



Figure 3: Simulations for Number of Dead nodes, Number of Alive nodes and Throughput when $m=0.1$ and $a=1$.

Fig.2 and Fig.3 show comparison of protocols LEACH, SEP, ZSEP and ISEP regarding alive and dead nodes, relative to number of rounds. It is observed that in ISEP, stability period is greater than all other protocols discussed. As it is threshold based protocol and here transmission is done at only some certain conditions. Nodes keep on sensing and so energy consumption is less than other protocols resulting in increased stability period and network life. The newly proposed protocol ISEP also being threshold based protocol with an additional feature of three levels of heterogeneity results in increased stability period, Throughput and network life even greater than that of ZSEP.

By performing simulations in MATLAB, it is observed that:

- ISEP has enhanced stability period than all other protocols. This is shown in Fig.2, Fig.3. The network life for ISEP was increased as compared to others.
- Increase and decrease in number of alive and dead nodes respectively.
- Increased throughput due to three level heterogeneity and decrease in throughput due to threshold sensitivity as can be observed in Fig.2, Fig.3.

6. Conclusions

In this paper ISEP, reactive routing protocol is proposed where nodes with three different levels of energies. CHs selection is threshold based, due to three levels of heterogeneity and being reactive routing network protocol, it causes increase in stability period and network life. In comparison with ZSEP, L SEP and LEACH it can be concluded that ISEP protocol will perform well in small as well as large sized networks.

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