|  |  |  |
| --- | --- | --- |
|  | . .... .  | 11111111 |
| 2 |    | Trigo111111111 |
| 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** ,          | 111111111 |
| 4 |  1. *PQR* is a straight and *BP* parallel to *CR.*

   | 1111111 |
| 5 | . | 11111111 |
| 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  | 111111 |
| 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  | 1111111 |
| 8 | 1. Let A = Nasir takes tuition

 B = Nasir passes mathematics paper  =  = 0.621.

 =  = @ 0.16  | 1+111+ 11 |
| 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* =  =  | 11111111111 |
| 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) =  =  =  | 111112111 |
| 11(b) |  or ()[ or ] qualified for 1 mark  or ()[ or ] qualified for 1 mark  | 2121 |
| 12 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Monthsm | Mid pointx | Frequencyf | Cumulativefrequency | 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 =  = 11.65Median =  = 11.61Mode = 11 +  = 11.58(b) since : mean > median > mode , the distribution is skewed. | 2 111111+1 |
| 4 | 1. Let A = Nasir takes tuition

 B = Nasir passes mathematics paper  =  = 0.621.

 =  = @ 0.16 | 1+111+ 11 |