210. Is a coccidian parasite
- 211. Has cats as its intermediate host
- 212. Congenital infection is diagnosed by demonstration of IgG in cord blood

Sabin vaccine

- 213. Is a killed vaccine
- 214. Induces intestinal IgA
- 215. Has risk of reversion to virulent form
- 216. Provides herd immunity

Rabies is

- 217. Caused by a DNA virus
- 218. Transmitted by bats
- 219. Diagnosed by demonstration of intranuclear inclusion bodies
- 220. Is prevented by human diploid cell vaccine

Chlamydia trachomatis

- 221. Is an intracellular bacterium
- 222. Has reticulate body as its infective form
- 223. D-K strains cause inclusion conjunctivitis in neonates

Streptococcus pneumoniae

- 224. Is a gram negative coccus
- 225. Causes aseptic meningitis
- 226. Produces alpha haemolytic colonies on blood agar
- 227. Infection complicates to acute rheumatic fever
- 228. Infection is prevented by a live attenuated vaccine

Mumps

- 229. Is caused by a paramyxovirus
- 230. Is characterized by Koplik's spots on the buccal mucosa
- 231. In post pubertal males complicate to orchitis
- 232. Virus G protein helps in attachment to host cells

Antibiotic associated diarrhea is

- 233. Caused by Clostridium difficile
- 234. Manifested as pseudomembranous colitis
- 235. Due to indiscriminate use of clindamycin

Ancaris lumbricoides

- 236. Is called hook worm
- 237. Eggs are bile stained
- 238. Infects man via skin penetration
- 239. Causes Loeffler's syndrome

Strongyloides stercoralis

- 240. Is ovoviviparous
- 241. Has rhabditiform larva as its infective form to man
- 242. Causes larva currens

Salmonella typhi

- 243. Is a non-motile bacillus
- 244. Causes bacteremia
- 245. Ferments lactose
- 246. Has animal reservoir
- 247. Is diagnosed by Widal test

Dengue

- 248. Is caused by a flavivirus
- 249. Virus has single serotype
- 250. Is transmitted through Anopheles mosquitoes
- 251. Hemorrhagic fever is due to production of enhancing antibodies
- 252. Is confirmed by detection of NS1 antigen

Trichuris trichiura

- 253. Is called thread worm
- 254. Infection is transmitted through feco-oral route
- 255. Infestation in malnourished children complicates to rectal prolapse
- 256. Eggs are planoconvex in shape

Hepatitis A Virus

- 257. Is an enveloped virus
- 258. Belongs to hepadnaviridae
- 259. Infection leads to chronic carrier state
- 260. Infection is prevented by a killed vaccine

