Reg. No.										

MANIPAL UNIVERSITY

MELAKA MANIPAL MEDICAL COLLEGE (MANIPAL CAMPUS)

MBBS PHASE – I STAGE – II DEGREE EXAMINATION – SEPTEMER 2016

SUBJECT : MICROBIOLOGY – PAPER I (ESSAY)

Wednesday, September 14, 2016

Time : 2.00 - 4.00 Hrs. Max. Marks : 60

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1. With the help of a labeled diagram, explain the bacterial growth curve.

(4 marks)

2. Describe the mechanism of complement activation during the primary infection caused by a gram negative bacterium and list the biological effects of the complement activation.

(4+2 = 6 marks)

3. Explain the mechanism of type 1 hypersensitivity reaction.

(5 marks)

4. A 25 year old man was admitted to emergency ward with history of vomiting and severe watery diarrhoea. No history of fever and abdominal pain was noticed. As signs of dehydration was evident he was put on IV fluids. Stool examination revealed actively motile comma shaped bacilli. The organism produced non-lactose fermenting colonies on MacConkey's agar.

4A. Name the causative agent.

4B. Explain the pathogenesis of this condition.

(1+4 = 5 marks)

5. Discuss the pathogenesis and laboratory diagnosis of ascariasis.

(3+2 = 5 marks)

6. Explain rotavirus under following headings:

6A. Morphology

6B. Pathogenicity

6C. Laboratory diagnosis

(1+2+2 = 5 marks)

7. A 30 year old man reported to a dermatologist with red bumpy rashes all over his body, tired and feverish. He gives a history of a painless sore on his external genitalia, which healed spontaneously 3 months ago. He admitted of having sex with commercial sex worker.

7A. Name the clinical condition and identify the stage of disease.

7B. Describe the laboratory diagnosis of this condition.

(1+4 = 5 marks)

8. Explain the laboratory diagnosis of candidiasis.

(4 marks)

9. List four microorganisms causing congenital infections. Explain the clinical manifestations and prevention of congenital rubella.

(2+2+2 = 6 marks)

10. A 13 year old school girl was brought to the hospital in comatose stage. Her mother gave history of fever, vomiting and headache since two days. Purpuric skin rashes were present on her trunk and arms. Her cerebrospinal fluid on staining showed gram negative cocci in pairs along with polymorphs. The same organism was isolated from blood and CSF.

10A. What is the likely causative agent?

10B. List the virulence factors of this agent.

10C. Explain the laboratory diagnosis of the afore mentioned condition.

(1+2+2 = 5 marks)

11. A 5 year old boy was brought to the hospital with fever, sore throat and difficulty in breathing. On examination a greyish membrane was seen on the posterior wall of his pharynx. Gram staining of the fibrinous exudate collected from the site showed gram positive bacilli having a cuneiform arrangement.

11A. Identify the etiological agent.

11B. Describe the pathogenesis.

11C. Explain the laboratory diagnosis of the above condition.

(1+2+3 = 6 marks)

12. Explain the types of antigenic variations associated with influenza virus with their significance.

(4 marks)

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MELAKA MANIPAL MEDICAL COLLEGE (MANIPAL CAMPUS)

MBBS PHASE – I STAGE – II DEGREE EXAMINATION – SEPTEMBER 2016

SUBJECT : MICROBIOLOGY – PAPER II (MTF)

Wednesday, September 14, 2016

Time : 4.30 - 5.30 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 **04 pages**. Please make sure that the question paper provided to you has all the pages.

Hot air oven

101. Employs a holding temperature of 160°C for 1 hour
102. Utilizes dry heat for sterilization
103. Kills microorganisms by protein coagulation
104. Is used for the sterilization of antibiotic solutions
105. Efficacy is tested by using spores of Clostridium tetani

Natural Killer cell

106. Is a component of acquired immunity
107. Kills virus infected cells
108. Requires MHC class II proteins for its activation
109. Mediates antibody dependent cell mediated cytotoxicity

Louis Pasteur

110. Established that fermentation is the result of microbial activity
111. Disproved the theory of spontaneous generation
112. Introduced techniques of sterilization
113. Discovered Vibrio cholerae
114. Introduced vaccines for diphtheria

Viruses

115. Have both RNA and DNA in the same virion
116. That are enveloped is exemplified by Rabies virus
117. Have capsids made up of peplomers
118. Replicate by binary fission

Bacterial flagella

119. Possesses 'K' antigens
120. Has antiphagocytic activity
121. Is absent in Klebsiella species
122. Is indirectly demonstrated by hanging drop method

Examples for viruses that cause persistent infections include

123. Herpes Simplex Virus
124. Respiratory Syncytial Virus
125. Rota virus
126. Influenza virus

IgG

127. Fixes the complement
128. Is the predominant immunoglobulin produced during primary immune response
129. Crosses the placenta
130. Exists in pentameric form

Salmonella typhi

131. Is a nonmotile bacillus
132. Causes bacteremia
133. Ferments glucose with acid and gas production
134. Has animal reservoir
135. Infection is prevented by live attenuated vaccine

Giardia lamblia

136. Attaches to the duodenum with its sucking disc
137. Has tetra nucleate cyst as its infective form to humans
138. Infection causes dysentery
139. Has pig as its reservoir host
140. Infection complicates to cholecystitis

Dengue fever

141. Is caused by a Togavirus
142. Causing virus has four serotypes
143. Is transmitted through tick bite
144. Is diagnosed by the detection of NS1 antigen using ELISA
145. Is prevented by administration of 17D vaccine

Enteropathogenic E. coli

146. Produces pale coloured colonies on MacConkey's agar
147. Causes diarrhea by attaching - effacing mechanism
148. Invades the enterocyte membrane of the microvilli
149. Causes traveler's diarrhea
150. Infection complicates to hemolytic uremic syndrome

Echinococcus granulosus

151. Is called dwarf tape worm
152. Has humans as accidental host
153. Is transmitted through ingestion of larvae
154. Infection is diagnosed using Casoni's test
155. Produces operculated eggs

Mycobacterium leprae

156. Is known as Hansen's bacillus
157. Resists decolourization with 20% sulphuric acid
158. Infection of lepromatous type is paucibacillary
159. Infection of tuberculoid type is characterized by positive lepromin test
160. Grows in Lowenstein Jensen's medium

Acute rheumatic fever is

201. A late complication of group A streptococcal throat infection
202. Due to immunological reaction of crosslinking antibodies
203. Diagnosed by 'Anti Streptolysin O' test
204. Characterized by Osler's nodes

Measles

205. Is caused by a ssDNA virus
206. Virus has single serotype
207. Manifests as maculopapular skin rashes
208. Is diagnosed by demonstration of multinucleated giant cells
209. Complicates to cardiac defects

Dermatophytes

210. Infect the subcutaneous tissues
211. Are exemplified by Epidermophyton
212. Infection is transmitted by direct contact
213. Of geophilic type is exemplified by Microsporum gypseum
214. Of genus Trichophyton produces pencil shaped macroconidia

Neisseria gonorrhoeae

215. Are Gram positive cocci arranged in pairs
216. Ferments glucose with acid production
217. Causes asymptomatic infection in females
218. Infections are diagnosed by the appearance of clue cells in microscopy
219. Causes ophthalmia neonatorum

Regarding laboratory diagnosis of HIV infection

220. p24 antibody is detectable during window period
221. PCR for proviral DNA is used for diagnosis of infection in infants
222. RT PCR is used for monitoring HIV cases
223. Western Blot is used as screening test
224. Non-specific immunoglobulins are elevated

Cryptosporidium parvum

225. Belongs to class coccidea
226. Has oocyst as its infective forms to humans
227. Has cat as its intermediate host
228. Infection manifests as protractile diarrhea
229. Infection is diagnosed by the demonstration of trophozoites in stool specimen

Rabies

230. Virus attaches to the host cells with the help of glycoprotein G spikes
231. Virus reaches the central nervous system through hematogenous route
232. Is diagnosed by demonstration of virus antigen from facial skin biopsy
233. Post exposure prophylaxis employs human rabies immunoglobulin

Cryptococcus neoformans

234. Is a dimorphic fungus
235. Produces urease
236. Has avian excreta as the source of infection
237. Forms mucoid colonies on SDA
238. Meningitis is diagnosed by detection of capsular antigens in CSF

Botulism is

239. Caused by a gram positive spore bearing bacillus
240. Due to the production of an exotoxin which blocks the release of inhibitory neurotransmitters
241. A vaccine preventable disease

Streptococcus pneumoniae

242. Produces catalase
243. Has a polypeptide capsule
244. Is optochin sensitive
245. Infections are prevented using a vaccine containing pilin polymers

Respiratory syncytial virus

246. Has G protein as its peplomer
247. Has H and N spikes on the envelope
248. Causes bronchiolitis in infants
249. Infection is diagnosed by direct immunofluorescence

Whooping cough is

250. Caused by Brucella abortus
251. Diagnosed using blood culture
252. Maximally contagious during the catarrhal phase
253. Prevented by BCG vaccine

Paragonimus westermanii

254. Is a lung fluke
255. Completes its life cycle in two hosts
256. Adult worm provokes granuloma formation in the infected tissue
257. Eggs are operculated

Aspergillus fumigatus

258. Antigens cause allergic broncho-pulmonary manifestations
259. Causes aspergilloma in patients with pre-existing lung cavities
260. Infection is diagnosed by demonstration of yeast cells in the infected tissue