|  |  |  |
| --- | --- | --- |
|  | .    .  .  .  .  . | 1  1  1  1  1  1  1  1 |
| 2 |  | Trigo  1  1  1  1  1  1  1  1  1 |
| 3 | Since *M* is the mid-point of *AB*,    Since *AB* is perpendicular to *DM*,        Since *CB* is parallel to *DM*,    Equating the coefficient of **i** ,    Equating the coefficient of **j** , | 1  1  1  1  1  1  1  1  1 |
| 4 | 1. *PQR* is a straight and *BP* parallel to *CR.* | 1  1  1  1  1  1  1 |
| 5 | . | 1  1  1  1  1  1  1  1 |
| 6 | a) X = number of misprints per page  X ~ P0 (3)  P (X = 0) =  = 0.05    b) Y = number of pages without misprint  *n* = 200 , *p* = 0.05 λ = *np* = 10  P ( Y ≥ 3 ) = 1 – P (Y < 3)  = 1 – [ P ( Y = 0 ) + P ( Y = 1 ) + P ( Y = 2 ) ]  = 1 –  = 0.9972 | 1  1  1  1  1  1 |
| 7 | X N (100 , 25) and Y N (80 , 20)  a) ( 2X – Y ) N (120 , 120)  P (2X – Y > 110) = P  = 0.81935  b) ( X + Y ) N (180 , 45)  P (X + Y < *a*) = 0.2085  P ( = 0.2085  = –0.812  *a* = 174.55 | 1  1  1  1  1  1  1 |
| 8 | 1. Let A = Nasir takes tuition   B = Nasir passes mathematics paper    =  = 0.62      =  = @ 0.16 | 1+1  1  1+ 1  1 |
| 9 | a) *p* + *q* + 2*p* + 2*q* + 2*p* = 1  5*p* + 3*q* = 1  [  b) E (X) = –2*p* – *q* + 0 +2*q* + 4*p*  = 2*p* + *q*  = 2*p* +  =  c) E (Y) = E ( X1 + X2 + X3 )  = 3 E (X)  =  = *p* + 1  d) P (X1 + X2 = 3) = P (X1 = 1).P(X2 = 2) + P (X1 = 2).P(X2 = 1)  = (2*q*) (2*p*) + (2*p*) (2*q*)  = 8*pq*  =  = | 1  1  1  1  1  1  1  1  1  1  1 |
| 10 | a)  *k*2 – 7*k* + 10 = 0  ( *k* – 2 ) ( *k* – 5 ) = 0  *k* = 2 , 5  Therefore *k* = 2  b) P ( 2 < X < 3 )  = F (3) – F (2)  =  =  c) *f* ( *x* ) =  d) E (X) =  =  = | 1  1  1  1  1  2  1  1  1 |
| 11  (b) | or ()  [ or ] qualified for 1 mark  or ()  [ or ] qualified for 1 mark | 2  1  2  1 |
| 12 | |  |  |  |  |  | | --- | --- | --- | --- | --- | | Months  m | Mid point  x | Frequency  f | Cumulative  frequency | fx | | 9 | 9.5 | 16 | 16 | 152 | | 10 | 10.5 | 44 | 60 | 462 | | 11 | 11.5 | 66 | 126 | 759 | | 12 | 12.5 | 50 | 176 | 625 | | 13 | 13.5 | 18 | 194 | 243 | | 14 | 14.5 | 4 | 198 | 58 | | 15 | 15.5 | 2 | 200 | 31 |   Mean =  = 11.65  Median =  = 11.61  Mode = 11 +  = 11.58  (b) since : mean > median > mode , the distribution is skewed. | 2  1  1  1  1  1  1+1 |
| 4 | 1. Let A = Nasir takes tuition   B = Nasir passes mathematics paper    =  = 0.62      =  = @ 0.16 | 1+1  1  1+ 1  1 |