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ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)  
B.E. /B.Tech /B.Arch (Full Time) - END SEMESTER EXAMINATIONS, DECEMBER 2023  
BIOMEDICAL ENGINEERING, V Semester

**BM5503 PATHOLOGY AND MICROBIOLOGY**  
(Regulation2019)

Time: 3hrs

Max. Marks: 100

CO1	To introduce the relevance of this course to the existing technology through demonstrations, case studies, simulations, contributions of scientist, national / international policies with a futuristic vision along with socio-economic impact and issues
CO2	To understand the structural and functional aspects of living organisms.
CO3	To know the etiology and remedy in treating the pathological diseases.
CO4	To practice on chemical and structural examinations, histopathological examinations

**BL – Bloom's Taxonomy Levels**

(L1-Remembering, L2-Understanding, L3-Applying, L4-Analysing, L5-Evaluating, L6-Creating)

**PART- A (10x2=20Marks)**

(Answer all Questions)

Q. No	Questions	Marks	CO	BL
1	Which antibody first appears in human serum and give its structural importance?	2	1	4
2	Mention the clinical significance of VW factor?	2	3	3
3	Why heavy metals are used for staining in electron microscope?	2	2	4
4	Bacillus divides every 30 minutes. You have inoculated culture with exactly 100 bacterial cells. After 3 hours, how many bacterium might be there?	2	4	3
5	What is meant by D value?	2	4	1
6	The occurrence of calcification in TB is a favorable sign for healing. Find out whether the statement is correct or incorrect; give reason for your answer.	2	3	3
7	Define HAT?	2	2	2
8	What is the role of alcohol in gram staining procedure?	2	4	4
9	Differentiate thrombosis and embolism?	2	3	2
10	What happens to blood clotting mechanism in vitamin K deficit?	2	2	4

**PART- B(5x 13=65Marks)**  
(Restrict to a maximum of 2 subdivisions)

Q. No	Questions	Mark	CO	BL
11 (a)	Find the impact of hypercalcemia at the cellular level?	13	3	4
OR				
11 (b)	A 60 yr old man had a severe chest pain for the past last 6 hours. On physical examination, he has tachycardia. Laboratory studies show an increased serum troponin I of 10ng/ml. A coronary angiogram revealed >90% occlusion of the anterior interventricular artery. What would have happened to cardiac tissues, give a clear sketch on the cellular changes and why the troponin level is elevated?	13	3	4

12 (a)	How TB causing bacterium cell wall is assembled?	13	2	3
OR				
12 (b)	How will you identify E. Coli from other microbial species?	13	2	3
13 (a)	Describe the assembly of phase contrast microscope?	13	4	2
OR				
13 (b)	Explain the assembly of scanning electron microscopy?	13	4	2
14 (a)	How diurnal rhythmic variations exhibits complexity in the life cycle of protozoans?	13	2	3
OR				
14 (b)	How will you produce tPA for vascular disease?	13	2	3
15 (a)	Explain about DIC?	13	3	2
OR				
15 (b)	Describe about the various stages of shock?	13	3	2

**PART- C(1x 15=15Marks)**  
(Q.No.16 is compulsory)

Q. No	Questions	Mark	CO	BL
16.	Ms. Mary of 56 yr old working woman admitted to the hospital with a history of generalized weakness and significant weight loss. Over a couple of weeks, she had a progression of dyspnea and cannot do household work because of pain in elbows and knees and also accompanied by swelling in knee joints. She had BP 128/70, heart rate: 88 bpm, respiration rate: 24 breaths/min, decreased breath sounds. The screening of blood revealed the existence of auto antibodies as a supportive evidence. Find the pathological condition of Mary and discuss on it?	15	3	5

