**Practical:6**

**1. Find the following from the given data.**

**i. E(x) ii. E(x2)**

**iii. E(3x+4) iv. V(x)**

**v. V(3x+4)**

|  |  |  |  |
| --- | --- | --- | --- |
| X | -2 | 4 | 8 |
| P(x) | 1/2 | 1/6 | 1/3 |

**Working expression:**

E(x)=x\*p(x)

E(x2)=x2\*p(x)

V(x)= E(x2)-[E(x)]2

**Computation:**

|  |  |  |  |
| --- | --- | --- | --- |
| X | p(X) | x\*p(X) | X^2\*p(x) |
| -2 | 0.5 | -1 | 2 |
| 4 | 0.166666667 | 0.666666667 | 2.666666667 |
| 8 | 0.333333333 | 2.666666667 | 21.33333333 |
| Total | 1.00000 | 2.33333 | 26.00000 |

|  |  |  |  |
| --- | --- | --- | --- |
| Parameters | Symbol | Value | Formula |
| Expectation of x | E(X) | 2.33333 | D6 |
|  | E(3X+4) | 11 | 3\*D9+4 |
|  | E(X^2) | 26.00000 | E6 |
| Variance of X | V(X) | 20.55555556 | D11-(D9\*D9) |
|  | V(3X+4) | 185 | 3^2\*D12 |

**Conclusion:**

Hence, the value of given problems is solved.

**Practical:7**

**1.Fit the binomial distribution of the following data.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| X | 0 | 1 | 2 | 3 | 4 |
| P(x) | 50 | 65 | 80 | 30 | 10 |

**Working Expression:**

Let X~B(n, p), then

P(X)= n \* where, x=0,1,2,…..,n

p= no of success, q= no of failure

Expected frequency(f)= N\* P(x)

**Computation:**

|  |  |  |
| --- | --- | --- |
| X | f | fx |
| 0 | 50 | 0 |
| 1 | 65 | 65 |
| 2 | 80 | 160 |
| 3 | 30 | 90 |
| 4 | 10 | 40 |
|  | 235 | 355 |

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Symbol | value | formula |
| Number of trials | n | 4 | B20 |
| probability of success | p | 0.377659574 | (D21/C21)/D20 |
| probability of failure | q | 0.622340426 | 1-D24 |

|  |  |  |  |
| --- | --- | --- | --- |
| X | observed f | P(x) | expected f |
| 0 | 50 | 0.150007181 | 35.25168756 |
| 1 | 65 | 0.364119995 | 85.56819885 |
| 2 | 80 | 0.33144256 | 77.88900152 |
| 3 | 30 | 0.134087873 | 31.51065019 |
| 4 | 10 | 0.020342391 | 4.780461887 |
|  | 235 | 1 | 235 |

**Conclusion:**

Hence , the binomial distribution of following data is fitted.