Reg. No.										

MANIPAL UNIVERSITY

MBBS PHASE I STAGE II DEGREE EXAMINATION – AUGUST 2014

SUBJECT: MICROBIOLOGY – I (ESSAY)

Wednesday, August 20, 2014

Time: 14:00 – 16:00 Hrs. Max. Marks: 60

1. List the steps involved in viral replication. Discuss the events occurring in the biosynthesis step.

(1+4 = 5 marks)

2. Give reasons:

2A. Haptens are non immunogenic

2B. Capsulated bacteria are more virulent

2C. Selenite F broth is used to isolate enteric pathogens

(1 mark × 3 = 3 marks)

3. What is 'thymic education'? Explain and illustrate with the help of a diagram the processes involved in thymic education.

(4 marks)

4. Classify mycoses with suitable examples.

(4 marks)

5. A 9 year old child was hospitalized due to high fever, vomiting and altered sensorium. On examination nuchal rigidity and ecchymotic rashes on the trunk were noticed. Cerebrospinal fluid showed plenty of intracellular gram negative diplococci that were oxidase positive.

5A. What is the etiology of the above disease?

5B. Discuss the pathogenesis of this condition.

(1+3 = 4 marks)

6. Discuss and relate the pathogenesis and clinical manifestations of anthrax.

(6 marks)

7. **Write short notes on:**

7A. Cutaneous larva migrans

7B. Laboratory diagnosis of Trichomonas vaginalis infection

(3+3 = 6 marks)

8. Enumerate Escherichia coli causing gastrointestinal infections. Add a note on pathogenesis on this agent associated with hemolytic uremic syndrome.

(1+4 = 5 marks)

9. Enumerate the serological markers of HBV infection and discuss their diagnosti significance.

(1+5 = 6 marks)

10. A 10 year old girl presented to the hospital complaining of running nose, fever, chills and myalgia. There was an outbreak of similar illness due to a segmented RNA virus in the same region. She responded well to amantidine.

10A. Identify the probable etiology

10B. Explain the transmission and pathogenesis of this agent

10C. Add a note on antigenic variations seen in this agent with the significance

(1+3+3 = 7 marks)

11. Discuss the pathogenesis of HIV infection with relation to the stages of illness.

(6 marks)

12. Explain the investigations performed in case of classical PUO.

(4 marks)

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MBBS PHASE I STAGE II DEGREE EXAMINATION – AUGUST 2014

SUBJECT: MICROBIOLOGY – II (MCQs)

Wednesday, August 20, 2014

Time: 16:30 – 17:30 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.

Robert Koch

101. Discovered tubercle bacilli
102. Disproved spontaneous generation theory
103. Introduced solid culture media
104. Introduced methods of sterilization

Examples of RNA viruses include

105. Influenza virus
106. Epstein Barr virus
107. Nipah virus

In conjugation

108. The transfer of DNA is mediated through a plasmid
109. Drug resistance is also transferred
110. The recipient cell gets converted to F+ cell

Regarding regulation of the complement system

111. The first regulatory step in the classical pathway is at the level of the antibody itself
112. C1 inhibitor is an important regulator of the classical pathway
113. Decay-accelerating factor acts by destabilizing C4 convertase

Anaphylaxis

114. Occurs when an allergen binds to IgE on the surface of T cells
115. Is prevented by sensitization
116. Is an immediate type of hypersensitivity reaction

Carcinoembryonic antigen

117. Is a heterophile antigen
118. Detection helps in the prognosis of the tumors
119. Is found in trace amounts in normal adults

Regarding congenital immunodeficiencies

120. Di George's syndrome is associated with deficient phagocytic activity
121. IgA deficiency predisposes to recurrent sinus infections
122. Female carriers of X-linked hypogammaglobulinemia are immunocompromised

Rickettsiae

123. Have cell walls resembling that of the gram positive bacteria
124. Divide by binary fission within the host cell
125. Infection results in vasculitis
126. Causing epidemic typhus have no animal reservoirs
127. Transmitted through louse is exemplified by Coxiella burnetti

Yellow fever virus

128. Has four antigenic types
129. Is transmitted by Aedes aegypti
130. Infection produces Cowdry type A inclusion body
131. Is prevented using 17 D vaccine

Strategies adopted by microorganisms to avoid phagocytosis and killing include

132. Releasing toxins and thereby killing the phagocytes
133. Resisting killing inside the phagosome by producing capsule
134. Preventing formation of phagolysosome
135. Producing antioxidants which prevent contact with phagocytes
136. Preventing interaction between opsonising antibody and phagocytes

Virulence factors of Haemophilus influenzae include

137. Flagella
138. Pili
139. Capsule
140. Endotoxin

Examples of slow viruses include

141. Measles virus
142. Rubella virus
143. Rabies virus
144. HIV

Chlamydia trachomatis

145. Is an obligate intracellular organism
146. Infection is initiated by reticulate body
147. Serotypes D-K causes eye infection
148. Infection results in intracytoplasmic inclusion body formation

Following pairs correctly match the microorganism with the type of hemolysis on blood agar

149. Alpha hemolysis: Streptococcus pneumoniae
150. Beta hemolysis: Viridans Streptococci
151. Gamma hemolysis: Streptococcus pyogenes

Sporothrix schenckii

152. Is a dimorphic fungus
153. Infection is associated with inhalation of spores
154. Has arthroconidia as infective forms
155. Infection involves lymphatic system
156. Produces tuberculate macroconidia

Giardia lamblia

157. Is an intestinal flagellate
158. Inhabits large intestine
159. Cyst has two pairs of nuclei
160. Requires two hosts to complete its life cycle

Osteomyelitis

201. Of acute type is commonly caused by Streptococcus species
202. Of the spine caused by Mycobacterium tuberculosis is also called Pott's disease
203. Is diagnosed by performing a blood culture

Varicella

204. Is caused by a DNA virus
205. Results due to reactivation of the virus
206. Manifests as vesicular rashes on dermatomes
207. Is diagnosed by the demonstration of intranuclear inclusions from the lesion
208. Is prevented by a live attenuated vaccine

A 6 year old girl was hospitalized due to severe weakness, abdominal cramps, fever, diarrhoea along with blood and mucus. Stool microscopy showed fecal leucocytes and culture yielded non-motile gram negative bacilli which were negative for oxidase test and mannitol fermentation. Regarding the causative organism in this case

209. It is Shigella dysenteriae
210. It does not produce exotoxins
211. A large infective dose is needed to initiate the above infection
212. The enrichment medium used for its isolation is Sach's buffered glycerol saline
213. It has no animal reservoir

Pseudomembranous colitis

214. Is caused by a gram negative anaerobe
215. Causing organism produces a cytotoxin
216. Is an exogenous infection

Campylobacter jejuni

217. Is a microaerophilic bacterium
218. Has animal reservoir
219. Is non-motile
220. Does not produce oxidase enzyme
221. Causes inflammatory enteritis with bloody diarrhea

Strongyloides stercoralis

222. Is called whip worm
223. Adult females remain embedded in the intestinal mucosa
224. Filariform larva is the most commonly seen stage in stool
225. Rhabditiform larva is highly infectious
226. Causes larva currens

Clonorchis sinensis

227. Is commonly known as giant intestinal fluke
228. Infective form is metacercaria
229. Is diagnosed by demonstrating nonoperculated eggs with lateral spine
230. Infections lead to carcinoma of the common bile duct

BCG is

231. A live attenuated vaccine
232. Prepared from a strain of Mycobacterium marinum
233. Given to HIV patients to prevent miliary tuberculosis

Whooping cough

234. Is caused by Bordetella pertussis
235. Paroxysmal stage is characterized by series of short cough, producing copious mucus
236. Complicates as anoxia
237. Etiological agent is isolated on enriched media from throat swabs
238. Causing agent produces a virulence factor that promotes lymphocytosis

Cytomegalovirus

239. Is a coronavirus
240. Has A and B serotypes
241. Causes heterophile negative infectious mononucleosis
242. Infection causes interstitial pneumonia in bone marrow transplant recipients
243. Produces owl's eye inclusion bodies

Chancroid

244. Is caused by Haemophilus aegypticus
245. Is characterized by painless, indurated ulcers on genitalia
246. Smear on microscopy shows gram negative bacilli with school of fish appearance
247. Is diagnosed by demonstration of Donovan bodies

Rubella virus

248. Is an enveloped single stranded RNA virus
249. Produces a prominent cytopathic effect on tissue culture
250. If transmitted congenitally results in Gregg's triad
251. Infection causes Koplik's spots on buccal mucosa

Histoplasma capsulatum

252. Is a capsulated fungus
253. Mycelial forms invade the tissue
254. Produces tuberculate macroconidia
255. Fails to grow in artificial medium

Human papilloma virus

256. Causes Hunterian chancre
257. Serotype 18 is associated with carcinoma of the cervix
258. Produces koilocytes
259. Infection leads to condylomata lata
260. Causes congenital malformations