4.1. CONCEPT

Shift-work is a common feature in the manpower utilisation of modern industry. There are different types of shift schedule in vogue for permanent shift workers, viz., morning shift, evening shift, night shift, which may be found to get administered through weekly, fortnightly, or monthly rotating schedule in some industrial situations. Shift-work arrangement is encouraged or undertaken by any management due to technological, economic, and socio-ecological reasons in order to take the following four advantages, singly or in combination of more than one:

(i) To increase production with minimum overhead cost
(ii) To provide more employment opportunity
(iii) To control capital investment for purchase of several similar type of costly machinery
(iv) To keep the workers' welfare service alive for day and night everyday without interruption - e.g. medical service, transport, communication, security, canteen, crech, etc.

Administrators of shift-work system in industry often encounter problems, of varying degree, with the shift-workers under employment in relation to their effective adjustment to keep pace with the shift-work schedule - arising out of work-schedule and personnel interactions. The nature of these problems may be broadly classified under three major heads, viz., (i) physiological,
(ii) psychological, and (iii) social. These broad headings never remain exclusive, or watertight, in character; on the contrary, they may be found to influence the personnel efficiency with the predominancy of either of these three. A number of researches have been reported in this regard by experts of both western and eastern countries - a review of the available bulk of scientific literature has been made by the present investigator before drawing out this outline plan (chapters One, Two, and Three). The core question in the said research works may be found to remain rooted in the question: Are these shift work schedules equally beneficial to the workers concerned?

Although a large number of researchers in India and Bangladesh have worked in this area of investigation yet few studies have so far been reported on the 'psychosocial aspects' of the shift workers' problem for suggesting remedial measures for the cause of personnel welfare and industrial efficiency. In order to meet that need the present plan of investigation has been outlined, as follows:

4.2. Aim and Objectives of the present investigation:

The aim of the present investigation is to verify the impact of workers' participation permanently in dayshift and nightshift schedules on their respective psychosocial aspects of life and compare the perceived effects by collecting data from two groups of shift workers for attaining the six objectives stated under the following research questions:

Whether:

(i) a subjective symptoms of fatigue or exhaustion reported to get perceived by the permanent dayshift workers are different from
the symptoms of fatigue reported to get perceived by the permanent night shift workers?

(ii) a subjective rating of any worker about the required effort for his efficient performance for a particular type of performance gives different picture for dayshift workers from that of nightshift workers?

(iii) a subjective feeling of physical health conditions or fitness to work regularly (in terms of presence or absence of health complaints) reported to be perceived by the dayshift workers are different from that of the said subjective feelings reported to be perceived by the nightshift workers?

(iv) a self-report about the mental health problems reported by the dayshift worker is different from that of nightshift workers?

(v) the nature of overall perceived job satisfaction of dayshift worker is different?

(vi) the nature of job-related problems reported to be perceived by the dayshift worker is different from that of perceived and reported by the nightshift workers?

4.3. Title:

A study on The Psychosocial Problems of Industrial Shift workers.
4.4. Sample:

From a particular type of manufacturing industry where shift work schedule remains in vogue list of all the organisations will be collected - of them those who would be found to run their respective establishments more than a decade will be picked up. These organisations will be approached in order to earn formal approval from the authority concerned for providing all facilities to conduct the investigation with the employees according to the plan and convenience of the investigator.

After obtaining the formal consent of the authority, the said willing manufacturing concern will be selected 'incidentally' as the venue for conducting the investigation. Obviously, from this organisation 200 permanent shift workers will be randomly selected after a three-stage sample screening - of them 100 will be from the pool of dayshift workers and 100 will be from the nightshift workers. As all these 100 workers will remain exposed to similar shift-work conditions (whose effect on their behaviour will be studied) so the group may be designed as 'single-group' or 'within-subjects' design of group (D'amato, 1979).

4.5. Variables:

Here the said shiftwork conditions (either during daytime or nighttime) will act as the independent variables - which will not be manipulated by the investigator and, hence, will be described as the 'type-3' variables. The responses of a particular group of shift workers which will be collected by a few selected, standardised tools would be considered as the 'dependent variables'. These dependent variables of a single group will be compared
statistically with the dependent variables of another single-group in order to appraise the nature of relations between these two single-groups (D'amato, 1979).

4.6. Controls for screening the sample:

I. Random selection of the sample would serve as one of the modes of control.

II. Besides, each of the workers to be selected as sample will be matched in terms of the following 'Subject-relevant variables', viz., age, sex, religion, experience, permanency in the employment, and educational-level.

III. Further, each of the matched workers of above description would be further grouped in terms of a set of 'situational-relevant variables' - i.e., each of them would be a worker of either morning or night shift schedule, with the idea that the worker be considered of having received the exposure of stress of a particular shift conditions equally with another workers of same shift.

Thus, both the 'subject-relevant variables' and 'situational-relevant variables' will be automatically controlled in the sample under each of the 'Single-group design' (D'amato, 1979).
4.7. **Instruments to be used (for data collection):**

Adapted Bengali version of each of the following six standardised instruments* will be used here for studying the impact of shift-work on the workers concerned:

1. Yoshitake's Symptoms of Fatigue Scale (1971).

4.8. **Statistical Treatment of Data:**

As has been described under 4.6, the sample would be well-matched workers' group whose behaviour under the exposure of a particular shift would be treated here as the data. And, in the present investigation the data of two such groups - one bearing the effect of dayshift and the other bearing the effect of nightshift - will have to be statistically compared in order to determine whether the independent variable has an effect on the dependent variable; so the appropriate statistical design suggests to treat them by

* Acknowledging gratitude to Dr. A. Khaleque for giving me his kind permission for using the Bengali versions of the Tests serial Nos. 1, 2, 4, and 6 adapted by him and to Dr. A. Khaleque and Dr. Rahman for permitting me to use the Bengali version of the Test No. 3 and to Dr. A. Khaleque and A.B. Siddique for the Test No. 5, adapted by them respectively. Short description of these tests will be given in the procedure and copy of each Test will be included in the Appendix."
one-way analysis of variance. "This design, described in most statistical textbooks, is applicable to any number of groups of Ss, i.e., to any number of values of the independent variable. When only two groups of Ss are involved, the one-way analysis of variance is closely related to the widely used 't' test" (D'Amato, 1979). Accordingly, the two sets of mean-scores of two shift-groups, which will be available from the data with reference to each of these six instruments described earlier (4.7), will be treated by 't test' for the appraisal of the workers' behaviour under study.

4.9. Applied Value:

The findings of the present investigation will be helpful in diagnosing the detrimental effect of shiftwork schedule, if any, on the workers' health and efficiency. Further, in case any detrimental effect gets detected its cause will be detected also by analysing the conditions of shift work schedule for offering suggestions to the management to minimise or receive that condition from work-situation for the welfare of the workers concerned.