DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination –Summer2023

Date:26/07/2023

Course:	**B. Pharmacy**	**Sem:3**	
Subject Name:	Pharmaceutical Engineering	**Subject Code:BP304T**	
Max Marks:	**75**	**Duration:**	**3 Hr.**

Instructions:

1. **All questions are compulsory**
2. **Draw diagrams / figures wherever necessary**
3. **Figures to right indicate full marks**

Q. 1. Objective Type Questions (Answer all the questions) **(10 x 2) = 20**

i) What is Reynold's number? Give its importance.

ii) What are heat exchangers. Give their types.

iii) Define evaporation. Classify evaporators.

iv) Give the applications of drying.

v) Describe the modes of size reduction.

vi) Differentiate between solid mixing and liquid mixing.

vii) Write the advantages and disadvantages of plastics as material of construction.

viii) Explain the term pitting corrosion and galvanic corrosion.

ix) Explain the mechanism of filtration.

x) State Fourier's law with equation.

Q. 2. Long Answers (Answer 2 out of 3) **(2 x 10) = 20**

i) Define Centrifugation. Classify centifuges with suitable examples. Discuss in detail on perforated basket centrifuge.

ii) Write the advantages of size reduction. Discuss the factors affecting selection of a mill for size reduction.

iii) Classify distillation. Explain the principle, construction, working and applications of molecular distillation.

Q. 3. Short Answers (Answer 7 out of 9) **(7 x 5) = 35**

i) Explain in detail about short tube evaporator.

ii) With the help of neat labelled diagram explain fluidised bed dryer.

iii) Write the theory of vortex formation and give its prevention methods.

iv) Discuss on the various modes of size separation.

v) What are filter aids? Why are the used. Enlist the filter aids used in pharmacy practice.

vi) Classify materials of construction. Discuss about various types of ferrous metals used.

vii) Describe the various modes of heat transfer with suitable examples.

viii) Explain the factors influencing mixing of solids. Write the principle of planteraty mixer

ix) Explain with the help of diagram the construction and working of a Hammer mill

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination – Winter 2022

Date: 17-2-23

Course:	**B. Pharmacy**	**Sem:** – 3	
Subject Name:	Pharmaceutical Engineering	**Subject Code:**	304
Max Marks:	**75**	**Duration:**	**3 Hr.**

Instructions:

1. **All questions are compulsory**
2. **Draw diagrams / figures wherever necessary**
3. **Figures to right indicate full marks**

Q. 1. Objective Type Questions (Answer all the questions) **(10 x 2) = 20**

i) What is Reynold's number? Give its importance.

ii) What are heat exchangers. Give their types.

iii) Define evaporation. Classify evaporators.

iv) Give the applications of drying.

v) Describe the modes of size reduction.

vi) Differentiate between solid mixing and liquid mixing.

vii) Write the advantages and disadvantages of plastics as material of construction.

viii) Explain the term pitting corrosion and galvanic corrosion.

ix) Explain the mechanism of filtration.

x) State Fourier's law with equation.

Q. 2. Long Answers (Answer 2 out of 3) **(2 x 10) = 20**

i) Define Centrifugation. Classify centifuges with suitable examples. Discuss in detail on perforated basket centrifuge.

ii) Write the advantages of size reduction. Discuss the factors affecting selection of a mill for size reduction.

iii) Classify distillation. Explain the principle, construction, working and applications of molecular distillation.

Q. 3. Short Answers (Answer 7 out of 9) **(7 x 5) = 35**

i) Explain in detail about short tube evaporator.

ii) With the help of neat labelled diagram explain fluidised bed dryer.

iii) Write the theory of vortex formation and give its prevention methods.

iv) Discuss on the various modes of size separation.

v) What are filter aids? Why are the used. Enlist the filter aids used in pharmacy practice.

vi) Classify materials of construction. Discuss about various types of ferrous metals used.

vii) Describe the various modes of heat transfer with suitable examples.

viii) Explain the factors influencing mixing of solids. Write the principle of planteraty mixer

ix) Explain with the help of diagram the construction and working of a Hammer mill

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination – Summer 2022

Course: B. Pharmacy

Sem: III

Subject Name: Pharmaceutical Engineering

Subject Code: BP304T

Max. Marks: 75

Date: 30/07/2022

Duration: 3.45 Hrs.

Instructions –

1. **All questions are compulsory**
2. **Answers to MCQs should be written in full sentences**
3. **Draw diagrams / figures wherever necessary**
4. **Figures to right indicate full marks**

Q. 1. Multiple Choice Questions (MCQs) = 20 x 1 = 20 (All the questions are compulsory)

1) When principle of conservation of energy is applied to flow of fluids then resulting equation is known as
   a) Reynold's Number b)Bernoulli's theorem
   c) Hagen-poistuile's equation d)Kick's theory
2) If the vapour pressure of the liquid is more the evaporation rate is
   a) High b) Low
   c) Medium d) Too low
3) Mechanism of fluid energy mill is
   a) Impact pressure b) Attrition and Impact
   b) Cutting d) None of the above
4) Climbing film evaporator also called as
   a) Falling film evaporator b) Triple effect evaporator
   c) Rising film evaporator d) Forced circulation
5) Which of the following is not an advantage of size reduction?
   a) Improved dissolution rate b) Improved physical stability
   c) Improved absorption rate d) Drug degradation
6) Which of the following theory not describe rate of filtration?
   a) Darcy's Law b)Poiseuille's equation
   c) Kozeny carman equation d) Noye's Whitney equation
7) Flow pattern in liquid-liquid mixing
   a) Radial flow b) Tangential flow
   c) Longitudinal flow d) All of the above
8) Alcohol and water is example of
   a) Positive mixture b) Negative mixture

c) Neutral mixture
d) None of the above

9) Centrifugation is used for...
a) Mixing
b) Purification
c) Separation
d) Sizing

10) Which of the following is type of stainless steel?
a) Martensitic
b) Ferritic
c) Austenitic
d) All of the above

11) Which of the following is not a filter aid?
a) Diatomaceous earth
b) Perlite
c) Cellulose
d) Cotton

12) Austenitic consists of
a) 13 to 20% chromium +6 to 22% nickel +0.1 to 0.25% carbon
b) 12 to 20% chromium +2% Nickel+0.2 to 0.4 % carbon
c) 20 to 40% chromium+12% nickel +1 to 25 carbon
d) 15 to 30 % chromium+0.15%carbon

13) Impingement, enlargement and straining are related to
a) Mixing
b) Centrifugation
c) Filtration
d) All of these

14) What is pore size of filtration membrane to remove bacteria?
a) 0.25µm
b) 0.27µm
c) 0.22µm
d) 0.26µm

15) Mixing device technically called as
a) Impellers
b) Turbines
C) Paddles
d) All of these

16) Raoult's law is related to
a) Vapour pressure
b) Atmospheric pressure
c) Osmotic pressure
d) All of the above

17) Heat transfer place as per
a) Zeroth law of thermodynamics
b) First law of thermodynamics
c) Second law of thermodynamics
d) Kirchhoff's law

18) Corrosion of metal involves
a) Physical reaction
b) Chemical reaction
c) Both a) and b)
d) None of the above

19) Free moisture content is
a) Total water content minus equilibrium moisture content.
b) Total water content plus equilibrium moisture content
c) Ratio of total water content to the equilibrium moisture content
d) Total water present in solid minus water in environment.

20) Tunnel dryer is varient of
a) Rotary drum dryer
b) Fluidized bed dryer

c) Tray dryer d) Spray dryer

Q. 2. Long Answers) = 2 x 10 = 20 (Answer 2 out of 3)

1) Discuss in detail various modes of heat transfer. Draw a neat diagram of shell and tube heat exchanger and explain its working.
2) Define distillation, write application of distillation and explain construction working laboratory scale vacuum distillation unit.
3) Define and classify evaporation and Describe in detail factor affecting evaporation.

Q. 3. Short Answers = 7 x 5 = 35 (Answer 7 out of 9)

1) Write a note on theories of filtration.
2) Explain principle, construction and working of rotameter.
3) Explain theories of corrosion.
4) Discuss the principle and application of centrifugation.
5) Explain in detail multiple effect evaporators.
6) Write in detail factors affecting size reduction.
7) How will you carry out conveying of solid?
8) Write a note on lyophylizer.
9) List the equipments used for solid mixing in pharmaceutical industry. explains construction and working of sigma blade mixer.

-----END OF THE PAPER-----

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY
LONERE - RAIGAD - 402 103
Winter Semester Examination - Dec. - 2019

Course: B. Pharm. **Semester: III**
Subject: Pharmaceutical Engineering (BP304T) **Marks: 75**
Date:24/12/2019 **Duration: 3hrs**

Instructions: *i) All questions are compulsory*
ii) Figures to the right indicate full marks
iii) Draw the diagrams or flow charts wherever necessary.

Q. No.1 Attempt the following questions (All Questions Compulsory) (20)

1) The SI unit of Reynolds number is
   a) Nm^{-2}
   b) Centipoise
   c) m/s
   d) Unit less
2) Bernoulli's equation can be derived from the conservation of
   a) Energy
   b) Mass
   c) Volume
   d) Angular momentum
3) Fluid energy mill works on the principle of
   a) Impact
   b) Attrition
   c) Cutting
   d) Impact & attrition
4) Elutriation is a process of
   a) Size reduction by mechanical forces
   b) Size reduction by stationary fluid
   c) Size reduction by moving fluid
   d) Size reduction by electrical forces
5) Which of the following is the case of heat transfer by radiation
   a) Blast furnace
   b) Heating and building
   c) Cooling parts of furnace
   d) Heat received by a person from fire
6) Evaporation occurs only at
   a) boiling
   b) Extreme cooling
   c) Surface of a liquid
   d) Boiling at atmospheric pressure
7) Sieve number indicates, the number of meshes in
   a) 2.54 mm
   b) 25.4 mm
   c) 254 mm
   d) 0.254 mm
8) Vena contracta occurs in
   a) Venturi meter
   b) Orifice meter
   c) Pitot tube
   d) Rota meter

9) Which of the following equation contains the term, "Specific surface area"
   a) Darcy's equation
   b) Kozeny-carman equation
   c) Stock's law
   d) Poiseuille's equation
10) Fluidization as a concept involved in
   a) Drying
   b) Coating
   c) Atomizers
   d) All of the above
11) Which distillation is called as 'Evaporative distillation' or 'Short path distillation?
   a) Simple distillation
   b) Vacuum distillation
   c) Molecular distillation
   d) d) Fractional distillation
12) Differential distillation is?
   a) Simple distillation
   b) Vacuum distillation
   c) Molecular distillation
   d) Fractional distillation
13) In which of the following techniques the sample is kept below triple point
   a) Centrifugation
   b) Spray congealing
   c) Lyophilization
   d) Spray Drying
14) If the dry spot appears in the substance in the batch drying curve at?
   a) CMC
   b) EMC
   c) Bound moisture
   d) Unbound moisture
15) Solid mixing equipment are commonly referred to
   a) Mixers
   b) Blenders
   c) Both a & b
   d) None
16) Impellers are the devices which supply energy form
   a) Solid-solid mixing
   b) Solid-liquid mixing
   c) Liquid-liquid mixing
   d) Liquid evaporation
17) Clarification is a process where amount of solids to be separated from liquid is less than?
   a) 1%
   b) 5%
   c) 10 %
   d) 0.1 %

18) Which one of the following filter is immersed in the slurry to be filtered?
a) Sintered glass filter
b) Leaf filter
c) Plate and frame filter
d) Seitz filter

19) Which one of the following is a continuous type centrifuge?
a) Super centrifuge
b) Perforated basket centrifuge
c) Non-perforated basket centrifuge
d) None of these

20) This form of corrosion occurs due to concentration difference in a component?
a) Uniform
b) Galvanic
c) Inter-Granular
d) Stress

Q. No.2 Attempt any TWO questions of the following: (20 Marks)

a) Explain principle, construction, working mechanism, applications along with diagram of Silverson emulsifier

b) Write in detail about Bernoulli's theorem and its application

c) Explain principle, construction, working mechanism, applications along with diagram of Rotary drum filter

Q. No.3 Attempt any SEVEN questions of the following: (35 Marks)

a) Give mechanism of size reduction, explain impact of speed on ball mill performance.

b) Explain construction, working, principle of air separator

c) Differentiate between size reduction and size separation

d) What is counter flow heat exchangers, explain shell & tube exchanger

e) Describe efficiency and capacity of multiple effect evaporators

f) Explain mechanism of drying & concept of EMC

g) What is top-driven and under driven batch type perforated basket centrifuge

h) What is corrosion, give its types and explain how corrosion can be prevented

i) Explain principle and procedure of molecular distillation, what are its applications

----- END OF PAPER -----

undefined

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY
LONERE – RAIGAD – 402 103
Winter Semester Examination – December – 2018

Course: B. Pharm. **Semester: III**
Subject with Subject Code: Pharmaceutical Engineering (BP304T)
Date: 22.05.2019 **Marks: 75** **Duration: 3hrs**

Instructions: *i) All questions are compulsory*
ii) Figures to the right indicate full marks
iii) Draw the diagrams or flow charts wherever necessary.

Q.No.1 Attempt the following multiple choice questions (All Questions Compulsory) (20 Marks)

1. According to Bernoullie's equation, where speed is high, pressure will be.....
   A. high
   B. low
   C. moderate
   D. zero
2. Flaw is a _____which is usually present on the material under consideration while size reduction.
   A. Structural weakness
   B. Strength
   C. Opening
   D. Fracture
3. Powder passed through 10 and retained on 44 is ___
   A. Coarse
   B. Moderately coarse powder
   C. Moderately fine powder
   D. Fine powder
4. Which of the color may absorb maximum heat
   A. White
   B. Black
   C. Red
   D. Orange
5. Principle of size separation using elutriation tank is based on
   A. Centrifugation
   B. Inertia
   C. Sedimentation
   D. viscosity
6. Application of heat transfer may not be valid for one of the following unit operations.
   A. Drying
   B. Distillation
   C. Filtration
   D. Crystallization
7. Water for injection is usually prepared using___ distillation
   A. Simple
   B. Flash
   C. Azeotropic

undefined

D. Steam

8. Drying is essential after one of the following unit operations.
   A. Mixing
   B. Crystallization
   C. Size reduction
   D. Evaporation
9. The dominant mechanism of mixing in sigma blade is____
   A. Convective mixing
   B. Diffusive mixing
   C. Tumbling
   D. Shearing
10. Fractional distillation is also known as ____
   A. Rectification
   B. Steam distillation
   C. Simple distillation
   D. None
11. Centrifuges used commercially are ____
   A. Perforated basket
   B. Short cycle batch
   C. Supercentrifuge
   D. All of above
12. Austenitic stainless steel is usually alloy, made up of ____
   A. Chromium, carbon, nickel
   B. Chromium, carbon, zinc
   C. Chromium, carbon, titanium
   D. Chromium, carbon, copper
13. Significant reason of corrosion is ____
   A. Physical attack
   B. Chemical attack
   C. Electrochemical attack
   D. Microbial attack
14. Factors which influence rate of mixing are____
   A. Nature of surface
   B. Particle shape
   C. Proportion of material
   D. All of above
15. In drying process the final product is in the form of____
   A. Slurry
   B. Solution
   C. Solid
   D. All of above
16. Latent heat of evaporation is the amount of heat required to transfer a phase from ____
   A. Solid to gas
   B. Fluid to vapor
   C. Liquid to vapor
   D. None
17. Calandria is a part of ____
   A. Distillery

B. Evaporator
C. Mill
D. Sieve

18. Drying of emulsion can be best acquired with_____ dryer.
A. Tray
B. Spray
C. Roller
D. Vacuum

19. Design of a racing car usually based on the principle similar to _____ flow.
A. Laminated
B. Turbulent
C. Flat
D. Stream lined

20. One of the following mills is not suitable for soft, tacky, fibrous materials.
A. Colloid mill
B. Cutter mill
C. Fluid energy mill
D. Roller mill

Q.No.2Attempt any TWO questions of the following: (20 Marks)

A] Define and classify evaporators. Describe in detail principle, construction and working of multiple effect evaporator.

B] Derive Bernoulli's Equation and write its application in orifice meter.

C] Explain corrosion. Write the principle involved in it and mention methods of prevention of corrosion.

Q.No.3Attempt any SEVEN questions of the following: (35 Marks)

A] Describe in detail construction and working of fluidized bed dryer.

B] What do you meant by fractional distillation?

C] Explain and classify different modes of heat transfer.

D] Explain filtration and, add a note on filter aids and factors influencing rate of filtration.

E] Explain simple (U tube) manometer.

F] Classify the industrial centrifuges. Write construction and working of perforated basket centrifuge.

G] Explain sieving method for size separation.

H] Write in detail fluid energy mill.

I] Discuss and draw a neat-labeled diagram of ribbon blender along with its advantages and disadvantages.

----- END OF PAPER -----

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY

LONERE – RAIGAD – 402 103

Winter Semester Examination – December – 2018

Course: B.Pharm. **Semester: III**

Subject with Subject Code: Pharmaceutical Engineering (BP304T)

Date: 26/12/2018 **Marks: 75** **Duration: 3hrs**

Instructions: *i) All questions are compulsory*

ii) Figures to the right indicate full marks

iii) Draw the diagrams or flow charts wherever necessary.

Q.No.1 Attempt the following questions (All Questions Compulsory) **(20 Marks)**

1. Austenitic consists of

   A. 13 to 20% Chromium + 6 to 22% Nickel + 0.1 to 0.25% carbon

   B. 12 to 20% Chromium + 2% Nickel +0.2 to 0.4% carbon

   C. 20 to 40% Chromium + 12% Nickel + 1 to 2% carbon

   D. 15 to 30% Chromium + 0.1% carbon

2. Commonly used ball for pebble mill are

   i) Round ball, ii) Rods iii) Needle

   A. Only i are used C. i & ii are used

   B. All ii & iii are used D. All of these are used.

3. Which of the following is false for reflux ratio for High efficiency of fractional distillation?

   A. It is controlled by means of a suitable still.

   B. It should be low.

   C. The quotient of the amount of liquid returning through the column to the amount collected into the receiver during the same interval of time.

   D. It should be high.

4. As per Indian official standard Moderately fine powder is

   A. All particles must pass through sieve no 44 and 50 % particles pass through sieve no 85.

   B. All particles must pass through sieve no 44 and 60 % particles pass through sieve no 85.

   C. All particles must pass through sieve no 44 and 50 % particles pass through sieve no 60.

   D. All particles must pass through sieve no 44 and 40 % particles pass through sieve no 85.

5. Free moisture content is

   A. Total water content minus equilibrium moisture content.

   B. Total water content plus equilibrium moisture content.

   C. Ratio of Total water content to the equilibrium moisture content.

   D. Total water present in solid minus water in environment.

6. The Liquid mixing mechanism are
   A. Bulk transport
   B. Turbulent mixing
   C. Molecular diffusion
   D. All of these
7. The value of Reynold's number for turbulent flow is
   A. <2000
   B. 2000-4000
   C. >4000
   D. <1000
8. Ultracentrifuge shows
   A. 85000 revolutions per minutes
   B. 8500 revolutions per minutes
   C. 10000 revolutions per minutes
   D. 850 revolutions per minutes
9. Which of following is not advantage of rising film evaporator?
   A. The enhanced heat transfer.
   B. Suitable for foam forming liquids.
   C. Large area for heat transfer is provided.
   D. Not suitable for heat sensitive material.
10. In centrifuges the driving forces for separation of solids are
   A. Centrifugal force
   B. Both Centrifugal force & Gravitational force
   C. Gravitational Force
   D. None of these.
11. As per Fourier's law of convention rate of heat transfer through a uniform material is
   A. Directly proportional to the length of uniform material.
   B. Inversely proportional to the temperature difference.
   C. Inversely proportional to the area of uniform material.
   D. Directly proportional to the temperature drop.
12. Planetary mixer is are example of
   A. Agitator mixer
   B. Solid mixer
   C. Shear mixer
   D. All of these
13. Impingement, Entanglement & Straining are related to
   A. Mixing
   B. Centrifugation
   C. Filtration
   D. All of these
14. The conveyers for transportation of solids are
   A. Belt conveyors
   B. Chain conveyors
   C. Screw conveyors
   D. All of these
15. The bacteria used to test membrane filters of Pore size 0.3 (μm) are
   A. *Serratia marcescens*
   B. *Pseudomonas aeruginosa*
   C. *Pseudomonas diminuta*
   D. *Saccharomyces cerevisiae*
16. Ball mill shows the principle
   A. Impact
   B. Compression
   C. Impact & attrition
   D. Crushing & sharing
17. Mixing device technically called as
   A. Impellers
   B. Turbines
   C. Paddles
   D. All of these.

18. The rate of evaporation is

A. Inversely proportional to atmospheric pressure

B. Inversely proportional to temperature.

C. Inversely proportional to the vapour pressure of liquid.

D. Inversely proportional to the surface area for evaporation.

19. Tunnel dryer is variant of

A. Rotary drum dryer.

B. Fluidized bed dryer.

C. Tray dryer.

D. Spray dryer.

20. Raoult's law is related to

A. Vapour pressure

B. Atmospheric pressure

C. Osmotic pressure

D. All the above

Q.No.2Attempt any TWO questions of the following: **(20 Marks)**

A] Derive Bernaulli's equation. Discuss its applications.

B] Discuss in detail various modes of heat transfer. Draw a neat diagram of shell & tube heat exchanger & explain its working.

C] List the factors influencing the rate of filtration. Explain construction, working & applications of filter press with a neat diagram.

Q.No.3Attempt any SEVEN questions of the following: **(35 Marks)**

A] Explain theories of corrosion.

B] Discuss construction, working, application & advantages of with a neat labeled diagram of fluidized bed dryer.

C] Draw a neat diagram of bag filter & explain its working.

D] Classify evaporators and explain economy of multiple effect evaporators in comparison to single effect evaporator.

E] List the equipments used for solid mixing in pharmaceutical industry. Explain construction & working of Sigma blade mixer.

F] Discuss the principle & application of centrifugation.

G] Discuss any five factors affecting evaporation.

H] With help of a neat diagram explain construction, working, application & advantages of fluid energy mill.

I] What is meant by steam distillation? What are its special advantages?

----- END OF PAPER -----

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination – Winter 2022

Date: 22/07/2023

Course	**: B. Pharmacy**	**Sem: III**	
Subject Name	**: Pharmaceutical Organic Chemistry-II**	**Subject Code:**	**BP301T**
Max Marks	**: 75**	**Duration**	**: 3 Hr.**

Instructions:

1. **All questions are compulsory**
2. **Draw diagrams / figures wherever necessary**
3. **Figures to right indicate full marks**

Q. 1. Objective Type Questions (Answer all the questions) **(10 x 2) = 20**

i) Structure and uses of DDT.

ii) Define Reichert Meissl Value and give its significance.

iii) Structure and uses of Resorcinol.

iv) Write down qualitative test for phenol.

v) Huckle rule for aromaticity.

vi) Saponification of oils.

vii) Any two reactions of benzoic acid.

viii) Structure and medicinal uses of Naphthalene.

ix) Any two method for preparation of diphenylmethane.

x) Coulson and Moffitt's modification.

Q. 2. Long Answers (Answer 2 out of 3) **(2 x 10) = 20**

i) Define fats and oils with example and give difference between them. Explain acid value, and saponification value with significance.

ii) What are condensed polynuclear hydrocarbon. Write down Haworth synthesis of Anthracene and any two-chemical reaction of it. Draw the structure of derivatives of it along with uses.

iii) Explain in detail Friedel Crafts alkylation and acylation in benzene with mechanism of reaction. Give its limitations.

Q. 3. Short Answers (Answer 7 out of 9) **(7 x 5) = 35**

i) Explain in detail evidences given by Kekule to establish the structure of benzene.

ii) Explain reaction and mechanism of nitration, halogenation and sulphonation in benzene.

iii) Write down about effect of substituents on acidity of phenol. Give synthetic uses of aryl diazonium salt.

iv) Explain in detail hydrogenation of oils. Give preventive major for rancidity of oils.

v) Explain electrophilic substitution in diphenylmethane. Give its uses.

vi) Give any three reactions of Phenanthrene. Note on derivatives of it.

vii) Discuss Baeyer's Strain theory.

viii) Give reactions of cyclopropane and cyclobutane.

ix) Define ester value give significance and principle involved in its determination.

------END OF THE PAPER------

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination – Winter 2022

Date: 29/12/2022 10/2/23

Course	**: B. Pharmacy**	**Sem: III**	
Subject Name	**: Pharmaceutical Organic Chemistry-II**	**Subject Code:**	**BP301T**
Max Marks	**: 75**	**Duration**	**: 3 Hr.**

Instructions:

1. **All questions are compulsory**
2. **Draw Structres/ diagrams / figures wherever necessary**
3. **Figures to right indicate full marks**

Q. 1. Objective Type Questions (Answer all the questions) **(10 x 2) = 20**

i) Give Structure and uses of DDT.

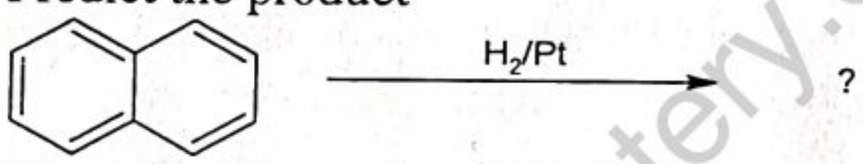
ii) Define Acid Value and give its significance.

iii) Write Structure and uses of Resorcinol.

iv) Write down qualitative test for phenol.

v) Write Huckle rule for aromaticity with suitable example.

vi) Predict the product



vii) Give any two reactions of benzoic acid.

viii) Discuss structure and medicinal uses of Naphthalene.

ix) Write any two methods for preparation of diphenylmethane.

x) Write down the structure and give numbering to the derivatives of naphthalene and Anthracene

Q. 2. Long Answers (Answer 2 out of 3) **(2 x 10) = 20**

i) *Define fats and oils with example and give difference between them. Explain Hydrolysis, Hydrogenation and Rancidity reactions of fats.*

ii) *What are condensed polynuclear hydrocarbon. Write down Haworth synthesis of Anthracene and any two-chemical reaction of it. Draw the structure of derivatives of it along with uses.*

iii) *What is Friedel craft reaction. Explain in detail Friedel Crafts alkylation and acylation. Give its limitations.*

Q. 3. Short Answers (Answer 7 out of 9) **(7 x 5) = 35**

i) What are activating & deactivating groups?

ii) Explain reaction and mechanism of nitration, halogenation and sulphonation in benzene.

iii) Write down about effect of substituents on acidity of phenol. Give synthetic uses of aryl diazonium salt.

iv) Give analytical and synthetic evidences in the derivation of structure of benzene.

v) Explain electrophilic substitution in diphenylmethane. Give its uses.

vi) Write Electrophilic substitution reaction of phenanthrene.

vii) Discuss Baeyer's Strain theory.

viii) Give reactions of cyclopropane and cyclobutane.

ix) Explain the basicity of aromatic amine

------END OF THE PAPER------

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary End Semester Examination – Summer 2022

Course: B. Pharmacy **Sem:** III

Subject Name: Pharmaceutical Organic Chemistry-II **Subject Code:** BP301T

Max Marks: 75 **Date:**24/08/2022 **Duration:** 3.45 Hrs.

Instructions –

1. **All questions are compulsory**
2. **Answers to MCQs should be written in full sentences**
3. **Draw diagrams / figures wherever necessary**
4. **Figures to right indicate full marks**

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1. Multiple Choice Questions (All questions are compulsory) **(20 Marks)**

1) Benzene reacts with acetic anhydride in presence of $AlCl_3$ to form
   a) Benzophenone b) Acetophenone
   c) Phenyl Acetate d) Chlorobenzene

2) Which of the following cycloalkane has the lowest heat of combustion per carbon item?
   a) Cyclopropane b) Cyclopentane
   c) Cyclohexane d) None of these

3) Acetylenes Contain
   a) Carbon – Carbon Bond (c-c) b) Carbon – Carbon Double Bond
   c) Carbon – Carbon Triple Bond d) No Bond.

4) Which Catalyst used during halogenation Benzene
   a) Lewis Acid b) Lewis Base
   c) Platinum d) Ni/ Platinum

5) Which of the following is used in manufacturing of Bakelite
   a) Phenol b) Formaldehyde
   c) Ethyl Alcohol d) Both A and B

6) Which of the following is most acidic
   a) Benzyl alcohol b) Para Chloro phenol
   c) Para Fluoro Phenol d)Meta Chloro Phenol

7) Which of the following statement is true regarding Halogenation of Benzene
   I. Activation of electrophile by Lewis catalyst
   II. Attack of electrophile by aromatic ring
   III. Attack ofaromatic ring by activated electrophile
   IV. Activated electrophile protonation to regenerate aromatic ring

   a) I & III b) I & IV c) I & II d) II & IV

8) Halogen through are electron withdrawing in nature they are ortho, para directors in electrophilic aromatic substitution.
   a) Positive charge accommodated on halogen b) They are ring activators
   c) Formation of stable hydronium ion d) Because they are electronegative in nature

9) Which is most acidic in following compounds:
   a) 2 chloro-propanol b) m-chlorophenol

c) Cresol
d) Phenol

10) Organic compound which contains one or more Benzene ring are termed as
a) Aryl
b) Arenes
c) Benzenes
d) Benzyls

11)Benzimidazolium chloride reacts with _____ to yield benzene
a) H_3PO_2
b) HBF_4
c) KCN
d) SnO_2

12)Phenols with _____ gives colored complexes
a) Diazonium Salt
b) Bromine
c) $FeCl_3$
d) Aspirin

13) Mono Nitration of n-methyl aniline gives _____ used as a major product
a) Ortho-nitro, n-methyl aniline
b) Para-nitro, n-methyl aniline
c) Meta-nitro, n-methyl aniline
d) Ortho, Para di-nitro, n-methyl aniline

14) Sulphonation of phenol at room temperature gives
a) *p*- isomer
b) *o* - isomer
c) *m*-isomer
d) Both *o*- and *p*- isomers

15) The degree of unsaturation of lipid can be measured as
a) Saponification
b) Iodine
c) RM
d) Polenske number

16) Molecular formula for DDT is
a) $C_{14}H_9Cl_5$
b) $C_{10}H_8Cl_8$
c) $C_{10}H_9Cl_5$
d) $C_{10}H_9Cl_2$

17) Which of the following is weaker than benzoic acid
a) *p*- Nitrobenzoic Acid
b) *p* - Chlorobenzoic Acid
c) p-Methylbenzoic Acid
d) *o*- Chlorobenzoic Acid

18) Highly unsaturated oil exposed to undergo oxidation and polymerization to form
a) Drying Oil
b) Hardening Oil
c) Rancid Oil
d) Saponification

19) Which of the following is not ortho-para directing
a) -OH
b) -SH
c) $-NH_2$
d) -CN

20)Which of this is the simplest example of polynuclear hydrocarbon
a) Pyrene
b) Dibenzoanthracene
c) Naphthalene
d) None of these

II.Long Answers(Answer any **Two**) **(20 Marks)**

1) Write the principle, reaction and mechanism of Nitration and Friedel Craft's Alkylation in benzene.

2) Give the synthesis, reactions and medicinal uses of anthracene & naphthalene

3) How acidity of aromatic carboxylic acid is analyzed. Explain the effects of substituents on acidic strength of benzoic acid.

III.Short Answers(Answer any **Seven**) **(35 Marks)**

1) Write the methods of preparations of deiphenyl methane.

2) Write the mechanism for diazotization reaction.

3) Explain the Huckel's rule with suitable examples.

4) Define angle strain. Discuss why higher cycloalkanes are more stable than lower members.

5) Write the chemical reactions of fats and oils.

6) Explain the molecular orbital structure of benzene.

7) Explain the directive effects of substituent towards electrophilic substitution reactions of benzene.

8) Give the structure and used of saccharin, resorcinol and phenanthrene.

9) Explain Bayer's strain theory and Sache-Mohrs theory.

------END OFPAPER------

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY
LONERE – RAIGAD – 402 103
Winter Semester Examination – December – 2019

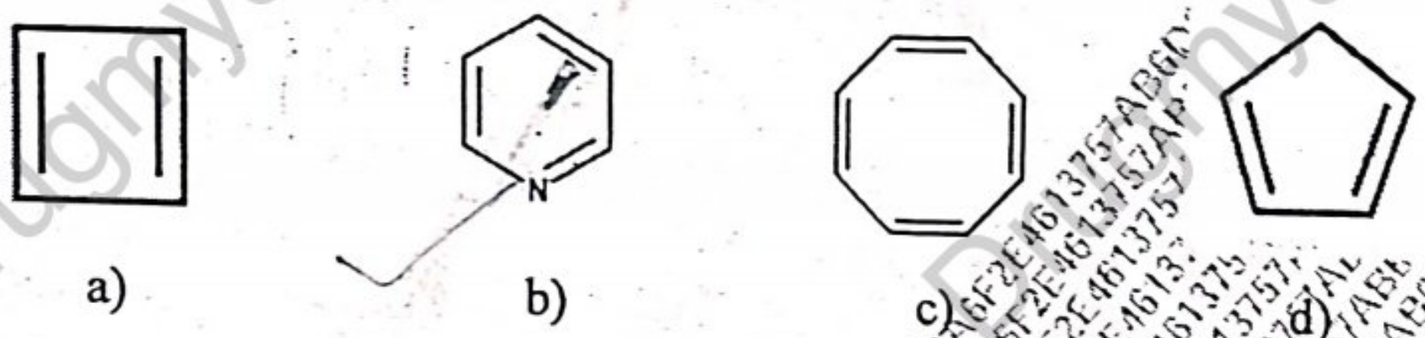
Branch: B. Pharm. Second Year **Semester: III**
Subject: Pharmaceutical Organic Chemistry-II (BP301T) **Marks: 75**
Date: 17/12/2019 **Time: 3hrs**

Instructions: i) All questions are compulsory
ii) Figures to the right indicate full marks
iii) Draw the diagrams or flow charts wherever necessary

Q. No.1 Multiple Choice Questions (MCQs) = 20 x 1 = 20

(Answer all the questions)

1) The Bond angle between carbon atoms in cyclohexane is ----------.
   a) 60^0 b) 90^0 c) 120^0 d) 109.28^0
2) Anthracene undergoes electrophilic substitution reactions mainly at ------.
   a) C-1 b) C-2 c) C-9 d) C-1 & C-2
3) Phenanthrene on reduction in presence of Na in isopentanol gives----------.
   a) 9,10 –dihydrophenantherne
   b) 1,2 –dihydrophenantherne
   c) 3,4 –dihydrophenantherne
   d) None of the above
4) The most stable conformation of cyclohexane is the ----------.
   a) Haworth b) Chair c) Boat d) Newmann
5) Fats and oils are ----------.
   a) Diesters of glycerol b) Diesters of glycol
   c) Monoesters of glycerol d) Triesters of glycerol
6) Naphthalene undergoes nitration with HNO_3/H_2SO_4 at 50-60^0c to give mainly-------.
   a) 1- Nitronaphthalene b) 2- Nitronaphthalene
   c) 1, 2 Dinitronaphthalene d) 1, 8- dinitronaphthalene
7) Which of the following compound is aromatic



a) b) c) d)

8) Liquid oil can be converted in to solid fats by ----------

a) Saponification b) Hydrolysis

c) Hydrogenation d) Oxidation of double bond

9) Phenol on reaction with excess of Bromine water to give----------

a) bromobenzene b) m-bromophenol

c) ortho and p-bromophenol d) 2,4,6 tribromophenol

10) Which of the following acid is weaker than Benzoic acid?

a) p-nitrobenzoic acid b) p-methylbenzoic acid

c) p-chlorobenzoic acid d) o-chlorobenzoic acid

11) The degree of unsaturation of fat can be determined by means of its ----

a) Iodine number b) Saponification number

c) Acetyl number d) Ester number

12) The carbon atoms in a benzene ring are

a) sp3 hybridised b) sp hybridized c) sp2 hybridised d) None of the above

13) Phenols can be synthesized by the ----------methods.

a) Dow's process b) From cumene c) From coal tar d) All of the above

14) Benzene undergoes substitution reaction more easily than addition reaction because:

a) It has a cyclic structure b) It has double bonds

c) It has six hydrogen atoms d) There is delocalization of electrons

15) Highly unsaturated oil exposed to air, they undergo oxidation and polymerization to form----

a) Drying oil b) Rancid oil c) Hardening oil d) Saponification

16) Anthracene on oxidation gives------.

a) Pthalic acid b) Benzophenone c) Benzoic acid d) Anthraquinone

17) Benzene reacts with acetic anhydride in presence of $AlCl_3$ to form:

a) Benzophenone b) Acetophenone c) Phenylacetate d) Chlorobenzene

18) Aniline on reaction with acetic anhydride gives--------.

a) N-methylaniline b) p-aminoacetophenone

c) Acetanilide d) m-aminoacetophenone

19) Which of the following compound is more reactive?

a) Cyclohexane b) Cyclopentane c) Cyclopropane d) Cycloheptane

20) Benzene reacts with Conc.HNO_3 in presence of Conc.H_2SO_4 to give nitrobenzene, this is an example of ----.

a) Electrophilic substitution b) Electrophilic addition

c) Nucleophilic substitution d) Nucleophilic addition

Q. No.2 Long Answers (Answer 2 out of 3) = 2 x 10 = 20

A] Discuss Aromaticity and Resonance in Benzene. Explain any two Electrophilic Substitution Reactions with Example.

B] Give Synthesis, Reactions and Medicinal uses of Phenanthrene and Anthracene.

C] Explain Principle, Procedure involved in Determination of Saponification Value. Give Significance of Reichert Meissl (RM) value.

Q. No.3 Short Answers (Answer 7 out of 9) = 7 x 5 = 35

A] Explain the Structure and Uses of DDT and Saccharine.

B] Discuss Baeyer strain Theory of Stability of cycloalkanes.

C] Give the structure and synthesis of triphenylmethane.

D] What are fats and oil? Give significance of iodine value and ester value.

E] Explain the effect of substituent on the acidity of aromatic acids/benzoic acid.

F] What are aryldiazonium salts and give its applications.

G] Give qualitative tests for phenols, give structure and uses of cresol and resorcinol.

H] Give halogenations reaction and reamer-tiemann reaction for phenol.

I] Explain Friedel-Crafts alkylation and acylation reaction of benzene.

---- END OF PAPER ----

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY
LONERE – RAIGAD – 402 103
Supplementary Examination –May 2019

Course: B. Pharm. (Second Year) **Semester:** III
Subject with Subject Code: Pharmaceutical Organic Chemistry –II (BP301T) **Marks:** 75
Date: 14-05-2019 **Duration:** 3hrs

Instructions: *i) All questions are compulsory*
ii) Figures to the right indicate full marks
iii) Draw the diagrams or flow charts wherever necessary.

Q.No.1 Attempt the following questions (All Questions Compulsory) **(20 Marks)**

1. A planner, cyclic system of unsaturated atoms with____ *pi* electrons will be aromatic in nature.
   A. 4n+2 B. 2n+2 C. 4n+4 D. 2n
2. If an aromatic carboxylic acid in conc. sulphuric acid is treated with chloroform solution of ____, it will yield amine.
   A. Acetic acid B. Hydrazoic acid C. Hydrochloric acid D. Picric acid
3. Which of the following is not *o, p* directing functional group?
   A. –OH B. –SH C. $-NH_2$ D. -CN
4. $ArNH_3$+_____ →RH
   A. RMgBr B. RNHMgBr C. RBr D. ArMgBr
5. 1,1,1-Trichloro-_____-bis(*p* chlorophenyl)ethane is the IUPAC name for DDT.
   A. 2,2 B. 1,2 C. 1,3 D. 2,3
6. Benzenediazonium chloride reacts with _____ to yield benzene.
   A. H_3PO_2 B. HBF_4 C. KCN D. SnO_2
7. 1,1-Dioxo-1,2-benzothiazol-3-one is the IUPAC name for_____.
   A. *DDT* B. Saccharine C. BHC D. Chloramine
8. _____reacts with pthalic anhydride in presence of conc. sulphuric acid to yield a dye which is used as indicator.
   A. Phenyl B. Cresol C. Phenol D. Naphthol
9. Molecular formula of DDT is_____.
   A. $C_{14}H_9Cl_5$ B. $C_{10}H_9Cl_5$ C. $C_{14}H_5Cl_5$ D. $C_{14}H_9Cl_2$
10. Phenol with _____gives colored complexes.
    A. Diazonium salt B. Bromine C. $FeCl_3$ D. Acid
11. The number of isomers possible in the case of phenanthrene are _____.
    A. 1 B. 2 C. 3 D. 4
12. _____ is oxidized in the presence of V_2O_5 to obtain phthalic anhydride.
    A. Napthalene B. Phenanthrene C. Anthracene D. Benzene
13. Which of the following is water soluble salt of fatty acid?
    A. Calcium B. Magnesium C. Zinc D. Sodium
14. Friedal Craft condensation between benzyl chloride and benzene yields _____.
    A. Diphenylmethane B. Fluorene C. Triphenylcarbinol D. Naphthol
15. RM value is the number of milliliters of 0.1 N KOH required to neutralize soluble volatile fatty acids derived from _____ gm of fat.
    A. 2 B. 3 C. 5 D. 1
16. $KMNO_4$ oxidizes naphthalene in basic media to yield _____.
    A. Phthalic acid B. Phthalonic acid C. Phthalic anhydride D. Naphthaquinone
17. 1, 3 isomer of benzenediol is also termed as_____.
    A. Resorcinol B. Phenol C. Napthol D. Cresol

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18. Phenol reacts with chloroform in presence of aq. NaOH to give_____.

A. Salicylaldehyde B. Phenol C. Benzoquinone D. Benzamide

19. Phenanthrene ring is present in _____agents.

A. Anticancer B. Antioxidant C. Antimalarial D. All

20. When naphthalene is refluxed with sodium in _____, it gives tetralin.

A. $C_5H_{11}OH$ B. C_2H_5OH C. H_2 D. HCl

Q.No.2 Attempt any <u>TWO</u> questions of the following: **(20 Marks**

A] Analyze acidity of aromatic carboxylic acid. Summarize effect of substituents on acidic strength of benzoic acid. Add a note on important reactions of benzoic acid.

B] Outline any two methods of preparation and two reactions of naphthalene. Add a note on dyes of diphenylmethane and triphenylmethane.

C] What do you understand by electrophilic substitution reaction? Write following reactions of benzene with general reaction mechanism: 1) Nitration 2) Halogenatic

Q.No.3 Attempt any <u>SEVEN</u> questions of the following: **(35 Marks)**

A] Discuss Sachse-Mohr theory of strainless angle in cyclic compounds.

B] Explain the basic nature of amines and the effect of substitution on basic nature of aromatic amines.

C] Illustrate the synthetic uses of aryldiazonium salt.

D] Demonstrate Friedal Craft alkylation reaction with mechanism and limitations.

E] Write a note on qualitative tests of phenols.

F] Elaborate any two analytical constants of fats and oils.

G] Give any two reactions and two uses of anthracene.

H] Describe drying oil and rancidity of oils.

I] Write a note on aromatic characters of benzene.

----- END OF PAPER -----

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103

Winter Semester Examination – December – 2018

Course: B. Pharm. **Semester: III**

Subject with Subject Code: Pharmaceutical Organic Chemistry-II (BP301T)

Date: 18/05/2018 **Marks: 75** **Duration: 3hrs**

Instructions: *i) All questions are compulsory*
ii) Figures to the right indicate full marks
iii) Draw the diagrams or flow charts wherever necessary.

Q. 1 Choose the correct alternative. 20

1. Which statement of the following gives false information about benzene?
   A. It is immiscible with water forming the lower layer.
   B. It is a planar molecule with bond angle 120^0.
   C. It can be converted into cycloheptane by hydrogenation at 200^0C in the presence of Ni catalyst.
   D. It reacts with ethyl chloride in the presence of aluminium chloride to form ethylbenzene.

2. Benzene undergoes substitution reactions more easily than addition reactions because:
   A. It has a cyclic structure
   B. It has double bonds
   C. It has six hydrogen atoms
   D. There is delocalization of electron

3. Benzene reacts with H_2 at 150°C at 30 atm in presence of Ni catalyst to give:
   A. Cyclohexane
   B. Cyclohexene
   C. *n* – Hexane
   D. None of the above

4. The electrophile which is considered to be the active agent in the nitration of benzene is:
   A. NO_2
   B. NO^+
   C. NO_2^+
   D. HNO_2^+

5. Sodium or potassium salts of fatty acids are called
   A. Surfactants
   B. Detergents
   C. Carbohydrates
   D. Soaps

6. Partial hydrogenation of vegetable oils in the presence of Ni catalyst at 200^0C gives
   A. Vanaspati ghee
   B. Margarine
   C. Both (A) and (B)
   D. None of these

7. The degree of unsaturation of a fat can be determined by means of its
   A. Iodine number
   B. Octane number
   C. Saponification number
   D. Melting point

8. Ozonolysis of naphthalene ring gives .....
   A. Phthalic acid
   B. Phthaledehyde
   C. Phthalic anhydride
   D. Napthaquinone

9. _____ compound is used for preparation of dyes such as; malachite green, bromocresol green.
   A. Diphenylamine
   B. Anthracene
   C. Naphthalene
   D. Triphenylamine

10. Anthracene undergoes electrophilic substitution reactions mainly at _____.
   A. C-1
   B. C-2
   C. C-9
   D. C1 & C-2

11. Naphthalene undergoes nitration with HNO_3/H_2SO_4 at 50-60°C to give mainly _____.
   A. 1-nitronaphthalene
   B. 2-nitronaphthalene
   C. 1,2-dinitronaphthalene
   D. 1,8-dinitronaphthalene

12. Cycloalkanes have similar formula as _____.
   A. Alkanes
   B. Alkenes
   C. Alkynes
   D. Cycloalkenes

13. Which of the following is treated with sodium in dry ether to give cyclopropane?
   A. 1,1-dibromopropane
   B. 1,2-dibromopropane
   C. 1,3-dibromopropane
   D. 2,2-dibromopropane

14. Which of the following cycloalkane is not expected to have ring strain?
   A. Cyclobutane
   B. Cyclohexane
   C. Cyclopropane
   D. Cycloheptane

15. The most stable confirmation of cyclohexane is the _____.
   A. Haworth
   B. Chair
   C. Boat
   D. Newmann

16. When phenol reacts with neutral $FeCl_3$ solution it develops _____.
   A. Yellow color
   B. Orange color

C. Green color
D. Violet color

17. Sodium phenoxide reacts with CO_2 at 125^0C under 5atm pressure to give salicylic acid. This reaction is called
A. Kolbe's reaction
B. Perkin reaction
C. Wurtz reaction
D. HVZ reaction

18. Benzoic acid on heating with soda lime gives_____
A. Sodium phenoxide
B. Benzene
C. Benzaldehyde
D. Benzophenone

19. Which of the following reagent is used to prepare benzediazonium chloride from aniline?
A. $NaNO_2 + HCl$
B. $NH_2NH_2 + KOH$
C. $LiAlH_4$
D. NaOH

20. Which of the following is strongest acid?
A. Trichloroacetic acid
B. Phenol
C. Acetic acid
D. Benzoic acid

Q.2 Answer **any two** of the following questions. 20
A. Explain the Nitration & sulphonation of benzene.
B. Explain the method of preparation and reactions of Naphthalene.
C. Define fatty acids. Explain Reichert-Meissl (RM) Value and Saponification Value in detail. Comment on rancidity of oils.

Q.3 Answer **any seven** of the following questions. 35
A. Explain the Basicity of Amines.
B. Give the reactions of Benzoic Acid.
C. Explain the stability of Cycloalkane.
D. Explain the chemical reactions of Phenanthrene.
E. Give structure and uses of
a. Benzene hexachloride
b. Chloramine-T
F. Write a note on Freidel Craft's Alkylation.
G. Explain various methods for preparation of Phenols
H. Explain the significance and principle involved in determination of *Acid value and Iodine value*.
I. Give the methods of preparation and reactions of Cycloalkanes.

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination – Summer 2023

Date: 24/07/2023

Course	**: B. Pharmacy**	**Sem: III**	
Subject Name	**: Physical Pharmaceutics I**	**Subject Code: BP302T**	
Max Marks	**: 75**	**Duration**	**: 3 Hr.**

Instructions:

1. **All questions are compulsory**
2. **Draw diagrams / figures wherever necessary**
3. **Figures to right indicate full marks**

Q. 1. Objective Type Questions (Answer all the questions) **(10 x 2) = 20**

i) Define polymorphism along with example.

ii) Draw HLB scale.

iii) Write about relative humidity.

iv) Define CMC and surface tension.

v) Write application of buffer in pharmacy.

vi) Define UCT and LCT along with example.

vii) Write Henderson Hasselbalch equation for acid and base.

viii) State Raoult's law.

ix) Give importance of protein binding.

x) Why surface tension is greater than interfacial tension.

Q. 2. Long Answers (Answer 2 out of 3) **(2 x 10) = 20**

i) Explain distribution law along with its application and limitation.

ii) Define complexation and classify it.

iii) Explain different methods to determine surface and interfacial tension.

Q. 3. Short Answers (Answer 7 out of 9) **(7 x 5) = 35**

i) Explain different factors affecting on solubility of drug.

ii) Write a note on liquid crystals.

iii) Explain properties of crystalline and amorphous solids.

iv) State Phase Rule and explain phenol-water system with neat diagram.

v) Enlist different physicochemical properties of drugs and explain refractive index.

vi) Write a note on spreading coefficient.

vii) Explain any one method to determine pH of solution.

viii) Write a note on solubilization and detergency.

ix) Explain solubility method to determine complexation.

------END OF THE PAPER------

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination – Winter 2022

Date: 13/02/2023			
Course:	**Second Year B. Pharmacy**	**Sem:**	**III**
Subject Name:	**Physical Pharmaceutics I**	**Subject Code:**	**BP302T**
Max Marks:	**75**	**Duration:**	**3 Hr.**

Instructions:

1. **All questions are compulsory**
2. **Draw diagrams / figures wherever necessary**
3. **Figures to right indicate full marks**

Q. 1. Objective Type Questions (Answer all the questions) **(10 x 2) = 20**

i) Give any four ways to express solubility of a drug.

ii) Define critical solution temperature. Give its applications.

iii) Define – desublimation, polymorphism, vapour pressure, latent heat

iv) Differentiate crystalline and amorphous solid.

v) Why interfacial tension is less than surface tension?

vi) Explain HLB scale.

vii) Give pharmaceutical applications of complexation.

viii) Give importance of protein binding.

ix) Write buffer equation and buffer capacity.

x) Define isotonic solution and paratonic solution.

Q. 2. Long Answers (Answer 2 out of 3) **(2 x 10) = 20**

i) Write in detail about Raoult's law with help of following point,
a) statement of law, b) ideal solution and real solution,
c) positive deviation d) negative deviation

ii) Describe refractive index property of drug molecule. Explain various refractometers used to determine refractive index in detail.

iii) Describe in detail methods of analysis of complex.

Q. 3. Short Answers (Answer 7 out of 9) **(7 x 5) = 35**

i) Explain in detail various factors affecting solubility of gases in liquid.

ii) What is liquid crystal? Write its classification with properties of it. Give its applications.

iii) Define aerosol dosage form. Give its merit and demerits. Explain propellant used in aerosol.

iv) Explain spreading coefficient along with applications.

v) Describe in detail about capillary rise method for determination of surface tension.

vi) Write in detail about factors affecting protein binding.

vii) Describe Sorensen's pH scale. Explain sodium chloride equivalent method for the adjustment of tonicity.

viii) Write a detail note on buffers.

ix) Write a note on adsorption isotherm for solid surface adsorption.

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE
Supplementary End Semester Examination – Summer 2022

Course: B. Pharmacy **Sem: III**

Subject Name: Physical Pharmaceutics – I **Subject Code: BP302T**

Max Marks: 75 **Date:27/08/2022** **Duration: 3.45 Hr.**

Instructions –

1. **All questions are compulsory**
2. **Answers to MCQs should be written in full sentences**
3. **Draw diagrams / figures wherever necessary**
4. **Figures to right indicate full marks**

Q. 1. Multiple Choice Questions (MCQs) = 20 x 1 = 20 (All the questions are compulsory)

1. Identify the property not to be considered as a derived property…

a) Solubility b) Bulk Density

c) Angle of repose d) porosity

2. Mark the state showing faster dissolution…

a) Amorphous b) Metastable

c) Stable d) All show the science rule

3. Maximum amount of a solute which can dissolve in 100g of a solvent at room temperature is called…

a) Solubility b) Solution

c) Capacity d) Eligibility

4. Amorphous substance do not have…

a) Sharp melting point b) Characteristic geometrical shape

c) regularity of the structure d) All of the above

5. Surfactants are characterized by the presence of …

a) Water solubilizing and fat solubilizing grow in the same molecule

b) Only negative charges

c) Only positive charges

d) None of the above

6. The pH of pharmaceutical buffer system can be calculated by …

a) pH partition theory

b) Noyes Whitney law

c) Henderson – Hasselbalch equation

d) Michalis menten equation

7. The term pH was first used by…

a) Søren Peter Lauritz Sørensen

b) Low's Pasteur

c) James kelvin

d) Alfrad columb

8. Stalagmometer is used to determine…

a) Viscosity

b) Surface tension

c) Solubility

d) Particle size

9. If the gold number is less than the protective action will be…

a) More

b) Less

c) Half

d) Zero

10. If temperature of the liquid is increased the surface tension will …

a) Remain constant

b) Increased

c) Decreased

d) can't be predicted

11. Sorbitan esters, used as nonionic surfactants, are …

a) Tweens

b) Spans

c) Pola waves

d) Poloxalkolis

12. Air permeability method is used to determine the_____of powder

a) Volume

b) Density

c) Weight

d) Specific surface area

13. Following gel shows a thixotropic behavior …

a) Bentonite

b) Starch

c) Pectin

d) Silica

14. The colligative property are related to the …

a) Total number of solute particles

b) pH

c) Number of ions

d) Number of ingredients

15. Unit of surface tension is …

a) Dyne/meter

b) dyne/cm

c) cc/mm

d) none of the above

16. The number of moles of solute per liter of solution is called …

a) Normality

b) Molarity

c) Mole fraction

d) None

17. If one part of solute is dissolved in 1 – 10 parts of the solvent, then the solute will be…

a) Soluble

b) Sparingly soluble

c) Freely soluble

d) None

18. Particle size and shape can be determined by using…

a) Microscopy

b) Sieving method

c) Sedimentation

d) All

19. HLB stands for ____ that are helpful to determine the type of emulsion …

a) Highly lipophilic base

b) High low balance

c) Hydrophilic lipophilic balance

d) All

20. Determination of surface tension is possibly by…

a) X – ray diffraction
b) Karl fisher method
c) Capillary rise method
d) Sedimentation method

Q. 2. Long Answers = 2 x 10 = 20 (Answer 2 out of 3)

1. Define surface tension explain any one method for determination of surface tension with its limitations
2. Explain in detail various physicochemical properties of drug molecules. Give its application.
3. Elaborate the term buffers and highlight their application. Explain any one method for determination of pH

Q. 3. Short Answers = 7 x 5 = 35 (Answer 7 out of 9)

1. Explain ideal solubility parameters for solubility.
2. Explain virous factors influencing solubility of drugs.
3. Explain critical solution temperature. Give its application
4. Define and classify polymorphism. Difference between polymorphism and amorphism.
5. Explain HLB scale and its applications.
6. Define and classify complexation with its application
7. What is protein binding? write the importance of protein binding.
8. Write a note on
   a. Maximum buffer capacity
   b. Buffer equation.
9. Define interfacial tension. Write a note on surfactant.

-----END OF THE PAPER------

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY
LONERE – RAIGAD – 402 103
Winter Semester Examination – Dec - 2019

Branch: B. Pharm **Semester: III**

Subject: Physical Pharmaceutics-I_Theory (BP302T)

Date: 19/12/2019 **Marks: 75** **Time: 3hrs**

Instructions: i) All questions are compulsory
ii) Figures to the right indicate full marks.
iii) Draw the diagrams or flow charts wherever necessary.

Q. No.1 Multiple Choice Questions (MCQs) = 20 × 1 = 20

(Answer all the questions)

1. Raoult's law is obeyed by.....

A. Real solution B. Ideal solution C. Both A and B D. All of these

2. Liquid crystals resulting from the action of certain solvents on solids are known as.....

A. Thermotropic B. Lyotropic C. Nematic D. Smectic

3. The system characterized by both upper and lower critical solution temperature is....

A. Phenol-water B. Triethylamine-water C. Nicotine-water D. All of these

4. The refractive index of substances.....with rise in temperature

A. Increases B. Decreases C. Remains unchanged D. None of these

5. The HLB value of the wetting agent is between.....

A. 3-6 B. 9-12 C. 6-9 D. 0-3

6. .....is the difference in potential between the surface of the shear plane and the electroneutral region of the solution in dispersion

A. Nernst potential B. Zeta potential C. Sedimentation potential D. Streaming potential

7. .....is the number of gram equivalents of the solute present in one liter of the solution

A. Molality B. Molarity C. Normality D. Mole fraction

8. The solubility of poorly water soluble drug.....in the presence of cosolvent

A. Decreases B. Increases C. No change D. None of these

9. The following equipment is used to determine the optical rotation of the compounds

7E2479D4FF0A082B23F2979E1F50F812

A. Refractometer B. Polarimeter C. Spectrophotometer D. Colorimeter

10. The formation of complex between glycine and cupric ion should result in

A. Increase in pH B. Decrease in pH C. No change in pH D. Both A and B

11. The ability of an element to exist in more than one form is known as

A. Polymorphism B. Allotropy C. Pseudopolymorphism D. None of these

12. The method used for the measurement of interfacial tension is...

A. Capillary rise method B. Drop count method C. Tensiometer D. All of these

13. .....is the ratio of increment of strong acid or base to the corresponding change in pH

A. Buffer index B. Buffer action C. Buffers D. Buffer number

14. The unit of interfacial tension in MKS and CGS system respectively is

A. N/M, Dynes/cm B. Dynes/cm, N/M C. N/M D. Dynes/cm

15. The protein present in high concentration and plays crucial role in the drug protein binding is

A. Globulin B. Albumin C. Alpha acid glycoprotein D. All of these

16. The solution containing solute in lower concentration than required for isotonic is...

A. Hypertonic B. Hypotonic C. Isotonic D. All of these

17. Ethylenediaminetetraacetic acid (EDTA) is an example of ligand type

A. Unidentate B. Bidentate C. Hexadentate D. Tridentate

18. The biological buffers present in the body are

A. Urine B. Blood C. Tears D. All of these

19. In.....type of complex ligand provides two or more donor groups to combine with metal ion

A. Clathrate B. layer type C. Chelate type D. Olefin type

20. One unit pH change means.....change in H^+ ion concentration

A. 100 folds B. 10 folds C. 2 folds D. 20 folds

Q. No. 2 Long Answers (Answer 2 out of 3) = 2 x 10 = 20

A] Define upper and lower CST with example. Describe in detail phenol-water system and give applications of CST.

B] Explain the concept of surface and interfacial tension. Describe the capillary rise method for the determination of surface tension.

C] Define and classify complexes. Enlist various methods for analysis of complexes and explain solubility method in detail.

Q. No.3 Short Answers (Answer 7 out of 9) = 7 x 5 = 35

A] Describe polymorphism along with applications.

B] Define refractive index. How will you determine it.

C] Which are the various methods for the adjustment of tonicity. Explain sodium chloride equivalent method.

D] Explain spreading coefficient along with applications.

E] Write a note on protein binding.

F] State and explain distribution law. Give its limitations and applications.

G] Give in detail about dielectric constant and its application.

H] Write a note on pharmaceutical aerosols.

I] Derive buffer equation and give its applications.

--- END OF PAPER ---

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY
LONERE – RAIGAD – 402 103
Summer Semester Examination – May – 2019

Course: B.Pharm. **Semester: III**
Subject with Subject Code: Physical Pharmaceutics-I (BP302T)
Date: 16/05/2019 **Marks: 75** **Duration: 3hrs**

Instructions: *i) All questions are compulsory*
ii) Figures to the right indicate full marks
iii) Draw the diagrams or flow charts wherever necessary.

Q.No.1 Attempt the following questions (All Questions Compulsory) **(20 Marks)**

1. **One unit pH change means ----- change in H+ ion concentration**
   A. Two Folds
   B. Ten Folds
   C. Hundred Folds
   D. All of These
2. **In exothermic process as temperature increases the solubility is_____**
   A. Increases
   B. Decreases
   C. Both A & B
   D. None of the above
3. **Which among the following is a colligative property**
   A. Lowering of Boiling Point
   B. Elevation of vapour pressure
   C. Elevation of freezing Point
   D. None of the above
4. **If common ion is added to solution the solubility will _____**
   A. Increase
   B. Decrease
   C. Both A & B
   D. None of the above
5. **_____ is temperature above which all the components of mixture are miscible in all proportions**
   A. UCT
   B. LCT
   C. Both a & b
   D. None of the above
6. **Debye-Huckel Theory is helpful in theoretical calculation of ……..of drug.**
   A. Dissociation
   B. Activity coefficient
   C. Association
   D. Concentration
7. **_____ are the mixtures of substances when mixed in particular proportion tend to liquefy due to reduction in their melting points**
   A. Homogeneous Mixtures
   B. Heterogeneous Mixtures
   C. Eutectic Mixtures
   D. All of the above
8. **In which of the liquid crystals, molecules are mobile in two directions and rotation about one axis.**
   A. Nematic

B. Cholesteric
C. Smectic
D. All of the above

9. **A solutions which contains largest possible amount of solute is known as_____**
   A. Saturated
   B. Unsaturated
   C. Super saturated
   D. None of the above
10. **In which type of solutions there is complete absence of attractive and repulsive forces and solvent does not affect the solubility**
   A. Real Solutions
   B. Ideal solutions
   C. Both a & b
   D. None of the above
11. **Following are the methods for determining surface tension EXCEPT**
   A. Drop Count Method
   B. Bubble pressure method
   C. Tensiometer
   D. Shake Flask Method
12. **pH is defined mathematically as…..**
   A. Log of the hydrogen ion concentration
   B. Negative log of H+ ion Concentration
   C. Log of reciprocal of H+ ion concentration
   D. Both b & c
13. **Following is the method for determination of pH**
   A. Colorimetric method
   B. Electrometric
   C. both a & b
   D. None of the above
14. **……..is defined magnitude of resistance of buffer to pH change**
   A. Buffers
   B. Buffer capacity
   C. Buffer action
   D. None of the above
15. **…..is defined as the solution which maintains the isotonicity and pH as that o the body fluids.**
   A. Isotonic
   B. Hypertonic
   C. Hypertonic
   D. Buffered isotonic
16. **…… are the intermolecular forces involved in formation of complexes**
   A. Covalent
   B. van der Waals
   C. Ion dipole
   D. All of the above
17. **Methods for characterization of amorphous solids**
   A. X Ray Diffraction
   B. Gas-Liquid Displacement method
   C. Viscosity Method
   D. All of the above
18. **Following are the crystal defects EXCEPT**

undefined

A. Schotty Defect
B. Frenkel Defects
C. Ion Defect
D. Metal Deficiency Defect

19. **..... is defined as adhesion of atoms, ions or molecules from a gas, liquid or dissolved solid to a surface.**
A. Absorption
B. Adsorption
C. Both a & b
D. None of the above

20. **.....is defined as the solution containing solute in higher concentration than required for isotonic solution.**
A. Isotonic
B. Hypotonic
C. Hypertonic
D. Buffered isotonic

Q.No.2 Attempt any TWO questions of the following: **(20 Marks)**

a) What is partition coefficient? Deduce thermodynamic deviation of partition law. Enlist conditions essential for partition coefficient. What are limitations of distribution law?
b) What do you mean by solid crystalline state? Give its types and characteristics. Write a short note on eutectic mixtures.
c) What are complex compounds? Write classification of complexes and explain inclusion complexes in details. Give applications of complexes in pharmacy.

Q.No.3 Attempt any SEVEN questions of the following: **(35 Marks)**

a) Explain the factors affecting solubility.
b) What do you mean by liquid complexes and explain liquid crystals with its types.
c) Explain raoults law. Give its derivation and limitations.
d) Derive Henderson-Hesselbalch equation. Give its application in Pharmacy.
e) Define surface tension. Explain capillary rise method for determination of surface tension.
f) What are surface active agents? Explain the factors affecting on it.
g) Write a short note on organic molecular complexes.
h) What is HLB? Why it is required to be calculated? Give its methods for estimation.
i) What are the pharmaceutical buffers? Explain buffer capacity.

----- END OF PAPER -----

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD -402 103
Winter SemesterExamination, December -2018

Branch: B. Pharmacy **Sem.:-III**

Subject with Subject Code: Physical Pharmaceutics-I (BP302T) **Marks:75**

Date: 20/12/2018 **Time:-3 Hrs.**

Instructions to the Students

1. *All questions are compulsory*
2. *Neat labelled diagram must be drawn wherever necessary*
3. *Figures to the right ndicate full marks*

Q. No. 1. Attempt following Multiple Choice Questions (MCQs) (20x 1= 20)

1. In the pH titration curves of Glycine-Cupric complex, sudden increase in the pH is observed. It indicates that.
   A. Complex is dissociated
   B. Lower complex turns to higher complex
   C. H+ ions stopped reacting with (OH-) ions
   D. (OH-) ions is not participated in the complex formation

2. Number of Moles of solute per kilogram of solvent is called.....
   A. Molarity B. Molality C. Normality D.Formality

3. The pH of pharmaceutical buffer system can be calculated by
   A. pH partition theory B. Noyeswhitney law
   C. Henderson-Hasselbaltch equation D. MichalisMenten Equations

4. The Dielectric constant (ε) value of water is.....
   A. 1 B. 80 C. 100 D. 273

5. The unit of R, the gas constant is
   A. erg K^{-1} mol^{-1} B. cal K^{-1} mol^{-1} C. joule K^{-1} mol^{-1} D. All of these

6. Joule Thomson effect describes gases'
   A. Contraction B. Sudden Expansion C. Expansion D. Relaxion

7. A gas law giving the relationship between volume & pressure is obtained from
   A. Daltons law B. Boyles Law C. Charles law D. Grahams law

8. The Henry law is applicable if
   A. The temperature & Pressure are moderate
   B. The solubility of gas in the solvent is low
   C. The gas does not react with the solvent to form a new species
   D. All of the above

9. The process in which the solid changes directly into vapors without changing in liquid state is called....

A. Condensation B. Evaporation C Boiling D. Sublimation

10. When CO_2 is dissolved in water, what is the nature of the solution?

A. Acidic B. Basic C. Neutral D. Unrelated

11. If an animal cell is placed in HYPERTONIC solution, what happens to the cell?

A. Cell swells and bursts B. Shrinks from water loss
C. Nothing happens D. Solute moves in and out

12. PolyoxyethyleneSorbitanMonooleate is also known as.....

A. Tween 20 B. Tween 80 C. Span 20 D. Span 80

13. The HLB range for Lipophilic surfactant is.....

A. 2-9 B. 9-16 C. 16-20 D. above 20

14. Partial vapour pressure of a solution component is directly proportional to its mole fraction. This statement is known as:

A. Henry's Law B. Raoult's Law
C. Ostwald dilution Law D. Distribution Law

15. Ethylene diaminetetraacetic acid (EDTA) is an example of ligand type

A. Unidentate B. Bidentate C. Tetradentate D. Hexadentate

16. Which one of following has acidic pH?

A. Blood B. Intenstinal fluids C. Orange Juice D. Saliva.

17. Solutions which shows positive or negative deviation from Raoult's law are called

A. Ideal Solution B. True Solutions
C. Non-ideal solutions D. Homogeneous solution

18. For Tetragonal crystal system, which of the following is not TRUE?

A. $a = b \neq c$ B. $\alpha = \beta = \gamma = 90^0$ C. $a \neq b \neq c$ D. None of These

19. Buffers are mixture of:

A. Strong acid & strong base B. Weak acid & their conjugate base
C. Strong acid & weak base D. Weak base & their conjugate acid

20. At critical temperature, the surface tension of a liquid ....

A. is Zero C. same as that at any other temperature
B. is Infinity D. Can not be determined

Q. No. 2: Solve any <u>TWO</u> from following questions **(2x 10 = 20)**

A. Explain the term Solubility & Solutions. Discuss the effect of temperature, solvent pH and surfactants on solubility of solids in liquids with suitable examples.

B. What is Adsorption? What are application of Adsorption to pharmacy? Explain detail Freundlich and Langmuir's adsorption Isotherm.

C. Define and Classify complexes. Explain Organic molecular complexes in detail.

Q. No. 3: Solve any SEVEN from following questions (7x 05 = 20)

A. Define the terms:
   i) Critical Temperature, ii) Critical Solution Temperature,
   iii) Adsorption Isotherm iv) Critical Micelle concentration,
   v) Glass transition Temperature

B. What is Nernst distribution law? Explain its limitation and applications.

C. What are Aerosols? Explain the principle involved in the two phase system aerosols.

D. Define polymorphism. Give different applications of polymorphism with suitable examples.

E. What is refractive index & its applications? Explain the method to determine refractive index.

F. Define Surface & Interfacial Tension & Explain DuNouy Ring method for measuring Surface & Interfacial tension in detail.

G. Derive an equation for drawing the Scatchard plot for drug-protein binding studies.

H. What are Buffered Isotonic solutions? Discuss buffers in Pharmaceutical Systems & Biological Systems.

I. What is Sorensen's pH scale? Describe the principle and experimental procedure for pH determination by electrometric method.

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination – Winter 2022

Date: 25/07/2023

Course	:	B. Pharmacy	Sem: III		
Subject Name	:	Pharmaceutical Microbiology	Subject Code	:	BP303T
Max Marks	:	75	Duration	:	3 Hr.

Instructions:

1. All questions are compulsory
2. Draw diagrams / figures wherever necessary
3. Figures to right indicate full marks

Q. 1. Objective Type Questions (Answer all the questions) (10 x 2) = 20

i) Define Microbiology Enlist different branches of microbiology

ii) Classify Microorganisms

iii) Classify Bacteria

iv) Define Industrial Microbiology

v) Define the term Resolving Power and Numerical Aperture

vi) Write The Classification of Microscope

vii) Write A Note On Shape And Arrangement Of Bacteria

viii) Differentiate Flagella And Pili

ix) Write The Properties of Agar

x) Differentiate between total count and viable count

Q. 2. Long Answers (Answer 2 out of 3) (2 x 10) = 20

i) Explain in detail applications of Pharmaceutical Microbiology

ii) Write In Detail About Contribution Of Louis Pasteur In The Field Of Microbiology

iii) Write In Detail About Discovery Of Antibiotics

Q. 3. Short Answers (Answer 7 out of 9) (7 x 5) = 35

i) Differentiate Between Prokaryotic And Eukaryotic Cell

ii) Write general characteristics of rickettsia.

iii) Explain the different natural sources of actinomycetes.

iv) What is dermatophytes.Explain?

v) Explain in short classification of Fungi.

vi) How can human amoebiasis be prevented and treated

vii) Write The Importance Of Algae.

viii) Write general characteristics of interferon's

ix) What Are Coliforms And Explain It.

------END OF THE PAPER------

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination – Winter 2022

Date: 15.02.2023

Course: B. Pharmacy
Sem: III
Subject Name: Pharmaceutical Microbiology
Subject Code BP303T
Max Marks: 75
Duration: 3 Hr.

Instructions:

1. **All questions are compulsory**
2. **Draw diagrams / figures wherever necessary**
3. **Figures to right indicate full marks**

Q. 1. Objective Type Questions (Answer all the questions) (10 x 2) = 20

i) Differentiate between gram-positive and gram-negative bacteria.

ii) Write about bacterial growth curve.

iii) Classify bacterial staining.

iv) Define i) Sterilization ii) D value

v) List factors influencing disinfection

vi) List general properties of viruses

vii) Differentiate between optical and electron microscope

viii) Classify clean area as per WHO.

ix) List ideal characteristics required for preservatives used in pharmaceutical products

x) Classify methods used for measurement of bacterial growth

Q. 2. Long Answers (Answer 2 out of 3) (2 x 10) = 20

i) Discuss main sources of contamination in aseptic area? How will you prevent it?

ii) Classify methods of sterilization and explain in detail moist heat sterilization.

iii) Define microbiology. Write about various branches of microbiology. Add a note its scope and importance in pharmacy

Q. 3. Short Answers (Answer 7 out of 9) (7 x 5) = 35

i) Explain ultra-structure of bacterial cell with suitable diagram.

ii) Explain IMViC test.

iii) Give the in-detail classification of disinfectants.

iv) Explain Phenol coefficient test along with its advantages and disadvantages.

v) Explain lytic cycle and lysogeny of viruses

vi) Describe microbial assay of antibiotics.

vii) Explain tests used for assessment of microbial spoilage

viii) Write the detail about the applications of animal cell culture in pharmaceutical industry and research.

ix) Enlist types of spoilage and give the factors affecting microbial spoilage.

------END OF THE PAPER------

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY
LONERE - RAIGAD - 402 103
Winter Semester Examination - Dec - 2019

Branch: B. Pharm. **Semester: III**

Subject: Pharmaceutical Microbiology **Subject Code: BP 303T**

Marks: 75 **Date: 21/12/2019** **Time: 3hrs**

Instructions: **i) All questions are compulsory**
ii) Figures to the right indicate full marks
iii) Draw the diagrams or flow charts wherever necessary

Q. No.1 Multiple Choice Questions (MCQs) = 20 x 1 = 20
(Answer all the questions)

01. Who is Father of Medical Microbiology

a) Louis Pasteur b) Alexander Fleming c) Dugger d) None of the above

02. _____ is mainly present in prokaryotic cell

a) Mitochondria b) Endoplasmic reticulum c) Golgi apparatus d) Mesosomes

03. A binocular microscope has _____

a) Two objectives b) Two eyepieces c) Two condenser d) Two mirror

04. Phycology is study of _____

a) Algae b) Fungi c) Molds d) Protozoa

05. In culture collection, NCIB stands for

a) National Collection of Industrial Bacteria b) National Centre of Industrial Bacteria
c) National Centre of Imported Bacteria d) National Culture of Imported Bacteria

06. Microorganism in natural environment usually occur as_____ culture

a) Bacterial b) Pure c) Mixed d) Fungal

07. The stain mainly used negative staining

a) Nigrosin b) Crystal Voilet c) Methylene blue d) ZNCF

08. Bacterial cell wall is made up of

a) Chitin b) cellulose c) dextran d) peptidoglycan

09. Pasteurization is carried out at

a) 100°C b) 100°C c) At 100°C d) None of these

10. Red heat used for sterilization of

a) Glass slide b) Glass syringe c) Surgical dressing d) Nichrome wire loop

11. Viruses are

a) Obligate parasites b) free living c) both a and b d) none of these

12. Viruses that attacks bacteria are called

a) lysophage b) bacteriophage c) virophage d) none of these

13. Most important surface active disinfectant are

a)Anionic b)Cationic c) Non-ionic d) Amphoteric

14. Efficiency of HEPA filter is_____%

a) 99.97 b) 88.87 c) 90.97 d) 98.79

15. DOP test is used for validation of_____

a) HEPA filter b) Membrane filter c) Aseptic room d) Autoclave

16. Test microorganism used for microbial assay of streptomycin is

a) Bacillus pumilus b) Styphalococcus aureus c) Bacillus subtilis d) none of these

17. Dimorphism is characteristic of_____

a) Bacteria b) Algae c) Viruses d) Fungi

18. Mordant used in grams staining is

a) Safranin b) ethanil c) crystal violate d) grams iodine

19. The organ of locomotion of bacteria is

a) flagella b) slime c) capsule d) fimbriae

20. Which part of animal virus develops from host cell membrane?

a) helical b) envelop c) DNA d) RNA

Q. No.2 Long Answers (Answer 2 out of 3) = 2 x 10 = 20

A] Classify sterilization methods and explain in detail moist heat sterilization

B] Give the classification of disinfectants and write a note on evaluation of disinfectant

C] Explain in detail structure of bacteria

Q. No.3 Short Answers (Answer 7 out of 9) = 7 x 5 = 35

A] Explain growth curve of Bacteria

B] Write scope & applications of pharmaceutical Microbiology

C] Write note on IMViC test

D] Enlist & explain different type of culture media

E] What are the sources of contamination in an aseptic area? Give methods of prevention

F] Explain lytic cycle in detail

G] Explain the assay of Vitamin B_{12}

H] Enlist and explain pure culture techniques

I] Enlist types of spoilage and give the factors affecting microbial spoilage

—— END OF PAPER ——

undefined

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY
LONERE – RAIGAD – 402 103
Summer Semester Examination – May – 2019

Course: B. Pharm. **Semester: III**
Subject with Subject Code: Pharmaceutical Microbiology (BP303T)
Date: 20/5/19 **Marks: 75** **Duration: 3hrs**

Instructions: *i) All questions are compulsory*
ii) Figures to the right indicate full marks
iii) Draw the diagrams or flow charts wherever necessary.

Q. 1 Attempt the following questions (All Questions Compulsory) **20**

1. Bacterial fimbriae present on the outer cell surface are used for:
   A. Cellular activity
   B. Motility
   C. Cell wall synthesis
   D. Adherence and exchange of genetic information.
2. The association of endotoxin in Gram-negative bacteria is a result of the presence of:
   A. Peptidoglycan
   B. Lipopolysaccharides
   C. Polypeptide
   D. Steroids
3. Which of the following is likely to contain structures composed of N-acetylmuramic acid and N-acetylglucosamine:
   A. Mycoplasmas
   B. Escherichia coli
   C. Protoplasts
   D. Amoebas
4. A typical growth curve consists of FOUR phases. Which is the correct sequence?
   A. log, lag, stationary, death
   B. lag, log, stationary, death
   C. stationary, log, lag, death
   D. lag, stationary, log, death
5. Ethanol is one of the most commonly used disinfectants. Which concentration of ethanol is most effective for this purpose?
   A. 100% B. 70% C. 50% D. 30%
6. Which of the staining technique helps in demonstrating spore structure in bacteria as well as free spores?
   A. Acid-fast stain
   B. Endospore stain
   C. Capsule stain
   D. Flagella stain
7. Which bacteria appears purple-violet colour after staining?
   A. Gram-positive
   B. Gram-negative
   C. Both Gram-positive and Gram-negative
   D. Neither Gram-positive nor Gram-negative

8. A suitable culture medium for the growth of both Fungi and aerobic bacteria is
   A. Fluid thioglycollate medium
   B. Alternate fluid thioglycollate medium
   C. Soybean casein digest medium
   D. None of the above
9. Test microorganism used for microbiological assay of Vitamin B_{12} is
   A. Lactobacillus leichamannii
   B. Lactobacillus plantarum
   C. Lactobacillus casei
   D. Lactobacillus viridescens
10. MIC of an antimicrobial agent is determined by
   A. Turbidimetric method
   B. Liquid dilution method
   C. Titrimetric method
   D. Microbiological assay method
11. Royce sachet is used as an indicator for ethylene oxide sterilization which contains
   A. Bromophenol blue
   B. Radiosensitive material
   C. Methylene blue
   D. None of the above
12. A differential medium used to differentiate characteristics of bacteria is
   A. MacConkey medium
   B. Wilson Blair medium
   C. Thayer-Martin medium
   D. None of the above
13. Kovac's reagent is used to detect production of
   A.Indole
   B. Acid
   C. Glucose
   D. None of the above
14. Which of the following is example of Gram negative bacteria?
   A. Staphylococcus aureus
   B. Pseudomonas aeruginosa
   C. Bacillus pumulus
   D. None of the above
15. Which of the following organism shows motility?
   A. Proteus vulgaris
   B. Streptococcus pyogenes
   C. Both A&B
   D. None of the above
16. D-value in sterilization process is expressed as
   A. Decimal reduction value
   B. Thermal destruction value
   C. Unit of lethality
   D. Temperature coefficient

undefined

17. Biological indicator used for validation of membrane filter (0.22µm) is
    A. Pseudomonas diminuta
    B. Bacillus pumulus
    C. Pseudomonas aeruginosa
    D. None of the above
18. Fungi which form mycelia are called
    A. Moulds
    B. Unicellular fungi
    C. Pseudohyphae
    D. None of the above
19. Lytic and lysogenic cycles are two life cycles of
    A. Bacteria
    B. Virus
    C. Fungi
    D. Bacteriophage
20. Micro-organisms that grow best at temperature above 45^0C are called
    A. Psychrophiles
    B. Thermophiles
    C. Mesophiles
    D. None of the above

Q. 2 **Attempt any TWO questions of the following.** **20**

A] Explain concept and importance of preservation of microbial culture. Write in detail about different methods used for preservation of microbial culture.

B] Define microbiology. Write about various branches of microbiology. Add a note on scope and importance of microbiology in Pharmacy.

C] What is sterility testing? Explain sterility testing of Pharmaceuticals according to I.P.

Q. 3 **Attempt any SEVEN questions of the following.** **35**

A] Explain the structure of bacterial cell with suitable and well labelled diagram.

B] Write about of phenol coefficient test. Also give its advantages and disadvantages.

C] Explain Radiation sterilization.

D] Write a note on culture media.

E] Explain any two methods used for isolation of bacteria.

F) Write a note on scanning electron microscopy.

G) Explain microbiological assay of Vitamin B_{12}.

H) Define disinfection. Explain factors affecting disinfection.

I) Define spoilage. Explain different types of spoilage.

----- END OF PAPER -----

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY
LONERE – RAIGAD – 402 103
Winter Semester Examination – December – 2018

Course: B. Pharm. **Semester: III**
Subject with Subject Code: Pharmaceutical Microbiology (BP303T)
Date: 22/12/2018 **Marks: 75** **Duration: 3hrs**

Instructions: *i) All questions are compulsory*
ii) Figures to the right indicate full marks
iii) Draw the diagrams or flow charts wherever necessary.

Q. 1 Choose the correct alternatives. 20

1. In the Riedel walker test strain used is:
   A. *E. coli*
   B. *Salmonella typhi*
   C. *Clostridium tetani*
   D. *Streptococus pyrogenous*
2. The value that shows time to kill 90% of microorganisms present in sample is called
   A. F-value
   B. T-value
   C. Z-value
   D. D-value
3. Biological indicator for radiation sterilisation is
   A. *B. subtilis*
   B. *B. pumulis*
   C. *S. marcescens*
   D. *B. stearothermophilus*
4. Lysol is a...
   A. Disinfectant
   B. Sterilent
   C. Antiseptic
   D. Antifungal
5. Which of the following method is best to sterilize heat labile solutions?
   A. Hot Air Oven
   B. Autoclave
   C. Pasteurization
   D. Membrane filtration
6. Temperature range for 'pasteurization' is
   A. 60°-70°C
   B. 62°-72°C
   C. 65°-75°C
   D. 121°-130°C
7. Flagella are made up of which protein:
   A. Flagellétein
   B. Flagellin
   C. Flagellicine
   D. Flagellinocine
8. Viruses are best grown in
   A. Blood agar
   B. Enriched media
   C. Liquid media with serum
   D. Media with living things

9. Effiiency of HEPA filter is _____%
   A. 90.97
   B. 88.87
   C. 98.79
   D. 99.97
10. Test micro organism used for microbiological assay for vitamin B12
   A. *L. viridescens*
   B. *L. casei*
   C. *L. leichmanii*
   D. None of the above
11. The order of reagents used in the Gram stain are:
   A. Alcohol, crystal violet, iodine, saffranin
   B. Crystal violet, iodine, saffranin, alcohol
   C. Crystal violet, iodine, alcohol, saffranin
   D. Iodine, crystal violet, saffranin, alcohol
12. Production of acetoin can be detected by which of the following tests?
   A. Citrate test
   B. Voges-Proskauer test
   C. Methyl red test
   D. Indole test
13. What type of microscopy is usually necessary to observe viruses?
   A. Dark field
   B. Compound
   C. Phase contrast
   D. Electron
14. Nearly all plant virus are:
   A. DNA virus
   B. RNA virus
   C. Viroids
   D. Satellite virus
15. When rod shaped bacteria appears to be in pair arrangement it is termed as:
   A. Staphylococci
   B. Bacillus
   C. Diplobacilli
   D. Streptobaccili
16. Bacteria are sensitive to antibiotics at which phase of growth curve?
   A. Lag phase
   B. Log phase
   C. Stationary phase
   D. Declined phase
17. Most important surface active disinfectant are
   A. Anionic
   B. Cationic
   C. Non-ionic
   D. Amphoteric
18. A pH below _____ inhibits animal cell growth
   A. 7.2
   B. 7.0
   C. 6.8
   D. 7.4

19. Prions are
    A. Bacteria
    B. Rickettsia
    C. Viruses
    D. Infectious protein
20. Lipopolysaccharides form a part of cell wall of
    A. gram positive bacteria
    B. gram negative bacteria
    C. coccus bacteria
    D. all of the above

20

Q. 2 Answer **any two** of the following questions. 35

a) What are main sources of contamination of an aseptic area? How will you prevent it?
b) How will you assess microbial spoilage contamination in pharmaceuticals?
c) How will you calculate time require for generation of Bacteria? Explain growth curve of bacteria.

Q. 3 Answer **any seven** of the following questions.

a) Write a note on cultivation of viruses.
b) Write about Bacterial cell.
c) Give classification of disinfectants.
d) What is Microbiology? Write about different applied branches of Microbiology.
e) Write a note on IMViC.
f) Write note on chemical indicators.
g) Write in detail about the applications of animal cell culture in pharmaceutical industry & research
h) Explain filtration sterilisation.
i) Explain any two methods for evaluation of disinfectants.

End

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