J.K. SHAH®
TEST SERIES
Evaluate Learn Succeed

SUGGESTED SOLUTION

CA FINAL NOVEMBER 2016 EXAM

ADVANCED MANAGEMENT ACCOUNTING

Test Code - F N J 6 0 1 0

BRANCH - (MUMBAI) (Date : 19.06.2016)

Head Office : Shraddha, 3rd Floor, Near Chinai College, Andheri (E), Mumbai – 69.

Tel : (022) 26836666

Answer-1 :

The following matrix gives the cost incurred if the typist (i = A, B, C, D, E) executes the job (j = P, Q, R, S, T).

Typist	Job P	Job Q	Job R	Job S	Job T
A	85	75	65	125	75
B	90	78	66	132	78
C	75	66	57	114	69
D	80	72	60	120	72
E	76	64	56	112	68

Subtracting the minimum element of each row from all its elements in turn, the above matrix reduces to-

Typist	Job P	Job Q	Job R	Job S	Job T
A	20	10	0	60	10
B	24	12	0	66	12
C	18	9	0	57	12
D	20	12	0	60	12
E	20	8	0	56	12

Now subtract the minimum element of each column from all its elements in turn, and draw minimum number of lines horizontal or vertical so as to cover all zeros. All zeros can be covered by four lines as given below-

Typist	Job P	Job Q	Job R	Job S	Job T
A	2	2	0	4	0
B	6	4	0	10	2
C	0	1	0	1	2
D	2	4	0	4	2
E	2	0	0	0	2

Since there are only 4 lines (<5) to cover all zeros, optimal assignment cannot be made. The minimum uncovered element is 1.

We subtract the value 1 from all uncovered elements, add this value to all intersections of two lines values and leave the other elements undisturbed. The revised matrix so obtained is given below-

Typist	Job P	Job Q	Job R	Job S	Job T
A	3	2	1	4	0
B	6	3	0	9	1
C	0	0	0	0	1
D	2	3	0	3	1
E	3	0	1	0	2

Since the minimum no. of lines required to cover all the zeros is only 4 (< 5), optimal assignment cannot be made at this stage also.

The minimum uncovered element is 2. Repeating the usual process again, we get the following matrix-

Typist	Job P	Job Q	Job R	Job S	Job T
A	1	0	1	2	0
B	4	1	0	7	1
C	0	0	2	0	3
D	0	1	0	1	1
E	3	0	3	0	4

Since the minimum number of lines to cover all zeros is equal to 5, this matrix will give optimal solution. The optimal assignment is made in the matrix below-

Typist	Job P	Job Q	Job R	Job S	Job T
A	1	0	1	2	0
B	4	1	0	7	1
C	0	0	2	0	3
D	0	1	0	1	1
E	3	0	3	0	4

Typist	Job	Cost (₹)
A	T	75
B	R	66
C	Q	66
D	P	80
E	S	112
	Total	399

(8 Marks)

Note

In this case the above solution is not unique. Alternate solution also exists.

Answer-2 :

Random Numbers Allocation

Arrivals

Time Between Two Consecutive Arrivals of Customers in minutes	Probability	Cumulative Probability	Random Nos. Allocated
3	0.17	0.17	00 – 16
4	0.25	0.42	17 – 41
5	0.25	0.67	42 – 66
6	0.20	0.87	67 – 86
7	0.13	1.00	87 – 99

(2 Marks)

Service Time

Arrivals Time by the Teller in minutes	Probability	Cumulative Probability	Random Nos. Allocated

3	0.10	0.10	00 – 09
4	0.30	0.40	10 – 39
5	0.40	0.80	40 – 79
6	0.15	0.95	80 – 94
7	0.05	1.00	95 – 99

(2 Marks)

Simulation Table

S. No	R. No	Arrival Time *in minutes*	Arrival Time A.M.	Service Begins A.M.	R. No	Service Time *in minutes*	Service Ends A.M.	Waiting Time for Customer Time *in minutes*	Idle Time *In mints*
1	11	3	11.03	11.03	56	5	11.08	---	3
2	23	4	11.07	11.08	72	5	11.13	1	---
3	94	7	11.14	11.14	83	6	11.20	---	1
4	83	6	11.20	11.20	02	3	11.23	---	---
5	97	7	11.27	11.27	99	7	11.34	---	4
6	83	6	11.33	11.34	10	4	11.38	1	---
7	93	7	11.40	11.40	34	4	11.44	---	2
8	33	4	11.44	11.44	53	5	11.49	---	---
9	49	5	11.49	11.49	94	6	11.55	---	---
10	37	4	11.53	11.55	97	7	12.02	2	---
							Total	4	10

(4 Marks)

Total Waiting Time of Customers: 4 minutes
Total Idle Time of Teller: 10 minutes

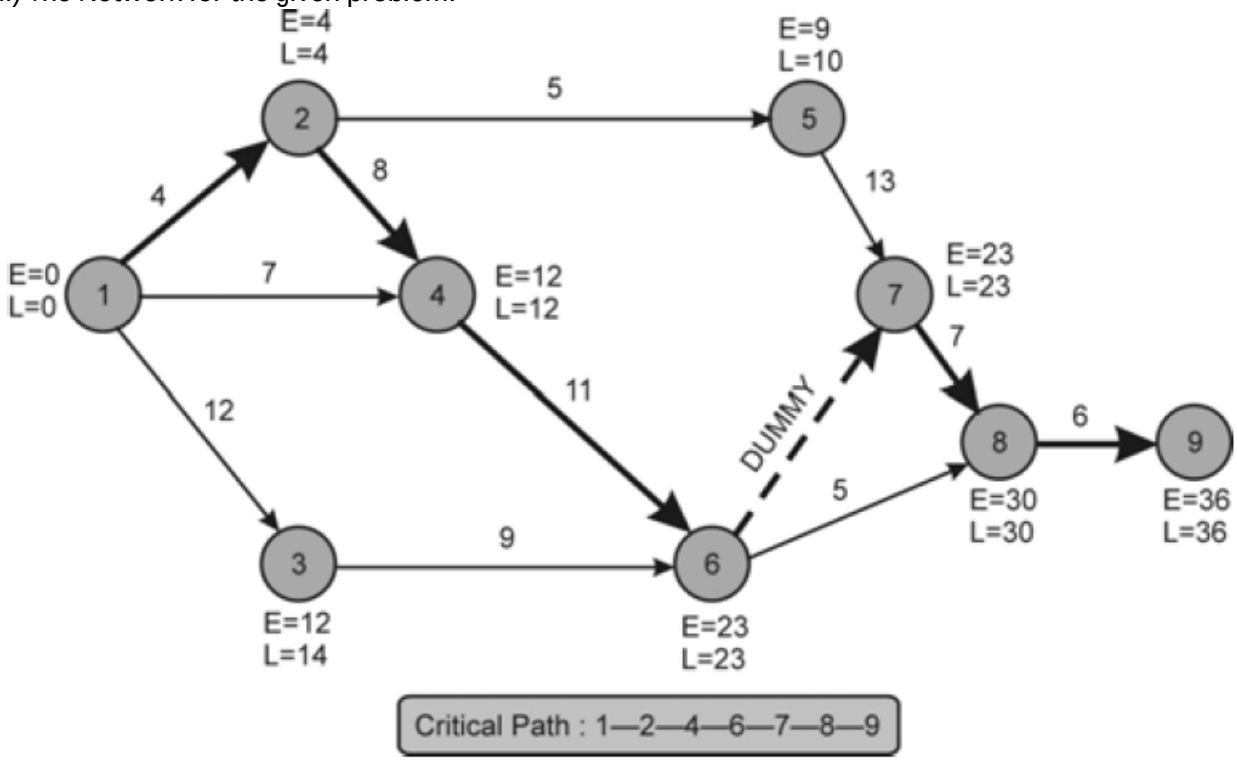
Answer-3 :

(i) Calculation of Missing Figures:

Activity	Duration D_{ij}	EST E_i	EFT $E_i + D_{ij}$	LST $L_j - D_{ij}$	LFT L_j	Total Float LST–EST
1–2	4	0	4	0	4	0
1–3	12	0	12	2	14	2
1–4	7	0	7	5	12	5
2–4	8	4	12	4	12	0
2–5	5	4	9	5	10	1
3–6	9	12	21	14	23	2
4–6	11	12	23	12	23	0
5–7	13	9	22	10	23	1
6–7	0	23	23	23	23	0
6–8	5	23	28	25	30	2
7–8	7	23	30	23	30	0
8–9	6	30	36	30	36	0

(5 Marks)

(ii) The Network for the given problem:



(2 Marks)

(iii) The **Various Paths** in the Network are:
1–2–4–6–7–8–9 with Duration 36 Days
1–2–5–7–8–9 with Duration 35 Days
1–3–6–7–8–9 with Duration 34 Days
1–2–4–6–8–9 with Duration 34 Days
1–3–6–8–9 with Duration 32 Days
1–4–6–7–8–9 with Duration 31 Days
1–4–6–8–9 with Duration 29 Days

(2 Marks)

(iv) The Critical Path is 1–2–4–6–7–8–9 with Duration 36 Days.

(1 Mark)

Answer-4 :

(1) Working note showing Standard Quantity of Material for 320th Batch.

Cumulative Number of Batches	=	320
Average Kgs. of Material per batch	=	$100x320^{-0.074}$
t	=	$100x320^{-0.074}$
log t	=	log100 – 0.074 × log320
log t	=	log100 – 0.074 × log (2x2x2x2 x2x2x5)
log t	=	log100 – 0.074 × [$\log 2^6$ + log 5]
log t	=	log100 – 0.074 × [6 × log2 + log 5]
log t	=	2 – 0.074 × [6 × 0.30103 + 0.69897]
log t	=	1.81462
t	=	Antilog (1.81462)
t	=	65.26
Cumulative Number of Batches	=	319
Average Kgs. of Material per batch	=	$100x319^{-0.074}$
t	=	$100x319^{-0.074}$
log t	=	log100 – 0.074 × log319
log t	=	log100 – 0.074 × log319
log t	=	2 – 0.074 × 2.50379
log t	=	1.81472

t	=	Antilog (1.81472)
t	=	65.27
Standard Quantity for 320th Batch	=	320 × 65.26 – 319 × 65.27
	=	62.07 Kgs.

(2) Working note showing Standard Hours for 320th Batch.

Cumulative Number of Batches	=	320
Average Labour Hours per batch	=	$0.322\ 100x320^{-0.322}$
t	=	$0.322\ 100x320^{-0.322}$
log t	=	log100 – 0.322 × log320
log t	=	log100 – 0.322 × log (2x2x2x2x2 x2x5)
log t	=	log100 – 0.322 × [$\log 2^6$ + log 5]
log t	=	log100 – 0.322 × [6 × log2 + log 5]
log t	=	2 – 0.322 × [6 × 0.30103 + 0.69897]
log t	=	1.19334
t	=	Antilog (1.19334)
t	=	15.61
Cumulative Number of Batches	=	319
Average Labour Hours per batch	=	$0.322\ 100x319^{-0.322}$
t	=	$0.322\ 100x319^{-0.322}$
log t	=	log 100 – 0.322 × log319
log t	=	2 – 0.322 × 2.50379
log t	=	1.19378
t	=	Antilog (1.19378)
t	=	15.62
Standard Hours for 320th Batch	=	320 × 15.61 – 319 × 15.62
	=	12.42 hours

(3 Marks)

Statement Showing "Standard Cost and Actual Cost of 320th Batch"

Standard Data			Actual Data			
Material						
SQ	SP	SQ x SP	AQ	AP	AQ x AP	SP x AQ
62.07 Kgs. (Refer W.N.1)	Rs.55	Rs.3,414	80 kgs.	Rs.50.00	Rs.4,000.00	Rs.4,400]00
Labour						
SH	SR	SH x SR	AH	AR	AH x AR	SR x AH
12.42 hours (Refer W.N.2)	Rs.40	Rs.497	20 hours	Rs.50.00	Rs.1,000.00	Rs.800
Variable Overhead						
SH	SR	SH x SR	AH	AR	AH x AR	SR x AH
12.42 hours (Refer W.N.2)	Rs.75	Rs.932	20 hours	Rs.90.00	Rs.1,800.00	Rs.1,500

(4 Marks)

Computation of Variances

Material Variances

Cost Variance	=	Standard Material Cost – Actual Material Cost
	=	SQ × SP – AQ × AP
	=	Rs. 3,414 – Rs. 4,000
	=	Rs. 586 (A)
Usage Variance	=	Standard Cost of Standard Quantity – Standard Cost of Actual Quantity
	=	SQ × SP – AQ × SP
	=	Rs.3,414 – Rs.4,400
	=	Rs.986 (A)
Price Variance	=	Standard Cost of Actual Quantity – Actual Material Cost
	=	AQ × SP – AQ × AP
	=	Rs.4,400 – Rs.4,000
	=	Rs.400 (F)

Labour Variances

Cost Variance	=	Standard Cost of Labour – Actual Cost of Labour
	=	SH × SR – AH × AR

	=	Rs.497 – Rs.1,000
	=	Rs.503 (A)
Efficiency Variance	=	Standard Cost of Standard Time – Standard Cost for Actual Time
	=	SH × SR – AH × SR
	=	Rs.497 – Rs.800
	=	Rs.303 (A)
Rate Variance	=	Standard Cost for Actual Time – Actual Cost of Labour
	=	AH × SR – AH × AR
	=	Rs.800 – Rs.1,000
	=	Rs.200 (A)

Variable Overhead Variances

Cost Variance	=	Standard Variable Overheads for Production – Actual Variable Overheads
	=	Rs.932 – Rs.1,800
	=	Rs.868 (A)
Efficiency Variance	=	Standard Variable Overheads for Production – Budgeted Variable Overheads for Actual Hours
	=	Rs.932 – 20 Hours × Rs.75
	=	Rs.568 (A)
Expenditure Variance	=	Budgeted Variable Overheads for Actual Hours – Actual Variable Overheads
	=	20 Hours × Rs.75 – Rs.1,800
	=	Rs. 300 (A)

(9 x 1 = 9 Marks)

Answer-5 :

Calculation of "Activity Rate"

Cost Pool	**Cost (Rs.) [A]**	**Cost Driver Cost Driver [B]**	**Rate (Rs.) [C] = [A]÷[B]**
Machine Department Expenses	18,48,000	Machine Hours (1,32,000 hrs.)	14.00
Assembly Department Expenses	6,72,000	Assembly Hours (42,000 hrs.)	16.00
Setup Cost	90,000	No. of Production Runs (450*)	200.00
Stores Receiving Cost	1,20,000	No. of Requisitions Raised on the Stores (120)	1,000.00
Order Processing and Dispatch	1,80,000	No. of Customers Orders Executed (3,750)	48.00
Inspection and Quality Control Cost	36,000	No. of Production Runs (450*)	80.00
Total (Rs.)	**29,46,000**		

(3 Marks)

*Number of Production Run is 450 (150 + 120 + 180)

Statement Showing "Overheads Allocation"

Particulars of Cost	Cost Driver	P	Q	R	Total
Machine Department Expenses	Machine Hours	4,20,000 (30,000 × Rs.14)	6,72,000 (48,000 × Rs.14)	7,56,000 (54,000 × Rs.14)	18,48,000
Assembly Department Expenses	Assembly Hours	2,40,000 (15,000 × Rs.16)	—	4,32,000 (27,000 × Rs.16)	6,72,000
Setup Cost	No. of Production Runs	30,000 (150 × Rs.200)	24,000 (120 × Rs.200)	36,000 (180 × Rs.200)	90,000
Stores Receiving Cost	No. of Requisitions Raised on the Stores	40,000 (40 × Rs.1,000)	30,000 (30 × Rs.1,000)	50,000 (50 × Rs.1,000)	1,20,000
Order Processing	No. of Customers	60,000	48,000	72,000	1,80,000

and Dispatch	Orders Executed	(1,250 × Rs.48)	(1,000 × Rs.48)	(1,500 × Rs.48)	
Inspection and	No. of Production	12,000	9,600	14,400	36,000
Quality Control Cost	Runs	(150 × Rs.80)	(120 × Rs.80)	(180 × Rs.80)	
Overhead (Rs.)		8,02,000	7,83,600	13,60,400	29,46,000

(5 Marks)

-x-x-x-