*Total number of printed pages:***5** **D/4th/DFET401**

2021

ELEMENTS OF FOOD ENGINEERING-II

Full Marks: 60

Time: 2 hours

The figures in the margin indicate full marks for the questions.

A. Multiple Choice Questions 1 x 20=20

1. Study of fluids at rest is called
   a. Static
   b. Kinematics
   c. Dynamics
   d. None of the above.
2. Water is
   a. Compressible liquid
   b. Incompressible liquid
   c. Both (a) and (b)
   d. None of the above.
3. The specific volume is the reciprocal of
   a. Specific gravity
   b. Weight density
   c. Mass density
   d. All of the above
4. Density of mercury is
   a. 13600 kg/m^3
   b. 1300 kg/m^3
   c. 1000 kg/m^3
   d. 13.6 kg/m^3
5. one litre =

a. 1/100 m^3

b. 1/1000 m^3

c. 1/10 m^3

d. None of the above

6. SI unit of viscosity is

a. N/m^2

b. Ns/m^3

c. Ns/m^2

d. All of the above

7. 1 centipoise =

a. 1/100 poise

b. 1/10 poise

c. 100 poise

d. None of the above

8. A fluid, which possesses viscosity is called

a. Ideal fluid

b. Real fluid

c. Ideal plastic fluid

d. None of the above

9. When the density of fluid (ρ) is constant, that type of fluid flow is called

a. Compressible flows

b. Incompressible flows

c. Uniform flow

d. All of the above

10. If the Reynolds number is less than 2000, the flow is called

a. Laminar flow

b. Turbulent flow

c. Steady flow

d. Unsteady flow

11. Discharge, Q =

a. A X D

b. A

c. A X V

d. None of the above

12. The equation which is based on Principle of conservation of mass is called

a. Newton's law of viscosity

b. Bernoulli's Equation

c. Euler's equation

d. Continuity equation

13. Bernoulli s equation is obtained by integrating

a. Continuity equation

b. Euler's equation

c. Both (a) and (b)

d. None of the above

14. The unit of Reynolds'number is

a. m^3/s

b. m^2/s

c. m^3

d. None of the above

15. The unit of relative density is

a. m^3/V

b. m^2/V

c. V / m^3

d. Unit less

16. If the specific weight of a liquid is $7000N/m^3$then density of liquid(ρ) is

a. 700 kg/m^3

b. 70 kg/m^3

c. 100 kg/m^3

d. 713.5 kg/m^3

17. A real fluid, in which the shear stress is directly proportional to the rate of shear strain, is known as

a. Ideal fluid

b. Newtonian fluid

c. Non-Newtonian fluid

d. All of the above

18. One stoke =

a. 100 m^2/s

b. 10 m^2/s

c. 1/100 m^2/s

d. 1/10 m^2/s

19. The type of flow in which the fluid particles move in a zigzag way, is called

a. Uniform flow

b. Non-uniform flow

c. Laminar flow

d. Turbulent flow

20 10 poise =

a. 10 Ns/m^2

b. 100 Ns/m^2

c. 1 Ns/m^2

d. None of the above.

B. Very Short Question 2*6=12

1. Define Fluid Mechanics.
2. What is specific density?
3. Define viscosity.
4. What is discharge?
5. What is kinematic viscosity?
6. State Euler's equation.

C Short Question 4*7=28

1. Explain how viscosity varies with temperature.
2. State and explain Newton's law of viscosity.
3. Calculate the density, specific weight and weight of one litre of petrol of specific gravity= 0.8.
4. The diameters of a pipe at the sections 1 and 2 are 20 cm and 25 cm respectively. Find the discharge through the pipe if the velocity of water flowing through the pipe at section 1 is 7m/s. Determine also the velocity at section 2.

5. State and explain Continuity equation.

6. A flat plate of area 1.5×10^6 mm^2 is pulled with a speed of 0.7 m/s relative to another plate located at a distance of 0.4 mm from it. Find the force and power required to maintain this speed, if the fluid separating them is having viscosity as 1 poise.

7. Differentiate between Uniform and Non-uniform flows.