Assignment 07

Due on 2020-03-18, 23:59 IST.

1. A bank account is double its initial amount in 20 years. What is the rate of interest?
   
   Footnote 1
   
   Answer: 5% per annum.

2. A sum of money is invested at an interest rate of 4% per annum for 3 years. If the simple interest earned is Rs. 900, what is the principal sum?
   
   Footnote 2
   
   Answer: Rs. 2500.

3. If the rate of inflation is 5% per annum, what is the cost of a product that costs Rs. 100 now?
   
   Footnote 3
   
   Answer: Rs. 105.05.

4. A company produces 1000 units of a product in a year. If the production cost is Rs. 50 per unit, what is the total production cost?
   
   Footnote 4
   
   Answer: Rs. 50,000.

5. The demand for a product is given by the equation Q = 100 - 0.5P, where Q is the quantity demanded and P is the price. If the price is Rs. 20, what is the quantity demanded?
   
   Footnote 5
   
   Answer: 70 units.

6. A car travels 100 km in 2 hours. What is its average speed?
   
   Footnote 6
   
   Answer: 50 km/h.

7. A ball is thrown vertically upwards with a velocity of 20 m/s. What is the maximum height reached by the ball?
   
   Footnote 7
   
   Answer: 20 m.

8. A pendulum has a length of 1 m. What is the period of oscillation?
   
   Footnote 8
   
   Answer: 2 seconds.

9. A force of 10 N is applied to a mass of 2 kg. What is the acceleration of the mass?
   
   Footnote 9
   
   Answer: 5 m/s².

10. A car accelerates from 0 to 100 km/h in 5 seconds. What is its average acceleration?
    
    Footnote 10
    
    Answer: 20 m/s².

11. A mass of 1 kg is hanging from a spring. The spring constant is 100 N/m. What is the natural frequency of the system?
    
    Footnote 11
    
    Answer: 10 Hz.

12. A parallel combination of two resistors of 10Ω and 20Ω is connected across a 6V battery. What is the current through the 10Ω resistor?
    
    Footnote 12
    
    Answer: 0.6 A.

13. A circuit contains a parallel combination of two resistors of 10Ω and 20Ω. If the total current drawn is 0.6 A, what is the current through the 10Ω resistor?
    
    Footnote 13
    
    Answer: 0.3 A.

14. A parallel circuit consists of two resistors of 10Ω and 20Ω. If the total resistance is 6Ω, what is the current through the 10Ω resistor?
    
    Footnote 14
    
    Answer: 0.5 A.

15. A parallel circuit consists of two resistors of 10Ω and 20Ω. If the current through the 10Ω resistor is 0.5 A, what is the current through the 20Ω resistor?
    
    Footnote 15
    
    Answer: 0.3 A.