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RP-003-001539 Seat No. _____

B. Sc. (Sem. V) (CBCS) Examination

February - 2019

IC - 503 : Pharmaceuticals - 1 & Fundamentals of Chemical Engineering

Faculty Code : 003

Subject Code : 001539

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) All the questions are compulsory.
(2) Figures to the right indicate maximum marks.
(3) Draw labeled diagram wherever necessary.
(4) Assume suitable data.
(5) Question-1 carries 20 marks.
(6) Question-2 and 3 carry 25 marks each.

1 Answer the following questions : **20**

(1) Viscosity is defined as internal resistance of a fluid to its own flow. (True/False)

(2) Continuity equation is derived on the basis of law of conservation of _____ (Mass/Energy).

(3) What do you mean by Irrotational flow ?

(4) Define the term ideal fluid.

(5) Write mathematical statement of Fourier's law of conduction ?

(6) Define reflux ratio.

(7) What is natural convection ?

(8) What is brine ?

(9) What is the refrigerant code for

(a) CO_2

(b) Dichlorodifloromethane.

(10) Give full form of COP.

(11) Give one example of thermostatic polymer.

(12) Define: Pharmacognosy

(13) In emulsion liquid which is converted into minute globules is called continuous phase. (True/False)

(14) Basic nitrogenous substances obtained from the natural source are called _____.

(15) _____ is an example of plant growth regulator.

(16) High molecular weight lipopolysaccharide is known as ?

(17) Give one example of Antioxidant.

(18) Methyl paraben is an example of _____.

(19) Who was the chairman of the fourth edition of Indian Pharmacopoeia ?

(20) Material which is direct contact with the product is called 1° packaging material. (True/False)

2 (a) Answer any **three** : **6**

(1) Define :

(a) Unsteady flow

(b) Streamline.

(2) What do you mean by Radiation mode and convection mode of heat transfer ?

(3) What is meant by 1 ton of refrigeration?

(4) Define :

(i) Vein Islet Number

(ii) Vein Termination Number.

(5) Define :

(i) Glidant

(ii) Foreign Organic Matter.

(6) Define :

(i) Palisade ratio

(ii) Phytochemical.

(b) Answer any **three** : **9**

(1) Write a brief note on laminar flow and turbulent flow.

(2) Derive equation for mass balance and energy balance over evaporator.

(3) Classify compressor on the basis of

(a) Stage

(b) Drive

(c) Pressure development.

(4) Explain: Features of ideal surgical dressing.

(5) Explain: Preservatives.

(6) Explain: Bandages in brief.

(c) Answer any **two** : **10**

(1) Carbon tetra chloride is to be flow to smooth horizontal pipe of circular section and 0.03 m diameter at a volumetric flow rate of 2×10^{-3} m^3/s. Estimate the pressure loss per meter length of pipe. Density & viscosity of CCl_4 are 1.5×10^3 kg/m^3 and 0.87×10^{-3} Ns/m respectively.

(2) Derive equation for lower operating line for a distillation column.

(3) Derive an equation to calculate work required per cycle for single acting reciprocating compressor working isothermally with clearance.

(4) Explain: History of Indian Pharmacopoeia.

(5) Discuss: Classification of crude drugs in detail.

3 (a) Answer any **three** : **6**

(1) Give any two characteristics of gaseous state.

(2) Define the term thermal conductivity.

(3) Give any four applications of refrigeration.

(4) Define :

(i) Polishing agent

(ii) Stomatal Number

(5) Define :

(i) Antioxidant

(ii) Pharmacopoeia.

(6) Define :

(i) Stomatal Index

(ii) Flavoring agent.

(b) Answer any **three** : **9**

(1) Give advantage and disadvantage of orificemeter.

(2) Explain with diagram simple U tube manometer.

(3) Write a short note on ammonia as a refrigerant.

(4) Explain: Need for the dosage form (any six)

(5) Explain: 1°, 2° and 3° packaging material

(6) Explain: Sweetening agent.

(c) Answer any **two** : **10**

(1) Give construction and working of rotameter with a neat diagram.

(2) Derive an equation of q-line.

(3) Discuss: Emulsion in detail.

(4) Explain: Sterilization in detail.

(5) Describe: Sutures and Ligatures in detail.
