

## FINAL EXAMINATION GROUP IV (SYLLABUS 2008)

### SUGGESTED ANSWERS TO QUESTIONS DECEMBER 2014

#### Paper- 15

#### Management Accounting–Enterprise Performance Management

Time Allowed : 3 Hours

Full Marks : 100

The figures in the margin on the right side indicate full marks.  
Attempt question No. 1 (carrying 25 marks), which is compulsory and  
any five more questions (each carrying 15 marks) from the rest.

Please: (1) Answer all part of a question at one place only.  
(2) Open a new page for answer to a new question.

1. (a) State whether the following statements given below are 'True or 'False'. If True, simply rewrite the given statement (= 1 mark). If False, state it as False (= ½ marks) and rewrite the correct statement (= ½ mark). 1x5=5
- (i) A 'Level Strategy' is one of the Aggregate Planning Strategies, which implies matching demand and capacity period by period.
  - (ii) 'Drum' is the constraint and that sets the pace for the entire system.
  - (iii) Value-chain concepts are fundamentally same.
  - (iv) Extranets can generally be accessed by customers, suppliers or other approved parties.
  - (v) The term 'Cybernetics' is derived from the Latin word 'Kybernetes'.
- (b) In each of the cases given below, only one is the most appropriate option. Indicate the correct answer (=1 mark) and show your workings/reasons briefly in support of your answer (=1 mark). 2x5=10
- (i) The information relating to the direct material cost of ASTRO LTD., is as under:

Standard Price per Unit (₹)	3.60
Actual Quantity purchased (in units)	2400
Standard Quantity allowed for actual production (in units)	2175
Material Price Variance on Purchase (Fav) (₹)	360

What is the actual purchase price per unit?

- (A) ₹ 3.06
- (B) ₹ 3.10
- (C) ₹ 3.45
- (D) ₹ 3.70

- (ii) AMBA LTD., operates throughput accounting system. The details of a product per unit are as under:

Selling Price (₹)	85
Material Cost (₹)	40
Conversion Cost (₹)	25
Time on bottleneck resources	15 Minutes

The return per hour for the product is

- (A) ₹ 270
- (B) ₹ 180
- (C) ₹ 120

# Suggested Answer\_Syl2008\_Dec2014\_Paper\_15

(D) Insufficient information

(iii) The following information is available from the records of VIDESH LTD., for a product – AB:

The number of units sold (units)	22,000
Total Sales Value (₹)	2,20,000
Total Valuable Costs (₹)	1,54,000
Total Raw Material Consumed (₹)	1,10,000
Fixed Cost (₹)	58,900

What will be the BEP (in units) if the Raw Material Price is reduced by 2%?

- (A) 8,181 units.
- (B) 18,750 units.
- (C) 18,560 units.
- (D) None of these

(iv) SRIJA LTD., determines its selling price by marking up variable costs by 60%. In addition, the company uses frequent selling price markdown to stimulate sales. If the markdown is 10%, what is the company's Contribution Margin Ratio?

- (A) 30.56%
- (B) 45.50%
- (C) 48.00%
- (d) None of these

(v) The selling of product M produced by AKIN LTD., is set at ₹ 1,200 for each unit. Sales for the coming year are expected to be 500 units.

If the company requires a return of 12% in the coming year on its investment of ₹ 15 Lakh in Product – M. The Target Cost for each unit for the coming year is:

- (A) ₹ 630
- (B) ₹ 830
- (C) ₹ 840
- (D) ₹ 990

(c) Define the following terms in one/two sentences:

1x5=5

- (i) Esteem Value
- (ii) Sensitivity of Cost
- (iii) Reverse Engineering
- (iv) Shitsuke
- (v) Simulation

(d) Expand the following abbreviation:

- (i) JUSE
- (ii) CONC
- (iii) DMAIC
- (iv) COSO
- (v) LCC

**Answer:**

1. (a) (i) False: The correct term is 'Chase Strategy' and not 'Level Strategy'.  
(ii) True: Drum is the constraint and sets the pace for the entire system.  
(iii) False: The Value-chain concept is fundamentally different from the Value-Added-Concept.  
(iv) True: Extranets can generally be accessed by customers, suppliers or other approved parties.  
(v) False: The term 'Cybernetics' is derived from the Greek word 'Kybernetes'.

# Suggested Answer\_Syl2008\_Dec2014\_Paper\_15

(b) (i) C ₹ 3.45

	₹
Actual quantity bought x Standard Price = 2,400 x 3.60	8,640
Deduct: Favourable Price Variance	360
Actual Quantity x Actual Price (₹)	8,280

Hence, Actual Price = 8,280/2,400 = ₹ 3.45

(ii) B ₹ 180

(Selling Price – Material Cost) / Time on bottle-neck resources  
 = [(₹ 85 – ₹ 40)/15 minutes] x 60  
 = ₹ 180.

(iii) D None of the above.

BEP (in Units) = Fixed Cost/Marginal Contribution per unit  
 = ₹ 58,900 / 3.10\*  
 = 19,000 units

\*[SP – (Reduced Material Price – Other Variable Cost)]/22,000 = [2,20,000 – 1,07,800 – (1,54,000 – 1,10,000)]/22,000 = (2,20,000 – 1,07,800 – 44,000)/22,000 = ₹ 3.10.

(iv) A 30.56%

When the Variable Cost is = 1, Selling Price = ₹ 1.60  
 Selling Price (SP) after 10% markdown of SP = 1.60 – 0.16 = ₹ 1.44.  
 Contribution = 0.60 – 0.16 = ₹ 0.44  
 Therefore, Contribution Margin = 0.44 / 1.44 = 30.56%.

(v) C ₹ 840

	₹
Sales Revenue	6,00,000
Return on Investment reqd. 12% of ₹ 15 Lakhs	1,80,000
Total Cost Allowed	4,20,000

Target Cost per unit (4,20,000 / 500) = ₹ 840.

(c) (i) **Esteem Value:** Esteem value is defined as the subjective value a client attributes to the product that makes them feel good about owning the product.

(ii) **Sensitivity of Cost:** Estimates to factors such as change in volume, usage etc., that are to be considered.

(iii) **Reverse Engineering:** Reverse Engineering is also known as Product Bench Marking. Every Organization tries to compare and try to match with the product of their rivals.

(iv) **Shitsuke:** Shitsuke means discipline. Discipline calls for changing from our present unsystematic way of adherence to set procedures.

(v) **Simulation:** To simulate means to imitate. In general, Simulation involves developing a model of real phenomenon and then performing experiments on the model thus evolved.

(d) (i) JUSE: Japanese Union of Scientists and Engineers.

(ii) CONC: Cost Of Non-Conformance.

(iii) DMAIC: Define, Measure, Analyze, Improve and Control.

(iv) COSO: Committee Of Sponsoring Organization.

(v) LCC: Life Cycle Costing.

2. (a) **BHUMIKA LTD., manufactures and sells in a year 20,000 units of a particular product to definite customers at a price of ₹ 100 per unit. The concern has a capacity to produce 25,000 units of the product per annum. To produce beyond 25,000 units per annum, the concern will have to install a new equipment at a cost of ₹ 15 lakh. The equipment will have a life span of 10 years and will have to residual value. There is an**

# Suggested Answer\_Syl2008\_Dec2014\_Paper\_15

offer from a client to purchase 10,000 units of the product regularly at a price of ₹ 90 per unit. The order, if accepted, will have to be over and above the existing level of production of 20,000 units.

The Cost Structure is as under:

	₹ per unit
Direct Material	30
Direct Labour	20
Variable overheads	10
Profit	20

During the coming year, it has been estimated that the cost of Direct Materials, as compared to the current year will increase by 10%. Because of certain wage agreement, Direct Labour Cost will increase by 25%. Fixed overheads will increase by 10%. If the new order for 10,000 units is accepted, fixed overheads will increase further by ₹ 60,000 due to increased administrative charges.

As a Cost & Management Accountant, you are required to analyze whether the concern should accept the order or instead try to secure order for the balance unused capacity, as available now, through some Sales Promotion Expenses, which will be ₹ 50,000 per annum. Ignore financial charges for the new investment. 10

(b) State the different applications of the Learning Curve. 5

Answer:

## 2. (a) Comparative Profitability Statement

	Alternative I 20,000 units (Rs.)	Alternative II 25,000 units (Rs.)	Alternative III 20,000 + 10,000 units (Rs.)
<b>(i)</b> Sales (20,000 × 100)	20,00,000	25,00,000	29,00,000
<b>(ii)</b> Variable Cost			
Direct Material (Rs. 33 per unit)	6,60,000	8,25,000	9,90,000
Direct Labour (Rs. 25 per unit)	5,00,000	6,25,000	7,50,000
Variable Overhead (Rs. 10 per unit)	2,00,000	2,50,000	3,00,000
	13,60,000	17,00,000	20,40,000
<b>(iii)</b> Contribution [(i) – (ii)]	6,40,000	8,00,000	8,60,000
<b>(iv)</b> Fixed Cost			
Existing 20,000 × 20 = 4,00,000 × 110/100	4,40,000	4,40,000	4,40,000
Increased Administrative charges	----	----	60,000
Sales Promotion Expenses	----	50,000	----
Depreciation on new equipment	----	----	1,50,000
	4,40,000	4,90,000	6,50,000
<b>(v)</b> Profit [(iii) – (iv)]	2,00,000	3,10,000	2,10,000

# Suggested Answer\_Syl2008\_Dec2014\_Paper\_15

## Conclusion:

As the profit is higher under Alternative II, the Bhumika Ltd. should increase the sales to 25,000 units to utilize the existing full capacity.

(b) **Application of Learning Curve** – Learning curve may be applied to direct labor, materials and spoilage and defective work.

(i) **Direct Labor:** Direct labor is the general application area of the learning curve since it is only people who are capable of learning. Learning presupposes a certain degree of inexperience in the performance of an activity and as such, the learning curve is mainly applicable to new activities and new labour force, whether employed on new or old activities.

(ii) **Materials** – Materials respond to learning only in an indirect way under specific circumstances. The learning curve is applicable mainly to sub-contract or fabrication order placed outside or components purchased from suppliers. The cost of the sub-contract or the components purchased would normally contain an element of labour and the purchaser will expect that at least a part of the benefit of learning should be passed on to him in the form of reduced price for the repeat orders for the sub-contract or components.

(iii) **Spoilage and defective work:** This is also an area for learning because with the acquirement of more skill and efficiency, losses on account of spoilage and defective production would decline.

On the other hand, the concept of learning curve may not be gainfully applicable in the following cases:-

(i) Where machine work predominates and the operation time is limited by the speed and feed of the machine.

(ii) In old established industries where no substantial change takes place.

(iii) In industries which do not receive repeat orders.

(iv) In small units where the quantity of production is small and costs are low.

3. (a) (i) **What is lean manufacturing? Briefly describe the lean/JIT system.** 1+3=4  
(ii) **Explain how adoption of JIT affects profitability of an organization.** 4

(b) **M. M. Ltd., have two similar factories under the same management. The management desires to merge these two plants. The following particulars are available:**

	Factory I	Factory II
<b>Capacity Operation</b>	<b>100%</b>	<b>60%</b>
<b>Sales (₹ in Lakhs.)</b>	<b>300</b>	<b>120</b>
<b>Variable Costs (₹ in Lakhs.)</b>	<b>220</b>	<b>90</b>
<b>Fixed Costs (₹ in Lakhs.)</b>	<b>40</b>	<b>20</b>

**You are required to calculate:**

(i) **The Capacity of the merged plant to be operated for the purpose of breaking-even.** 4

(ii) **The profitability on working at 75% of the merged capacity.** 3

## Answer:

3. (a) (i) Just in Time (JIT) philosophy was first developed in Japan. Toyota introduced it in 50's and later, other companies in Japan have adopted it. The overriding feature of JIT is that materials or parts are generated in the exact quantity required and just at the time they are needed. A classic JIT system consists of a series of manufacturing units each delivering to one another in successive stages of production. The amount delivered by each unit to the next unit is exactly what the needs for the next production period (usually one day). There are no safety margins in the form of buffer stock, live storage or work-in-progress. JIT is a sophisticated approach in eliminating wastage in the process of manufacturing in different stages, say, from the production design stage to the stage of delivery of

# Suggested Answer\_Syl2008\_Dec2014\_Paper\_15

finished product. JIT is sometimes regarded as an inventory control technique or a purchasing method. It aims at eliminating all activities which do not add 'value' to the product.

JIT seeks to achieve the following goals:

- Elimination of non value added activities
- Zero inventories
- Zero defects
- Batch size of one
- Zero Breakdowns
- A 100% on time delivery service

JIT is defined as being 'to produce and deliver finished goods just in time to be sold, sub assemblies just in time to be assembled into finished goods, fabricated parts just in time to go into sub assemblies and purchased materials just in time to be transformed into fabricated parts'.

(ii) The introduction of a JIT system can be expected to affect profit as follows:

There will be a reduction in inventory holding costs since inventories of raw materials and finished goods will be eliminated. There will probably be an increase in the price paid for raw materials to compensate the supplier for the additional flexibility that they are required to offer. There may be cost increase as a result of peaks and troughs of demand which cause fluctuating production levels and results in high labour costs through overtime. More management time may be spent on planning the resource utilization rather than on making strategic decisions to improve the profitability.

(b) (i) Calculation of the capacity of the merged plant at break-even:

	Factory I (at 100% capacity) ₹ in lakhs	Factory II (at 100% capacity) ₹ in lakhs	Factory III (at 100% capacity) ₹ in lakhs
Sales:	300	200	500
Less: Variable Cost	<u>220</u>	<u>150</u>	<u>370</u>
Contribution	<u>80</u>	<u>50</u>	<u>130</u>
Fixed Costs	40	20	60

Combined P/V Ratio:  $(\text{combined contribution} / \text{Combined Sales}) \times 100 = 130 / 500 \times 100 = 26\%$ .

Sales at Break-even Point =  $(\text{Combined Fixed Cost} / \text{Combined P/V Ratio}) = 60 / 26\% = 60 / 26 \times 100 = ₹ 230.8 \text{ Lakhs}$ .

Break-Even Point =  $(\text{Break-Even Sales Volume} / \text{Total capacity Sales Volume}) \times 100 = (230.8/500) \times 100 = 46.16\%$

Thus the capacity of the merged plant to be operated for the purpose of break-even would be 46.16%.

(ii) Profitability Statement at 75% of the merged capacity:

	₹ in lakhs
Sales	375.00
Less: Variable Cost $(100 - 26\%) = 75\%$	<u>277.50</u>
Contribution	97.50
Less: Fixed Costs	<u>60.00</u>
Profit	37.50

# Suggested Answer\_Syl2008\_Dec2014\_Paper\_15

4. (a) What is Intranet? What are its advantages? 2+6=8  
(b) An engineering company produces two products A and B. The Cost Data are as under:

Particulars	A (₹)	B (₹)
Selling Price	175	220
Direct Material	40	80
Direct Labour	60	40
Variable Overheads	30	20

Each product undergoes an operation in the two departments, viz., cutting and finishing, before it emerges as a finished product. The unit time taken by the products and the maximum available hours in the cutting and finishing operations are given below:

Products	Cutting hours	Finishing hours
A	5	10
B	20	15
Maximum hours available	400	450

Required: Formulate the above problem in a linear programming problem. 7

Answer:

4. (a) An Intranet is a private computer network that uses internet protocols and network-connectivity to securely share part of an organization's information or operations with its employees. Briefly it can be understood as a "private version of an internet" or as a "version of the Internet confined to an organization". Through such devices and systems, off-site employees can assess company information, computing resources and internal communications.

### Advantages of Intranets:

The following are some of the important advantages of Intranets:

**Work-force productivity:** Intranets can help users to locate and view information faster and use applications relevant to their roles and responsibilities. Users can access data held in any data base the organization wants to make available, anytime and from anywhere within the company work-stations.

**Time:** With Intranets, organizations can make more information available to employees on a "pull" basis (i.e., employees can link to relevant information at a time which suits them) rather than being deluged indiscriminately by e-mails.

**Communication:** Intranets can serve as powerful tools for communication within an organization – both vertically as well as horizontally.

**Enhance Collaboration:** With information easily accessible by all authorized users, team-work is enabled.

**Promote Corporate Culture:** Every user is viewing the same information within the Intranet.

**Cost-effective:** The Intranet enables the system to become cost-effective.

**Knowledge Management:** Web publishing allows "cumbersome" corporate knowledge to be maintained and easily accessed throughout the company using hypermedia and Web technologies.

**Examples include:** Employee manuals, benefits documents, company policies, business standards, news feeds, and even training, can be accessed using common

# Suggested Answer\_Syl2008\_Dec2014\_Paper\_15

Internet standards (Acrobat files, Flash files, CGI applications). Because each business unit can update the online copy of a document, the most recent version is always available to employees using the intranet.

Business operations and management: Intranets are also being used as a platform for developing and deploying applications to support business operations and decisions across the intranet worked enterprise.

(b) Contribution per unit

Particulars	A (₹)	B (₹)
Selling Price	175	220
Less: Variable Cost	130	140
Contribution	45	80

Let  $x_1$  and  $x_2$  be the number of units of Product A and Product B to be produced respectively.

Subject to  $5x_1 + 20x_2 \leq 400$  (available cutting hours constrained)

$10x_1 + 15x_2 \leq 450$  (available finishing hours constrained)

$x_1, x_2 \geq 0$  (non-negative factors)

5. (a) After observing heavy congestion of customers over a period of time in a petrol station, Mr. X has decided to set up a petrol pump facility on his own in a nearby site. He has compiled statistics relating to the potential customers arrival pattern and service pattern as given below. He has also decided to evaluate the operations by using the simulation technique.

Arrivals		Services	
Inter-arrival time (minutes)	Probability	Inter-arrival time (minutes)	Probability
2	0.22	4	0.28
4	0.30	6	0.40
6	0.24	8	0.22
8	0.14	10	0.10
10	0.10		

Assume:

(i) The clock starts at 8.00 hours

(ii) Only one pump is set up

(iii) The following 12 Random Numbers are to be used to depict the customer arrival pattern 78, 26, 94, 08, 46, 63, 18, 35, 59, 12, 97 and 82.

(iv) The following 12 Random Numbers are to be used to depict the customer service pattern 44, 21, 73, 96, 63, 35, 57, 31, 84, 24, 05 and 37.

You are required to find out the

(i) Probability of the pump being idle and

(ii) Average time spent by a customer waiting in queue.

3+4=7

(b) What are the major components of Balanced Scored Card?

8

Answer:

5. (a) Random No. Table:

Inter-arrival time				Service time			
Minutes	Probability	Cumulative Probability	Range	Minutes	Probability	Cumulative Probability	Range
2	0.22	0.22	00-21	4	0.28	0.28	00-27
4	0.30	0.52	22-51	6	0.40	0.68	28-67
6	0.24	0.76	52-75	8	0.22	0.90	68-89
8	0.14	0.90	76-89	10	0.10	1.00	90-99
10	0.10	1.00	90-99				



## Suggested Answer\_Syl2008\_Dec2014\_Paper\_15

Sl. No.	Random No. for inter arrival	Inter Arrival time	Entry time in queue	Service start time	Random No. for service	Service time	Service end time	Waiting time of customer	Idle time
1	78	8	8.08	8.08	44	6	8.14	-	8
2	26	4	8.12	8.14	21	4	8.18	2	-
3	94	10	8.22	8.22	73	8	8.30	-	4
4	08	2	8.24	8.30	96	10	8.40	6	-
5	46	4	8.28	8.40	63	6	8.46	12	-
6	63	6	8.34	8.46	35	6	8.52	12	-
7	18	2	8.36	8.52	57	6	8.58	16	-
8	35	4	8.40	8.58	31	6	9.04	18	-
9	59	6	8.46	9.04	84	8	9.12	18	-
10	12	2	8.48	9.12	24	4	9.16	24	-
11	97	10	8.58	9.16	05	4	9.20	18	-
12	82	8	9.06	9.20	37	6	9.26	14	-
							Total time	140	12

Average waiting time spent by the customer =  $140/12 = 11.67$  minutes.

Probability if idle time of petrol station =  $12/86 = 0.1395$  i.e., 14%

- (b) (i) A well designed Balanced Score Card (BSC) combines financial measures of past performance with measured of the Firm's drivers of future performance.
- (ii) The specific objectives and measures of a Firm's BSC are derived from the Firm's vision and strategy.
- (iii) Generally, the BSC has the following perspectives from which a Company's activity can be evaluated:
- Customer perspective i.e., How customers see us? In order to translate effective internal processes into organizational success, customers/clients must be happy with the service they receive. The Customer perspective considers the business through the eyes of the customers, measuring and reflecting upon customer satisfaction.
  - Internal business perspective i.e., in what processes must the Firm excel? The Internal perspective focuses attention on the performance of the key internal processes, which drive the business. The nature of the processes is dependent on the nature of the organization.
  - Innovation and learning perspective i.e., Can we continue to improve and create value? The learning and Growth perspective is a measure of potential future performance – it directs attention to the basis of all future success – the organization's people and infrastructure. Adequate investment in these areas is critical to all long term success.
  - Financial perspective i.e., How we look to our shareholders? The Financial perspective measures the results that the organization delivers to its stakeholders.

6. N Ltd., has adopted a Standard Costing System. The Standard output for 20,000 units. The Standard Cost and Profit per unit is given below:

Particulars	(₹)
<b>Direct Materials (6 units @ ₹ 1.50)</b>	<b>9.00</b>
<b>Direct Labour (6 units @ ₹ 1.00)</b>	<b>6.00</b>
<b>Direct Expenses</b>	<b>1.00</b>
<b>Factory Overheads:</b>	
Variable	0.50
Fixed	0.60
<b>Administrative overheads</b>	<b>0.60</b>
	<b>17.70</b>
<b>Profit per unit</b>	<b>2.30</b>

# Suggested Answer\_Syl2008\_Dec2014\_Paper\_15

Selling Price (Fixed by Government)	20.00
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Actual production and sales for a period was 14,400 units. The following are the variance worked out at the end of the period:

Particulars	Favourable (₹)	Adverse (₹)
<b>Direct Materials:</b>		
Price Variance	---	8,500
Usage Variance	2,100	---
<b>Direct labour:</b>		
Rate Variance	---	8,000
Efficiency Variance	6,400	---
<b>Factory Overheads:</b>		
Variable Expenditure Variance	800	---
Fixed Expenditure Variance	800	---
Fixed Volume Variance	---	3,360
<b>Administrative Overheads:</b>		
Expenditure Variance	---	800
Volume Variance	---	3,360

You are required to:

- (i) Ascertain the details of cost and prepare the Profit and Loss Account in the statement for the period, showing actual profit.
- (ii) Reconcile the actual profit with the standard profit.  $[(1+4)+\{(5+3)+2\}]=15$

**Answer:**

6. (i)

N LTD.

ASCERTAINMENT OF DETAILS OF COSTS OF 14,400 UNITS:

Particulars	Variance (₹)	Standard Cost (₹)	Actual Cost (₹)
Directs Materials (14,400 x 9)		1,29,600	
Price Variance (Adv.)	8,500		
Usage Variance (Fav.)	(2,100)	6,400	1,36,000
Direct Labour (14,400 x 6)		86,400	
Rate Variance (Adv.)	8,000		
Efficiency Variance (Fav)	(6,400)	1,600	88,000
Direct Expenses: (14,400 x 1)		14,400	14,400
<b>Factory Overheads:</b>			
Variable (14,400 x 0.50)		7,200	
Fixed (14,400 x 0.60)		8,640	
Variable Expenditure (Fav)	(800)		
Fixed Expenditure (Fav)	(800)		
Fixed Volume (Adv.)	3,360	1,760	17,600
<b>Administrative Overheads:</b>			
(14,400 x 0.60)		8,640	
Expenditure (Adv)	800		
Volume Variance (Adv)	3,360	4,160	12,800
<b>Total cost (14,400 x 17.70)</b>		<b>2,54,880</b>	<b>2,68,800</b>

Profit and Loss Account of N Ltd., for the year ending

Particulars	₹	₹
Sales Revenue (14,400 x 20)		2,88,000
Less: Costs:		
Direct Materials	1,36,000	
Direct Labour	88,000	
Direct Expenses	14,400	
Factory Overhead :		

# Suggested Answer\_Syl2008\_Dec2014\_Paper\_15

Variable	6,400	
Fixed	11,200	
Administrative Overhead	12,800	2,68,800
Profit (Actual)		19,200
Standard Profit (14,400 x 2.30)		33,120

(ii)

### Statement of reconciliation of actual profit with standard profit

Particulars	₹	₹
Standard Profit		33,120
Add: Favourable Variance:		
Direct Materials Usage	2,100	
Direct Labour Efficiency	6,400	
Variable OH Expenditure	800	
Fixed OH Expenditure	800	10,100
		43,220
Less: Adverse Variance:		
Direct Material Price	8,500	
Direct Labour Rate	8,000	
Fixed OH Volume	3,360	
Administrative OH Expenditure	800	
Administrative OH Volume	3,360	24,020
Profit (Actual)		19,200

7. (a) Write a note on Total Quality Management. 6  
 (b) Differentiate between Quality Planning, Quality Control and Quality Improvement. 9

**Answer:**

7. (a) Quality is considered a by-product of the manufacturing system, i.e., each individual process has some variation that will lead to the production of some defective units. If the resulting defective rate is too high, compared to the established quality standards, quality inspectors will identify and send them back for rework. The approach is expensive and does not guarantee the desired quality, because quality maintenance and ensuring itself cannot be inspected into a product. This approach assigns the responsibility for quality to quality control managers. A more realistic approach to quality emphasizes building quality into the product would be by studying and improving activities that affect quality, from marketing through design to manufacturing. This new approach is referred to as Total Quality Management (TQM)

TQM is an active approach encompassing a company-wide operating philosophy and system for continuous improvement of quality. It demands co-operation from everyone in the company, from the top management down to workers.

The principles of TQM are as follows:

- (i) Customer focus,
- (ii) Managerial Leadership,
- (iii) Belief in continuous improvement.
- (iv) The current thinking on TQM is moving from Quality of product and service to Quality of people and also embrace the Quality of environment. ISO 14000 standard supports this.

- (b) Difference between Quality Planning, Quality Control & Quality Improvement:

Quality Planning	Quality Control	Quality Improvement
Determine who the Customers are.	Choose control subjects what to control?	Establish the infrastructure needed to secure annual

# Suggested Answer\_Syl2008\_Dec2014\_Paper\_15

		quality improvement.
Determine the needs of the Customers	Choose units of measurements. Evaluate measurements	Identify the specific needs for improvement – the improvement projects
Develop product features that respond to the customer's needs.	Establish standards of performance	For each project establish a project team with clear responsibility for bringing the project to a successful conclusion.
Develop processes that are able to product feature	Measures actual performance	Diagnoses the causes
Transfer the resulting plans to the operating forces.	Interpret the difference (actual versus standard)	Stimulate establishment of a remedy

**8. Write short notes on any three out of the following:**

**5x3=15**

**(a) Basic elements of Control System**

**(b) Matrix Organization Structure**

**(c) Difference between Strategic Planning and Management Control**

**(d) Difference between Theory 'X' and Theory 'Y'**

**Answer:**

8. (a) Basic elements of Control Systems:

The basic elements of a control system are the following:

- A Control object or variable to be controlled – is the variable of the systems behavior chosen for monitoring and control.
- A detector or scanning sub-system-tracks the performance and can be visualized as a scanning system and its feeds on information.
- A comparator / Assessor – The output of the scanning system constitutes the energizing input of the comparator.
- An effector or action taking sub system shall constitute the true decision maker. It evaluates alternative course of corrective action in the light of the significance of the deviations transmitted by the comparator.
- Communication Network - are devices that transmit information between the detector and the assessor and between the assessors and the effectors.

(b) Matrix Organisation Structure: Combines the co-ordination and control of the decentralized structure with the technical excellence economics of scale of the functional structures to reap the benefits of both. While managing complex programs as in large high – technology programs, complex products and services and multinational business, organization face several co-ordination problems. A matrix avoids such problems as the total responsibility for achieving goals and objective of the program lies with Program Manager but must share resources from the various functional heads. The functional managers assigned to the projects are administratively reporting to the Project Manager but functionally to the Function Head.

The distinguishing feature of the matrix structure is thus the dual dimensions of management embodied in it. The outputs produced by the organization may be identified in the rows of the matrix while functional inputs utilized by each project may be identified in the columns of the matrix. The total outputs of the functions are found in the last column of the matrix. Through the Project Manager assumes full responsibility for delivery of a product which meets performance specifications he does not have direct authority over the functional organization that actually performs the work. The functional personnel thus operate under the knowledge-based authority of the function and the resource-based authority of the Project

# Suggested Answer\_Syl2008\_Dec2014\_Paper\_15

Manager. This may create a friction in the course of the work but it is up to the Project Manager to sue it as a creative friction further the goals of the program.

The matrix organization structure is suitable for projects which are not large enough to warrant a fully decentralized set-up, with all functional managers under each project. Decentralization may result in loss of scale economics, by way of duplication of functional services for several projects, the matrix structure is suitable for projects of short duration.

Advantages:

- (a) Ensures better co-ordination and control of the decentralized structure along with achieving technical excellence and economics of scale of the functional organization,
- (b) Fosters Creativity and multiple sources of diversity,
- (c) Broader middle-management exposure to strategic issues of the business,
- (d) Acts as a good training ground for future leaders.

Disadvantages:

- (a) Dual accountability as explained above, which may create confusion,
- (b) Necessitates tremendous horizontal and vertical co-ordination,
- (c) Difference in orientation between Program and Functional personnel. The functional person may aim for high technical performance not warranted by project requirement.
- (d) Diffuse responsibility – as responsibility is distributed between program and functional personnel becomes difficult to administer system of accountability, leading to potential conflict,
- (e) Program personnel may have a sense of insecurity as soon as a project is completed and this may lower their morale,
- (f) The design of the reward structure for program and functional personnel is a ticklish issue which should be worked out in a fair and transparent manner to satisfy all.

(c) Differences between Strategic Planning and Management Control:

Characteristic	Strategic Planning	Management Control
Focus of plans	On one aspect at a time	On whole organization
Complexities	Many variables	Less complex
Degree of structure	Unstructured and irregular; each a different problem	Rhythmic; prescribed
Nature of information	Tailor-made for the Procedures problem; more external and predictive; less accurate	Integrated; more internal and historical; more accurate
Communication of information	Relatively simple	Relatively difficult
Purpose of estimates	Show expected results	Lead to desired results
Persons primarily involved	Staff and top management	Line and top
Number of persons involved	Small management	Large
Mental activity	Creative; analytical	Administrative; persuasive
Source discipline	Economics	Social psychology
Planning and control	Planning dominant, but some control	Emphasis on both planning and control
Time horizon	Tends to be long	Tends to be short
End result	Policies and precedents	Action within policies and precedents
Appraisal of the job done	Extremely difficult	Much less difficult

## Suggested Answer\_Syl2008\_Dec2014\_Paper\_15

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(d) Differences between Theory X and Theory Y:

Douglas McGregor has propounded two theories of human behavior in management philosophy, based on the theme of dual nature of human being. These two theories are best known as Theory 'X' and Theory 'Y'. The major differences between these two theories are:

Theory 'X'	Theory 'Y'
Theory 'X' is the traditional theory of management philosophy. According to this theory, authority and control are centralized. The line of authority or the chain of command traditionally goes direct from the top, down through various layers of organization with some delegation of authority but full accountability is up the line.	Theory 'Y' is based on the views of modern management. This theory is based on the realistic assessment of the capabilities of the people. This theory pleads for a humanistic and supportive approach to managing people.
As per Theory 'X', most people inherently dislike work and shall always try to shrink their responsibility.	As per Theory 'Y', the average human being does not dislike work. For him, work is as natural as play or rest. Depending upon the controllable conditions, work may be a source of satisfaction or punishment.
Because of this inherent character of human being, people must be coerced, controlled, directed and threatened with punishment, rebuffed or rebuked so as to get them to put forth adequate efforts towards the achievement of organizational goals.	External control and the threat of punishment are not the only means for accomplishing the organizational objectives. Workers are committed to objective and exercise self-control and self direction to achieve them. They are fully conscious to their job.
The average human being prefers to be directed, wishes to avoid responsibility. He puts off the work still it is necessary.	Under proper conditions, the average man will not only like to accept responsibility but would seek responsibility. Avoidance of responsibility, lack of ambition and emphasis on security are not the inherent qualities of man.
Most people at work have little ambition as to the improvement of work. He does not work with interest but wait for directions and act accordingly.	The reward for the execution of work is that his work should properly recognized.
The average human being wants security and safety above all. Hence, he tends to work slowly. The labour co-operate the management.	The theory is based on democratic principles, wherein all persons are given equal chance to develop their skill.