

Reg. No.

MANIPAL UNIVERSITY
MELAKA MANIPAL MEDICAL COLLEGE (MANIPAL CAMPUS)
MBBS PHASE – I STAGE – II DEGREE EXAMINATION – MARCH 2017
SUBJECT : MICROBIOLOGY – PAPER I (ESSAY)

Wednesday, March 15, 2017

Time : 2.00 - 4.00 Hrs.

Max. Marks : 60

1. A 10 year old boy was admitted to the hospital with complaints of fever for the past one week. On examination, the physician noticed splenomegaly and erythematous lesions on his abdomen. His mother gave a history of having food from street vendors. She also said that his temperature was increasing daily. The physician suspected an enteric bacterial infection and requested for laboratory investigations.
 - 1A. What is the ideal specimen collected in this case?
 - 1B. Explain the method adopted for isolation of the bacteria.
 - 1C. Describe the agglutination based serological test performed for the diagnosis of this condition. (1+3+2 = 6 marks)

2. Explain the pathogenesis of vivax malaria (5 marks)

3. Describe the investigation steps followed in the diagnosis of classical PUO (4 marks)

4. With the neat labelled diagram compare and contrast the cell wall of gram positive and gram negative bacteria. (5 marks)

5. Describe the classical pathway of complement activation. (5 marks)

6. List the steps involved in viral replication. Explain the biosynthesis of RNA virus (2+4 = 6 marks)

7. A 60 year old man presented with chronic productive cough with haemoptysis, gives a history of progressive weakness, weight loss and evening rise of temperature since three months. His chest radiograph revealed consolidation of upper lobe of right lung. Microscopy of sputum showed acid-fast bacilli.
 - 7A. Name the etiological agent.
 - 7B. Discuss the laboratory diagnosis (1+5 = 6 marks)

8. Explain the pathogenesis of poliomyelitis. (4 marks)
9. Discuss the laboratory diagnosis of *Cryptococcus neoformans* infection (4 marks)
10. A 40 year old businessman was admitted to a hospital for the management of persistent diarrhoea and severe weakness. On examination, he was found to have low grade fever, significant weight loss and generalized lymphadenopathy. His CD4 count was 180 cells/ μ l and PCR was positive for a sexually transmitted RNA virus. His stool specimen showed numerous spherical pink coloured oocysts on modified acid fast staining.
Explain the etio – pathogenesis of this viral infection. (5 marks)
11. Discuss the role of virulence factors in the pathogenesis of *Neisseria gonorrhoeae* infection. (5 marks)
12. Explain the laboratory diagnosis of dermatophytosis. (5 marks)



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MBBS PHASE – I STAGE – II DEGREE EXAMINATION – MARCH 2017
SUBJECT : MICROBIOLOGY – PAPER II (MTF)

Wednesday, March 15, 2017

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.

Enterohemorrhagic Escherichia coli

101. Produces verotoxin
102. Ferments sorbitol
103. Causes bloody diarrhoea
104. Infection complicates to haemolytic uremic syndrome

Cholera

105. Is caused by a bacterium with peritrichate flagella
106. Results due to an enterotoxin
107. Causing agent ferments sucrose
108. Is diagnosed by demonstration of fecal leukocytes

Rota virus

109. Is an RNA virus
110. Causes infantile diarrhoea
111. Infection is prevented by a live attenuated vaccine

Giardia lamblia

112. Is a flagellate
113. Trophozoite is the infective form to humans
114. Causes traveller's diarrhoea
115. Infection leads to flask shaped ulcer formation in large intestine

Taenia solium

116. Is a trematode
117. Infection is acquired through consumption of undercooked pork
118. Causes neurocysticercosis following consumption of its eggs
119. Eggs possess hexacanth embryo

Strongyloidiasis is

120. Caused by a nematode
121. Transmitted through skin penetration by rhabditiform larvae
122. Manifested as larva currens following autoinfection
123. Diagnosed by demonstration of bile stained eggs

Hepatitis B virus

124. Is an enveloped virus
125. Infection is transmitted through contaminated water
126. Super carriers have HBe antigen in their serum
127. Infection is prevented by a killed vaccine

Leptospirosis

128. Is caused by gram positive bacteria
129. Manifests as sub conjunctival haemorrhage
130. Complicates to Weil's disease

Robert Koch

131. Invented the autoclave
132. Proved the theory of spontaneous generation
133. Discovered anthrax bacillus
134. Introduced antiseptic techniques in surgery

Conjugation

135. Is mediated through bacteriophages
136. Results in gene transfer within a bacterial cell
137. Requires fertility factor
138. Results in the acquisition of antibiotic resistance in bacteria

Autoclave

139. Employs dry heat
140. When used at 110°C for 15 minutes achieves sterilization
141. Is used to sterilize antibiotic solutions
142. Efficiency is tested using Clostridium tetani spores

Type I hypersensitivity reaction

143. Is mediated by immune complexes
144. Results in granuloma formation in tuberculosis
145. Manifests as allergic rhinitis
146. With familial predisposition is called atopy
147. Involves mast cells

IgA

- 148. Crosses the placenta
- 149. Is the predominant antibody of primary immune response
- 150. Has a 'J' chain
- 151. Contributes to local immunity
- 152. Activates complement through alternate pathway

Fungi

- 153. Are prokaryotes
- 154. Have cytoplasmic membrane containing ergosterol
- 155. Possessing capsules are exemplified by *Histoplasma capsulatum*
- 156. Are grown in media containing antibiotics
- 157. With yeast morphology is exemplified by *Cryptococcus neoformans*

Agglutination

- 158. Occurs with soluble antigens
- 159. Takes place maximally in prozone stage
- 160. Is exemplified by VDRL test

Haemophilus influenzae

- 201. Is a gram negative coccobacillus
- 202. Is cultured on MacConkey's agar
- 203. Sepsis is associated with C1 - C5 deficiency
- 204. Exhibits satellitism

Mumps

- 205. Virus is a paramyxovirus
- 206. Is transmitted by respiratory droplets
- 207. Manifests as swelling of parotid glands
- 208. Complicates to orchitis in postpubertal males
- 209. Is prevented by a subunit vaccine

Rabies virus

- 210. Has double stranded DNA genome
- 211. Attaches to host cell through its G spikes
- 212. Exhibits latency in the anterior horn cells
- 213. Infected neuron shows intra-nuclear inclusion bodies

Naegleria fowleri

- 214. Is a protozoan parasite
- 215. Has amoeboid form as its infective form to humans
- 216. Enters brain through the olfactory tract
- 217. Causes primary amoebic meningoencephalitis
- 218. Infection is diagnosed by demonstration of cysts in CSF

Prions

- 219. Have RNA genome
- 220. Replicate by binary fission
- 221. Cause spongiform encephalopathy
- 222. Cause disorders only in humans

Trachoma is

- 223. Caused by *Chlamydia trachomatis* serotypes D-K
- 224. Characterized by follicular hypertrophy
- 225. Complicated to blindness

Toxoplasma gondii

- 226. Has humans as the definitive host
- 227. Produces tissue cysts during chronic infection
- 228. Causes intrauterine growth retardation

Clostridium tetani

- 229. Is a spore forming bacillus
- 230. Toxin blocks the release of glycine at spinal synapses
- 231. Infection leads to flaccid paralysis of the muscle
- 232. Toxin is demonstrated by Elek's gel precipitation

Staphylococcus aureus

- 233. Ferments mannitol
- 234. Produces coagulase
- 235. Causes erysipelas
- 236. Produces exotoxins with super antigen activity
- 237. Forms alpha haemolytic colonies on blood agar

Varicella Zoster Virus

- 238. Has double stranded RNA genome
- 239. Produces intracytoplasmic inclusion bodies in the infected cells
- 240. Has four serotypes
- 241. Reactivation in sensory ganglia leads to shingles

Syphilis

- 242. Causing agent is motile due to peritrichous flagella
- 243. In secondary stage manifests as condylomata lata
- 244. Causing agent is grown on chocolate agar
- 245. Diagnosis is confirmed by RPR card test

Clostridium perfringens

- 246. Is an anaerobic gram negative bacterium
- 247. Is a normal flora of the human colon
- 248. Produces alpha toxin
- 249. Causes pseudomembranous colitis

Sporothrix schenckii

- 250. Is a dimorphic fungus
- 251. Lesions are seen along the draining lymphatics
- 252. Infection is classified as cutaneous mycosis
- 253. Forms conidia arranged in daisy head appearance

Pneumocystis jirovecii

- 254. Cysts are stained using silver methanamine
- 255. Is grown on Sabouraud's Dextrose Agar
- 256. Is transmitted through inhalation
- 257. Infection is diagnosed by IgM ELISA

Congenital rubella syndrome

- 258. Is caused by double stranded DNA virus
- 259. Manifests as deafness
- 260. Causing agent forms syncytium in the infected cells

