| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Income distribution of 1000 families follows Normal distribution with Mean 40000 and S.D. 10000. From this group one family is | | | | | | | | | | | |
| 2 | selected at random, compute the probability that income of this family lies. | | | | | | | | | | | |
| 3 | | i) below 45000 ii) more than 42000 iii) between 45000 to 50000 | | | | | | | | | | |
| 4 | Also estimate the number of families whose income lies | | | | | | | | | | | |
| 5 | | i) atleast 46000 ii) atmost 50000 iii) between 35000 to 50000 | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 7 | Solution:- Let, x=Income | | | | | | | | | | | |
| 8 | Here, we have | | | | | | | | | | | |
| 9 | | Mean(μ)= | 40000 | S.D(σ)= | 10000 | N= | 10000 | | | | | |
| 10 | First Part | | | | | | | | | | | |
| 11 | i) Req.prob. =p(x<45000) | | | | 0.69146246 | NORM.DIST(45000,C9,E9,1) | | | | | | |
| 12 | ii) Req.prob. =p(x>42000) | | | | 0.42074029 | 1-NORM.DIST(42000,C9,E9,1) | | | | | | |
| 13 | iii) Req.prob =p(45000<x<50000) | | | | 0.14988228 | NORM.DIST(50000,C9,E9,1)-NORM.DIST(45000,C9,E9,1) | | | | | | |
| 14 | | | | | | | | | | | | |
| 15 | Second Part | | | | | | | | | | | |
| 16 | i) Req.prob. =N*p(x>=46000) | | | | 2743 | G9*(1-NORM.DIST(46000,C9,E9,1)) | | | | | | |
| 17 | ii) Req.prob. =N*p(x<=50000) | | | | 8413 | G9*NORM.DIST(50000,C9,E9,1) | | | | | | |
| 18 | iii) Req.prob. =N*p(35000<x<50000) | | | | 5328 | G9*(NORM.DIST(50000,C9,E9,1)-NORM.DIST(35000,C9,E9,1)) | | | | | | |
| 19 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 21 | | | | | | Name | Karina Kc | | | | | |
| 22 | | | | | | Roll NO: | 15 | | | | | |

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| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| 1 | fit Poisson distribution to following data. | | | | | | | | |
| 2 | No. of Accidents:- | | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 3 | Noo. Of Days:- | | 195 | 91 | 40 | 20 | 10 | 3 | 1 |
| 4 | | | | | | | | | |
| 5 | Table for expected frequencies | | | | | | | | |
| 6 | x | f | f*x | E | | | | | |
| 7 | 0 | 195 | 0 | 160 | Here, mean(μ)= | | 0.811 | C14/B14 | |
| 8 | 1 | 91 | 91 | 130 | | N= | 360 | | |
| 9 | 2 | 40 | 80 | 53 | | E= | G$9*POISSON(A8,G$8,0) | | |
| 10 | 3 | 20 | 60 | 14 | | | | | |
| 11 | 4 | 10 | 40 | 3 | | | | | |
| 12 | 5 | 3 | 15 | 0 | | | | | |
| 13 | 6 | 1 | 6 | 0 | | | | | |
| 14 | | 360 | 292 | 360 | | | | | |
| 15 | | | | | | | | | |
| 16 | | | | | | Name: Karina kc | | | |
| 17 | | | | | | Roll No: 15 | | | |

| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 1 | Fit binomial distritution to given data. | | | | | | | |
| 2 | No. of girls:- | | 0 | 1 | 2 | 3 | 4 | |
| 3 | No. of families:- | | 20 | 112 | 244 | 115 | 21 | |
| 4 | | | | | | | | |
| 5 | Solution:- | Let x= Number of girls | | | | | | |
| 6 | Here,we have | | | | | | | |
| 7 | | n= | 4 | p= | 0.5 | N= | 512 | |
| 8 | Calculation table of expected frequencies | | | | | | | |
| 9 | | x=r | x=r | x=r | x=r | | | |
| 10 | | 0 | 20 | 0.0625 | 32 | Where,O=observed frequency | | |
| 11 | | 1 | 112 | 0.25 | 128 | E=Expected frequency | | |
| 12 | | 2 | 244 | 0.375 | 192 | | | |
| 13 | | 3 | 115 | 0.25 | 128 | | | |
| 14 | | 4 | 21 | 0.0625 | 32 | | | |
| 15 | | | 512 | 1 | 512 | | | |
| 16 | | | P(x=r)= | BINOMDIST(B10,C$7,E$7,0) | | | | |
| 17 | | | E= | G$7*D11 | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | Name= Karina Kc | | |
| 20 | | | | | | Roll NO: 15 | | |

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| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| 1 | **From the given data compute first four central moments. Also, compute measures** | | | | | | | | |
| 2 | **of central tendency, Measures of dispersion, skewness and kurtosis and intrepret** | | | | | | | | |
| 3 | **the result.** | | | | | | | | |
| 4 | **45** | **50** | **60** | **70** | **75** | **50** | **80** | **85** | **70** |
| 5 | | | | | | | | | |
| 6 | **Solution:- Calculation of first four central moments** | | | | | | | | |
| 7 | **x** | **(x-x*)** | **(x-x*)2** | **(x-x*)3** | **(x-x*)4** | | | | |
| 8 | **45** | **-19.5** | **380.25** | **-7414.875** | **144590.0625** | | | | |
| 9 | **50** | **-14.5** | **210.25** | **-3048.625** | **44205.0625** | | | | |
| 10 | **60** | **-4.5** | **20.25** | **-91.125** | **410.0625** | | | | |
| 11 | **70** | **5.5** | **30.25** | **166.375** | **915.0625** | | | | |
| 12 | **75** | **10.5** | **110.25** | **1157.625** | **12155.0625** | | | | |
| 13 | **50** | **-14.5** | **210.25** | **-3048.625** | **44205.0625** | | | | |
| 14 | **80** | **15.5** | **240.25** | **3723.875** | **57720.0625** | | | | |
| 15 | **85** | **20.5** | **420.25** | **8615.125** | **176610.0625** | | | | |
| 16 | **70** | **5.5** | **30.25** | **166.375** | **915.0625** | | | | |
| 17 | **60** | **-4.5** | **20.25** | **-91.125** | **410.0625** | | | | |
| 18 | | **0** | **1672.5** | **135** | **482135.625** | | | | |
| 19 | **Mean =** | **64.5** | **n =** | **10** | | | | | |
| 20 | **For first four central moments** | | | | | | | | |
| 21 | **For** | **Value** | **Formula** | | **For** | **Value** | **Formula** | | |
| 22 | **m1 =** | **0** | **0** | | **Mean =** | **64.5** | **64.5** | | |
| 23 | **m2 =** | **167.25** | **167.25** | | **S.D. =** | **12.93251716** | **12.933** | | |
| 24 | **m3 =** | **13.5** | **13.5** | | **β1 =** | **0.00004** | **4E-05** | | |
| 25 | **m4 =** | **48213.5625** | **48214** | | **b2 =** | **1.723601922** | **1.7236** | | |
| 26 | | | | | | | | | |
| 27 | | | | | | | | | |
| 28 | | | | | Name: Karina Kc | | | | |
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| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Fit Poisson distribution to following data. | | | | | | | | | | |
| 2 | No. of Defects | | 0 | 1 | 2 | 3 | 4 | 5 | | | |
| 3 | No. of pages | | 135 | 109 | 40 | 12 | 3 | 1 | | | |
| 4 | | | | | | | | | | | |
| 5 | Solution:- Let, x = No. of defects | | | | | | | | | | |
| 6 | | Table for expected frequencies | | | | | | | | | |
| 7 | x | f | f*x | E | | | | | | | |
| 8 | 0 | 135 | 0 | 134 | Here, Mean(μ)= | | 0.806667 | C14/B14 | | | |
| 9 | 1 | 109 | 109 | 108 | | N= | 300 | | | | |
| 10 | 2 | 40 | 80 | 44 | | E= | 133.903 | G$9*POISSON(A8,G$8,0) | | | |
| 11 | 3 | 12 | 36 | 12 | | | | | | | |
| 12 | 4 | 3 | 12 | 2 | | | | | | | |
| 13 | 5 | 1 | 5 | 0 | | | | | | | |
| 14 | | 300 | 242 | 300 | | | | | | | |
| 15 | | | | | | Name:Karina Kc | | | | | |
| 16 | | | | | | Roll:15 | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | A message centre forward 4 messages per minute. Compute the probability that no. of forwarded message are | | | | | | | | | | |
| 2 | i) Exactly 5 message ii) less than 6 messages iii) more than 8 message in an interval of two minutes | | | | | | | | | | |
| 3 | iv) atmost 10 message in an interval of two minutes v)almost 13 messages in an interval of three minutes | | | | | | | | | | |
| 4 | | | | | | | | | | | |
| 5 | solution:-Let ,x=Number of messages | | | | | | | | | | |
| 6 | Here,we have | | | | | | | | | | |
| 7 | | Average(λ)= | | 4 | per minute | | | | | | |
| 8 | i) Req.prob. =p(x=5)= | | | 0.156293 | | | | | | | |
| 9 | ii) Req. prob. =p(x<6)= | | | 0.78513 | | | | | | | |
| 10 | | Average(λ)= | | 8 | For two mintues | | | | | | |
| 11 | iii) Req. prob. =p(x>8)= | | | 0.407453 | | | | | | | |
| 12 | iv)Req. prob. =p(x≤10)= | | | 0.815886 | | | | | | | |
| 13 | | Average(λ)= | | 12 | For three mintues | | | | | | |
| 14 | v) Req. prob. =p(x≥13)= | | | 0.424035 | | | | | | | |
| 15 | | | | | | Name: Karina kc | | | | | |
| 16 | | | | | | Roll:15 | | | | | |

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