

MANIPAL UNIVERSITY

MBBS PHASE I STAGE II DEGREE EXAMINATION – FEBRUARY 2014

SUBJECT: MICROBIOLOGY – I (ESSAY)

Wednesday, February 12, 2014

Time: 09:00 – 11:00 Hrs.

Max. Marks: 60

1. With the help of a labeled diagram, explain the bacterial growth curve. (4 marks)

2. Classify hypersensitivity reactions. Discuss the mechanism of Type I hypersensitivity. (2+3 = 5 marks)

3. A 70 years old splenectomised man presented with high fever, headache and neck stiffness. His CSF on gram staining revealed gram positive cocci in pairs along with pus cells.
 - 3A. Name the pathogen in the above case.
 - 3B. Explain briefly the pathogenesis of this condition.
 - 3C. Add a note on preventive measures. (1+3+1 = 5 marks)

4. Write the prophylactic measures that you would initiate in a 7-year-old boy bitten by a street dog. (5 marks)

5. Explain the laboratory diagnosis of dermatophytosis. (4 marks)

6. Explain the pathogenesis of dengue hemorrhagic fever shock syndrome. (3 marks)

7. A 25 year old factory worker developed a rash on his hand which had a blackish central area with smaller pustular lesions around the periphery. The exudate from the lesion revealed gram positive bacilli.
Name the etiology and discuss the pathogenicity of this agent. (1+3 = 4 marks)

8. A 33 year old man visited the medicine OPD with complaints of multiple episodes of bloody diarrhoea after consumption of vegetable salad. A stool culture revealed lactose fermenting enteropathogen that did not ferment sorbitol.
 - 8A. Identify the probable causative agent.
 - 8B. Describe the pathogenesis and complications of above mentioned case. (1+4 = 5 marks)

9. Describe the life cycle of *Ancylostoma duodenale*.
(4 marks)
10. Describe the stages involved in diagnosis of classical PUO.
(4 marks)
11. Discuss the role of peplomers of Influenza virus in causing outbreaks.
(5 marks)
12. A new born baby was admitted to neonatal ICU with patent ductus arteriosus and hepatosplenomegaly. History revealed that mother had viral infection during the first trimester of the pregnancy which had manifested as rashes on the face and extremities. Child's saliva and urine samples revealed the presence of a teratogenic RNA virus.
12A. Name the clinical condition seen in the newborn baby.
12B. Discuss the pathogenesis of the above mentioned case.
(1+3 = 4 marks)
13. Discuss the laboratory diagnosis of genital infections caused by *Chlamydia trachomatis*.
(5 marks)
14. With the help of a graph, depict the seromarkers seen in super carrier of Hepatitis B virus infection.
(3 marks)



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MANIPAL UNIVERSITY**MBBS PHASE I STAGE II DEGREE EXAMINATION – FEBRUARY 2014****SUBJECT: MICROBIOLOGY – II (MCQs)**

Wednesday, February 12, 2014

Time: 11:30 – 12:30 Hrs.

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 **03 pages**. Please make sure that the question paper provided to you has all the pages.

Bacterial endotoxins

101. Induce vigorous immune response in the host
102. Are proteins
103. Are coded by plasmids

Following pairs correctly match the chemical disinfectants with the articles sterilized

104. Formaldehyde: Endoscopes
105. Isopropyl alcohol: Skin
106. Ethylene oxide: Disposable syringes

IgM

107. Is associated with type I hypersensitivity responses
108. In its pentameric form functions as antigenic receptor on B cells
109. Crosses the placenta
110. Detection helps in the diagnosis of congenital infections

Lyme disease

111. Is caused by *Borrelia recurrentis*
112. Is transmitted through sandflies
113. Complicates to arthritis

Examples for antigen presenting cells are

114. Macrophages
115. Dendritic cells
116. B cells
117. Eosinophils

Yellow fever

118. Is caused by an enveloped DNA virus
119. Causing virus has four antigenic types
120. Is prevented by administering 17 D vaccine
121. Is spread through the bite of Anopheles mosquitoes

Natural killer cells

122. Are large granular lymphocytes
123. Have T cell receptor
124. Mediates immunological surveillance
125. Activity is enhanced by prior exposure

Major histocompatibility complex

126. Is located on the short arm of chromosome 8
127. Class I proteins interact with the TCR on cytotoxic T cells
128. Class II proteins consist of a heavy chain non-covalently bound to a beta2-microglobulin

Rickettsiae

129. Are short gram positive bacilli
130. Causing scrub typhus is *Rickettsia rickettsii*
131. Which cause epidemic typhus is transmitted through mites?

Creutzfeldt Jacob disease is

132. A slow viral disease
133. Transmitted from human to human through aerosols
134. Diagnosed by detecting specific antibodies against the causative agent

Streptococcus agalactiae

135. Produces beta hemolytic colonies on blood agar
136. Causes neonatal meningitis
137. Hydrolyses hippurate

Pityriasis versicolor

138. Is caused by *Malassezia furfur*
139. Results due to the transformation of the causative agent from yeast to hyphal forms
140. Is classified under systemic mycoses

Reactive arthritis is

141. Due to the bacterial invasion of joints
142. Seen in people having HLA B27
143. Associated with enteric infections

Following enzymes/toxins of *Streptococcus pyogenes* match correctly with their biologic activities

144. Hyaluronidase: Helps spread of infection along the intercellular space
145. Erythrogenic toxin: Produces rash of scarlet fever
146. Streptokinase: Converts fibrinogen to fibrin

Chlamydia trachomatis

147. Is an obligate intracellular organism
148. Eye infection is initiated by the reticulate body
149. Produces wrinkled colonies on blood agar

Japanese Encephalitis Virus

150. Belongs to Flaviviridae
151. Is transmitted through Ixodid ticks
152. Produces intra nuclear inclusion bodies

Clostridium tetani

153. Is a gram positive spore forming aerobic bacillus
154. Toxin inhibits the release of acetyl choline at the neuromuscular junction
155. Infection is prevented by administration of toxoid

Brucella melitensis

156. Is an obligate aerobe
157. Causes undulant fever in humans
158. Infections are diagnosed by blood culture

Virulence factors of Haemophilus influenzae include

- 159. Fimbriae
- 160. Capsule
- 201. Exotoxin

Vibrio cholera

- 202. Has peritrichous flagella
- 203. Produces green colored colonies on TCBS medium
- 204. Enterotoxin increases cGMP level in enterocytes
- 205. Infection complicates to haemolytic uremic syndrome
- 206. Produces cytochrome oxidase

Campylobacter jejuni

- 207. Infection predisposes to Guillain-Barre syndrome
- 208. Is transmitted through contaminated water
- 209. Is microaerophilic
- 210. Has animal reservoir
- 211. Produces urease

Bacillary dysentery

- 212. Manifestations are due to bacterial invasion of duodenal mucosa
- 213. Is characterized by presence of faecal leucocytes
- 214. Is caused by a lactose fermenter
- 215. Complicates to intestinal perforation

Rota virus

- 216. Has segmented RNA genome
- 217. Exists as single serotype
- 218. Infection leads to villous hypertrophy
- 219. Infection is diagnosed by detection of viral antigen in stool
- 220. Infection is prevented by live attenuated vaccine

Hydatid disease

- 221. Is caused by a trematode larva
- 222. Has dog as the definitive host
- 223. Is characterized by development of fluid filled cysts in the infected tissue

Corynebacterium diphtheria

- 224. Toxin inhibits the synthesis of elongation factor-2
- 225. Is isolated using Loeffler's serum slope
- 226. Toxin is demonstrated by Nagler's reaction
- 227. Toxigenicity is due to lysogenic conversion by beta phage

Bordetella pertussis

- 228. Colonies show medusa head appearance
- 229. Is grown using cough plate method
- 230. Attaches to respiratory epithelium using filamentous hemagglutinin
- 231. Infection is prevented by live attenuated vaccine

Respiratory syncytial virus

- 232. Is a non-enveloped RNA virus
- 233. Has hemagglutinin spikes on its surface
- 234. Infection is diagnosed by demonstration of viral antigens in nasopharyngeal washings

Human immunodeficiency virus

- 235. Is a lentivirus
- 236. Gag gene encodes for gp120
- 237. Which are T-cell tropic bind to CCR5 receptors?
- 238. Causes persistent cytopathic infection of T lymphocytes
- 239. Infection during window period is diagnosed by demonstration of anti-p24 antibodies

Lymphogranuloma venereum

- 240. Is caused by Chlamydia trachomatis serotypes D-K
- 241. Manifests as inguinal buboes
- 242. Complicates to genital elephantiasis
- 243. Is diagnosed by 'Frei' skin test

Chancroid

- 244. Is caused by Haemophilus ducreyi
- 245. Manifests as indurated genital ulcers
- 246. Causing agent exhibits 'school of fish' appearance in smears

Granuloma inguinale is

- 247. Caused by a gram positive bacillus
- 248. Characterized by nodules that bleed readily on contact
- 249. Diagnosed by demonstration of Donovan bodies

Candida albicans

- 250. Is a thermally dimorphic fungus
- 251. Produces chlamydospores on cornmeal agar
- 252. Causes endocarditis in intravenous drug abusers

Pseudomonas aeruginosa

- 253. Has cetrimide agar as a selective medium
- 254. Produces pyocyanin
- 255. Sepsis is characterized by erythema chronicum migrans

Neisseria gonorrhoeae

- 256. Is an obligate anaerobe
- 257. Infection complicates to Reiter's syndrome
- 258. Transmitted congenitally leads to ophthalmia neonatorum
- 259. Is oxidase negative?
- 260. Has IgA protease as a virulence factor

