

(Write very clear)

Candidate's Number:..... 190407005

*1st/2nd Semester Examination, 20.....²³...../.....²⁴..... Session

Faculty.....^{of} Engineering..... Department:.....^{of} Systems Engineering.....

Course Code..... SSG 34S

Course Title..... Industrial Engineering

(*Cross out the word which does not apply)

UNIVERSITY OF LAGOS

INSTRUCTIONS TO CANDIDATES

1. Write legibly on both sides of the paper.
2. Begin each answer on a fresh page.
3. Write the number of the question at the top of each page.
4. Cross out rough works.
5. In your own interest you should enter in the space provided below, the number of each question attempted (with sub-sections where necessary).
6. If supplementary books are used they must be fastened at the end of this book and inside the cover.
7. In no circumstances must answer books used or unused be removed from the Examination Room by a candidate.
8. Folding of, or tampering with this booklet in any way will attract severe penalty.
9. Do not write anything on your question paper except your matriculation number.
10. For your rough work, use only (a) the inside cover and (b) the last page of your answer booklet.

NUMBER OF QUESTIONS in order in which they
are answered

1, 3, 4

| For Examiners use only | |
|---------------------------|-------|
| Question No | Marks |
| 4 | 05½ |
| 3 | 10½ |
| 1 | 09 |
| | 25 |
| Total | |

(a) i. Time Study Board : This is one of the equipments used in the ~~of time~~ Time Study. It is the representation of the time study on a board.

If means when the time study is being done, the results of the time study are represented on a board.

ii Time Study Observation Sheet.

Time Study Observation Sheet is another means of representation of the time study.

This involves recording the observation of time made in a sheet.

The sheet is therefore called the Time Study Observation Sheet.

(b) Allowance in time Study is the parameter which is added to normal time to get the standard

- (a) Process Allowance ?
(b) Performance Allowance ?
(c) Rest and Special Allowance ?

(c). Worked for 3 hours

Performance level 75%

Standard level 85%

Normal working time

$$\text{Performance level} = \text{Time Worked} \times \frac{\text{Performance level}}{\text{Standard level}}$$

$$= 3 \text{ hours} \times 75\%$$

$$NT = 2.25 \text{ hours}$$

(a) Consideration in Job Selection For Motion Study.

1. Known Consideration.

* 1. The first consideration is to choose a job that haven't been studied before.

2. When there is a recent change in the job, method study is needed.

3. When the workers complain a lot about the job, method study should be done.

(b) Motion Study is the systematic recording and critical examination of the process of doing things in order to make improvement.

Steps Involved in Method Study.

1. SELECTION of the job to make a method.

Study on.

2. RECORDING of the parameters associated with the job.

3. EXAMINE : Critically examine the job to implement a motion study on .

4. DEVELOP : Develop a motion study and which enhances the previous process at which the job is done

5. DEFINE : Define the solution and tender it to the needed authorities.

6. INSTALL : The solution of the motion study should be taken into action and adhered by the workers .

7. MAINTAIN : The motion study should be maintained from time to time . This is like a review to make sure it is used in the right manner .

(C)

Objectives of Motion Study

1. The aim and first objective of motion study is to develop a better process of doing things .
2. To remove unnecessary steps or delay in doing the job .
3. Motion Study enables us use resources such as man , tools etc efficiently .
4. Motion Study helps to improve the layout at which things are done .

Candidate's Number:..... 190407043.....

2011

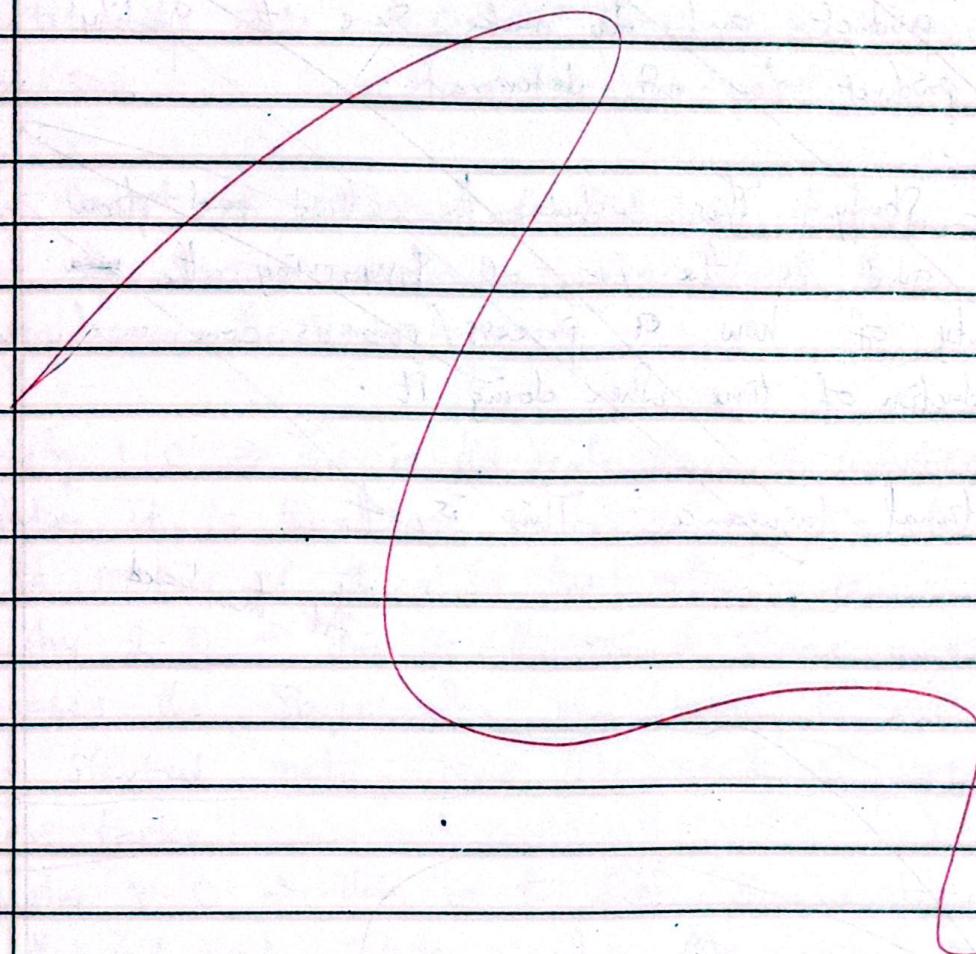
Session

Question..... BC

Write on both sides of the paper

Do not write
on either
margin

5. Help in the Specification of final product.



(a) 4 Construct of Industrial Engineering

i. Quality Control : This is the process of making sure quality of a product does not drop. It means upholding the standard of a product and also make sure the quality of a product does not deteriorate.

ii. Work Study : This include the method and time study and is the way of improving the ~~time~~ entirety of how a process / job is done and the reduction of time when doing it.

iii. Operational Insurance : This is the
At the back

Question..... 1.b
Write on both sides of the paper

(b). Evolution of Industrial Engineering 1.0 to 5.0.

Industrial Engineering has evolved over the year, a study was taken out and the evolutions were partitioned into 1.0 to 5.0 [to 4.0 in some case].

The concept of evolution of Industrial Engineering means the various advancement in which the industry over the years.

Industry 1.0 \Rightarrow This is the early stage of industrial evolution it is the stage in which no tools was used in the making of thing in the older days.

Industry 2.0 \Rightarrow This is the second stage and showcases the stage when man begin to evolve and started making tools like stick to perform various tasks.

Industry 3.0 \Rightarrow This is the ~~3rd~~ advanced stage of the industrial evolution when been connected different things to make their work faster.

Industry 4.0 \Rightarrow This makes use of machinery in the industry. Machines are used to perform work faster.

Industry 5.0 \Rightarrow This introduces robotic and artificial intelligence, where man does not even need to be present before the work is done. ??

(c) (1) Quality Planning

This is the first process of quality management.
It is the process before production.

This is the process where the industrial engineer makes his or her research in order to plan well and produces the best product that satisfies the right and customer standard.

The inputs include

- Scope Statement
- Quality policy
- Standard and quality analysis.

It also has various tools like benefit/cost, benchmarking etc.

There are also outputs such as

(2) Quality Assurance

This is the 2nd process involved in the quality management which explains that a product must be always up to standard.

In this Quality Assurance process, the product must be made sure to be of a good quality based on the standard. ~~or international standard~~

(B) Quality Control : This is the 3rd process of Quality management . It simply means making sure that the quality you have set up in the Quality assurance Stage does not deteriorate and reduce.

This is like upholding of quality of a product through time to time, review .

(Id.) Engineering Design is both Iterative and Cyclic .

① This means that the Engineering design which is the design of engineering processes is repetitive ^(Iterative) and is also goes from initial stage to ~~final~~ stage and back to the initial stage (cyclic) .

1e.

1e. Work Breakdown Structure.

This is a method of trying to improve the process at which work is done. Breaking of the work structure into elements. The main reason why involves:

- Separation of productive element from unproductive elements.
- To identify the fatigue which causes the work to be slowing down and removing the fatigue.
- It used to rate each participating element in the job accurately.
- To have the detailed job Specification.

i. (a) i. Optimization: This is the maximization of the input the ~~less~~ industrial engineer gives to a process in the hope of getting a maximum output.

ii. Continuous Improvement: An Industrial engineer must at all the time ~~strive to~~ make improvement of the process.

An Industrial Engineer must always strive to increase output with same or decreased input.

(iii) System Thinking : An industrial engineer must think systematically in order ~~to~~ receive the optimal output.

(iv) Human Factor : Human are needed in order to do the work in industrial engineering. They are essential for the making of large output off an ~~input~~ and also part of the success of an industry.

