ANNEXURE:

COMPLIANCE OF QUERIES

I express my sincere gratitude to the honourable examiners for the thesis coming under their careful and painstaking scrutiny.

About the queries which one respected examiner has made, I submit the following:

Query 01: What was the exact problem in which the research work is based?

*The thesis is a disaggregative analysis of rural industries in Balangir district of Orissa.*

*It seeks to examine the status of these industries, their problems and prospect of growth from theoretical, historical and empirical perspectives.*

THE EMPIRICAL RESEARCH PROBLEM:

The Statement: To determine the production conditions of the rural industries in Balangir District of Orissa by testing relevant hypotheses.

*This has not been explicitly stated.*

Query 02: Most of the details presented in tables pertain to 2000-2004. How do you account for 7 years time lag?

*Firstly, the thesis was submitted to the Sambalpur University for examination in 2007. The time lag of 4 years (2007-2011) can better be explained by the Authorities.*
Secondly, the empirical work was conducted during 2004-2005 prior to the submission of the thesis in 2007 and the latest secondary data which were available only from Government sources were published in 2005. These publications printed data collected and processed during 2000-2004.

Considering the snail pace of growth of these rural industries in Balangir District in the Post-Independence period as analysed in Chapter-II, the time lag of 7 years does not appear to impair much the findings of this study.

Query 03(a): In Hypothesis I, the researcher has used output as a dependent variable and in hypotheses II, value added and again in hypothesis III, he has used output. Why?

These three hypotheses have been formulated with three different objectives.

Hypothesis I seeks to examine the influence of (fixed) capital on output in these rural industries, which were basically labour intensive industries. This is done with a view to finding out whether capital up-gradation can enhance output growth.

Hypothesis II is addressed to the objective of determining contribution of two productive factors namely labour and capital to the production process by adopting the modified Ricardo-Marxian conceptual framework viz; that of the value added which is different from output growth.
Hypotheses III attempts to test the influence of three types of inputs viz; capital, labour and raw-materials on production by adopting econometricians' preferred model of Cobb-Douglas production function.

The researcher did not intend to use output as dependent variable in all these hypotheses. That is because he did not aim at comparing the $\beta$ co-efficient results of (a) bivariate (b) trivariate and (c) multivariate regression models vertically. Econometricians the world over have preferred use of CD function to multivariate regression model in determining influence of the three factors on production. This has been attempted in Hypotheses III.

Query 03(b): In P. 209 he compares the results of different regressions. When the dependent variables are different, how can he compare the results and draw inferences?

The thesis does not compare between incomparables. It compares the results of a single regression equation across different categories of rural industries. In other words, the comparison is legitimately horizontal and not a vertical exercise.
Query 04: In hypotheses I, II, IV and V, he has used deterministic models and not econometric model. Is there any theory to support the deterministic models for hypotheses I, II, IV and V?

One classification of classical regression model in Econometrics is the following:

(a) Deterministic Model:
\[ Y = \alpha + \beta X \]

(b) Probabilistic / Stochastic Model:
\[ Y = \alpha + \beta X + \mu \]

Where \( \mu \) is the disturbance/error term.

In case of deterministic model, \( E(\mu|X) = 0 \)

Thus the scholar has adopted econometric model of the first type in hypotheses I, II, IV & V.

Query 05(a): In page No. 211, model specification is incorrect.

Original Cob-Douglas Production Function:

\[ 0 = \alpha L^{\beta_1} K^{\beta_2} \]

Where \( \beta_1 + \beta_2 = 1 \)

Modern Extensions & Our Model –

\[ 0 = \alpha L^{\beta_1} K^{\beta_2} R^{\beta_3} \]

Where \( \beta_1 + \beta_2 + \beta_3 = 1 \)

Michael Intriligator's celebrated edition, Econometric Models, Techniques and Applications (1978) is a key reference to this modern extension of CD Function, which we have adopted in the thesis.
"Among the other inputs that could be included in the production function are raw materials, fuel and land" (Ref: P.263)

Alpha C. Chiang has specifically mentioned in his famous textbook, Fundamentals of Mathematical Economics (Ref: P.416) that the properties of this trivariate CD-function "are equally valid in other contexts. Furthermore, it is possible to extend our results to the case of more than two variables" where

\[ Y = f(x_1, x_2, \ldots, x_n) \]

In page 417, this renowned mathematical economist provides the well known proof there of in support of extension of CD Model.

Many econometric studies-most notably the study of small scale industries in Orissa by Dr. Bedabati Mohanty (Ref: P.23, "Economics of Small Scale Industries", Bedabati Mohanty – In India and abroad have used this multi-variate CD (Extension) Model.

Query 05(b): And what is K in that Model? Is it fixed capital, working capital or productive capital?

K in our model stands for fixed capital. It refers to machines, machine tools and other instruments of production used in these rural industries.
Query 06: \( \alpha \) does not represent technology, rather it indicates managerial/organizational efficiency (see, Koutsoyiannis: Modern Micro Economics).

Alpha C. Chiang (Ref. Fundamentals of Mathematical Economics, P. 416) has resolved this conflict in the following way:

"For the given values of \( K \) and \( L \), the magnitude of \( A \) will proportionately affect the level of \( Q \). Hence \( A \) may be considered as an efficiency parameter, i.e. as an indicator of the state of technology."

Query 07: From hypotheses IV (P.215) it appears that he has taken total capital in Cobb-Douglas production function. If so, how can he include raw-material as a separate explanatory variable in CD function and the co-efficient of raw material is highly significant in all industries (P. 213)?

In the CD Function, as has been clarified earlier (Ref: Query 05), it is not total capital, but fixed capital which has been used as a factor of production in our model.

Therefore, there is no conceptual or statistical problem in including Raw Material as a separate explanatory variable.
Query 08: What is the reason for altering the variables; both dependent and explanatory in each model?

An econometric exercise of the nature of running a regression model relies on choice of appropriate independent and dependent variables. So one variable (say output) in one model may be independent variable and in other model, it may be chosen as dependent variable if there is economic justification for it.

Query 09: To what extent the research findings are similar to or different from the earlier studies made elsewhere and what are their theoretical or policy import?

Some novelty of our study springs from several sources:

(a) Skimpy Literature: Research literature on rural industries is rather skimpy and this thesis may be a welcome addition.

(b) Spatial Angle: From spatial point of view, this thesis is the first attempt to make an in-depth study of rural industries in an underdeveloped / developing district, namely Balangir, categorized by the government of India as a "No Industry District".

(c) Methodological Dissimilarity: The disaggregative nature of this regional study is distinctly different from other studies which underscore the methodological significance of this thesis.
Findings:

(i) Similarities / Dissimilarities / Newness: All the findings of this study are new in the sense that no research work had ever been done on this aspect of rural sector in Western Orissa.

But the findings have similarities / dissimilarities/ newness with respect to other studies.

1) Regarding the effects of different variables on production, it is observed that raw-material is the most important variable influencing production in the sample units. It suggests that an expansion of rural industrial sector can be achieved, if provisions of raw-materials are assured. What these industries lack is not fixed capital but working capital to run the industries continuously, resulting in huge excess capacity in this sector. These findings resemble the study made by Bedabati Mahanty.

2) From our econometric analysis, it is known that output is not significantly related to fixed capital in case of all categories of rural industries except three such as Metal and Quarry based units, Metal based units and Forest based units. This finding is different from that of A.K. Sinha which shows
positive (but insignificant) relationship between output and fixed capital in most of the industries under study.

3) This study shows that all the sample units are operating under decreasing returns to scale. This finding differs from that of A.V. Arun Kumar where constant returns to scale is seen in all the units under study. However, our finding is same as of Bedabati Mahanty in this respect.

4) The general academic perception that labour intensive industries do not use capital efficiently has been proved incorrect. The present study has established positive correlation between labour intensity and capital efficiency.

5) Similar to findings of studies made by Papola and Sinha, it is observed that capital output ratio is low in the majority of rural industries under study. It implies that rural industries make efficient use of scarce resources of the economy.

6) The study made by T.S. Papola, A.K. Sinha and many others have found like this study that in most of the rural industries, mandays of employment is positively and significantly related to value added.

7) In most of these industries, output is found to be positively and significantly related to value added per worker. However value added per worker is
negatively related to total capital as well as to the number of workers in majority of industries under study.

8) A totally different and interesting observation made in this study is that with the expansion of institutional lending and implementation of Government schemes during the planning period, the dominance of village money lenders has almost disappeared from the scene.

9) In respect of other problems such as marketing constraints, use of modern technology, transport and storage facilities, etc., our finding on sample rural industrial units are not different from other studies.

(ii) Theoretical and Policy Import of our findings:
The micro theory and growth theory implications of our study are analysed in Page 214-215 and Page 245-250 respectively.

The policy import and strategy formulations are discussed in the conclusion chapter.