Wages and Incentives

Course: Industrial Management and Safety

Course Code: 5001

Module: I

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Wages and Types

- <u>Wage:</u>
  - It is the payments made by the employer for the efforts put in by the worker in production.
  - These are the payment made for the services rendered by labour.

- <u>Wage types:</u>
  - Nominal Wages
  - Real Wages
  - Living Wages
  - Fair Wages
  - Minimum Wages

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                    Wages
    ┌───────┬───────┼───────┬───────┐
 Nominal   Real   Living   Fair   Minimum
  Wage     Wage    Wage    Wage    Wage
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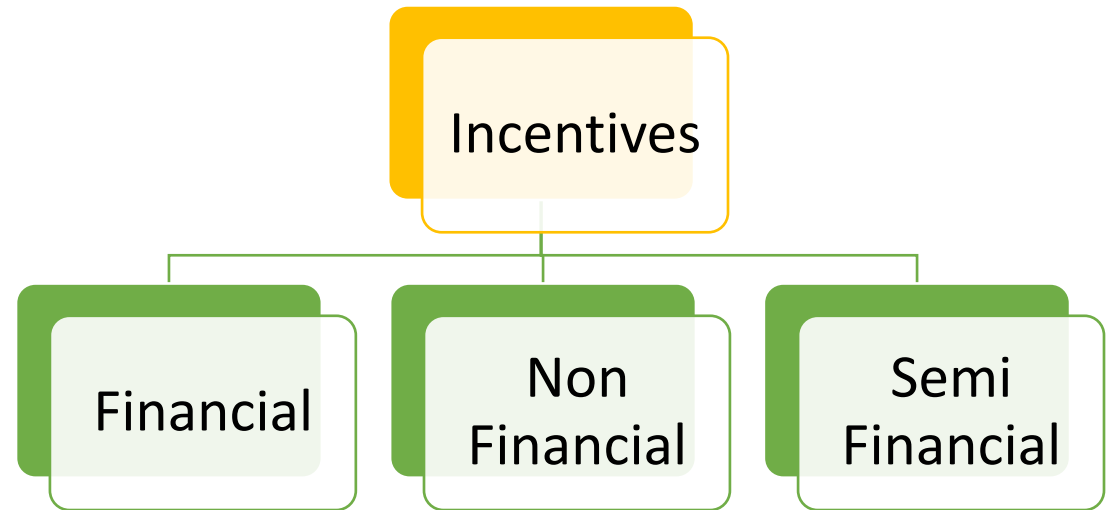Lecturer in Mechanical Engineering
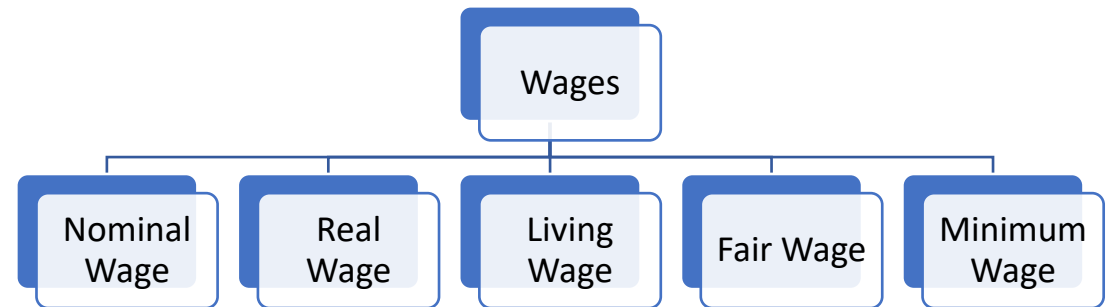
Requirements of a good wage plan

- It should provide a guaranteed minimum wage to the worker.

- Must reward the worker according to his capacity and merit.

- It must be simple in working and easy to understand.

- Should aim at increasing the production without affecting quality.

- Plan should be fair both to the employers and the employees.

- Incentives, bonus, etc. should be payable along with the wages.

- The wage plan should be able to compare the efficiencies of various departments of the enterprise.

- Wage plan should be flexible enough to meet the changing economic and social conditions.

- High wage rates should be prescribed for overtime work.

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Incentives

- <u>Incentive:</u>
    - Incentive is a <u>reward</u> which is given to a worker for his efficiency and hard work.
    - It is a motivation and encouragement to the worker to produce more and better.
    - Incentive is in proportion to the worker's contribution towards production.

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              Incentives
          ┌───────┼───────┐
      Financial   Non     Semi
               Financial  Financial
```

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Types of Financial Incentive Plans

- Financial Incentive Plans:
    i.   Straight Piece Rate Plan
    ii.   Straight Piece Rate With Guaranteed Minimum Wage
    iii. Taylor's Differential Piece Rate System
    iv.   Halsey Premium Plan
    v.   Rowan Premium Plan
    vi.   Gantt Task and Bonus System
    vii. Weir Premium Plan
    viii. Bedaux Premium Plan
    ix.   Emerson's Efficiency Plan

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Straight Piece Rate System

- In this system, a piece rate and a standard time for completion of the job is fixed.

- If a worker completes the job earlier than the standard time, in the saved time, the worker can make extra jobs.

- Earnings of a worker = No. of pieces produced x Rate per piece

- Merits:
  - Simple, easy to understand and operate.
  - Helps in boosting the production fast.
  - The administrative works are reduced.

- Demerits:
  - No guaranteed minimum wage.
  - Difficult to maintain required quality.
  - May cause increased accidents.
  - The method does not assure job security.
  - With a desire to earn more, a worker may spoil his relations with his co-workers.

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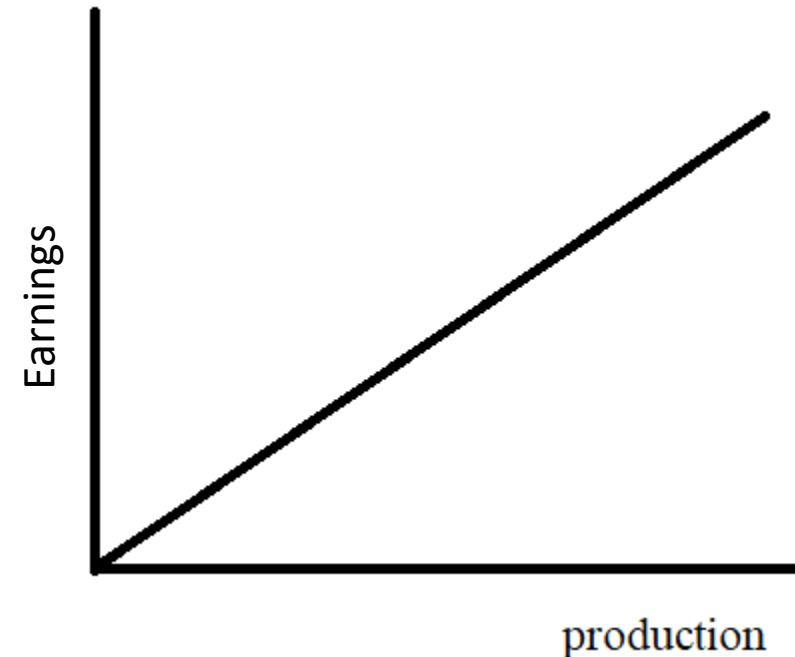
Problem

- A manufacture is employed for manufacture of MS pins at a piece rate of 15 paise. He has to prepare 40 pins in 8 hours of work. However, he prepared 55 pins in 8 hours. Calculate his extra earnings as per straight piece rate plan.

- Solution:
  - Piece Rate = 15 paise per pin
  - Earnings of the worker for preparing 40 pins = 40x15 = 600 paise = Rs 6.00
  - Earnings of the worker for preparing 55 pins = 55x15 = 825 paise = Rs 8.25
  - Extra earnings = 8.25-6.00 =

      Rs 2.25 (Ans)

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Straight Piece Rate with a Guaranteed Minimum Wage

- It is an improvement over the straight piece rate system.

- It guarantees a minimum (hourly or daily) base wage.

- In this plan, the worker gets the guaranteed minimum wage even if the worker produces less than the standard output set by the management.

- If the worker exceeds the standard output, he/she is given a wage in direct proportion to the number pieces produced at the straight piece rate.

- Merits:
  - This system provides a guaranteed minimum wage.
  - It takes some care of the enforced idleness beyond the control of the workers.

- Demerits:
  - The system may fail to offer sufficient incentive for a worker who exceeds the standard output.

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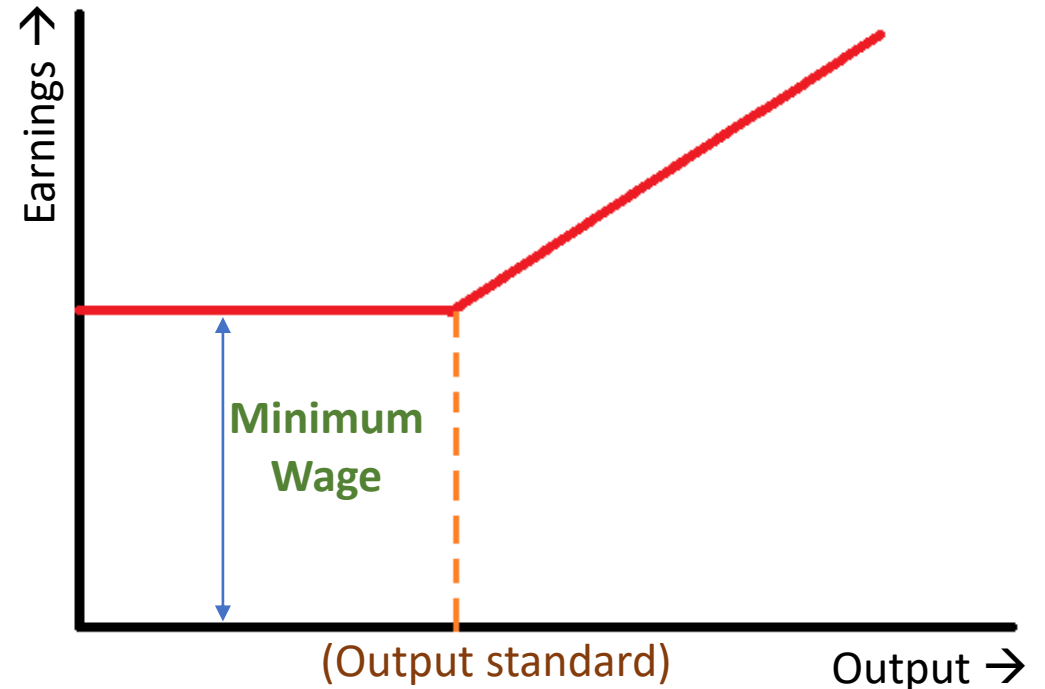
Problem

- The standard output of a product is fixed to be 10 pieces per day. A wage rate of Rs 10 per hour is fixed and total working hours in a day is 8 hours.
  - i. Calculate the piece rate and the guaranteed wage rate.
  - ii. If the worker exceeds the standard output and produces 15 pieces per day, calculate the earnings of the worker.

- Solution:
  - Standard Out put = 10 pieces per day (given)
  - Wage rate = Rs 10 per hour. (given)
  - Number of pieces to be produced in 8 hours = 10
  - i. Guaranteed wage = 10x8 = Rs 80 per day. (Ans.)

    Piece Rate = 80/10 = Rs 8 per piece. (Ans.)
  - ii. If the worker produces 15 pieces per day, earnings = 15 x 8 = Rs 120(Ans.)

Differential Piece Rate System

- This system was suggested by F.W. Taylor.

- In this system, a standard time is fixed for producing the standard output.

- The workers who complete the jobs earlier than the standard time are paid at higher wages and who do not complete the job in standard time are paid at lower rates.

- Merit:
    - It gives an encouragement to active workers but punishes the lazy workers.

- Demerit:
    - The fresh workers who are unable to reach output standard could earn very little and hardly survive.
    - It divides the workers into two groups:
        - Efficient workers who produces more than the standard output and gets higher wage rate.
        - Inefficient workers who are unable to produce the standard out put and gets lower wag rate.

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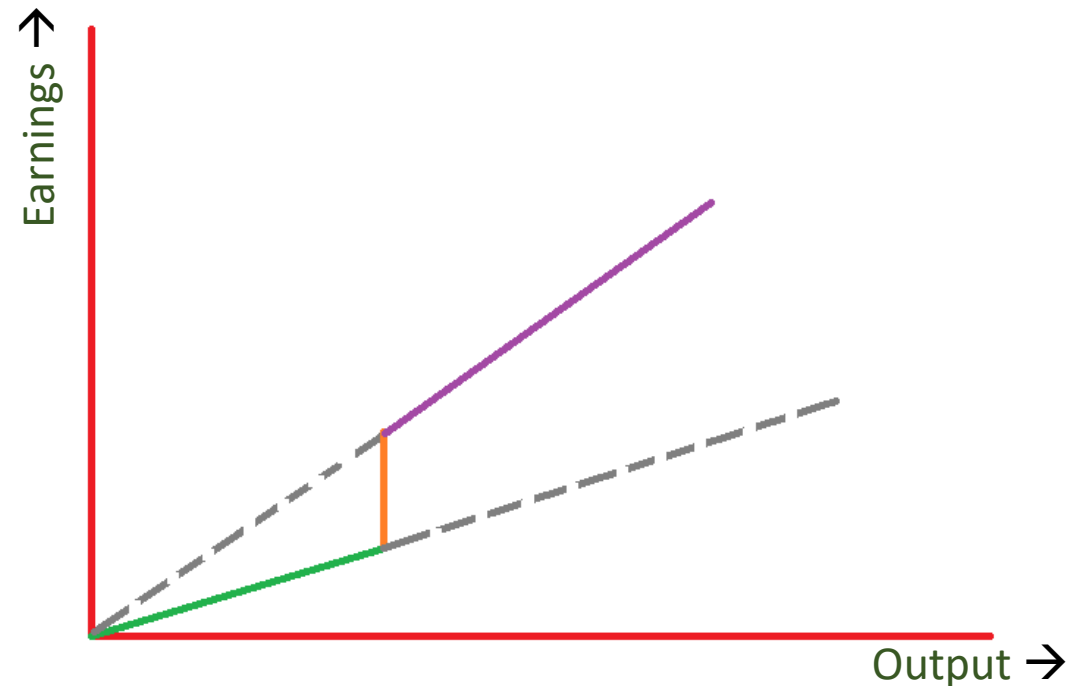
Problem

- The management decides to implement Taylor's differential piece rate system for a plant. The standard rate of production is fixed at 15 units per hour. The lower and higher wage rates are Rs 0.50 and Rs 0.60 respectively for each job. The workers work 8 hours per day. Calculate the daily wage of a worker if his/her production is
  - 12 units per hour
  - 15 units per hour
  - 18 units per hour.

- Solution:

- Standard rate of production = 15 units per hour (given).

- Standard output per day = 15x8 = 120.

- Lower wage rate = Rs 0.50 per piece (given)

- Higher wage rate = Rs 0.60 per piece (given)
  - i.   12 units per hour:
    - Output = 96 < standard output
    - Wage rate = Rs 0.50 per piece.
    - Daily Wage = 96 x 0.50 = Rs 48 per day. (Ans.)
  - ii.   15 units per hour:
    - Out put = 15 x 8 = 120 = standard out put.
    - Wage rate = Rs 0.60 per piece.
    - Daily Wage = 120 x 0.60 = Rs 72 per day. (Ans.)
  - iii.   18 units per hour:
    - Output = 18 x 8 = 144 > standard output
    - Wage Rate = Rs 0.60 per piece
    - Daily Wage = 144 x 0.60 = Rs 86.4 per day (Ans.)

Halsey's Premium Plan

- It is a minimum wage guaranteed plan.

- In this system, an hourly wage rate and standard time foe completion of the job is fixed by the management from previous records.

- In this system, if the worker completes the job in less than standard time, he is rewarded with additional percentage of total bonus for the saved time.

- No extra remuneration is paid if the worker completes the job in just the standard time.

- The earnings of the worker is calculated according to the formula:

$$E = RT + (S-T) \times R \times \frac{P}{100}$$

R= hourly wage rate

T= Actual Time taken to complete the job

S= Standard time allowed

P= fixed percentage on the time saved given to the worker

- **50-50 Halsey Plan:**
  - When 50% of the bonus on the time saved is given to the worker (i.e. when P = 50/100), then the plan is called 50-50 Halsey Plan given by the formula:

$$E = RT + \frac{(S-T)R}{2}$$

- **Merits:**
  - Guarantees minimum wage.
  - Simple to understand and to operate.
  - Management also shares a percentage of bonus.
  - It does not consume time on expensive time studies

- **Demerits:**
  - Workers may not like management sharing the bonus.
  - Output standards being based upon past production records may not be accurate and fair.

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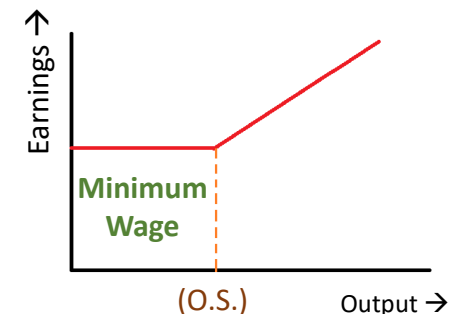
Problem

- Compute the total wages of the worker per hour working in the factory based on following information with respect to 50-50 Halsey Plan
    - Time rate = Rs 10 per hour
    - Time allowed = 100 hours
    - Time taken = 80 hours

- **Solution:**
    - Hourly wage rate, R = Rs 10 per hour (given)
    - Time allowed, S = 100 h
    - Time Taken, T = 80 h
    - According to 50-50 Halsey Plan, Earnings,

$$E = RT+(S-T)R/2$$
$$= 10\times80+(100-80)\times10/2$$
$$= Rs\ 900.$$

    - Wage of the worker per hour

$$= 900/80$$
$$= Rs\ 11.25\ per\ hour\ (Ans.)$$

Rowan Premium Plan

- In Rowan's plan, a standard time is fixed for each job and a premium is given in the ratio of the time saved to the standard time multiplied by the time taken on the job.

$$E = RT + (\frac{S-T}{S})RT$$

- In Rowan's Plan, the bonus gradually increases with increase in percent time saved and reaches a maximum bonus at 50% time saved.

- The bonus gradually decreases above 50% time saved and becomes zero when the time saved is 100%.

- Merits:
  - Provides guaranteed minimum wage.
  - It encourages inferior and fresh workers.
  - Management shares a percentage of bonus.
  - It can be employed even if O.S. Is not very accurate.

- Demerits:
  - Workers may not like management sharing the bonus.
  - Incentive for high productive workers is insufficient.
  - Not easy to understand and operate.

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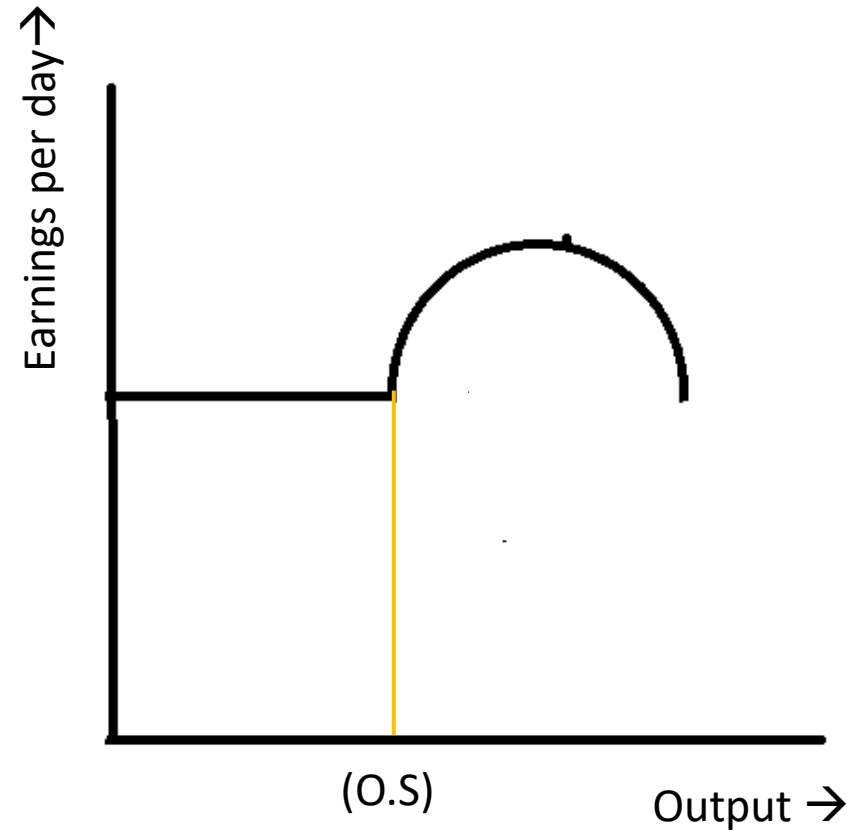
Problem

- The standard time for a particular job is 8 hours and the time taken by the worker to complete the job is 6 hours. If the operator is paid at the rate of Rs 10 per hour. Calculate the earnings of the worker under Halsey plan and Rowan Plan.

- **Solution:**
- Standard time for the job, S = 8 h
- Time taken, T = 6 h
- Wage Rate, R = Rs 10 per h.
- **50-50 Halsey Plan:**
  - Earning,
    $$E = RT+(S-T)R/2$$
    $$= 10\times6+(8-6)10/2$$
    $$= \text{Rs } 70/\text{- for 6 hours (Ans.)}$$
  - **Rowan Premium Plan:**
    - Earning,
      $$E = RT + ((S-T)/S)RT$$
      $$= 10\times6+((8-6)/8)10\times6$$
      $$= \text{Rs } 75/\text{- for 6 hours (Ans.)}$$

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Gantt Task and Bonus System

- In this system, a standard time is fixed for doing a particular task and the efficiency of the worker is determined.

- If the worker takes more than the standard time, he/she is given a wage for the time taken by him or guaranteed minimum wage.

- If the worker takes standard time to complete the task, he is given a wage of standard time and a bonus of 20% on the wages earned or a bonus of some percentage of the time taken.

- If the worker completes the task in less than the standard time, he is given wage for standard time and a bonus of 20% of his normal earnings.

- It is also known as 'Progressive Rate System'.

- Merits:
  - Ensures guaranteed minimum wage to the worker.
  - Makes distinction between efficient and inefficient workers.

- Demerits:
  - May lead to dispute among workers as it divides the workers into two categories.

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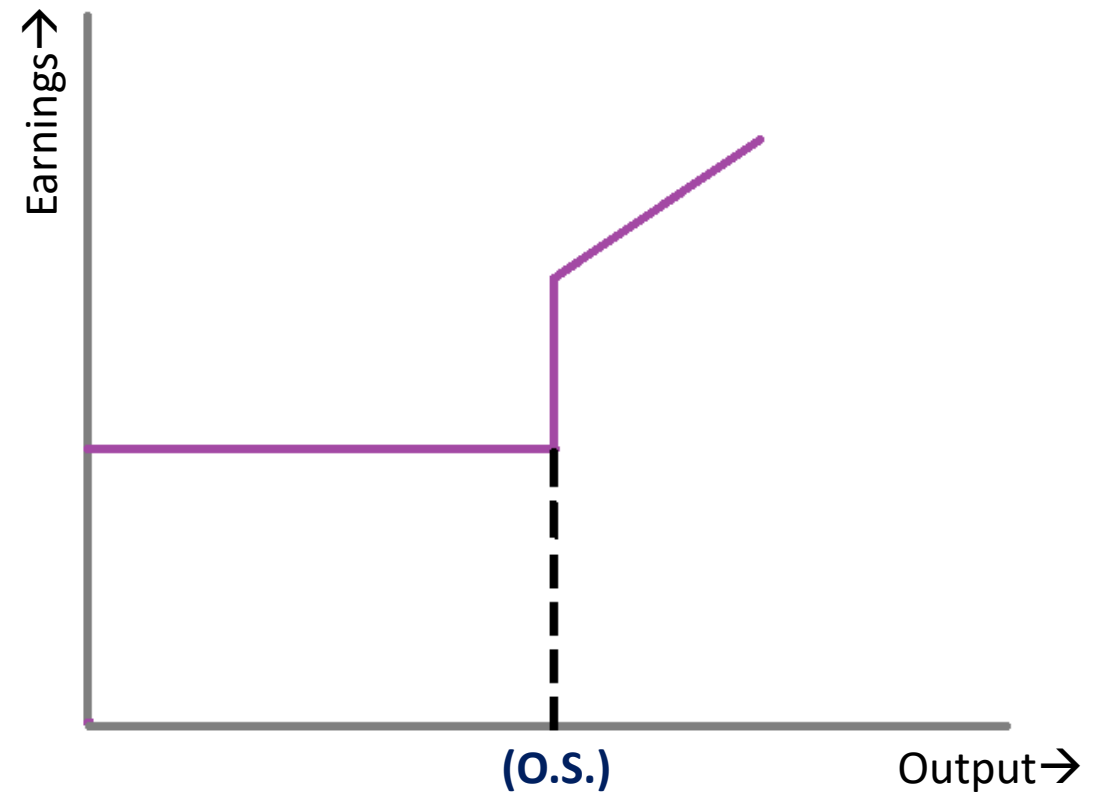
Problem

- From the following data, calculate the total monthly remuneration of three workers – A, B and C under Gantt Plan.
  i.   Standard production per month per worker is 1000 units.
  ii. Actual production during the month:

  A-850 units, B- 1000 units, C- 1100 units

  iii. Piece work rate – 50 paise per unit

  (Assume bonus of 20%)

- **Solution**
  - Standard Output (S.O.) = 1000 units

Workers	Production	Monthly Rate @ Rs 0.50 per unit (Rs.)	Bonus @20% of monthly remuneration (Rs.)	Total monthly remuneration (Rs.)
A	850 <S.O.	850x0.50 = 425	Nil	425
B	1000=S.O.	1000x0.5 = 500	.20x500 =100	500+100 = 600
C	1100>S.O.	1100x0.5 = 550	.20x550 =110	550+110 =660

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