Economic Order Quantity models have many assumptions that are not satisfied completely with recent economic conditions. One of these assumptions is that all items in an ordered lot are perfect quality. But a portion of ordered lot may be defective. The other unrealistic assumption is that the payments are made as soon as the items received. However, in today’s business transactions it is more common that the supplier will allow certain fixed period known as permissible delay in payment to the retailer for settling the total amount of received goods. In this study, by loosening these two unrealistic assumptions, a new model is proposed in the case of defective items, permissible delay in payments and shortage. For two case of permissible delay, the optimal values are determined. Furthermore, numerical examples are given for the developed model and changes in the optimal values are analyzed with sensitivity analysis. Finally some previously published results are deduced as special cases of proposed model.