PHB Education

Government Exam and D. Pharm Exit Exam Preparation Questions Bank

Subject: Pharmaceutics

Chapter 7 : Filtration

Section 1: Introduction & Objectives of Filtration

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1. Filtration is a process used for separation of:
   a) Solids from liquids
   b) Liquids from solids
   c) Solids from gases
   d) Both a and c
   → **a**
2. Filtration is a type of _____ operation.
   a) Chemical
   b) Physical
   c) Biological
   d) Enzymatic
   → **b**
3. The substance that passes through the filter is called:
   a) Filtrate
   b) Cake
   c) Slurry
   d) Medium
   → **a**
4. The material retained on the filter medium is called:
   a) Filtrate
   b) Residue or cake
   c) Precipitate
   d) Sediment
   → **b**
5. The objective of filtration is to obtain:
   a) A turbid liquid
   b) A clear filtrate
   c) A colored solution
   d) A concentrated mixture
   → **b**

6. Filtration removes:
   a) Soluble impurities
   b) Insoluble particles
   c) Both
   d) None
   → **b**
7. In pharmacy, filtration is used to produce:
   a) Sterile formulations
   b) Tablets
   c) Capsules
   d) Emulsions
   → **a**
8. Filtration ensures clarity and _____ of liquids.
   a) Sterility
   b) Acidity
   c) Viscosity
   d) Density
   → **a**
9. The driving force in filtration may be:
   a) Pressure difference
   b) Temperature difference
   c) Concentration difference
   d) None
   → **a**
10. Filtration is a step in the manufacture of:
    a) Ophthalmic and parenteral preparations
    b) Ointments
    c) Tablets
    d) Capsules
    → **a**

Section 2: Classification of Filters

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11. Filters are classified according to:
    a) Mechanism
    b) Driving force

c) Construction

d) All of these

→ **d**

12. Based on the mechanism, filters are of:

a) Surface and depth types

b) Simple and compound types

c) Active and passive types

d) None

→ **a**

13. Surface filtration retains particles on:

a) The surface of the medium

b) Within pores

c) Below the filter

d) None

→ **a**

14. Depth filtration retains particles:

a) On the surface

b) Within the thickness of the filter medium

c) At the outlet

d) In the filtrate

→ **b**

15. Example of surface filter:

a) Membrane filter

b) Sintered glass filter

c) Cotton plug

d) Both a and b

→ **a**

16. Example of depth filter:

a) Sintered glass filter

b) Filter paper

c) Membrane filter

d) Cellulose plug

→ **a**

17. According to driving force, filtration can be:

a) Gravity

b) Vacuum

c) Pressure

d) All of these

→ **d**

18. Gravity filters work under:

a) Vacuum

b) Atmospheric pressure

c) Compressed air

d) Centrifugal force

→ **b**

19. Pressure filters operate under:

a) Suction pressure

b) Compressed air

c) Gravity

d) None

→ **b**

20. Vacuum filtration uses:

a) Negative pressure

b) Positive pressure

c) Atmospheric force

d) None

→ **a**

Section 3: Theory of Filtration

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21. Filtration is governed by:

a) Poiseuille's law

b) Fick's law

c) Newton's law

d) Graham's law

→ **a**

22. Poiseuille's law relates flow rate to:

a) Pressure difference, viscosity, and radius

b) Temperature

c) Concentration

d) Volume

→ **a**

23. Flow rate is directly proportional to:

a) Pressure difference

b) Viscosity

c) Filter thickness

d) Resistance

→ **a**

24. Flow rate is inversely proportional to:

a) Viscosity

b) Pressure

c) Area

d) None

→ **a**

25. Resistance in filtration comes from:

a) Cake

b) Filter medium

c) Both

d) None

→ **c**

26. As filtration progresses, cake resistance:

a) Decreases

b) Increases

c) Remains same

d) None

→ **b**

27. Increasing temperature generally:

a) Increases viscosity

b) Decreases viscosity

c) Increases resistance

d) None

→ **b**

28. Filtration efficiency depends on:

a) Pore size

b) Pressure difference

c) Area of filter

d) All

→ **d**

29. Filtration rate can be increased by:

a) Increasing pressure

b) Decreasing viscosity

c) Using filter aid

d) All

→ **d**

30. The total resistance in filtration = resistance of cake + _____.

a) Resistance of medium

b) Pressure

c) Surface tension

d) Temperature

→ **a**

Section 5: Principle, Construction, Working

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31. Principle of filtration:

a) Separation through a porous medium

b) Evaporation

c) Precipitation

d) Diffusion

→ **a**

32. Driving force in gravity filtration:

a) Gravity

b) Pressure

c) Centrifugal force

d) Vacuum

→ **a**

33. Driving force in vacuum filtration:

a) Suction pressure

b) Centrifugal force

c) Diffusion

d) None

→ **a**

34. Driving force in pressure filtration:

a) Compressed air

b) Weight

c) Gravity

d) Centrifuge

→ **a**

35. Rotary drum filter works on:

a) Continuous vacuum filtration

b) Pressure filtration

c) Gravity filtration

d) None

→ **a**

36. Buchner funnel is used in:

a) Vacuum filtration

b) Gravity filtration

c) Pressure filtration

d) None

→ **a**

37. Filter aids are used to:

a) Prevent clogging

b) Increase filtration rate

c) Both a and b

d) None

→ **c**

38. Example of filter aid:

a) Kieselguhr

b) Asbestos

c) Bentonite

d) All

→ **d**

39. Filter media must be:

a) Chemically inert

b) Reactive

c) Colored

d) Absorbent

→ **a**

40. The filtration area and flow rate are:

a) Directly proportional

b) Inversely proportional

→ **a**

Section 6: Sintered Glass Filter

41. Sintered glass filters are made by:
    a) Fusing glass particles
    b) Melting metals
    c) Pressing paper
    d) Fusing cellulose
    → **a**
42. The pores are formed by:
    a) Sintering process
    b) Cooling
    c) Crystallization
    d) Chemical etching
    → **a**
43. Sintered glass filters are graded as:
    a) G1–G5
    b) F1–F5
    c) A1–A5
    d) None
    → **a**
44. Sintered glass filters are examples of:
    a) Depth filters
    b) Surface filters
    c) Membrane filters
    d) None
    → **a**
45. Principle:
    a) Filtration through porous glass structure
    b) Evaporation
    c) Centrifugal separation
    d) Diffusion
    → **a**
46. Pore size range:
    a) 1–200 µm
    b) 0.1–1 µm
    c) 10–500 µm

d) 0.22 µm

→ **a**

47. Used in:

a) Laboratory filtration

b) Industrial gases

c) Corrosive liquids

d) All

→ **d**

48. Advantages include:

a) Reusable

b) Uniform pore size

c) Chemically inert

d) All

→ **d**

49. Disadvantage:

a) Brittle

b) Expensive

c) Not for viscous fluids

d) All

→ **d**

50. Sterilization can be done by:

a) Dry heat

b) Autoclave

c) Chemical

d) All

→ **d**

Section 7: Membrane Filter

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51. Membrane filters are also called:

a) Millipore filters

b) Sintered filters

c) Paper filters

d) None

→ **a**

52. Membrane filter is an example of:

a) Surface filter

b) Depth filter

→ **a**

53. Membrane filters are made of:

a) Cellulose acetate

b) PTFE

c) PVC

d) All

→ **d**

54. Membrane filter pore size for sterilization:

a) 0.22 µm

b) 1.0 µm

c) 0.45 µm

d) 5.0 µm

→ **a**

55. Works on principle of:

a) Mechanical sieving

b) Adsorption

c) Ion exchange

d) Diffusion

→ **a**

56. Retains:

a) Bacteria

b) Particulates

c) Both

d) None

→ **c**

57. Commonly used in:

a) Sterilization of heat-labile fluids

b) Grinding

c) Mixing

d) Extraction

→ **a**

58. Advantage:

a) Effective for bacteria removal

b) High flow rate

c) Reusable

d) All

→ **a**

59. Common pore diameter range:

a) 0.1–5 µm

b) 1–100 µm

c) 5–10 µm

d) 0.01 µm

→ **a**

60. Membrane filters are _____ when wet.

a) Flexible

b) Brittle

c) Inactive

d) Hard

→ **a**

Section 8: Applications

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61. Used in sterilization of:

a) Heat-sensitive liquids

b) Powders

c) Tablets

d) Emulsions

→ **a**

62. Used in preparation of:

a) Parenteral products

b) Ophthalmic solutions

c) Both

d) None

→ **c**

63. Used in air purification units — True/False

→ **True**

64. Used in water purification — True/False

→ **True**

65. Used in microbiological sterility testing — True/False

→ **True**

66. Used in analytical laboratories — True/False

→ **True**

67. Used for clarification of solutions — True/False

→ **True**

68. Filtration ensures product clarity — True/False

→ **True**

69. Filtration used before filling sterile containers — True/False

→ **True**

70. Membrane filters are used in air sampling — True/False

→ **True**

Section 9: Advantages

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71. Filtration removes microorganisms without heat — True/False

→ **True**

72. Maintains drug potency — True/False

→ **True**

73. Provides sterile and clear product — True/False

→ **True**

74. Simple and effective process — True/False

→ **True**

75. Sintered glass filter is reusable — True/False

→ **True**

76. Membrane filter provides precise particle retention — True/False

→ **True**

77. Membrane filter operation is rapid — True/False

→ **True**

78. No thermal degradation occurs — True/False

→ **True**

79. Membrane filters are disposable — True/False

→ **True**

80. Filtration avoids chemical contamination — True/False

→ **True**

Section 10: Comparative Questions

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81. Which is reusable?

a) Sintered glass filter

b) Membrane filter

→ **a**

82. Which is disposable?

a) Membrane filter

b) Sintered glass filter

→ **a**

83. Which has uniform pore size?

a) Membrane filter

b) Sintered glass filter

→ **a**

84. Which can withstand heat sterilization better?

a) Sintered glass filter

b) Membrane filter

→ **a**

85. Which gives absolute filtration?

a) Membrane filter

b) Depth filter

→ **a**

86. Which filter is brittle?

a) Sintered glass

b) Membrane

→ **a**

87. Which filter removes bacteria by size exclusion?

a) Membrane

b) Sintered

→ **a**

88. Which filter cannot handle viscous liquids?

a) Sintered glass

b) Membrane

→ **a**

89. Which is used for sterile filtration of antibiotics?

a) Membrane

b) Sintered

→ **a**

90. Which filter is graded by pore size?

a) Sintered glass

b) Both

→ **a**

Summary & Conceptual Review

91. Filtration is a _____ separation process.

a) Mechanical

b) Chemical

→ **a**

92. Filtration media must be:

a) Inert

b) Reactive

→ **a**

93. Filtration rate depends on:

a) Pressure and viscosity

b) Color and odor

→ **a**

94. Filter aids improve:

a) Flow rate

b) Resistance

→ **a**

95. Membrane filter sterilizes without:

a) Heat

b) Cooling

→ **a**

96. Sintered glass filters can be cleaned and reused — True/False

→ **True**

97. Membrane filters can be tested using bubble point test — True/False

→ **True**

98. Depth filters remove particles by entrapment — True/False

→ **True**

99. Surface filters remove particles by sieving — True/False

→ **True**

100. Filtration is an essential **unit operation** in pharmaceutics — True/False

→ **True**