1. **Naïve Bayes** is best suited for ML applications wherein the feature vectors $\bar{\mathbf{x}}$ are discrete, response is discrete
   Ans a
2. The Bayes principle is given as
$$p(B|A) = \frac{p(A|B)p(B)}{p(A)}$$
   Ans a
3. The Naïve Bayes assumption can be mathematically expressed as
$$p(\bar{\mathbf{x}} = \bar{\mathbf{v}}|y = u) = \prod_{j=1}^{N} p(x_j = v_j|y = u)$$
   Ans c
4. The probability $p(x_j = 1|y = 1)$ can be evaluated using the formula
$$\frac{\sum_{i=1}^{M} 1(x_j(i) = 1, y(i) = 1)}{\sum_{i=1}^{M} 1(y(i) = 1)}$$
   Ans b
5. The probability $p(y = 1)$ can be evaluated as
$$\frac{\sum_{i=1}^{M} 1(y(i) = 1)}{M}$$
   Ans a
6. Given a new observation $\bar{\mathbf{x}} = \bar{\mathbf{v}}$, it can be labeled as belonging to the class $y = 1$ if
$$\prod_{j=1}^{N} p(x_j = v_j|y = 1) \times p(y = 1) > \prod_{j=1}^{N} p(x_j = v_j|y = 0) \times p(y = 0)$$
   Ans d
7. The Naïve Bayes module can be imported in PYTHON as
   from sklearn.naive_bayes import GaussianNB
   Ans b

SNo.	Weather condition	Road condition	Traffic condition	Engine problem	Accident
1	Rain	bad	high	no	yes
2	snow	average	normal	yes	yes
3	clear	bad	light	no	no
4	clear	good	light	yes	yes
5	snow	good	normal	no	no
6	rain	average	light	no	no
7	rain	good	normal	no	no
8	snow	bad	high	no	yes
9	clear	good	high	yes	no
10	clear	bad	high	yes	yes

8. Given data above. Prior probability of accident occurring is $\frac{5}{10} = \frac{1}{2}$
   Ans c
9. Consider data below for label no

SNo.	Weather condition	Road condition	Traffic condition	Engine problem	Accident
3	clear	bad	light	no	no
5	snow	good	normal	no	no
6	rain	average	light	no	no
7	rain	good	normal	no	no
9	clear	good	high	yes	no

Probability of good road condition given no accident is $\frac{3}{5}$

Ans c

10. The machine learning problem it can be used to solve is to determine Probability of determining accidents based on ambient conditions

    Ans a