**2.** Which of these are propositions? What are the truth values of those that are propositions?

a) Do not pass go. → *Not Declarative* — *No*
b) What time is it?
c) There are no black flies in Maine. → *Declares some* **FACT**

$2^n > 100$ — ? *No*

*for some values of $n$ It is True*

$n > 6$ *then It is True otherwise false*

**3.** What is the negation of each of these propositions?

a) Mei has an MP3 player.
b) There is no pollution in New Jersey.
c) $2 + 1 = 3$.
d) The summer in Maine is hot and sunny.

**4.** What is the negation of each of these propositions?

a) Jennifer and Teja are friends.
b) There are 13 items in a baker's dozen.
c) Abby sent more than 100 text messages every day.
d) 121 is a perfect square.

*Negations     Not p     It is not the Case*

ⓐ *Jennifer and Teja are not friends*

**11.** Let $p$ and $q$ be the propositions

$$\begin{bmatrix} p : \text{It is below freezing.} \\ q : \text{It is snowing.} \end{bmatrix}$$

Write these propositions using $p$ and $q$ and logical connectives (including negations). → *Conjunction* ∧

a) It is below freezing and snowing.
b) It is below freezing but not snowing.
c) It is not below freezing and it is not snowing.

ⓐ $p \lor q$          ⓓ $\sim p \land \sim q$
ⓑ $p \land \sim q$
ⓒ $p \land q$

ⓐ → $p$ and $q$
$p \land q$

ⓑ *But logically same meaning as that of* **And**

$p$ and (not $q$)
$p \land \sim q$

**6.** Suppose that Smartphone A has 256 MB RAM and 32 GB ROM, and the resolution of its camera is 8 MP; Smartphone B has 288 MB RAM and 64 GB ROM, and the resolution of its camera is 4 MP; and Smartphone C has 128 MB RAM and 32 GB ROM, and the resolution of its camera is 5 MP. Determine the truth value of each of these propositions.

a) Smartphone B has the most RAM of these three smartphones.
b) Smartphone C has more ROM or a higher resolution camera than Smartphone B. *F ... T*
c) Smartphone B has more RAM, more ROM, and a higher resolution camera than Smartphone A.

**7.** Suppose that during the most recent fiscal year, the annual revenue of Acme Computer was 138 billion dollars and its net profit was 8 billion dollars, the annual revenue of Nadir Software was 87 billion dollars and its net profit was 5 billion dollars, and the annual revenue of Quixote Media was 111 billion dollars and its net profit was 13 billion dollars. Determine the truth value of each of these propositions for the most recent fiscal year.

a) Quixote Media had the largest annual revenue.
b) Nadir Software had the lowest net profit and Acme Computer had the largest annual revenue.
c) Acme Computer had the largest net profit or Quixote Media had the largest net profit.

A: 256 MB    32 GB    8
B: 288        64       (4)
C: 128        32       (5)

For T = T