

Exam Date & Time: 24-Jan-2022 (10:00 AM - 01:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

Pharmaceutical Microbiology [PBT-BP303T - S2]

Marks: 75

Duration: 180 mins.

I: Multiple Choice Questions (MCQs)

Answer all the questions.

Section Duration: 30 mins

1) Who is regarded as the Father of Modern Microbiology?

1) Robert Hook	2) Anton van Leeuwenhoek	3) Louis Pasteur	4) Edward Jenner	(1)
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2) Which of the following is wrongly matched according to Whittaker's five kingdom classification?

1) Monera cyanobacteria	2) Protista- Plasmodium	3) Fungi- Photosynthesis	4) Animalia Ingestion	(1)
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3) What is the chief mode of heat transfer in a hot air oven?

1) Conduction	2) Convection	3) Radiation	4) Reflection	(1)
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4) Which among the following is not a biological indicator?

1) <i>Bacillus pumilus.</i>	2) <i>Mycobacterium tuberculosis.</i>	3) <i>Bacillus stearothermophilus</i>	4) <i>Bacillus subtilis</i>	(1)
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5) T-even phages are

1) Enveloped virus	2) Complex virus	3) Helical virus	4) Polyhedral virus	(1)
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6) Pick the odd one out (1)

1) Sporangiospore	2) Conidiospore	3) Basidiospore	4) Blastospore	(1)
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7) A disinfectant has a dilution coefficient of 6 and that a 1.0 % solution kills a certain population of bacteria in 10 minutes. If the concentration is doubled how much time does it take to kill the same population?

(1)

1)	1.6 minutes	2)	3.2 minutes	3)	0.6 minutes	4)	16 seconds
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- 8) Which among the following disinfectants is more effective in the ionised form?

1)	Phenol	2)	Benzoic acid	3)	Salicylic acid	4)	Acridines
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- 9) Temperature recommended for the reaction mixture to react with test organism in the determination of the RWC is

1)	17.5± 0.5 °C	2)	27.5±0.5 °C	3)	30 °C	4)	37 °C
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- 10) Identify the agar diffusion technique to determine the bacteriostatic action of multiple organisms against a tested product in a single petri plate.

1)	Cup plate method	2)	Gradient plate method	3)	Ditch plate method	4)	All of the above
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- 11) Recommended test organism for the determination of Chick Martin coefficient is

1)	Yeast cells	2)	<i>Staphylococcus aureus</i>	3)	<i>Escherichia coli</i>	4)	<i>Pseudomonas aeruginosa</i>
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- 12) In which of the following microbiological assays, the test substance may inhibit the growth of microorganisms?

1)	Microbiological assay of antibiotics	2)	Microbiological assay of vitamins	3)	Microbiological assay of amino acids	4)	Both b and c
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- 13) ULPA filters are -----% effective in removing the submicron particulate matter of 0.12-micron (1) diameter.

1)	99.999%	2)	99.97%	3)	99%	4)	97%
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- 14) Which of the following biological safety cabinet is designed solely for operator protection?

1)	Class I	2)	Class II	3)	Class III	4)	Class IV
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15) Which of the following protein expression systems show rapid cell growth of 90 min?

(1)

1)	Mammalian cells	2)	Insect cells	3)	Yeast	4)	<i>E. coli</i>
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16) Which of the following preservative forms a complex with the pharmaceutical ingredient and prevents degradation of the formulation?

(1)

1)	Neem oil	2)	Polyphosphates	3)	Sodium benzoate	4)	Sodium chloride
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17) Cells in culture are classified into three basic categories based on their shape and appearance. Which of the following cells are bipolar or multipolar, have elongated shape and grow attached to a substrate?

1)	Fibroblastic cells	2)	Epithelial-like cells	3)	Lymphoblast-like cells	4)	All the above
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18) Identify the protective agent employed for cryopreservation of cell lines.

1)	Glycerol	2)	Isopropanol	3)	Ethanol	4)	Butanol
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19) Which of the following preservative is commonly used in semisolid formulations?

1)	Methylparaben	2)	Phenol	3)	Methyl Hydroxybenzoate	4)	Chlorocresol
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20) Which of the following mammalian cell lines is used to produce therapeutic proteins? (1)

1)	Caco-2	2)	MCF-7	3)	HeLa	4)	CHO
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II Long Answers

Answer all the questions.

- 1) Explain the structure of bacterial flagellum and citing one example each, enlist types of flagellar arrangements. Explain how the flagella structure differs in a Gram positive and Gram negative bacteria and write a note on bacterial growth curve. (10)
- 2) Define saturated steam. Describe the properties of steam that makes it an efficient sterilising agent. With the aid of a phase diagram, explain the major reasons for superheating of steam in a large steriliser. (10)

III Short Answers

Answer all the questions.

- 1) Enlist Koch postulates and explain any two methods for the cultivation of anaerobic bacteria.

- 2) Explain the principle of Gram staining and discuss how it functions as a differential staining method.
- 3) Enlist various methods of sexual reproduction in fungi and elaborate on various sexual spores produced by them. (5)
- 4) Describe the protocol involved in the determination of the minimum inhibitory concentration of a disinfectant using serial dilution in fluid media. How is the concentration of nutrient medium across the (5) tubes maintained without dilution across the tubes?
- 5) Write a note on unidirectional airflow in clean room.
- 6) Explain the microbiological assay of antibiotics by the turbidimetric method.
- 7) Explain the influence of storage temperature and pH on microbial spoilage of pharmaceutical products.

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