MA 691 - Exam cum Assignment - 1

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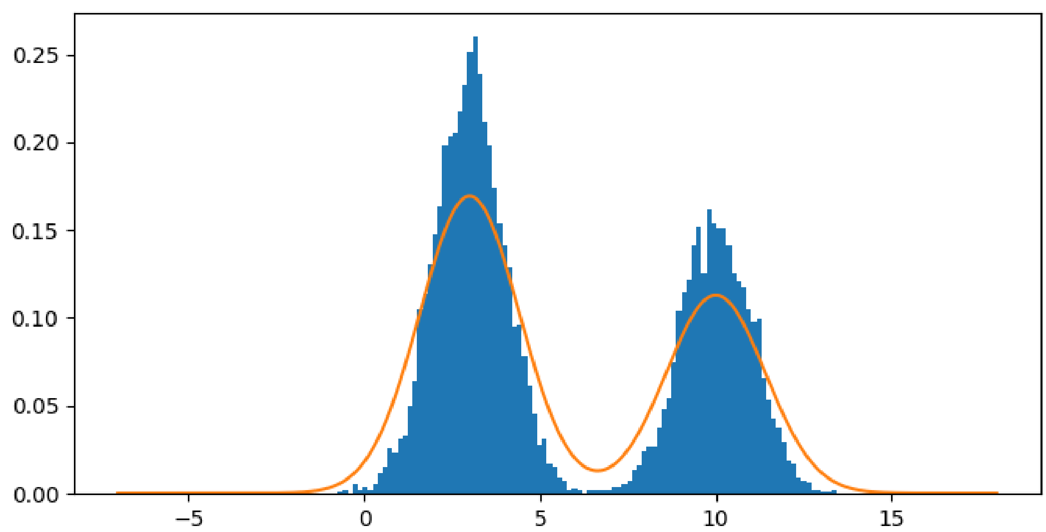
Ques.**1**
Given **Multinomial(20,0.3,0.4,0.1)**
Since p1 = 0.3, p2 = 0.4, p3 = 0.1, hence total probability = p1+p2+p3 = **0.8.**
Since total prob! = 1 Hence we add another component (let's say p4) so that total probability = 1. p4 = 1 - 0.8 = 0.2
Hence we have **4 components** in the given Multinomial Distribution.

Ques.**3**



Ques.**4**
Received Output
[[5.91697517 2.77803998 4.20523542 1.29841561]
[5.006 3.428 1.462 0.246]
[6.54632887 2.94943079 5.4834877 1.98716063]] [0.30118609 0.33333333 0.36548058]
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[[1.36487205e+01 1.89301763e+00 2.44224824e+00 1.75027832e+01
1.05792456e+02 2.81100844e+00 2.93666388e+00 2.94993944e-01
1.88341313e+00 5.35438111e+00 1.07445213e+00 3.13311499e+00
1.08634973e+03]
[1.23591713e+01 2.21875795e+00 2.25015482e+00 2.06732696e+01
9.13654548e+01 2.15403303e+00 2.00010159e+00 3.64839121e-01
1.50840698e+00 3.59868735e+00 9.97714554e-01 2.62517401e+00
4.74985241e+02]
[1.30152258e+01 2.99167919e+00 2.41774130e+00 2.03987866e+01
1.02732859e+02 1.86485785e+00 1.01065378e+00 4.35909429e-01
1.34993269e+00 6.45929341e+00 7.73457507e-01 1.99016898e+00
6.77936558e+02]] [0.34586417 0.35623708 0.29789875]
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[[1.21625159e+01 1.81117822e+01 7.81751817e+01 4.64129320e+02
9.26691857e-02 7.95351210e-02 4.66280790e-02 2.61352846e-02
1.74204234e-01 6.27189069e-02 2.89242932e-01 1.23930447e+00
2.02597117e+00 2.16631543e+01 7.29671246e-03 2.12101104e-02
2.61425809e-02 1.00254128e-02 2.05636974e-02 3.60475269e-03
1.34048714e+01 2.38160697e+01 8.70998624e+01 5.61493156e+02
1.25284263e-01 1.79481980e-01 1.65309729e-01 7.49413320e-02
2.69640425e-01 7.89783954e-02]
[1.75957085e+01 2.13689346e+01 1.16319305e+02 9.91637145e+02
1.02876168e-01 1.48130748e-01 1.63244155e-01 8.91394718e-02
1.93444157e-01 6.29365440e-02 6.09821615e-01 1.17722062e+00
4.34906577e+00 7.33021385e+01 6.58953275e-03 3.30124849e-02
4.20461896e-02 1.49219947e-02 2.05045237e-02 4.13057753e-03
2.13255680e+01 2.89627155e+01 1.42852023e+02 1.44387232e+03
1.44874555e-01 3.86279506e-01 4.60861434e-01 1.84626613e-01
3.26149713e-01 9.27148016e-02]] [0.63837544 0.36162456]
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