**[Que-31] - The mean of a distribution is 60 with a standard deviation of 10. Assuming that the distribution is normal, what percentage of items be (i) between 60 and 72, (ii) between 50 and 60, (iii) beyond 72 and (iv) between 70 and 80?**

Given that the distribution is normal with a mean (μ) of 60 and a standard deviation (σ) of 10, we can use the properties of the normal distribution and the standard normal table (or Z-table) to find the required percentages.

1. **Between 60 and 72:**
   * First, convert the raw scores to Z-scores:

Z=

For X=60:

Z1 = =0

For X=72:

Z2 = =1.2

* + Now, look up the Z-scores in the standard normal distribution table (or use a calculator):

The area to the left of Z2 =1.2 is approximately 0.8849.

The area to the left of Z1 =0 is 0.5.

* + The percentage between 60 and 72 is:

0.8849−0.5=0.3849 or 38.49%

1. **Between 50 and 60:**
   * Convert the raw scores to Z-scores: For X=50:

Z1 = =−1

For X=60:

Z2 =1060−60 =0

* + Now, look up the Z-scores in the standard normal distribution table:

The area to the left of Z1 =−1 is approximately 0.1587.

The area to the left of Z2 =0 is 0.5.

* + The percentage between 50 and 60 is:

0.5−0.1587=0.3413 or 34.13%

1. **Beyond 72:**
   * For X=72, the Z-score is:

Z= =1.2

* + The area to the left of Z=1.2 is approximately 0.8849.
  + The area beyond 72 is:

1−0.8849=0.1151or11.51%

1. **Between 70 and 80:**
   * Convert the raw scores to Z-scores: For X=70:

Z1 =1070−60 =1

For X=80:

Z2 = =2

* + Now, look up the Z-scores in the standard normal distribution table:

The area to the left of Z1 =1 is approximately 0.8413.

The area to the left of Z2 =2 is approximately 0.9772.

* + The percentage between 70 and 80 is:

0.9772−0.8413 = 0.1359 or 13.59%

Therefore, the percentages are:

1. Between 60 and 72: **38.49%**
2. Between 50 and 60: **34.13%**
3. Beyond 72: **11.51%**
4. Between 70 and 80: **13.59%**