TEST- 15 [Solution]		
Time Allowed: 1 hour 30 min.		Total Marks: 50 Marks

Answer to Question no.1: **CENTRALISED PURCHASING & DECENTRALISED PURCHASING**

1) **CENTRALISED PURCHASING**
   Centralized purchasing is the system where one common purchasing department manages the purchasing function of all the departments of the organization. Although this system enables the organization to place the order in large quantities, it may slow down the procurement process.
2) **ADVATAGES OF CENTRALISED PURCHASING**
   a) Helps in availing quantity discount and cash discount. Hence, cost is reduced.
   b) Prompt reporting of scrap, obsolete stock and storage losses.
3) **DECENTRALISED PURCHASING**
   Decentralized purchasing is a system where purchasing of material is made by various departments independently as per their own requirements. It helps to purchase the materials immediately in case of urgent needs.
4) **ADVATAGES OF DECENTRALISED PURCHASING**
   a) Local supply sources are developed which reduces the transport cost
   b) Different departments are made accountable and responsible in relation to their own purchase.
5) **WHICH SYSTEM IS BEST?**
   It is to be decided by the organization keeping in mind the following factors:-
   a) Nature and Quantity and quality of material to be purchased.
   b) Location of purchase Function in business.

Answer to Question no.2: **Casual Worker and Out Worker**

1. **Casual Workers** - These are those workers who are not in the list of regular employees but they are employed casually wherever there is extra load in the factory or whenever the regular worker is absent from the job for temporary period due to illness or any other reason.
2. **Out Worker** – There are those workers who work from outside the factory premises. These workers may be: -
   a) Those workers who are not in regular employment and they are supplied material for execution of work at their own premises.
   b) Those who are in regular employment and they are sent to perform some specific duties at customer's premises or at any other place as per the directions.
3. From costing point of view, the difference between casual and out workers is not relevant. In fact, the Direct wages must be regarded as part of Prime cost and Indirect wages must be recorded as Factory overhead, Administration overhead or Selling overhead as the case may be.

Answer to Question no.3:

Cost of material in one unit of final product = Input output ratio × Material Price

Cost of Material P = $\frac{125}{100} \times 30 =$ ` 37.50 Cost of Material $P_2 = \frac{120}{100} \times 32 =$ ` 38.40

Cost of Material $P_1 = \frac{150}{100} \times 28 =$ ` 42 Cost of Material $P_3 = \frac{140}{100} \times 31 =$ ` 43.40

Of the above three substitutes material P_2 is most economical despite higher price. It is so due to higher productivity with P_2. Use of substitute P_2 will result in an increase in material cost of ` 38.40 – 37.50 = ` 0.90 per unit in final product.

Answer to Question no.4:

Standard Time = 50 hours

Hourly Wage Rate = ₹ 15

Worker Garry

Assume actual hours = x

Hence, Time Wages (x hrs. × ₹ 15/hr.) = ₹ $15x$

Bonus (Rowan Plan) $\frac{x}{50} \times (50 - x) \times 15$ = $\frac{3}{10}x(50 - x)$

Total Earnings = $15x + \frac{3}{10}x(50 - x)$

We are given that, effective hourly rate = ₹ 20

$$\frac{15x + \frac{3}{10}x(50-x)}{x} = 20 \Rightarrow 15 + \frac{3}{10}(50 - x) = 20$$

Solving, we get x = 33 $\frac{1}{3}$ hours.

Hence, actual hours taken by worker Garry are 33 $\frac{1}{3}$ hours.

Worker Larry

Time Wages (33 $\frac{1}{3}$ hrs. × ₹ 15/hr.) = ₹ 500

(+) Bonus (Halsey Plan) $\frac{50}{100}\left(50-33\frac{1}{3}\right)$hrs. × ₹ 15 / hr. = ₹ 125

Total Earnings = **₹ 625**

Effective hourly rate = $\frac{₹\,625}{33\frac{1}{3}\text{hrs.}}$ = ₹ 18.75

Answer to Question no.5:

(i) Earning of workers under Halsey's and Rowan's premium scheme.

Particulars	Worker A	Worker B
Standard Time	$\frac{176 \text{ pieces} \times 15 \text{ minutes}}{60 \text{ minutes}}$ = 44 hrs	$\frac{140 \text{ pieces} \times 15 \text{ minutes}}{60 \text{ minutes}}$ = 35 hrs.
Time Taken	(40 hrs.)	(40 hrs.)
Time Saved	4 hrs.	Nil
Halsey Plan		
Time wages	(40 hrs × 40/hr) = ₹ 1,600	(40 hrs × 40/hr) = ₹ 1,600
+ Bonus	$\left(\frac{50}{100} \times 4 \text{ hr} \times ₹\ 40/\text{hr}\right)$ = ₹ 80	Nil
Total earnings	**₹ 1,680**	**₹ 1,600**
Rowan Plan		
Time wages	(40 hrs × 40/hr) = ₹ 1,600	(40 hrs × 40/hr) = ₹ 1,600
+ Bonus	$\left(\frac{4}{44} \times 40 \text{ hr} \times ₹\ 40/\text{hr}\right)$ = ₹ 145.45	Nil
Total earnings	**₹ 1,745.45**	**₹ 1,600**

(ii) Earning of workers under Taylor's differential piece rate system and Emerson's efficiency plan

Taylor's differential piece rate system

Worker A

Efficiency = $\frac{176}{160} \times 100 = 110\%$

Total wages = 176 pieces × 120% of ₹10 per piece = ₹ 2,112.

Since efficiency level is more than 100%, the differential piece-rate is 120% of straight piece-rate.

Worker B

Efficiency = $\frac{140}{160} \times 100 = 87.5\%$

Total wages = 140 pieces × 80% of ₹10 per piece = ₹ 1,120.

Since efficiency level is less than 100%, the differential piece-rate is 80% of straight piece-rate.

Answer to Question no.6:

(i) (1) Inventory turnover ratio (Raw material)

$$= \frac{\text{Raw material consumed}}{\text{Average stock of Raw material}} = \frac{₹\,4,05,00,000}{₹\,22,50,000} = 18 \text{ times}$$

Average stock of raw material = $\frac{\text{Opening stock} + \text{closing stock}}{2} = \frac{\text{Nil} + 45,00,000}{2} ==$ ₹ 22,50,000

(2) Inventory turnover ratio (Finished goods)

$$= \frac{\text{Cost of sales}}{\text{Average stock of finished goods}} = \frac{₹\,4,05,00,000}{₹\,1,08,00,000} = 3.75 \text{ times.}$$

Average stock of finished goods = $\frac{\text{Opening stock} + \text{closing stock}}{2} = \frac{\text{Nil} + 2,16,00,000}{2} =$ ₹ 1,08,00,000

(3) Input-Output ratio = $\frac{\text{Input consumed}}{\text{Output obtained}} \times 100 = \frac{1,80,000 \text{ units}}{1,60,000 \text{ units}} = 100 = 112.5\%$

Input consumed (in quantity) = $\frac{₹\,4,05,00,000}{₹\,225 \text{ p.u}} = 1,80,000$ units

(4) Stock-out ratio = $\left(\frac{\text{Orders held up due to stock shortage}}{\text{Total orders received}}\right) \times 100$

$$= \frac{12,000 \text{ units}}{(1,00,000 + 12,000 + 8,000) \text{ units}} \times 100 = 10\%$$

Explanation: - During the year, the company has received order of 1,20,000 units and out of which, the order of 12,000 units could not be fulfilled due to stock shortage. Hence, the company fails to fulfill 10% of total ordered quantity.

(ii) Comments:-

(1) Raw material turnover ratio (18 times) is maintained at high level which means that the consumption of raw material is at fast speed and stock of raw material is held for short period. This situation is favorable to the organization.

(2) Finished goods turnover ratio (3.75 times) is maintained at low level which means that sale of finished goods is at slow speed and stock of finished goods is held for long period. This situation is unfavorable to the organization.

(3) Input output ratio of 112.5% means that 12.5% of total input is wasted in manufacturing procedure.

(4) Stock-out ratio indicates that the organization lacks internal control system in context of stock management.

Answer to Question no.7:

Annual Usage (U) = 90,000 units.

Cost of One order (P) = ₹ 300

Inventory Carrying cost p.u. p.a. (S) = ₹ 6

(i) EOQ = $\sqrt{\frac{2UP}{S}} = \sqrt{\frac{2 \times 90,000 \times 300}{6}}$ = 3,000 units.

(ii) Discount offer of 2%

Presently, we order 3,000 units each time and there are total number of 30 orders. The present total inventory cost is computed below –

	₹
Purchase Cost (90,000 units × ₹ 3 per unit)	2,70,000
Ordering Cost (30 orders × ₹ 300)	9,000
Carrying Cost $\left(\frac{3,000 \text{ units}}{2} \times ₹\ 6\right)$	9,000
	2,88,000

In case 4,500 units are purchased each time with 2% discount, total inventory cost would have been –

	₹	
Purchase Cost (90,000 units × ₹ 2.94)	2,64,600	
Ordering Cost (20 orders × ₹ 300)	6,000	
Carrying Cost $\left(\frac{4,500 \text{ units}}{2} \times ₹\ 6\right)$	13,500	**2,84,100**

The discount offer will reduce total inventory cost to the extent of ₹ 3,900 (2,88,000 – 2,84,100)

Discount offer of 3%

Hence 6,000 units are to be purchased each time and there will be total number of 15 orders.

	₹	
Purchase Cost (90,000 units × ₹ 2.91)	2,61,900	
Ordering Cost (15 orders × ₹ 300)	4,500	
Carrying Cost $\left(\frac{6,000}{2} \times 6\right)$	18,000	**2,84,400**

The discount offer will reduce total inventory cost to the extent of ₹ **3,600** (2,88,000-2,84,400).

Conclusion: The discount offer of 2% is more profitable.