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

Wednesday, February 15, 2012

Time: 09:00 – 11:00 Hrs.

Max. Marks: 60

- ✍ **Answer ALL questions. Write brief, relevant and legible answers.**
- ✍ **Draw diagram, flow charts wherever appropriate.**

1. Classify mycoses based on location with examples.  
(5 marks)
2. A patient developed chills and rigors while receiving intravenous dextrose saline. Intravenous infusion was stopped immediately and the remaining fluid was sent to microbiology laboratory as it appeared turbid. *Pseudomonas aeruginosa* was isolated from the remaining fluid.
  - 2A. Explain the complement cascade activated in the above patient if the bacteria was entering the patient for the first time.
  - 2B. What are the biological functions of complement component C3?  
(4+1 = 5 marks)
3. Write short notes on:
  - 3A. Life cycle of *Wuchereria bancrofti* in definitive host.
  - 3B. Graft versus host reaction.  
(2+3 = 5 marks)
4. Discuss the pathogenesis and laboratory diagnosis of *Shigella sonnei*.  
(5 marks)
5. Describe the life cycle and laboratory diagnosis of *Echinococcus granulosus*.  
(5 marks)
6. Explain the mechanisms of variations occurring in influenza virus.  
(5 marks)

7. A 10 year old rural boy developed epigastric pain, dyspepsia and passed black coloured stool. On examination he had oedema of the feet and ankle. He gave the history of walking barefooted in the paddy field. His stool sample was collected and sent for parasitic identification.

7A. Name the most common nematode that the boy would have infested.

7B. Explain the life cycle of the above parasite.

7C. Why is the stool black in color in the above case?

(1+3+1 = 5 marks)

8. Explain the laboratory diagnosis of dermatophytosis.

(5 marks)

9. Explain the pathogenesis and discuss the prophylaxis of poliomyelitis.

(2+3 = 5 marks)

10. Discuss the laboratory diagnosis of *Clostridium botulinum*.

(5 marks)

11. Give reasons:

11A. One of the criteria for the diagnosis of bacterial vaginosis is clue cell.

11B. *Pseudomonas aeruginosa* infection results in the production of blue pus.

11C. BCG vaccine is not given to immunocompromised child.

11D. *Gonococcus* does not attach to vaginal epithelial cells in reproductive age group.

11E. Cesarean delivery is preferred, if the mother gets primary herpes simplex infection during pregnancy.

(1×5 = 5 marks)

12. Discuss the laboratory diagnosis of urinary tract infection.

(5 marks)



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

Wednesday, February 15, 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	<b>1</b> mark is awarded
For every <b>Wrong</b> response	<b>0.5</b> mark is deducted
For every <b>Don't Know</b> response	<b>No</b> 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.



### Natural killer cells

101. Are activated without the prior exposure to the virus
102. Pass through the thymus in order to attain immunological competence
103. Are activated by gamma interferon
104. Are found in spleen and peripheral blood
105. Lack immunological memory

### Secondary humoral response

106. Has a lag period of 2-3 days
107. Involves the production of IgG antibodies
108. Antibody level persists longer than primary response

### Regarding cytokines

109. Interleukin-1 is produced by T cells
110. Gamma interferon activates macrophages
111. Interleukin -4 helps in B cell differentiation to plasma cells
112. Chemokines are produced by neutrophils

### IgA

113. Crosses the placenta
114. Pentameric form is seen in mucosal surfaces
115. Activates complement through classic pathway
116. Is present on the surface of B cells
117. Is an effective opsonin

### Capsule

118. Is a determinant of bacterial virulence
119. Of *Streptococcus pneumoniae* is polypeptide in nature
120. Is demonstrated by India ink staining

### Flagella

121. Of monotrichous arrangement is seen in *Salmonella typhi*
122. Is demonstrated by hanging drop experiment
123. In *Treponema pallidum* is peritrichaete
124. Consists of H antigen
125. Is atrichate in distribution in *Klebsiella* species

### Bacteria

126. Are called chemotrophs if they require 5-10% CO<sub>2</sub>
127. Having no cellwall belongs to mycobacteria species
128. Multiplying in the presence of low oxygen concentration are called microaerophilic

### Following pairs correctly match the materials with their sterilization methods used

129. Soiled bedding: Incineration
130. Glass tubes: Autoclave
131. Liquid paraffin: Vaccine bath
132. Sugar media: Hot air oven

### Regarding metazoan

133. Cestodes are hermaphrodites
134. Trematodes have cylindrical body
135. Production of operculated eggs is exemplified by *Schistosoma mansoni*

### Giardiasis

136. Is caused by a coccidian protozoa
137. Is transmitted by faeco-oral route
138. Causative agent is demonstrated by entero test
139. Is manifested as steatorrhea

### Ascariasis

140. Infection complicates to intestinal obstruction
141. Manifests as Loeffler's syndrome
142. Infection is acquired by penetration of the larvae through the skin
143. Is diagnosed by demonstrating the nonbile stained eggs in the feces

### Hepatitis E virus

144. Is a single stranded DNA virus
145. Spreads through faecal-oral route
146. Infection runs a severe course in pregnant women

### Diphtheria toxin

147. Is an exotoxin
148. Acts by inhibiting the release of acetyl choline from the neuromuscular junction
149. Is demonstrated in vitro by Schick test

### Rota virus

150. Is a double stranded DNA virus
151. Has an envelope made up of polypeptides
152. Causes diarrhea by producing cytotoxin
153. Seen under electronmicroscope has cart-wheel appearance
154. Infection leads to permanent destruction of intestinal villi

## Hepatitis B virus

- 155. Infection is associated with cervical cancer
- 156. 'e' antigen indicates infectivity
- 157. Infection is prevented by recombinant yeast extract containing surface antigen

## Respiratory syncytial virus

- 158. Belongs to herpesviridae
- 159. Has H and N glycoprotein peplomers
- 160. Causes heterophile negative mononucleosis
- 201. Infections are diagnosed by demonstration of multinucleated giant cell formation

## ASO test

- 202. Detects antibodies against hemolysis 'S'
- 203. Of 60 Todd units/ml indicates recent infection
- 204. Is used in the diagnosis of rheumatoid arthritis

## Mycobacterium tuberculosis

- 205. Is an acid fast organism which decolorises with 5% sulphuric acid
- 206. Component tubercular protein mediates immediate hypersensitivity reaction
- 207. Takes 2-8 weeks to grow on Lowenstein Jensen's medium

## Following groups of atypical mycobacteria correctly match with their examples

- 208. Photochromogens: *Mycobacterium kansasii*
- 209. Scotochromogens : *Mycobacterium chelonae*
- 210. Nonchromogens : *Mycobacterium avium-intracellulare* complex
- 211. Rapid growth: *Mycobacterium scrofulaceum*

## Whooping cough

- 212. Manifestations are due to the production of a toxin that inhibits EF-2
- 213. Has maximum infectivity during the catarrhal phase
- 214. Infection leads to subconjunctival haemorrhage
- 215. Is prevented by a live attenuated vaccine

## Prions

- 216. Disorders have short incubation period
- 217. Infection induce antibodies in the host
- 218. Infection results in neuronal vacuolation
- 219. Have no nucleic acid
- 220. Disease is exemplified by Creutzfeldt-Jakob disease

## Botulism

- 221. Is caused by a gram positive Coccus
- 222. In infants due to the consumption of food contaminated with toxin
- 223. In infants manifests as floppy baby syndrome
- 224. Causing organism is anaerobic

## Pneumococcal meningitis

- 225. Has splenectomy as its predisposing factor
- 226. Causing organism has IgA protease as its virulence factor
- 227. Is identified by the isolation of beta-hemolytic organism on blood agar

## Cryptococcus neoformans

- 228. Is a germ tube positive fungus
- 229. Grows on bird seed agar
- 230. Infecting humans produces Urease

## Streptococcus pyogenes

- 231. Produces catalase
- 232. Is a facultative anaerobe
- 233. Causes erysipelas
- 234. Is resistant to bacitracin
- 235. Has M protein as a virulence factor

## Human papilloma virus

- 236. Is a member of papovaviridae
- 237. Is cultivated on HeLa cell lines
- 238. Infection leads to formation of koilocytes

## Yersinia pestis

- 239. Shows bipolar staining
- 240. Forms colonies with 'medusa head' appearance on agar media
- 241. Causes 'malignant pustule' at the site of flea bite

## Pneumocystis jiroveci infection

- 242. In immunocompromised leads to meningitis
- 243. In the neonate leads to cyanosis
- 244. Is diagnosed by the isolation of the organism on Sabouraud's dextrose agar

## Histoplasma capsulatum

- 245. Has arthrospores as the infective forms
- 246. has birds as reservoir host
- 247. Causes granulomatous lesions in liver
- 248. Infection is diagnosed by the demonstration of capsulated fungi



### **Primary syphilis is**

- 249. Manifested as formation of gummas
- 250. A highly infectious stage
- 251. Confirmed by rapid plasma reagin card test

### **Trichomonas vaginosis**

- 252. Results in the increase of the vaginal pH to more than 4.5
- 253. Causing agent forms cysts in the vagina
- 254. Causes cheesy vaginal discharge

### **Human immunodeficiency virus**

- 255. Has gag gene which codes for gp 41
- 256. Is a single stranded negative sense DNA virus
- 257. Has CCR5 as a co-receptor for attachment

### **Laboratory diagnosis of human immunodeficiency virus infection includes**

- 258. Detection of P24 antibodies by ELISA in window period
- 259. Western blot test as confirmatory test
- 260. Demonstration of reverse transcriptase activity after co-cultivation method of culture

