

MANIPAL UNIVERSITY**MBBS PHASE I STAGE II DEGREE EXAMINATION – FEBRUARY 2015****SUBJECT: MICROBIOLOGY – I (ESSAY)**

Friday, February 13, 2015

Time: 09:00 – 11:00 Hrs.

Max. Marks: 60

1. A 50 year old man visited a general practitioner with nonpitting subcutaneous oedema on his left leg with rough skin. He was residing in an area which was inhabited by many mosquitoes. His peripheral blood collected in the night revealed microfilaria.
 - 1A. Name the most common lymphatic tissue nematode responsible for the above mentioned case.
 - 1B. Explain briefly its life cycle.

(1+3 = 4 marks)

2. **Write short notes on the following:**
 - 2A. Laboratory diagnosis of Leptospirosis
 - 2B. Bacterial growth curve

(3+4 = 7 marks)

3. Overview the immunologic mechanisms by which intracellular bacterial pathogens are destroyed in the body.

(7 marks)

4. Explain briefly the pathogenesis of Dengue haemorrhagic fever shock syndrome.

(4 marks)

5. A 9 year old boy complained of bloody diarrhea with abdominal pain. Stool culture revealed the following:
Gram negative motile bacillus
Sorbitol MacConkey's agar: Pale coloured colonies
Indole: positive
Glucose: fermentation with acid and gas
 - 5A. Name the bacteria causing the above manifestation.
 - 5B. Discuss the pathogenesis of the aforesaid infection.

(1+4 = 5 marks)

6. **Give reasons:**
 - 6A. Urea breath test is used for the laboratory diagnosis of Helicobacter pylori infection
 - 6B. Ancylostoma duodenale infection leads to severe anemia
 - 6C. Vibrio cholerae forms yellow coloured colonies on TCBS agar

(1 mark × 3 = 3 marks)

7. Explain briefly the life cycle of *Strongyloides stercoralis*.
(5 marks)
8. Draw and label the structure of HIV. Enumerate its structural genes.
(3+2 = 5 marks)
9. Urine collected by suprapubic aspiration from a 6 month old infant grew *E.coli* with a count of 50,000 CFU/ml of urine
- 9A. Comment on the child's urine report
- 9B. Define significant bacteriuria
- 9C. List four virulence factors of uropathogens
(1 mark × 3 = 3 marks)
10. With the help of a diagram explain the working principle of autoclave.
(5 marks)
11. Classify mycoses. Name the genera of medically important dermatophytes and add a note on its laboratory diagnosis.
(2+4 = 6 marks)
12. Sputum sample from a 37 year old patient complaining of productive cough, evening rise in temperature and weight loss, after appropriate staining showed acid-fast bacilli. A skin test done was positive. However the bacterium took 8 weeks to grow on the culture medium.
- 12A. What is the etiology?
- 12B. Discuss the laboratory diagnosis of this condition.
- 12C. Add a note on its prevention.
(1+4+1 = 6 marks)



MANIPAL UNIVERSITY

MBBS PHASE I STAGE II DEGREE EXAMINATION – FEBRUARY 2015

SUBJECT: MICROBIOLOGY – II (MCQs)

Friday, February 13, 2015

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 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.

Immunoglobulin M

101. Is a pentamer
102. Stimulates alternate pathway of complement activation
103. Is the predominant immunoglobulin during secondary response

Regarding delayed type of hypersensitivity reaction

104. Tuberculin type is mediated by IgE
105. CD4 positive T cells actively take part in contact dermatitis
106. It is transferred from one individual to another through serum

Examples for systemic autoimmune disorders include

107. Systemic lupus erythematosus
108. Hashimoto's disease
109. Rheumatoid arthritis

Following pairs correctly match the interleukins with predominant cells that produce them

110. IL 1 : Macrophages
111. IL 2 : Helper T cells
112. IL 4 : Cytotoxic T cells

Lyme disease

113. Is caused by *Borrelia recurrentis*
114. Is transmitted by Ixodes ticks
115. Manifests as erythema chronicum migrans
116. Is diagnosed by Weil-Felix test
117. Complicates as arthritis

Yellow fever is

118. Caused by a retrovirus
119. Transmitted by culex mosquitos
120. Prevented by killed vaccine

Brucellosis

121. Is most severe when caused by *Brucella abortus*
122. Results due to the consumption of unpasteurised milk
123. Is characterized by granulomatous lesions in the reticuloendothelial system
124. Is diagnosed by cultivation of the organism by Castaneda method

Neisseria meningitidis

125. Is a gram positive diplococci
126. Infection is more severe in people with C5-C8 complement deficiency
127. Ferments maltose producing acid only
128. Infection is characterised by ecchymotic rashes

Rabies

129. Virus has a helical nucleocapsid
130. In humans manifests as hydrophobia
131. Is characterized by the formation of intranuclear inclusion bodies

Botulism

132. Toxin blocks the release of inhibitory neurotransmitters
133. Causing organism produces lecithinase
134. Of infant type results due to consumption of honey contaminated with spores

Salmonella gastroenteritis

135. Is caused by *Salmonella paratyphi A*
136. Causing organism is selectively isolated using Wilson Blair medium
137. Results due to the production of prostaglandins
138. Leads to septicaemia in patients with sickle cell anaemia

Campylobacter jejuni

139. Is a curved gram negative bacilli
140. Produces urease
141. Produces a cytotoxin that is responsible for the manifestation
142. Is microaerophilic

Vibrio cholerae

143. Is a halophilic vibrio
144. Manifestations are due to the production of cGMP
145. Has alkaline peptone water as an enrichment medium
146. Produces mucinase

Isospora belli

147. Belongs to subphylum sarcodina
148. Has oocysts as the infective form for humans
149. Is diagnosed by the demonstration of trophozoites in stool sample

Trichuris trichiura

- 150. Has rhabditiform larva as the infective form for humans
- 151. Are parthenogenic
- 152. Infection leads to rectal prolapse

Echinococcus granulosus

- 153. Is a trematode
- 154. Has humans as the definitive host
- 155. Is diagnosed by Casoni's test
- 156. Infection in human is a dead end

Treponema pallidum

- 157. Is a gram positive bacillus
- 158. Is propagated in rabbit testis
- 159. Evades host immune response due to its rich lipid content on its surface
- 160. Infection in foetus results in saddle nose

Enteric fever is

- 201. Diagnosed during the first week of illness by detecting the antibodies against the flagellar antigen
- 202. Characterised by step ladder pyrexia
- 203. Prevented by Ty 21 a vaccine

Epstein-Barr virus

- 204. Infection leads to production of heterophile antibodies
- 205. Remains latent in B lymphocytes
- 206. Is the largest virus in the herpesviridae family
- 207. Is associated with hepatocellular carcinoma

Pseudomonas aeruginosa

- 208. Infection leads to ecthyma gangrenosum
- 209. Produces powerful exotoxin
- 210. Is a spore forming organism
- 211. Belongs to family Enterobacteriaceae

Organisms causing congenital infection/ include

- 212. Candida albicans
- 213. Cytomegalovirus
- 214. Toxoplasma gondii
- 215. Streptococcus agalactiae

Chancroid is

- 216. Caused by Haemophilus influenzae
- 217. Characterized by painless ulcers

- 218. Diagnosed by gram negative bacilli having 'school of fish' appearance from the aspirate

Chemical disinfectants that act by disrupting cell membrane include

- 219. Alcohol
- 220. Glutaraldehyde
- 221. Crystal violet
- 222. Phenols

During viral replication

- 223. Retroviruses use their own polymerases for transcription process
- 224. Non enveloped viruses enter by endocytosis
- 225. Single stranded RNA viruses with negative polarity utilise their own polymerases
- 226. Virus undergoes eclipse phase

Peptidoglycan

- 227. Consists of alternating units of lecithin and cholesterol
- 228. In gram negative bacteria constitute to 50-90% of its cell wall
- 229. Synthesis is inhibited by beta - Lactam antibiotics
- 230. Accounts for antiphagocytic activity

Following virulence factors of Streptococcus pyogenes correctly match with their function/characters

- 231. Streptokinase : Breaks down DNA
- 232. Hyaluronidase : Lyses fibrinogen
- 233. Streptolysin O : Heat stable toxin
- 234. Streptodornase : Affects heart valve

Mycobacterium leprae

- 235. Is a gram negative bacillus
- 236. Infection in patients with low CMI leads to tuberculoid type of leprosy
- 237. Produces colonies on Lowenstein-Jensen media
- 238. Causes lepromatous leprosy which is characterized by leonine appearance

Arthritis

- 239. Of the reactive type is caused by Staphylococcus aureus
- 240. Of septic type results due to the invasion of the joint by organisms
- 241. Is diagnosed by blood culture

Rota virus

- 242. Is a DNA virus
- 243. Infection is transmitted feco-orally
- 244. Infection leads to villus atrophy

Rubella virus

- 245. Causes German measles
- 246. Is a togavirus
- 247. Causes intrauterine infection
- 248. Infections are diagnosed by demonstration of cytopathic effect

Diphtheria toxin

- 249. Is a low molecular weight polysaccharide with five sub units
- 250. Production is demonstrated by Elek's gel precipitation test
- 251. Inhibits the release of acetylcholine at the neuromuscular junction
- 252. Is produced as a result of lysogenic conversion

Cytomegalovirus

- 253. Is a pox virus
- 254. Produces intranuclear inclusion bodies
- 255. Interferes with the transport of Class II MHC proteins on to the cell surface
- 256. Growth in cell culture is detected using interference phenomenon

Examples of non enveloped RNA viruses include

- 257. Herpes simplex virus
- 258. Polio virus
- 259. Hepatitis A virus
- 260. Mumps virus

