HCN-003-001539 Seat No. _____

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

October - 2017

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

Faculty Code : 003
Subject Code : 001539

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

Instructions :

(1) All questions are **compulsory**.

(2) Figures to the **right** indicate maximum marks.

(3) Draw labelled diagram wherever **necessary** and assume suitable data, if required.

(4) Question - **1** carries **20** marks subjective type question.

(5) Question- **2** and **3** carries **25** marks each.

1 Subjective type questions : **20**

(1) What do you mean by critical velocity of a flowing fluid ?

(2) Range of Reynold's number for transition flow is _____ to _____.

(3) Define the term pressure.

(4) Write Borda's equation.

(5) What is fouling factor ?

(6) What is the significance of –ve sign in Fourier's law of heat conduction equation ?

(7) Define reflux ratio.

(8) Define coefficient of performance (COP).

(9) Define volumetric efficiency.

(10) What is meant by the term refrigeration ?

(11) Give one example of Thermosetting plastic used in pharmaceutical packaging.

(12) In emulsion, the liquid which is in the form of minute globules is called _____ phase.

(13) Sorbitol is an example of _____.

(14) Who is chairman of 3rd edition of Indian pharmacopoeia ?

(15) _____ type of drug : kills viruses.

(16) Give difference between ointment and lotion.

(17) Give one example of pharmaceutical excipients used as Binder.

(18) _____ is known as substances which are medicinally active and derived from natural sources.

(19) Give formula to calculate R_f value in chromatography technique.

(20) Auxin is example of _____.

2 (a) Answer any **three** out of six : **6**

(1) What do you mean by ideal fluids ?

(2) Define :

(a) Natural Convection

(b) Forced Convection.

(3) Write in brief the term air conditioning.

(4) Define :

(a) Diluent

(b) HLB Value

(5) Define :

(a) Disintegrating agent

(b) Polishing agent.

(6) Enlist types of surgical dressings.

(b) Answer any **three** out of six : **9**

(1) Explain laminar flow and turbulent flow.

(2) Give mass and energy balance over crystallizer.

(3) Classify compressors on the basis of :

(a) Source of power

(b) Action

(c) Pressure development.

(4) Enlist various routes of drug administration.

(5) Explain needs for the dosage form (any six).

(6) Write a short note on Antioxidants.

(c) Answer any **two** out of five : **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 and viscosity of CCl_4 are 1.5×10^3 kg/m^3 and 0.87×10^{-3} Ns/m respectively.

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

(3) Derive an equation to calculate work required per cycle for single acting reciprocating compressor working isothermally without clearance.

(4) Give an account of emulsions.

(5) Discuss in detail Sutures and Ligatures.

3 (a) Answer any **three** out of six : **6**

(1) Enlist any two characteristics of gaseous state.

(2) Define :

(a) Conduction

(b) Radiation.

(3) What pressure ratio in compressing adiabatically would give 50% apparent volumetric efficiency ? If adiabatic index is 1.4 and clearance is 5%.

(4) Define :

(a) Stomatal Number

(b) Stomatal Index.

(5) Define :

(a) Vein Islet Number

(b) Foreign Organic Matter.

(6) Define :

(a) Suppositories

(b) Elixir.

(b) Answer any **three** out of six : **9**

(1) Give advantages and disadvantages of orifice meter.

(2) State and derive equation for Fourier's law of heat conduction.

(3) Enlist characteristics of a good refrigerant (any six).

(4) Explain features of ideal surgical dressing.

(5) Explain : Isolation of alkaloid in brief.

(6) Explain in brief 1^o, 2^o and 3^o pharmaceutical packaging materials.

(c) Answer any **two** out of five : **10**

(1) Give principle, construction and working of Venturimeter.

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

(3) Give classification of crude drugs.

(4) Write a detailed note on history of Indian Pharmacopoeia.

(5) Write a detailed note on Sterilization.
