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**MANIPAL UNIVERSITY**  
**MBBS PHASE I STAGE II DEGREE EXAMINATION – AUGUST 2012**  
**SUBJECT: MICROBIOLOGY – I (ESSAY)**

Thursday, August 16, 2012

Time: 09:00 – 11:00 Hrs.

Max. Marks: 60

1. Discuss the events that take place during the various phases of the bacterial growth curve with the help of a graph.  
(4 marks)
  
2. Classify hypersensitivity reactions. Explain the types and mechanisms involved in Type IV hypersensitivity.  
(1+4 = 5 marks)
  
3. Describe the laboratory diagnosis of candida infections.  
(4 marks)
  
4. Discuss the working principle of autoclave and mention its use.  
(3 marks)
  
5. List the infections caused by *Toxoplasma gondii* with their modes of transmission. Add a note on the laboratory diagnosis.  
(2+3 = 5 marks)
  
6. Explain the pathogenesis of tetanus. Add a note on its prophylaxis.  
(3+2 = 5 marks)
  
7. A 6 year old boy developed fever associated with mild respiratory symptoms. Next day his mother observed few maculopapular rashes on his trunk which turned into vesicles with clear fluid. His mother also noticed crops of such vesicles appeared on his legs and hands. She has been explained by the GP about the epidemic of viral exanthems and the boy was put under acyclovir therapy  
Mention the etiology of the above condition. Discuss the pathogenesis of the above disease.  
(1+4 = 5 marks)
  
8. Write short note on septic arthritis.  
(4 marks)

9. A 50 year old American developed profuse watery diarrhea along with vomiting, muscular cramps and severe dehydration during his visit to India. His stool sample collected was rice water in appearance and microscopy showed the presence of actively motile comma shaped bacilli

9A. Name the clinical disease in the above case.

9B. Explain its pathogenesis.

(1+4 = 5 marks)

10A. List the pathogenic intestinal protozoa.

10B. Explain the life cycle of *Ascaris lumbricoides*.

(2+4 = 6 marks)

11. Discuss the pathogenesis of pulmonary tuberculosis with special emphasis on immune response.

(6 marks)

12. Discuss the laboratory diagnosis of urinary tract infection.

(5 marks)

13. Give reasons:

13A.  $CD_4$ :  $CD_8$  cell ratio is reversed in AIDS patients.

13B. CSF glucose level is decreased in septic meningitis.

13C. Atypical lymphocytes are seen in infectious mononucleosis.

(1×3 = 3 marks)



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# MANIPAL UNIVERSITY

## MBBS PHASE I STAGE II DEGREE EXAMINATION – AUGUST 2012

### SUBJECT: MICROBIOLOGY – II (MCQs)

Thursday, August 16, 2012

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 <b>Correct</b> response	1 mark is awarded
For every <b>Wrong</b> response	0.5 mark is deducted
For every <b>Don't Know</b> 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.



### In the biosynthesis step of viral replication

101. There is production of early proteins which become the structural components
102. Transcription of mRNA takes place
103. There is stripping of the outermost coat of the virus particle

### Features of cestodes include

104. Presence of body cavity
105. Bilaterally symmetrical body

### With reference to the figure below:



111. The serological procedure is a single diffusion in two dimensions
112. Figure 'a' shows a reaction of no identity
113. Figure 'b' depicts a cross reaction between antigens
114. Figure 'c' denotes a reaction of identity

### T cell maturation

115. Occurs in the fetal liver
116. Involves contact with self antigens in the thymus
117. Leads to MHC restriction
118. Failure leads to Ataxia telangiectasia

### Arthus reaction

119. Is due to the deposition of immune complexes at the localized site
120. Is mediated by IgE
121. Is exemplified by "farmer's lung"
122. Occurs when tetanus toxoid is administered at the same site in short intervals

### Japanese encephalitis virus

123. Has a single antigenic type
124. Has pigs as amplifier host
125. Is a double stranded DNA virus
126. Infection is prevented by live attenuated vaccine

### African trypanosomiasis

127. Is transmitted by reduviid bug
128. Is caused by *Trypanosoma cruzi*
129. Manifests as Winterbottom's sign
130. Is diagnosed by demonstration of parasite in lymph node aspirates

106. Presence of two suckers
107. Production of eggs with hexacanth embryos

### Cell wall of gram positive bacteria

108. Possesses thicker multilayered peptidoglycan
109. Have porins
110. Is responsible for causing endotoxic shock

### Strategies for concealment of microbial antigens include

131. Remaining inside cells without the antigens being displayed
132. Displaying the antigens on the walls of intracellular vacuoles
133. Producing proteins, which prevent display of class I MHC molecules
134. Integrating the genome to host DNA
135. Covering the microbial surface by host molecules

### *Streptococcus agalactiae*

136. Forms non hemolytic colonies on blood agar
137. Is a normal flora in the female genital tract
138. Hydrolyses hippurate
139. Is identified by positive CAMP test

### *Coccidioides immitis*

140. Is a dimorphic fungus
141. Has arthrospores as the infective form
142. Forms spherules at room temperature
143. Causes meningitis in immunocompromised host

### Viruses which enter central nervous system through peripheral nerves include

144. Rabies virus
145. Mumps virus
146. Herpes simplex virus

### **Cryptococcus neoformans**

- 147. Is an yeast like fungus
- 148. Produces dry, wrinkled colonies on Sabouraud's dextrose agar
- 149. Meningitis is diagnosed by the demonstration of capsular antigens in CSF
- 150. Produces urease

### **Leptospira**

- 151. Is a gram negative bacillus
- 152. Enters humans through skin
- 153. Has rats as the reservoir host
- 154. Species biflexa is pathogenic to humans
- 155. Infection leads to Weil's disease

### **Measles virus**

- 156. Infection is associated with appearance of Koplik's spots
- 157. Has haemagglutinin and neuraminidase activity on the same spike
- 158. Causes primary giant cell pneumonia
- 159. Infection has SSPE as a late complication
- 160. Infection is prevented by killed vaccine

### **Trichinella spiralis**

- 201. Is commonly called thread worm
- 202. Has eggs as infective forms for humans
- 203. Infects mainly striated muscle
- 204. Infection is diagnosed by demonstration of ova in the stool

**A nine month old child was hospitalized due to poor feeding, vomiting and diarrhea. The stool sample which was watery without blood or mucous revealed "little wheels" in the electron microscopy. The treating physician suspected a viral cause and started rehydration therapy. Regarding the etiological agent of the above case**

- 205. It has single stranded RNA genome
- 206. It is enveloped
- 207. There is only one human serotype of this agent
- 208. The pathogenesis is mediated by an enterotoxin
- 209. The diagnosis is confirmed by detection of viral antigen in feces

### **Bacillus cereus**

- 210. Is an anaerobic bacteria
- 211. Producing heat stable enterotoxin in food causes emetic type of disease
- 212. Has a polypeptide capsule

**Following pairs correctly match the organisms with the clinical conditions caused by them**

- 213. Pig-bel : Clostridium perfringens
- 214. Hemolytic uremic syndrome : Enteroinvasive E.coli
- 215. Pseudomembranous colitis : Yersinia enterocolitica
- 216. Traveller's diarrhea : Enterotoxigenic E.coli
- 217. Gastric ulcer disease : Helicobacter pylori

### **Entamoeba histolytica**

- 218. Is a coccidian parasite
- 219. Has binucleated cyst as infective form to humans
- 220. Has animal reservoir
- 221. Trophozoite contains RBCs

### **Cryptosporidium parvum**

- 222. Transmits by the ingestion of oocysts containing eight sporozoites
- 223. Infections are life threatening in patients with CD4 T cell counts < 100 / mm<sup>3</sup> of blood
- 224. Oocysts are stained by modified acid fast technique
- 225. Undergoes sexual and asexual means of reproduction in the same host

### **Listeriosis is**

- 226. Caused by a gram negative coccobacilli
- 227. Manifested as congenital infection
- 228. Due to the release of an enterotoxin
- 229. Diagnosed by cold enrichment technique

### **Acute epiglottitis**

- 230. Has Haemophilus influenzae as one of the etiological agent
- 231. Is toxin mediated disease
- 232. Complicates as meningitis

### **Influenza virus**

- 233. Has segmented RNA
- 234. Type B causes pandemics
- 235. Infection manifests as croup
- 236. H5N1 strain causes avian flu

### **Klebsiella pneumoniae**

- 237. Belongs to the family Enterobacteriaceae
- 238. Infection in the lungs produces currant jelly sputum
- 239. Produces non lactose fermenting colonies on MacConkey's agar
- 240. Has peritrichous flagella



### **Pneumocystis jiroveci**

- 241. Is classified as protozoa based on molecular studies
- 242. Is found in domestic animals
- 243. Multiplies in alveolar macrophages
- 244. Infection is diagnosed by silver methanamine staining of lung biopsy

### **Rubella virus**

- 245. Is a DNA virus
- 246. Produces prominent cytopathic effect
- 247. Infection leads to maculopapular rashes
- 248. Is a teratogen

### **Following types of vaccines correctly match with their examples**

- 249. 17D : Killed vaccine
- 250. Sabin : Sub unit vaccine
- 251. BCG : Live attenuated vaccine
- 252. Hib : Toxoid

### **Mycobacterium avium intracellulare complex is**

- 253. A non chromogenic bacteria
- 254. A rapid grower
- 255. Weakly acid fast

### **Neisseria gonorrhoeae**

- 256. Is an intracellular gram positive diplococcus
- 257. Has pili as virulence factor
- 258. Ferments maltose
- 259. Causes ophthalmia neonatorum
- 260. Infection complicates as Reiter's syndrome

