1. The Newton's law of viscosity gives the relationship between shear stress to shear rate. It is mathematically expressed as

   a) $\tau = \mu \dfrac{dv}{dy}$

   b) $\tau = -\mu \dfrac{dv}{dy}$

   c) $\mu = -\tau\left(\dfrac{dv}{dy}\right)$

   d) None of the above

ANSWER: b

2. Which of the following can be expressed as a Newtonian fluid?
   a) Water
   b) Oil
   c) Milk
   d) None of the above

   ANSWER: a

3. For Pseudoplastic fluid, the value of flow behaviour index 'n' is

   a) =1
   b) <1
   c) >1
   d) None of the above

   ANSWER: b

4. If apparent viscosity is denoted as μ, the equation representing a Bingham plastic fluid is given as

   a) $\tau = \mu\left(-\dfrac{dv}{dy}\right)^n$

   b) $\tau = \mu\left(\dfrac{dv}{dy}\right)^n$

   c) $\tau = \mu\left(-\dfrac{dv}{dy}\right) + \tau_y$

   d) None of these

ANSWER: c

5. The unit of consistency index 'K' is

   a) N.s/m^2
   b) N.s^2/m^2
   c) N.s^2/m
   d) N.s^n/m^2

   ANSWER: d

6. The pseudolplastic and dilatant fluids are explained by the equation

   a) $\tau=\mu(-\frac{dv}{dy})^n$

   b) $\tau=\mu(-\frac{dv}{dy})$

   c) $\tau=-\mu(\frac{dv}{dy})^n$

   d) $\tau=\mu(-\frac{dv}{dy})^{1/n}$

ANSWER: a

7. Which one of the following is the example of pseudoplastic fluid?

   a) Mayonnaise
   b) Starch suspensions
   c) Detergent slurries
   d) All the above

ANSWER: d

8. In case of a rheopectic fluid,

   a) shear stress increases with time

   b) shear stress decreases with time

   c) shear stress increases with rate of shear

   d) shear stress decreases with rate of shear

ANSWER: a

9. A granular material is to be conveyed pneumatically in a line of 20 cm diameter and 100 m long, at the rate of 1500 kg/hr. What will be the mass velocity (mass flux)?

   a) 31.26 kg m^{-2} s^{-1}

b) 13.26 kg m^{-2} s^{-1}
c) 1.326 kg m^{-2} s^{-1}
d) 3.126 kg m^{-2} s^{-1}

ANSWER: b

$$G = \frac{1500}{\frac{\pi}{4} \times 0.2^2 \times 3600} = 13.26 \text{ kg m}^{-2} \text{ s}^{-1}$$

10. Which of the following statement is correct?

    a) Specific volume of fluid is much higher than specific volume of solid
    b) Specific volume of fluid is much lower than specific volume of solid
    c) Specific volume of fluid is nearly equal to specific volume of solid
    d) None of the above

ANSWER: a