5. STANDARD COSTING

NO. OF PROBLEMS IN 40E OF CA INTER: CLASS ROOM - 22, ASSIGNMENT - 19

NO. OF PROBLEMS IN 41E OF CA INTER: CLASS ROOM - 22, ASSIGNMENT - 22

NO. OF PROBLEMS IN 42E OF CA INTER: CLASS ROOM - 20, ASSIGNMENT - 20

MODEL WISE ANALYSIS OF PAST EXAM PAPERS OF IPCC & CA INTER

No.	MODEL NAME	N-09	M-10	N-10	M-11	N-11	M-12	N-12	M-13	N-13	M-14	N-14	M-15	N-15	M-16	N-16	M - 17	N-17	M-18 (O)	M-18 (N)	N-18 (O)	N-18 (N)	M-19 (N)	M-19 (N)
1.	Material Variances	8	15	-	-	-	-	-	5	-	-	-	-	-	-	-	-	4	-	5	-	-	-	-
2.	Labour Variances			-	-	-	-	6	-	-	-	-	-	-	-	8	-	-	5	-	-	-	10	8
3.	Overhead Variances	-	-	-	-	-	8	-	-	-	8	-	8	-	-	-	5	-	-	-	-	5	-	-
4.	Comprehensive Variances	-	-	-	-	8	-	-	-	8	-	-	-	-	8	-	-	-	-	-	-	-	-	-

SIGNIFICANCE OF EACH PROBLEM COVERED IN THIS MATERIAL

Problem No. in this material	Problem No. in NEW SM	Problem No. in OLD SM	Problem No. in OLD PM	RTP	MTP	Previous Exams	Remarks
CR 1	-	-	-	-	-	-	
CR 2	IIL-3	ILL-4	-	-	-	-	
CR 3	PQ-10	ILL-13	-	-	-	-	
CR 4	-	-	-	MAY19(O)	-	-	
CR 5	-	-	Q.NO-10	-	-	-	
CR 6	-	-	-	-	MAY19-II	-	
CR 7	ILL-5	ILL-8	-	-	-	-	
CR 8	-	-	-	-	-	MAY18(O)	
CR 9	-	-	-	-	-	MAY18(N)	
CR 10	-	-	-	NOV-17	-	-	
CR 11	-	-	-	-		MAY19(O)	
CR 12	PQ-3	ILL-7	-	-	NOV-15	-	
CR 13	-	-	Q.NO-14	MAY18(N&O)	-	-	
CR 14	PQ-7	ILL-14	-	-	-	-	
CR 15	PQ-5	ILL-12	-	-	-	-	
CR 16	-	-	-	-	-	-	
CR 17	ILL-9	ILL-11	Q.NO-12	-	-	MAY14	
CR 18	ILL-8	ILL-9	-	-	-	-	
CR 19	-	-	-	-	NOV 18(N)	-	
CR 20	-	-	-	-	-	NOV16	
ASG 1	ILL-2	ILL-2	-	-	-	-	
ASG 2	ILL-1	ILL-1	-	-	-	-	
ASG 3	-	-	-	-	-	-	
ASG 4	-	-	Q.NO-3	NOV 15	-	-	
ASG 5	-	-	-	-	MAY15	-	
ASG 6	-	-	-	-	-	-	
ASG 7	PQ-2	ILL-5	-	-	-	-	

ASG 8	-	-	-	-	-	-	
ASG 9	-	-	-	-	NOV14	-	
ASG 10	-	-	-	-	-	-	
ASG 11	-	-	Q.NO-15		MAY 18	-	
ASG 12	-	Q.NO-15		-	-	MAY19(O)	
ASG 13	-	-	-	-	-	-	
ASG 14	-	-	-	,MAY-18(N)	-	-	
ASG 15	-	-	-	-	-	-	
ASG 16	PQ-8	ILL-15-	-	-	-	NOV- 12	
ASG 17	PQ-8	ILL-15	-	-	-	MAY17	
ASG 18	-	-	-	-	-	-	
ASG 19	-	-	-	-	-	-	
ASG 20	-	-	-	RTP NOV18 (N&O)	-	-	

TOPICS TO BE COVERED

1. Materials Variances (1 to 6)
2. Labour Variances (7 to 13)
3. Overheads (fixed & variable) Variances (14 to 19)
4. Comprehensive (20)

1. Define the term Standard Cost. Is it the same as Estimated Cost?

a) Standard Cost is the pre-determined operating cost calculated from Management's standards of efficient operation and the relevant necessary expenditure.

b) It is used as a basis for - (a) Price Fixing and (b) Cost Control through variance analysis

c) It reflects-(a) quantities of material and labour expected to be used, (b) prices expected to be paid for materials and labour during the coming year and (c) factory expenses applicable to production based on good performance and practical capacity operation of the factory.

2. What are the uses of Standard Costs?

a) **Planning & Control:** Standards provide a benchmark, which serve two purposes-showing direction to the activities of the Firm (planning) and analysing whether actual activities are in proper direction (control).

b) **Pricing Decisions:** Standard Costs facilitate pricing decisions as also for decisions involving submission of quotations, answering tenders etc. Since cost is pre-determined based on acceptable standards of efficiency, decision-making process is simplified.

c) **Variance Analysis:** Identification and measurement of variances from standards is possible with the use of Standard Cost, with a view to improve performance or to revise the standards, wherever applicable.

d) **Management by Exception:** By analysing the variances, the decision-maker can focus on significant deviations from standards and take corrective action. Managers can concentrate on critical areas of activity where variances are reported. Hence Standard Costs facilitate control by exception.

3. Define the term Standard Costing and outline the steps involved therein.

Definition: Standard Costing refers to "the preparation and use of Standard Costs, their comparison with Actual Costs and the Analysis of Variances to their causes and points of incidence."

Standard Costing involves the following Steps:

a) Setting up of Standard costs for Standard Output

b) Ascertainment of Actual Costs for Actual Output

c) Preparation of Standard Costs for Actual Output

d) Comparison of Standard Costs for Actuals and Standard Costs to determine Variances, and

e) Investigation of variances and taking appropriate action thereon wherever necessary.

4. **What are the preliminary steps prior to the installation of a Standard Costing system?**

a) **Responsibility Centers:** The key areas of operation in the enterprise should be identified into Responsibility Centers with clearly defined roles, e.g. Cost Control, Revenue Maximization etc. Such Responsibility Centres may be identified either through - (a) Departmentation or (b) Activity Based Costing.

b) **Classification of Accounts:** The various heads of expense accounts should be classified and codified for collection and comparison of Actual Costs with Standard Costs. This will also help the process of mechanized/computerized accounting.

c) **Selection of Standards:** For operational requirements, a suitable type of standard should be selected.

d) **Length of period:** The duration, for which the standards are to be used, should be determined.

PROBLEMS FOR CLASSROOM DISCUSSION

MODEL 1: MATERIAL VARIANCE

PROBLEM 1: From the following particulars compute

a) Material cost variance,

b) Material price variance, and

c) Material usage variance:

Quantity of materials purchased	3,000 units
Value of materials purchased	Rs.9,000
Standard quantity of materials required per tonne of output	30 units
Standard rate of material	Rs.2.50 per unit
Opening stock of materials	Nil
Closing stock of materials	500 units
Output during the period	80 tonnes

(A) (ANS.: MCV = RS. 1,500 (A); MPV = RS. 1,250 (A); MUV = RS. 250 (A))

(SOLVE PROBLEM NO 1,2 OF ASSIGNMENT PROBLEMS AS REWORK)

Concept question:

What is the impact on the question , If actual output is 90 tonnes

Note:_____

_____

PROBLEM 2: (PRINTED SOLUTION IS AVAILABLE) The standard cost of a chemical mixture is as follows:

40% material A at Rs. 20 per kg.

60% material B at Rs. 30 per kg.

A standard loss of 10% of input is expected in production. The cost records for a period showed the following usage :

90 kg material A at a cost of Rs. 18 per kg.

110 kg material B at a cost of Rs. 34 per kg.

The quantity produced was 182 kg. of good product.

Calculate all material variances.

(A) (NEW SM, OLD SM) (ANS.: MCV = RS. 102 (A), MPV = RS. 260.00 (A), MUV = RS. 158 (F), MMV = 100(F), MYV = 58(F))

(SOLVE PROBLEM NO 3 OF ASSIGNMENT PROBLEMS AS REWORK)

Concept question:

What is the impact on the question, If standard loss is 20% on input

Note:_____

_____

PROBLEM 3: (PRINTED SOLUTION IS AVAILABLE) J.K. Ltd. manufactures NXE by mixing three raw materials. For every batch of 100 kg. of NXE, 125 kg. of raw materials are used. In April, 2012, 60 batches were prepared to produce an output of 5,600 kg. of NXE. The standard and actual particulars for April, 2012, are as follows:

Raw Materials	Standard		Actual		Quantity of Raw Materials Purchased
	Mix (%)	Price per kg. (Rs.)	Mix (%)	Price per kg. (Rs.)	(Kg.)
A	50	20	60	21	5,000
B	30	10	20	8	2,000
C	20	5	20	6	1,200

Calculate all variances. *(A) (NEW SM, OLD SM) (ANS.: MCV = RS. 17,500 (A), MPV = RS. 3,000 (A), MUV = RS. 14,500 (A))*

(SOLVE PROBLEM NO 4 OF ASSIGNMENT PROBLEMS AS REWORK)

Concept question:

What is the impact on the question, If 110 kg are required for 100 kg of output

Note:_____

_____

PROBLEM 4: (PRINTED SOLUTION IS AVAILABLE) XYZ Ltd. produces a product X by using two raw materials A and B. The following standards have been set for the production:

Material	Standard Mix	Standard Price (Rs.)
A	40%	40 per kg.
B	60%	30 per kg.

The standard loss in processing is 15%.

During July, 2016 the company produced 2,000 kg. of finished output.

The positions of stock and purchases for the month of July, 2016 are as under:

Material	Stock on 1st July 2016	Stock on 31st July 2016	Purchases during July 2016	
			Quantity	Amount (Rs.)
A	40 kg.	10 kg.	900 kg.	42.50
B	50 kg.	60 kg.	1,400 kg.	25.00

Calculate the following variances:

i) Material Price Variance;

ii) Material Usage Variance;

iii) Material Mix Variance;

iv) Material Yield Variance;

v) Total Material Cost Variance.

The company follows FIFO method of stock valuation.

(A)(RTP MAY19 OLD) (RTP N16) (ANS.: (I) RS.4,475(F);(II)RS.1,102(F); (III)RS.20(A);(IV)1,122(F);(V)RS.5,577(F))

(SOLVE PROBLEM NO 5OF ASSIGNMENT PROBLEMS AS REWORK)

Concept question:

What is the impact on the question, If actual production is 2500 kg

Note:_____

_____

PROBLEM 5: (PRINTED SOLUTION IS AVAILABLE) Following are the details of the product Phomex for the month of April 2013:

Standard quantity of material required per unit	5 Kg
Actual output	1,000 units
Actual cost of materials used	Rs.7,14,000
Material price variance	Rs.51,000 (Fav)

Actual price per kg of material is found to be less than standard price per kg of material by Rs.10.

You are required to calculate:

i) Actual quantity and Actual price of materials used.

ii) Material Usage Variance

iii) Material Cost Variance

(A) (OLD PM, M13 - 5M) (ANS.: A.Q = 5,100 AND A.P = RS.140; II. MUV = RS. 15,000(A); III. MCV = RS. 36,000(F))

(SOLVE PROBLEM NO 6 OF ASSIGNMENT PROBLEMS AS REWORK)

Concept question:

What is the impact on the question, If standard quantity is 10 kg per unit

Note:_____

_____

PROBLEM 6: BBC Ltd. manufactures Ordinary Portland Cement (OPC). The standard data for the raw materials that are used to manufacture OPC are as follows:

Material	Composition (%)	Rate per Metric Ton (Rs.)
Limestone	65	565
Silica	20	4,800
Alumina	5	32,100
Iron ore	5	1,800
Others	5	2,400

During the month of February 20X8, A Ltd. produced 500 MT OPC. Actual data related withthe consumption and costs are as follows:

Raw Material	Quantity (MT)	Total Cost (Rs.)
Limestone	340	1,90,400
Silica	105	5,09,250
Alumina	25	8,12,500
Iron ore	30	53,400
Others	23	51,750

You are required to COMPUTE the following variances related with the production of OPC for the month of February 20X8:

(i) Material Price Variance

(ii) Material Mix Variance

(iii) Material Yield Variance

(iv) Material Cost Variance.

(MTP MAY19S-II)(ANS1) 9,500(A)II) 35,596.75(F)III)72,271.75(A)(IV)46,175(A)

(SOLVE PROBLEM NO 7 OF ASSIGNMENT PROBLEMS AS REWORK)

Concept question:

What is the impact on the question, If actual production is 800 tonnes

Note:_____

_____

MODEL 2: LABOUR VARIANCE

PROBLEM 7: The standard labour employment and the actual labour engaged in a week for a job are as under:

Details	Skilled Workers	Semi-skilled Workers	Unskilled workers
Standard no. of workers in the gang	32	12	6
Actual no. of workers employed	28	18	4
Standard wage rate per hour	3	2	1
Actual wage rate per hour	4	3	2

During the 40 hours working week, the gang produced 1,800 standard labour hours of work.

Calculate:

a. Labour Cost Variance

b. Labour Rate Variance

c. Labour Efficiency Variance

d. Labour Mix Variance

e. Labour Yield Variance.

(B) (NEW SM, OLD SM, MTP1 M18 (N&O)) (ANS.: A. RS.2,424 (A), B. RS.2,000 (A),C.RS.424 (A), D. RS.80 (F), E. RS.504 (A))

(SOLVE PROBLEM NO 8OF ASSIGNMENT PROBLEMS AS REWORK

Concept question:

What is the impact on the question, If standard labour hours are 2000h

Note:_____

_____

PROBLEM 8: A Company planned to produce 2,000 units of a product in a week of 40 hours by employing 65 skilled workers. Other relevant information are as follows:

- Standard wages rate : Rs.45 per hour
- Actual production : 1800 units
- Actual number of worker employed : 50 workers in a week of 40 hours
- Actual wages rate : Rs.50 per hour
- Abnormal time loss due to machinery breakdown : 100 hours

You are required to calculate:

(i) Labour cost, rate, Idle time and efficiency variances.

(ii) Reconcile the variances.

(A) (M 18 (O) - 5M) (ANS:. 300 (F), 10,000 (A), 4,500(A), 19,800 (F))

(SOLVE PROBLEM NO 9 OF ASSIGNMENT PROBLEMS AS REWORK)

Concept question:

What is the impact on the question, If actual production is 2000U

Note:_____

_____

PROBLEM 9: A gang of workers normally consists of 30 skilled workers, 15 semi-skilled workers and 10 unskilled workers. They are paid at standard rate per hour as under:

Skilled	Rs70
Semi-skilled	Rs 65
Unskilled	Rs 50

In a normal working week of 40 hours the gang is expected to produce 2000 units of output. During the week ended 31st march, 2019, the gang consists of 40 skilled, 10 semi-skilled and 5 unskilled workers. The actual wages paid were at the rate of Rs75 Rs60, and Rs52 per hour respectively .Four hours were lost due to machine breakdown and 1600 units were produced.

Calculate the following variances showing clearly adverse (A) or Favorable (F)

i) Labour cost Variance

ii) Labour rate Variance

iii) Labour efficiency variance

iv) Labour mix variance

v) Labour idle time variance

(MAY19 NEW)(i).40,000(A) ii)6400(A) iii)18,800(A) iv) 4500 (A) v) 14800 (A)

(SOLVE PROBLEM NO 10 OF ASSIGNMENT PROBLEMS AS REWORK

Concept question:

What is the impact on the question, If standard rate is 50, 40 & 20

Note:_____

_____

PROBLEM 10: (PRINTED SOLUTION IS AVAILABLE) The following information has been provided by a company:

Number of units produced and sold 12,000

Standard labour rate per hour Rs. 16

Standard hours required for 12,000 units - ?

Actual hours worked 34,188 hours

Labour efficiency 105.3%

Labour rate variance Rs. 1,36,752 (A)

You are required to calculate:

i) Actual labour rate per hour

ii) Standard hours required for 12,000 units

iii) Labour Efficiency variance

iv) Standard labour cost per unit

v) Actual labour cost per unit. *(A) (RTP N17) (ANS.: I) AR = RS.20, II) SH = 36,000 HRS., III) 28,992 (F), IV) RS. 48, V) RS.56.98)*

(SOLVE PROBLEM NO 11 OF ASSIGNMENT PROBLEMS AS REWORK)

Concept question:

What is the impact on the question, If labour efficiency is 120%

Note:_____

_____

PROBLEM 11: Following information relates to labour of KAY PEE Ltd.

	Skilled	Semi-Skilled	Unskilled	Total
Number workers in standard gang	12	8	5	25
Standard rate per hour	75	50	40	-
Number workers in Actual gang				25
Actual rate per hour	80	48	42	

The standard output of gang was 12 units per hour of the product M. The gang was engaged for 200 hours during the month of March 2019 out of which 20 hours were lost due to machine breakdown and 2295 units of product M were produced. The Actual number of skilled workers was 2 times the semi-skilled workers. Total labour mix variance was Rs.10800 (A).

You are required to calculate the following:

a) Actual number of workers in each category

b) Labour rate variance

c) Labour yield variance

d) Labour efficiency variance *(MAY19 OLD)(Ans: a)7,14,4workersb) 12800(F)c)16,875(F) d) 25,125(A)*

(SOLVE PROBLEM NO 12 OF ASSIGNMENT PROBLEMS AS REWORK

Concept question:

What is the impact on the question, If actual production is 2500 U

Note:_____

_____

PROBLEM 12: The following standards have been set to manufacture a product:

Direct Material:	(Rs.)
2 units of A @Rs.4 per unit	8.00
3 units of B @ Rs.3 per unit	9.00
15 units of C @ Rs.1 per unit	15.00
Direct Labour:	
3 hrs. @ Rs.8 per hour	24.00
Total standard prime cost	56.00

The company manufactured and sold 6,000 units of the product during the year. Direct material costs were as follows:

12,500 units of A at Rs.4.40 per unit

18,000 units of B at Rs.2.80 per unit

88,500 units of C atRs.1.20 per unit

The company worked 17,500 direct labour hours during the year. For 2,500 of these hours, the company paid at Rs.12 per hour while for the remaining, the wages were paid at standard rate.

Calculate materials price variance and usage variance and labour rate and efficiency variances.

(A) (NEW SM, OLD S), N-09, MTP - N15 - 8M, MTP19 S-ii NEW, OLD)

(ANS.: MPV=RS.19,100 (A), MUV = RS.500(A), LRV = RS.10,000(A), LEV=RS.4,000(F))

(SOLVE PROBLEM NO 13 OF ASSIGNMENT PROBLEMS AS REWORK)

Concept question:

What is the impact on the question, If actual production is 7000U

Note:_____

_____

PROBLEM 13: (PRINTED SOLUTION IS AVAILABLE) ABC Ltd. had prepared the following estimation for the month of April:

Particulars	Quantity	Rate (Rs.)	Amount (Rs.)
Material-A	800 kg.	45.00	36,000
Material-B	600 kg.	30.00	18,000
Skilled labour	1,000 hours	37.50	37,500
Unskilled labour	800 hours	22.00	17,600

Normal loss was expected to be 10% of total input materials and an idle labour time of 5% of expected labour hours was also estimated.

At the end of the month the following information has been collected from the cost accounting department:

The company has produced 1,480 kg. finished product by using the followings:

Particulars	Quantity	Rate (Rs.)	Amount (Rs.)
Material-A	900 kg.	43.00	38,700
Material-B	650 kg.	32.50	21,125
Skilled labour	1,200 hours	35.50	42,600
Unskilled labour	860 hours	23.00	19,780

Required:

CALCULATE:

i) Material Cost Variance;

ii) Material Price Variance;

iii) Material Mix Variance;

iv) Material Yield Variance;

v) Labour Cost Variance;

vi) Labour Efficiency Variance and

vii) Labour Yield Variance

(A) (RTP M 18 N&O, RTP MAY 19 NEW), OLD PM)

(ANS.: (I) 3,625 (F); (II) 625 (F); (III) 210 (A); (IV) 3,660 (F); (V) 884 (A); (VI) 2,424 (A); (VII) 1,556(A))

(SOLVE PROBLEM NO 14 OF ASSIGNMENT PROBLEMS AS REWORK

Concept question:

What is the impact on the question, If normal loss is 5%.

Note:_____

_____

MODEL 3: OVERHEAD VARIANCE

PROBLEM 14: XYZ Ltd. has furnished you the following information for the month of August, 2012:

	Budget	Actual
Output (units)	30,000	32,500
Hours	30,000	33,000
Fixed overhead Rs.	45,000	50,000
Variable overhead Rs.	60,000	68,000
Working days	25	26

Calculate overhead variances.

(B) (NEW SM, OLD SM)(ANS.: FOCV=RS.1,250 (A), VOCV= RS.3,000(A))

(SOLVE PROBLEM NO 15 OF ASSIGNMENT PROBLEMS AS REWORK)

Concept question:

What is the impact on the question, If actual no. of days worked are 30 days

Note:_____

_____

PROBLEM 15: A company has a normal capacity of 120 machines, working 8 hours per day of 25 days in a month. The fixed overheads are budgeted at Rs.1,44,000 per month. The standard time required to manufacture one unit of product is 4 hours. In April 1998, the company worked 24 days of 840 machine hours per day and produced 5,305 units out output. The actual fixed overheads were Rs.1,42,000.

Compute:

1. Expense variance
2. Volume variance
3. Total fixed overheads variance.

(B) (NEW SM, OLD SM) (ANS.: 1. RS. 2,000 (F), 2. RS.16,680 (A), 3. RS. 14,680 (A))

(SOLVE PROBLEM NO 16 OF ASSIGNMENT PROBLEMS AS REWORK)

Concept question:

What is the impact on the question, If actual fixed overheads were 2,50,000

Note:_____

_____

PROBLEM 16: (PRINTED SOLUTION IS AVAILABLE) A manufacturing concern has provided related to fixed overheads:

	Standard	Actual
Output in a month	5000 units	4800 units
Working days in a month	25 days	23 days
Fixed overheads	Rs.5,00,000	Rs.4,90,000

Compute:

i) Fixed overhead variance **ii)** Fixed overhead expenditure variance

iii) Fixed overhead volume variance **iv)** Fixed overhead efficiency variance

(Ans: i) 10000A ii) 10000F iii) 20000A iv) 20000F)

(A) (N18 (N) - 5M) (SOLVE PROBLEM NO 17 OF ASSIGNMENT PROBLEMS AS REWORK)

Concept question:

What is the impact on the question, If actual production is 5000U

Note:_____

_____

PROBLEM 17: The following information was obtained from the records of a manufacturing unit using standard costing system.

Details	Standard	Actual
Production	4,000 units	3,800 units
Working days	20	21
Fixed Overhead	Rs.40,000	Rs.39,000
Variable Overhead	12,000	12,000

You are required to calculate the following overhead variance:

a) Variable overhead variance

b) Fixed overhead variances

- **i)** Expenditure variances
- **ii)** Volume variance

(B) (NEW SM, OLD SM, PM, M14 - 8M) (ANS: A. RS.600 (A), B. RS.1,000(A), (I).RS.1,000(F), (II)RS.2,000(A))

(SOLVE PROBLEM NO 18 OF ASSIGNMENT PROBLEMS AS REWORK)

Concept question:

What is the impact on the question, If actual VOH is 15,000

PROBLEM 18: (PRINTED SOLUTION IS AVAILABLE) The overhead expense budget for a factory producing to a capacity of 200 units per month is as follows:

Description of overhead	Fixed cost per unit in Rs.	Variable cost per unit in Rs.	Total cost per unit in Rs.
Power and fuel	1,000	500	1,500
Repair and maintenance	500	250	750
Printing and stationary	500	250	750
Other overheads	1,000	500	1,500
	Rs 3,000	Rs 1,500	Rs 4,500

The factory has actually produced only 100 units in a particular month. Details of overheads actually incurred have been provided by the accounts department and are as follows:

Description of overhead	Actual cost
Power and fuel	Rs. 4,00,000
Repair and maintenance	Rs. 2,00,000
Printing and stationary	Rs. 1,75,000
Other overheads	Rs. 3,75,000

You are required to compute the production volume variance and the overhead expenses variance.

(A) (NEW SM, OLD SM) (ANS.: PVV = RS. 3,00,000 (A), OHEV = RS. 4,00,000 (A))

(SOLVE PROBLEM NO 19 OF ASSIGNMENT PROBLEMS AS REWORK

Concept question:

What is the impact on the question, If actual production is 150 U

Note:_____

_____

PROBLEM 19: (PRINTED SOLUTION IS AVAILABLE) Z. Ltd. uses standard costing system in manufacturing of its single product 'M'. The standard cost per unit of M is as follows:

	Rs.
Direct Material - 2 metres @ Rs. 6 per metre	12.00
Direct labour- 1 hour @ Rs. 4.40 per hour	4.40
Variable overhead- 1 hour @ Rs. 3 per hour	3.00

During July, 2016, 6,000 units of M were produced and the related data are as under:

Direct material acquired- 19,000 metres @ Rs.5.70 per metre.

Material consumed - 12,670 metres.

Direct labour - ? hours @ Rs. ? per hour Rs. 27,950

Variable overheads incurred Rs. 20,475

The variable overhead efficiency variance is Rs. 1,500 adverse. Variable overheads are based on direct labour hours. There was no stock of the material in the beginning

You are required to compute the missing figures and work out all the relevant Variances

(B) (MTP 18 S-1) (MTP M16) (ANS.: DIRECT LABOUR HOURS: 6500, @RS 4.30 PER HOUR)

Concept question:

What is the impact on the question, If actual material consumed were 18000 metres

Note:_____

_____

MODEL 4: COMPREHENSIVE VARIANCE

PROBLEM 20: The following information is available from the cost records of a company for the month of July, 2016.

1.	Material purchased	22,000 pieces	Rs.90,000
2.	Material consumed	21,000 pieces	
3.	Actual wages paid for	5,150 hours	Rs.25,750
4.	Fixed factory overhead incurred		Rs.46,000
5.	Fixed factory overhead budgeted		Rs.42,000
6.	Units produced	1,900	
7.	Standard rates and prices are:		
	Direct material	Rs.4.50per piece	
	Standard input	10 pieces per unit	
	Direct labour rate	Rs.6 per hour	
	Standard requirement	2.5 hours per unit	
	Overheads	Rs.8 per labour hour	

You are required to calculate the following variances

i) Material price variance
ii) Material usage variance
iii) Labour rate variance
iv) Labour efficiency variance
v) Fixed overhead expenditure variance
vi) Fixed overhead efficiency variance
vii) Fixed overhead capacity variance

(A) (N16 - 8M)
(MPV-RS. 9,000(F) OR RS. 8,591(F); MUV- RS. 9,000(A); LRV- RS. 5,150(F); LEV- RS. 2,400(A); FOEXP - RS. 4,000(A); FOEFV- RS. 3,200(A); FOCV- RS. 800(A)
(SOLVE PROBLEM NO 20 OF ASSIGNMENT PROBLEMS AS REWORK)

Concept question:
What is the impact on the question, If actual labour cost were Rs.46,350/-

Note:_____

_____

ASSIGNMENT PROBLEMS

MODEL 1: MATERIAL VARIANCE

PROBLEM 1: NXE Manufacturing Concern furnishes the following information:

Standard: Material for 70 kg finished products 100 kg.

Price of material Rs.1 per kg.

Actual: Output - 2,10,000 kg.

Material used - 2,80,000 kg.

Cost of Materials Rs.2,52,000

Calculate: (a) Material usage variance, (b) Material price variance, (c) Material cost variance.

(C) (NEW SM , OLD SM) (ANS.: A. RS.20,000 (F), B. RS.28,000(F), C.RS.48,000(F))

PROBLEM 2: The standard and actual figures of product 'Z' are as under:

	Standard	Actual
Material quantity	50 units	45 units
Material price per unit	Rs. 1.00	Rs. 0.80

Calculate material cost variance. *(C) (NEW SM, OLD SM) (ANS.: MCV = RS.14 (F))*

PROBLEM 3: The standard cost of a certain chemical mixture is:

35% Material A at Rs.25 per kg and 65% Material B at Rs.36 per kg.

A standard loss of 5% is expected in production

During a period actual details are:

125 kg of Material A at Rs.27 per kg and

275 kg of Material B at Rs.34 per kg.

The actual output was 365 kgs.

Calculate:

a) Material Cost Variance

b) Material Price Variance

c) Material Mix Variance

d) Material Yield Variance

(A) (ANS.: MMV = RS. 165 (A); MYV = RS. 510 (A); MPV = RS. 300 (F); MCV = RS. 375 (A))

PROBLEM 4: Jigyasa Pharmaceuticals Ltd. is engaged in producing dietary supplement 'Funkids' for growing children. It produces 'Fun kids' in a batch of 10 kgs. Standard material inputs required for 10 kgs. of 'Fun kids' are as below:

Material	Quantity (In Kgs.)	Rate per kg. (in Rs)
Vita-X	4	110
Proto-D	3	320
Mine-L	3	460

During the month of March, 2014, actual production was 5,000 kgs. of 'Fun kids' for which the actual quantities of material used for a batch and the prices paid thereof are as under:

Material	Quantity (In Kgs.)	Rate per kg. (in Rs)
Vita-X	6	115
Proto-D	2.5	330
Mine-L	2	405

You are required to calculate the following variances based on the above given information for the month of March, 2014 for Jigyasa Pharmaceuticals Ltd.:

i) Material Cost Variance;

ii) Material Price Variance;

iii) Material Usage Variance;

iv) Material Mix Variance;

v) Material Yield Variance

(A) (OLD PM, RTP N15, M14)

(ANS.: MCV = RS. 2,82,500 (F), MPV = RS. 27500(F), MUV = RS. 2,55,000(F), MMV = RS. 1,89,420 (F), MYV = RS. 65,580 (F))

PROBLEM 5: J&J Ltd. produces an article by blending two basic raw materials. The following standards have been set up for raw materials:

Material	Standard Mix	Standard Price per kg.
A	40%	5.00
B	60%	4.00

The standard loss in processing is 10%. During March, 2014, the company produced 2,250 kg. of finished output.

Material	Stock on 1.3.2014	Stock on 31.3.2014	Purchase during March, 2014
A	40Kgs	20Kgs	800 kg. for Rs.4,800
B	50Kgs	15Kgs	1800 kg. for Rs. 7,560

The position of stock and purchases for the month of March, 2014 is as under:

Calculate the following variances:

i) Material Price Variance

ii) Material Usage Variance

iii) Materials Yield Variance

iv) Materials Mix Variance

v) Material Cost Variance

Assume FIFO method for issue of material. The opening stock is to be valued at standard price.

(A) (MTP M15 - 8M)

(ANS.: MCV = RS. 1,577 (A), MPV = RS. 1,137(A), MUV = RS. 440 (A), MMV = RS. 242 (F), MYV = RS. 682 (A))

PROBLEM 6 : Following are the details of the product Phomex for the month of April 2013:

Standard quantity of material required per unit	3 Kg
Actual output	2,000 units
Actual cost of materials used	Rs.5,14,000
Material price variance	Rs.51,000 (Fav)

Actual price per kg of material is found to be less than standard price per kg of material by Rs.5.

You are required to calculate:

i) Actual quantity and Actual price of materials used

ii) Material Usage Variance

iii) Material Cost Variance

(Ans: i) 10200U, 50.39 ii) 2,32,6385(A) iii) 181660(A)

PROBLEM 7: The standard mix to produce one unit of product is as follows:

Material X 60 units @Rs.15 per unit = 900

Material Y 80 units @Rs.20 per unit = 1,600

Material Z 100 units @Rs.25 per unit = 2,500

During the month of April, 10 units were actually produced and consumption was as follows:

Material X 640 units @Rs.17.50 per unit = 11,200

Material Y 950 units @Rs.18.00 per unit = 17,100

Material Z 870 units @Rs.27.50 per unit = 23,925

Calculate all material variances.

(B) (NEW SM, OLD SM) (ANS.: MCV=RS.2,225 (A), MPV=RS.1,875(A), MUV=RS.350(A), MMV=RS.900(F), MYV=RS.1,250(A))

PROBLEM 8: The standard labour employment and the actual labour engaged in a week for a job are as under:

Details	Skilled Workers	Semi-skilled Workers	Unskilled workers
Standard no. of workers in the gang	25	10	15
Actual no. of workers employed	30	10	10
Standard wage rate per hour	5	4	3
Actual wage rate per hour	6	7	4

During the 35 hours working week, the gang produced 2,000 standard labour hours of work.

Calculate:

1. Labour Cost Variance
2. Labour Rate Variance
3. Labour Mix Variance
4. Labour Yield Variance
5. Labour Efficiency Variance

(B) (NEW SM, OLD SM, MTP1 M18 (N&O)) (Ans: 1)2590 A 2)2450A 3)350 A 4)210F 5)140A)

PROBLEM 9: August Furniture makes different varieties of office furniture. It makes 7 revolving chairs per hour by employing 5 skilled, 10 semiskilled and 20 unskilled workers. The standard wage rate is Rs. 24 per labour hour. During the last week workers paid for 56 hours and made 400revolving chairs. 2% of the time paid was lost due to the abnormal reasons. The actual hourly rate paid to skilled, semiskilled and unskilled workers wereRs.30, Rs.24 and Rs.18 respectively.

You are required to calculate

i) Labour Cost Variance
ii) Labour Rate Variance
iii) Labour Efficiency Variance and
iv) Idle Time Variance.

(B) (MTP N14) (ANS.: (I) RS.6,000 (F), (II) RS. 5,040 (F) (III) RS. 1,900 (F), (IV) RS. 940.8 (A))

PROBLEM 10:A gang of workers normally consists of 25 skilled workers, 10 semi-skilled workers and 20 unskilled workers. They are paid at standard rate per hour as under:

Skilled	Rs50
Semi-skilled	Rs 60
Unskilled	Rs 40

In a normal working week of 35 hours the gang is expected to produce 2500 units of output. During the week ended 31st march, 2019, the gang consists of 30 skilled, 15 semi-skilled and 10 unskilled workers. The actual wages paid were at the rate of Rs50 Rs70, and Rs30 per hour respectively .Five hours were lost due to machine breakdown and 2000 units were produced.

Calculate the following variances showing clearly adverse (A) or Favourable (F)

i) Labour cost Variance
ii) Labour rate Variance
iii) Labour efficiency variance
iv) Labour mix variance
v) Labour idle time variance

(MAY19 NEW)(Ans: i)9800A II)15750A III)23800A IV)18500A V)14000F)

PROBLEM 11: The following information has been provided by a company:

Number of units produced and sold	6,000
Standard labour rate per hour	Rs. 8
Standard hours required for 6,000 units	-
Actual hours required	17,094 hours
Labour efficiency	105.3%
Labour rate variance	Rs. 68,376 (A)

You are required to calculate

i) Actual labour rate per hour
ii) Standard hours required for 6,000 units
iii) Labour Efficiency variance
iv) Standard labour cost per unit
v) Actual labour cost per unit.

(A) (OLD PM, MTP2 M18 (N), M16) (ANS.: (I)RS.12 (II) 18,000 UNITS (III) 7,248 (F) (IV) RS.24 (V) RS. 34.19)

PROBLEM 12: Following information relates to labour of KAY PEE Ltd.

	Skilled	Semi-Skilled	Unskilled	Total
Number workers in standard gang	10	5	10	25
Standard rate per hour	50	60	70	-
Number workers in Actual gang				25
Actual rate per hour	70	90	50	

The standard output of gang was 12 units per hour of the product M. The gang was engaged for 200 hours during the month of March 2019 out of which 20 hours were lost due to machine breakdown and 2500 units of product M were produced. The Actual number of skilled workers was 2 times the semi-skilled workers. Total labour mix variance was Rs.21600 (A).
You are required to calculate the following:

a) Actual number of workers in each category
b) Labour rate variance
c) Labour yield variance
d) Labour efficiency variance

(ANS: a)4.625,9.25,11.125 b)373800A c)30,000F d)13000A) (MAY19 OLD)

PROBLEM 13: The following standards have been set to manufacture a product:

Direct Material:	**(Rs.)**
4 units of A @Rs.5 per unit	20.00
3 units of B @ Rs.7 per unit	21.00
5 units of C @ Rs.2 per unit	10.00
Direct Labour:	
3 hrs. @ Rs.8 per hour	24.00
Total standard prime cost	75.00

The company manufactured and sold 5,000 units of the product during the year. Direct material costs were as follows:

20,000 units of A at Rs.4 per unit

30,000 units of B at Rs.3 per unit

50,000 units of C atRs.3per unit

The company worked 20,000 direct labour hours during the year. For 3,000 of these hours, the company paid at Rs.8 per hour while for the remaining, the wages were paid at standard rate.

Calculate materials price variance and usage variance and labour rate and efficiency variances.
(NEW SM, OLD SM), N-09, MTP - N15 - 8M)(MAY19 MTP S-ii NEW, OLD)) (ANS:42,000 F,155,000A,NIL,40000A)

PROBLEM 14: ABC Ltd. had prepared the following estimation for the month of April:

Particulars	Quantity	Rate (Rs.)	Amount (Rs.)
Material-A	800 kg.	30.00	24,000
Material-B	600 kg.	50.00	30,000
Skilled labour	1,000 hours	40.00	40,000
Unskilled labour	800 hours	30.00	24,000

Normal loss was expected to be 20% of total input materials and an idle labour time of 10% of expected labour hours was also estimated.

At the end of the month the following information has been collected from the cost accounting department:

The company has produced 1700 kg. finished product by using the followings:

Particulars	Quantity	Rate (Rs.)	Amount (Rs.)
Material-A	1200 kg.	43.00	38,700
Material-B	800 kg.	32.50	21,125
Skilled labour	1,200 hours	35.50	42,600
Unskilled labour	860 hours	23.00	19,780

Required:

CALCULATE:

i) Material Cost Variance;
ii) Material Price Variance;
iii) Material Mix Variance;
iv) Material Yield Variance;
v) Labour Cost Variance;
vi) Labour Efficiency Variance and
vii) Labour Yield Variance

(ANS: i)4364.41F,ii)1600A,iii)1143F,iv)4821.4F,V)25.50F VI)13630F VII)14186F)

PROBLEM 15: From the following data calculate overhead variances.

ITEM	Budget	Actual
Number of working days	20	22
Man hours per day	8,000	8,400
Output per man hour	2.00	1.80
Fixed overhead cost (Rs.)	8,00,000	8,40,000
Variable Overhead Cost	4,00,000	8,00,000

(A) (ANS.: FOH EV = RS. 92,400 (A); FOH CPV = RS. 44,000 (F); FOH CAV = RS. 80,000 (F); FH VV = RS. 31,600 (A); FOH BV = RS. 40,000 (A); FOH CV = RS. 8,400 (A), VOH SP = 46,200(A), VOH EX = 3,38,000(A), VOH CV = 3,84,200 (A))

PROBLEM 16: S.V. Ltd. has furnished the following data:

DETAILS	Budget	Actual, July (2012)
No. of working days	25	27
Production in units	20,000	22,000
Fixed overheads	Rs.30,000	Rs.31,000

Budgeted rate is Rs.1.00 per hour. In July, 2012, the actual hours worked were 31,500. Calculate the following variances:

(i) Volume variance. **(ii)** Expenditure variance, **(iii)** Total overhead variance.

(A) (NEW SM, OLD SM, N - 12) (ANS.: I. RS.3,000 (F), II. RS.1,000 (A), III. RS.2,000 (F))

PROBLEM 17: AB Ltd. has furnished the following information:

	Budgeted	Actual July 2016
Number of working days	25	27
Production (in units)	20,000	22,000
Fixed Overheads (in Rs.)	30,000	31,000

Budgeted fixed overhead rate is 1.00 per hour. In July 2016, the actual hours worked were 31,500. In relation to fixed overheads, calculate:

i) Efficiency Variance
ii) Capacity Variance
iii) Calendar Variance
iv) Volume Variance
v) Expenditure variance

(A) (M 17 - 5M) (ANS.: (I) 1500 (F), (II) 900(A), (III) 2,400(F), (IV) 3,000(F), (V) 1000(A))

PROBLEM 18: The following information was obtained from the records of a manufacturing unit using standard costing system.

Details	Standard	Actual
Production	5,000 units	4,000 units
Working days	22	20
Fixed Overhead	Rs.50,000	Rs.40,000
Variable Overhead	10,000	13,000

You are required to calculate the following overhead variance:

a) Variable overhead variance

b) Fixed overhead variances

i) Expenditure variances

ii) Volume variance

(B) (NEW SM, OLD SM, PM, M14 - 8M) (ANS:5000A,10,000F,10,000A)

PROBLEM 19 The overhead expense budget for a factory producing to a capacity of 200 units per month is as follows:

Description of overhead	Fixed cost per unit in Rs.	Variable cost per unit in Rs.	Total cost per unit in Rs.
Power and fuel	500	300	1,500
Repair and maintenance	1000	400	750
Printing and stationary	1000	300	750
Other overheads	1,000	300	1,500
	Rs 3,500	Rs 1,300	Rs 4,500

The factory has actually produced only 100 units in a particular month. Details of overheads actually incurred have been provided by the accounts department and are as follows:

Description of overhead	Actual cost
Power and fuel	Rs. 2,00,000
Repair and maintenance	Rs. 3,00,000
Printing and stationary	Rs. 2,00000
Other overheads	Rs. 3,00,000

You are required to compute the production volume variance and the overhead expenses variance.

(A) (NEW SM, OLD SM) (ANS:3,50,000A,145000A)

PROBLEM 20: Aaradhya Ltd. manufactures a commercial product for which the standard cost per unit is as follows:

Particulars	(Rs.)
Material: 5 kg. @ Rs. 4 per kg.	20.00
Labour: 3 hours @ Rs.10 per hour	30.00
Overhead:	
Variable: 3 hours @ Rs.1	3.00
Fixed: 3 hours @ Rs.0.50	1.50
Total	54.50

During Jan. 20X8, 600 units of the product were manufactured at the cost shown below:

Particulars		(Rs.)
Materials purchased:	5,000 kg. @ Rs.4.10 per kg.	20,500
Materials used:	3,500 kg.	
Direct Labour:	1,700 hours @ Rs. 9	15,300
Variable overhead		1,900
Fixed overhead		900
Total		38,600

The flexible budget required 1,800 direct labour hours for operation at the monthly activity level used to set the fixed overhead rate.

COMPUTE:

(a) Material price variance, (b) Material Usage variance; (c) Labour rate variance; (d) Labour efficiency variance; (e) Variable overhead expenditure variance; (f) Variable overhead efficiency variance; (g) Fixed overhead expenditure variance; (h) Fixed overhead volume variance; (i) Fixed overhead capacity variance; and (j) Fixed overhead efficiency variance.

Also RECONCILE the standard and actual cost of production.

(B) (RTP N18 (N&O))

(ANS.: A. RS. 500 (A); B. 2,000 (A); C) 1,700 (F); D) RS. 1,000 (F); E. RS. 200 (A); F. RS. 100 (F); G. NILL; H. NILL ; I. RS. 50 (A); J. RS. 50 (F))

ADDITIONAL PROBLEMS FOR STUDENTS SELF PRACTICE

PROBLEM 1: XYZ Ltd. produces two products M and N by using two inputs Material A and B. The standard price per unit of Material A is Rs.20 and of Material B is Rs.10. The standard quantities of materials for each product are as follows

Products	Materials	
	A (units)	B (units)
M	2	3
N	1	4

The company actually produced 11,000 units of M and 9,000 units of N and used 32,500 units of Material A at a cost of Rs.6,59,750 and 67,000 units of Material B at a cost of Rs.6,83,400.

Calculate:

i) Material Price Variance;

ii) Material Usage Variance; iii) Material Cost Variance.

PROBLEM 2: From the particulars given below, compute: Material Price Variance, Material Usage Variance, Labour Rate Variance, Idle time Variance and Labour Efficiency Variance with full working details:

1 ton of material input yields a standard output of 1,00,000 units.

The standard price of material is Rs. 20 per kg.

Number of employees engaged are 200.

The standard wage rate per employee per day is Rs. 6.

The standard daily output per employee is 100 units.

The actual quantity of material used is 10 tons and the actual price paid is Rs. 21 per kg.

Actual output obtained is 9,00,000 units.

Actual number of days worked is 50 and actual rate of wages paid is Rs. 6.50 per day.
Idle time paid for and included in above time is ½ day.

PROBLEM 3: The standard labour employment and the actual labour engaged in a 40 hours week for a job are as under:

Category of Workers	Standard		Actual	
	No. of workers	Wage Rate per hour (Rs.)	No. of workers	Wage Rate per hour (Rs.)
Skilled	65	45	50	50
Semi-skilled	20	30	30	35
Unskilled	15	15	20	10

Standard output: 2000 units; Actual output: 1800 units Abnormal Idle time 2 hours in the week

Calculate:

i) Labour Cost Variance

ii) Labour Efficiency Variance

iii) Labour Idle Time Variance.

PROBLEM 4: The following data has been collected from the cost records of a unit for computing the various fixed overhead variances for a period:

Number of budgeted working days	25
Budgeted man-hours per day	6,000
Output (budgeted) per man - hour (in units)	1
Fixed overhead cost as budgeted -	Rs.1,50,000
Actual number of working days -	27
Actual man-hours per day -	6,300
Actual output per man-hour (in-units) -	0.9
Actual fixed overhead incurred -	Rs.1,56,000

Calculate fixed overhead variances:

(a) Expenditure Variance, (b) Volume Variance, (c) Fixed Cost Variance.

PROBLEM 5: SJ Ltd. has furnished the following information:

Standard overhead absorption rate per unit	Rs. 20
Standard rate per hour	Rs. 4
Budgeted production	12,000 units
Actual production	15,560 units

Actual overheads were Rs.2,95,000 out of which Rs.62,500 fixed. Actual hours - 74,000 Overheads are based on the following flexible budget:

Production (units)	8,000	10,000	14,000
Total Overheads (Rs.)	1,80,000	2,10,000	2,70,000

You are required to calculate the following overhead variances (on hour's basis) with appropriate workings:

(i) Variable overhead efficiency and expenditure variance

(ii) Fixed overhead efficiency and capacity variance.

PROBLEM 6: A cost accountant of a company was given the following information regarding overheads for February.

a) Overhead cost variance Rs.1,400 adverse.

b) Overhead volume variance Rs.1,000 adverse.

c) Budgeted hours for February 1,200 hours.

d) Budgeted Overheads for February Rs.6,000

e) Actual rate of recovery overheads is Rs.8 per hour.

You are required to assist him in computing the following for February.

1. Overhead expenditure variance
2. Actual overheads incurred
3. Actual hours for actual production
4. Overheads capacity variance
5. Overheads efficiency variance
6. Standard hours for actual production

PROBLEM 7: Arnav Ltd. manufactures a product Q, the standard cost of which is as follows:

PARTICULARS	Standard Cost per unit (Rs.)
Direct Material	600
Direct labour:	
- Skilled @ Rs.80 per hour	120
- Unskilled @ Rs.60 per hour	90
Variable overheads	75
Fixed overheads	30
	915

During the month just ended 4,000 units of Q were produced. The actual labour cost was as follows.

	Rate per hour (Rs.)	Cost (Rs.)
Skilled	87.50	5,77,500
Unskilled	55.00	2,97,000

10% of the labour time was lost due to idle time. The standard idle time was 7.5% of labour time. Arnav Ltd. has budgeted to produce 4,200 units of Q. Arnav Ltd. absorbs its overheads on direct labour hour (effective hours) basis. Actual fixed and variable overheads incurred were Rs.1,55,000 and Rs.2,85,000 respectively.

Calculate:

i) Labour rate variance;

ii) Labour efficiency variance;

iii) Labour mix variance;

iv) Labour yield variance;

v) Labour idle time variance;

vi) Variable overhead expenditure variance and

vii) Variable overhead efficiency variance.

PROBLEM 8: XYZ Company has established the following standards for factory overheads.

Variable overhead per unit: Rs.10/-

Fixed overheads per month Rs.[illegible],000

Capacity of the plant 20,000 units per month.

The actual data for the month are as follows:

Actual overheads incurred Rs.3,00,000

Actual output (units) 15,000 units

Required:

Calculate overhead variances viz:

i) Production volume variance

ii) Overhead expense variance

PROBLEM 9: Aaradhya Ltd. manufactures a commercial product for which the standard cost per unit is as follows:

Particulars	Rs.
Material:	
5 kg. @ ` 4 per kg.	20.00
Labour:	
3 hours @ `10 per hour	30.00
Overhead	
Variable: 3 hours @ `1	3.00
Fixed: 3 hours @ `0.50	1.50
Total	54.50

During Jan. 20X8, 600 units of the product were manufactured at the cost shown below:

Particulars	Rs.
Materials purchased:	
5,000 kg. @ `4.10 per kg.	20,500
Materials used:	
3,500 kg.	
Direct Labour:	
1,700 hours @ ` 9	15,300
Variable overhead	1,900
Fixed overhead	900
Total	38,600

The flexible budget required 1,800 direct labour hours for operation at the monthly activity level used to set the fixed overhead rate.

COMPUTE:

(a) Material price variance, (b) Material Usage variance; (c) Labour rate variance; (d) Labour efficiency variance; (e) Variable overhead expenditure variance; (f) Variable overhead efficiency variance; (g) Fixed overhead expenditure variance; (h) Fixed overhead volume variance; (i) Fixed overhead capacity variance; and (j) Fixed overhead efficiency variance.

Also RECONCILE the standard and actual cost of production.

PRINTED SOLUTIONS TO SOME SELECTIVE PROBLEMS

PROBLEM NUMBERS TO WHICH SOLUTIONS ARE PROVIDED: 2,3,4,5,10,13,16,18,19

PROBLEM NO : 2

	1	2	3	4
	SPXSQ	RSQXSP	AQXAP	AQXAP
Material A	81X20	80X20	90X20	90X18
Material B	121X30	120X30	110X30	110X34
	5250	5200	5100	5360

Material yield variance = (1-2) = SPXSQ- RSQXSP = 50F

Materials mix variance = (2-3) = RSQXSP- AQXAP = 100F

Material usage variance = (1-3) = SPXSQ- AQXAP = 150F

Material price variance = (3-4) = AQXAP- AQXAP = 260A

WORKING NOTE 1:

PARTICULARS	STANDARD MIX	QUANTITY	ACTUAL QUANTITY	REVISED STANDARD QUANTITY
Material A	40%	81(202x40%)	90	80
Material B	60%	121	110	120
Input	100%	202(182/90x100)	200	200
(-)loss@10%	10%	20	18(b/f)	
output	90%	180	182`	

PROBLEM NO 3

	1	2	3	4
PARTICULARS	SPXSQ	RSQXSP	AQXSP	AQXAP
A	3500X20	3750X20	4500X20	4500X21

B	2100X10	2250X10	1500X10	1500X8
C	1400X5	1500X5	1500X5	1500X6
	98,000	1,05,000	1,12,500	1,15,500

Material yield variance = (1-2) SPXSQ- RSQXSP=7000A

Materials mix variance = (2-3) RSQXSP- AQXAP=7500A

Material usage variance = (1-3) SPXSQ- AQXAP =14500A

Material price variance = (3-4) AQXAP- AQXAP =3000A

Material cost variance = (1-4) SPXSQ- AQXAP =17500A

WORKING NOTE 1:

PARTICULARS	STANDARD MIX	STANDARD QUANTITY	`ACTUAL MIX	`ACTUAL QUANTITY	RSQ(AQ IN STANDARD MIX)
Material A	50%	3500	60%	4500	3750
Material B	30%	2100	20%	1500	2250
Material C	20%	1400	20%	1500	1500
Input	100%	7000	100%	7500	7500
(-)loss		1400(125-100 ?-5600)		1900	
output		5600	←	5600	

PROBLEM NO 4

PARTICULARS	1	2	3	4
	SPXSQ	RSQXSP	AQXAP	AQXAP
Material A	941X40	928X40	930X40	39,425 40X40+(930-40)X42.5
Material B	1412X30	1392X30	1390X30	35,000 (50X30+(1390-50)X25
	80,000	**78880**	**78900**	**74,425**

Material yield variance = (1-2) SPXSQ- RSQXSP=1120F

Materials mix variance = (2-3) RSQXSP- AQXAP=20A

Material usage variance = (1-3) SPXSQ- AQXAP =1100F

Material price variance = (3-4) AQXAP- AQXAP =4475F

Material cost variance = (1-4) SPXSQ- AQXAP = 5575F

WORKING NOTE 1:

Actual quantity consumed = opening stock+purchases-closing stock

Material A = 90+900-10 = 930kg

Material B = 50+1,400-60 = 1390kg

Standards are set based on previous year actuals

Therefore opening stock should be valued at standard price

Actual production = 2000kg

Standard quantity for actual production

PARTICULARS	STANDARDS		ACTUAL QUANTITY	REVISED STANDARD
	MIX	QUANTITY		

				QUANTITY
Material A	40%	941(2353x40%)	930	928
Material B	60%	1412	1390	1392
Input	100%	2353(2000/85x10)	2320 →	2320
(-)loss	15%	(353)	(320)	
output	85%	2000 ←	2000	

PROBLEM NO 5

i) Material price variance = (3-4)

51,000 = AQXSP-AQXAP

51,000 = AQ(SP-AP)

= AQX10

AQ = 5100kg

Actual material cost = AQXAP

7,14,000 = 5100kgxAP (AP = 140)

Material usage variance = (1-3)

= SPXSQ-AQXSP

= SP(SQ-AQ)

= (5,000-5,100)X150

= 15,000A

*SP = 100,SP-AP

SP = AP+10 = 140+10 = 150

Material cost variance = (1-4)

= SQXSP-AQXAP

= 5,000X150-5,100X40 = 36,000F

PROBLEM NO 10

I) Labour rate variance = (4-5)

-1,36,752 = AHPXSR-AHPXAR

-1,36,752 = AHP(SR-AR)

-1,36,752 = 34,188(16-AR)

-4 = 16-AR ; AR = 20 (Actual usage rate per hour = 20)

II) Efficiency (%) $= \frac{SH}{AHW}$

$105.3\% = \frac{SH}{34188}$

SH = 105.3%*34188 = 36,000h

Standard hours for actual production = Rs.36,000

III) Labour efficiency variance=(1-3)

SHXSR-AHWXSR = (SH-AHW)XSR = (36,000-34,188)X16 = 28,992F

IV) Actual production = 12,000 units

Standard labour cost for actual production=SHXSR : 36,000*16 = 5,76,000

Standard labour cost per unit=5,76,000/12,000 = 48

V) Actual labour cost = (AHPXAR) = 34,188X20 = 6,83,760

Actual labour cost per unit =683760/12000 = 56.985

PROBLEM – 13

MATERIAL VARIANCE:

Materials	1	2	3	4
	SQXSP	RSQXSP	AQXSP	AQXAP
Material – A	939.4 x 45	885.7 x 45	900 x 45	900 x 43
Material – B	704.6 x 30	664.3 x 30	650 x 30	650 x 32.5
	63,411	59,786	60,000	59,825

(1 – 2) (SQXSP) - (RSQXSP)	Material Yield Variance	3,625 (F)
(2 – 3) (RSQXSP) - (AQXSP)	Material Mix Variance	214 (A)
(1 – 3) (SQXSP) -(AQXSP)	Material Usage Variance	3,411 (A)
(3 – 4) (AQXSP) - (AQXAP)	Material Price Variance	195 (F)
(1 – 4) (SQXSP) - (AQXAP)	Material Cost Variance	175 (F)

WORKING NOTE : 2

Particulars		Given quantity	Standard quantity	Actual quantity	RSQ(8:6)
Material – A		800	939.4	900	885.7
Material – B		600	705.6	650	664.2
	Input	1400	1644	1550	1550
	(–) Loss 10%	140	164	70	
	Output	1,260	1,480	1,480	

LABOUR VARIANCE:

Actual production: 1,450kg

Standard hours for Act. Prod skilled = $1,115.8\left[\frac{1480 \times 950}{1260}\right]$

Unskilled = $892.7\left[\frac{1480 \times 760}{1260}\right]$

Revised standard hour worked in standard mix

Actual that hours worker = 1,200 + 860 = 2,060

Standard Mix = 1,000 – 800 = 10:08

Revised standard skilled $= \left[\frac{2,060}{18} x10\right] = 1,144.4$

Unskilled $= \left[\frac{2,060}{18} x8\right] = 915.5$

Labour cost variance = 1 – 5

= SH X SR – AHP X AP = $\begin{bmatrix}1115.8 x 37.5 \\ 892.7 x 22\end{bmatrix} - \begin{bmatrix}1,200 x 37.5 \\ 860 x 23\end{bmatrix} = 898.\ A$

Labour Efficiency variance = 1 – 3

= SH X SR – AHW X SR

$\begin{matrix}\text{Skilled} \\ \text{Unskilled}\end{matrix}\begin{bmatrix}1,115.8 x 37.5 \\ 892.7 x 22\end{bmatrix} - \begin{bmatrix}1,200.8 x 37.5 \\ 860 x 22\end{bmatrix}$

Labour Yield variance = (1 – 2)SH X SR – RSH X SR

$$\begin{matrix}\text{Skilled}\\ \text{Unskilled}\end{matrix}\begin{bmatrix}1{,}115.8\text{x}37.5\\ 892.7\text{x}22\end{bmatrix}-\begin{bmatrix}1{,}144.4\text{x}37.5\\ 915.6\text{x}22\end{bmatrix}$$

= 1,574.A

Problem – 16

Calculation of Variances:

(i) Fixed Overhead Variance: (1-5) = Standard fixed overhead-Actual fixed overhead
= [(5,00,000/5,000)X4,800] – Rs.4,90,000 = Rs.10,000(A)

(ii) Fixed Overhead Expenditure Variances(4-5)
= Budgeted fixed overhead – Actual Fixed overhead
= Rs.5,00,000-Rs.4,90,000 = Rs.10,000(F)

(iii) Fixed Overhead volume variance(1-4)
Standard fixed overhead – Budgeted Fixed overhead
= Rs.4,80,000 – Rs.5,00,000 =Rs.20,000 (A)

(iv) Fixed overhead efficiency variance:(1-2)
Standard fixed overhead – Budgeted fixed overhead for actual days
= Rs.4,80,000-[(Rs.5,00,000/25)X23] = Rs.20,000 (F)

PROBLEM NO.18

Production volume variable =(1-4)=SHXSR-BHXSR = AOXSR-BOXSR
= SR(AO-BO)
= (100-200)X3000
= 3,00,000A

Overhead expense variable(VOH+FOH) $\begin{bmatrix}3\\4-5\end{bmatrix}$

= (AHXSR+BHXSR)-(AHXSR+AHXAR)
= (SOXSR+BOXSR)-AOXAR
= [(100X1500)+(200X3000)]-11,50,000
= 7,50,000-11,50,000
= 4,00,000A

NOTE: SO=AO if information is not available.

PROBLEM NO 19

Actual production=6000U

standard quantity for Actual production = 12,000U $\begin{bmatrix}1\text{unit}-2\,\text{metres}\\ 6000\,\text{U}-?\end{bmatrix}$

actual quantity consumed=12670

standard hours for actual production = 6000h $\begin{bmatrix}1\text{unit}-1\text{h}\\ 6000\,\text{U}-?\end{bmatrix}$

VOH Efficiency variance = (1-2)SHXSR-AHXSR

-1500 = (SH-AH)SR

-1500 = (6000-AH)3 ; AH = 6500h

Actual labour cost = AHXAR

727950 = 6500XAR; AR = 4.30

Material usage variance = (1-3)SQXSP-AQXSP

= (SQ-AQ)SP

= (12000-12670)6 = 4020A

Material price variance = (3-4)AQXSP-AQXAP

= AQ(SP-AP)

= 12,670(6-5.7) = 3,801F

Material cost variance = (1-4)SQXSP-AQXAP

= 12000X6-12670X5.7 = 219A

Labour efficiency variance =(1-3)SHXSP-AHXSR

= (SH-AH)SR

= (6000-6500)4.4= 2200A

Labour rate variance = (4-5)AHPXSR-AHPXAR

= 6500(4.4-4.3) = 650F

Labour cost variance = (1-5) = SHXSR-AHXAR

= 6000X4.4-6500X4.3 = 1550A

VOH efficiency variance = 1500A

VOH expenses variance = (2-3)AHXSR-AHXAR

= 6500X3-20475 = 975A

VOH cost variance= VOH efficiency variance+ VOH expenses variance=1500A+975A=2745A

The End