Printed Pages : 3

EBM-703

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 101706

Roll No.

B.Tech.

(SEM. VII) (ODD SEM.) THEORY EXAMINATION, 2014-15

BIOTRANSPORT PHENOMENA

Time : **3** Hours] [Total Marks : **100**

Note : Attempt all questions. Each question carries equal marks.

1 Attempt any **four** questions : **(4×5=20)**

a. Define the terms :

i. Fluid

ii. Density

iii. Specific Weight

b. Explain the basic laws of fluid in flow :

i. Conservation of mass

ii. Conservation of energy

c. State and explain 'Bernoulli equation'.

d. State and explain Fick's law with respect to transfer in biosystem.

e. How does apparent absolute viscosity of blood relate to shear rate ?

f. Define viscosity and explain its measurement technique.

2 Attempt any **four** questions : **(4×5=20)**

a. Explain diffusion as the basic process of mass transfer.

b. Explain Poiseuille's law.

c. Explain how the body of a living being attains stability of normal body temperature when an environmental temperature varies in certain range.

d. Write a note on membrane structure composition and permeability.

e. Explain Donnan equilibrium phenomenon.

f. What is pinocytosis ?

3 Attempt any **four** questions : **(4×5=20)**

a. Explain whether blood is Newtonian fluid or non-Newtonian fluid.

b. Explain how Reynolds number helps us to predict the transition between laminar and turbulent flow ?

c. Write a note on active transport.

d. Explain the terms passive diffusion and pressure diffusion.

e. Explain facilitated diffusion of oxygen in haemoglobin solutions.

f. Write a note on resting membrane potential in nerve cells.

4 Attempt any **two** questions : **(2×10=20)**

a. Explain with neat diagram the gas transport mechanism in lungs.

b. Write a detail note on one compartment and two compartment open model.

c. Explain oxygen and carbon dioxide transfer in the blood.

5 Attempt any **two** questions : **(2×10=20)**

a. Explain transport mechanisms in the tubules.

b. Explain in detail the analysis of mass transfer in dialysers.

c. Explain analytical model for Henle's loop.
