Exam Date & Time: 12-Dec-2022 (10:00 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

Pharmaceutical Microbiology [PBT-BP303T]

Marks: 75 **Duration: 180 mins.**

I Multiple Choice Questions (MCQs)

Answer all the questions. Section Duration: 30 mins

1) Which of the following is monobacilli? (1)

1)	*E. coli*		2)	*S. aureus*		3)	*L. lactis*		4)	*S. epidermidis*	

2) Which among the following is not a suitable method to improve the resolving power of a bright field microscope. (1)

1)	Using immersion oil		2)	Using light of shorter wavelength to illuminate the object		3)	Using a condenser		4)	Using an objective with higher magnification	

3) Which among the following gases is used in admixture with ethylene oxide to reduce its flammable nature? (1)

1)	Carbon dioxide		2)	Trichlorofluoromethane		3)	Dichlorofluoromethane		4)	All of the above	

4) Identify the correct statement with respect to ionising radiation. (1)

1)	Gram positive organisms are more sensitive than Gram negative organisms due to their less complex cell wall.		2)	A dose of 2.5 rads is sufficient to produce sterility		3)	This is a time consuming sterilisation technique. However, it is faster than ethylene oxide sterilisation.		4)	*Bacillus pumilus* is the biological indicator used for the control of process.	

5) Which of the following is a motile fungal spore? (1)

1)	Conidiospore		2)	Arthrospore		3)	Chalmydospore		4)	Zoospore	

6) Which is the causative organism of common cold? (1)

1)	Adenovirus		2)	Herpes virus		3)	Hepedna virus		4)	Rhinovirus	

7) The redox indicator present in fluid thioglycolate medium is

1)	L-cysteine		2)	Sodium thioglycolate		3)	Resazurin Sodium		4)	None of the above	

(1)

8) The most suitable way of inactivating the disinfectant action of benzalkonium chloride during sterility testing is by_____

1)	Separation from inhibitor		2)	Inactivation by dilution		3)	Inactivation by neutralisation		4)	Bioremediation	

(1)

9) Which among the following is a surface active agent with no disinfectant properties?

1)	Sodium stearate		2)	Sorbitan mono oleate		3)	Cetrimide		4)	Tego compounds	

(1)

10) ---- are finely dispersed emulsions of coal tar acids.

1)	White fluids		2)	Black fluids		3)	Tego compounds		4)	Jeyes fluid	

(1)

11) The Φ_{10} value of phenol is 4.0. How many fold increase in the disinfectant activity of phenol can be achieved by increasing the temperature of phenol from 20°C to 30°C? (1)

1)	4 fold		2)	10000 fold		3)	16 fold		4)	70,000 fold	

12) The observation of two level (factorial) assay of antibiotics is given below. Calculate the value of 'a'.
Sum of S1= 136mm, sum of S2= 130mm, sum of U1=133mm, and sum of U2= 128mm

(1)

1)	0.0431		2)	-0.0431		3)	0.0185		4)	-0.0185	

13) In one level assay of antibiotics, the correction point of the curve is

(1)

1)	Average value of		2)	Sum of zone		3)	Sum of zone		4)	Average value of	

	zone diameters of 36 readings of S3.			diameters of 18 readings of S1.			diameters of 36 readings of S3.			zone diameters of 18 readings of S3	

14) According to clean room requirement as per FS209, limits per cubic meter for particles 0.5µ or larger in class (SI) M2 is____ (1)

1)	1		2)	10		3)	100		4)	1000	

15) Water activity, Aw is a measure of

1)	complexed water that is available in the formulation to support microbial growth		2)	uncomplexed water that is available in the formulation to support microbial growth		3)	complexed water that helps the formulation to prevent microbial growth		4)	uncomplexed water that helps the formulation to prevent microbial growth	

(1)

16) Which of the following is NOT an opportunistic pathogen that are likely to be present in medicinal products? (1)

1)	*Pseudomonas*		2)	*Klebsiella*		3)	*Serratia*		4)	*Saccharomyces*	

17) With a reduction in temperature from 30°C to 20°C, the Q10 of ethanol on *E coli* is (1)

1)	15		2)	30		3)	45		4)	60	

18) Which of the following preservatives exhibit neurotoxicity? (1)

1)	Paraben		2)	Benzyl alcohol		3)	EDTA		4)	Chlorocresol	

19) The proteins that provide cell-substrate interaction is_____ (1)

1)	Cadherins		2)	Integrins		3)	Collagenase		4)	Trypsin	

20) Chick embryo fibroblast cells can grow upto (1)

1)	50 generations		2)	100 generations		3)	Grow indefinitely		4)	None of the above	

II Long Answers

Answer all the questions.

1) Explain the physical requirements for the growth of laboratory culture of bacteria. Discuss ANY TWO methods for growing anaerobic bacteria. (10)

2) Describe the properties of saturated steam as an ideal sterilising agent. What is superheating? Why it is not desirable in moist heat sterilisation? With a phase diagram, explain various instances of formation of superheating in an industrial autoclave. (10)

III Short Answers

Answer all the questions.

1) With suitable diagram, elaborate on the structure of bacterial flagellum and discus the types of its arrangement. (5)

2) Explain how MRVP test works. Show how this test helps to differentiate *Escherichia coli* from *Enterobacter aerogenes.* (5)

3) Classify viruses with suitable examples and explain any ONE method for cultivating them in laboratory. (5)

4) Relate the effect of dilution and presence of organic matter on the course of disinfection. (5)

5) Describe one level assay of antibiotics. Explain the importance of correction factor and how to calculate it. (5)

6) Enlist the sources of contamination and explain the methods to prevent it in a clean room. (5)

7) Explain Preservative Efficacy Test. (5)

-----End-----