Previous Year CAT Questions on Profit and Loss

Instructions

For the following questions answer them individually

Question 1

Ram and Shyam form a partnership (with Shyam as working partner) and start a business by investing 4000 and 6000 respectively. The conditions of partnership were as follows:
1. In case of profits till 200,00 per annum, profits would be shared in the radio of the invested capital.
2.Profits from 200,001 till 400,000 Shyam would take 20% out of the profit, before the division of remaining profits, which will then be based on ratio of invested capital.
3.Profits in excess of 400,000, Shyam would take 35% out of the profits beyond 400,000, before the division of remaining profits, which will then be based on ratio of invested capital.
If Shyam's share in a particular year was 367000, which option indicates the total business profit (in) for that year?

A 520,000

B 530,000

C 540,000

D 550,000

E None of the above

Answer: D

Explanation:

Ratio of profits earned by Ram : Shyam = 4000 : 6000

= 2 : 3

If profit < 2,00,000

% of profit earned by Shyam = $\frac{3}{5} \times 100 = 60\%$

If 2,00,000 < profit < 4,00,000, he gets 20 % and 60 % of the remaining profit.

% of profit earned by Shyam = 20% + .80 $\times$ 60% = 68%

If profit > 4,00,000

% of profit earned by Shyam = 35 % + .65 $\times$ 60% = 74%

Now, for first 2,00,000 profit earned by Shyam = $\frac{60}{100} \times$ 2,00,000 = Rs. 1,20,000

For second 2,00,000 profit earned by Shyam = $\frac{68}{100} \times$ 2,00,000 = Rs. 1,36,000

Let total profit earned by them = Rs. (4,00,000 + x)

=> From $Rs.x$ profit, Shyam received = 3,67,000 - 1,20,000 - 1,36,000 = Rs. 1,11,000

=> $\frac{74}{100} \times x$ = 1,11,000

=> x = 1,11,000 $\times \frac{100}{74}$ = 1,50,000

$\therefore$ Total profit = 4,00,000 + 1,50,000 = Rs. 5,50,000

Question 2

A Techno company has 14 machines of equal efficiency in its factory. The annual manufacturing costs are Rs. 42,000 and establishment charges are Rs. 12,000. The annual output of the company is Rs. 70,000. The annual output and manufacturing costs are directly proportional to the no. of machines. The shareholders get 12.5% profit, which is directly proportional to the annual output of the company. If 7.14% machines remain closed throughout the year, then the percentage decrease in the amount of profit of the shareholders would be:

A 12%

B 12.5%

C 13.0%

D None of these

Answer: B

Explanation:
Manufacturing cost (MC) of 14 machines = R*s.* 42000
Output of 14 machines = Rs. 70000
Establishment cost (EC) = Rs. 12000
Profit = Rs.(70000 - 42000 - 12000) = Rs. 16000
Shareholder's profit = 12.5% of Rs. 16000 = Rs. 2000
It is given that 7.14% of the machines were non functional which means only 13 machines were functional.
MC of 13 machines = Rs. $(42000 * \frac{13}{14})$ = Rs. 39000 [As it is directly proportional to the number of functional machines]
Output of 13 machines = Rs. $(70000 * \frac{13}{14})$ = Rs. 65000 [As it is directly proportional to the number of functional machines]
EC of 13 machines = Rs. 12000 [As it does not depend on the number of functional machines]
Profit = Rs.(65000 - 39000 - 12000) = Rs. 14000
Shareholder's profit = 12.5% of Rs. 14000 = Rs. 1750
Reduction in Shareholder's profit = Rs.(2000 - 1750) = Rs. 250
Reduction % = $\frac{250}{2000}$*100% = 12.5%
Hence, option B is the correct answer.

Question 3

I sold two watches for Rs. 300 each, one at the loss of 10% and the other at the profit of 10%. What is the percentage of loss(-) or profit(+) that resulted from the transaction?

A (+)10

B (-)1

C (+)1

D (-)10

Answer: B

Explanation:
Selling price of first watch = 300
Profit = 10%
cost price = $\frac{300}{1.1}$
Selling price of second watch = 300
Loss = 10%
cost price = $\frac{300}{0.9}$

Total selling price of transaction= 600
Total cost price of transaction = $300(\frac{10}{11} + \frac{10}{9}) = 600(\frac{100}{99})$
Loss = $600(\frac{100}{99} - 1)$
%loss = $(600(\frac{100}{99} - 1)) \div (600(\frac{100}{99})) \times 100 = 1$

Instructions

Books and More sells books, music CDs and film DVDs. In December 2009, they earned 40% profit in music CDs and 25% profit in books. Music CDs contributed 35% towards their total sales in rupees. At the same time total sales in rupees from books is 50% more than that of music CDs.

Question 4

If Books and More made 50% loss in film DVDs, then overall they made

A 12.3% profit

B 8. 7% profit

C 0.4% loss

D 6.25% loss

E 20% loss

Answer: B

Explanation:

Let total selling price of books and more = $Rs.100x$

Thus, S.P. of music CDs = $^{35}_{100} \times 100x = 35x$

S.P. of books = $35x + ^{50}_{100} \times 35x = 52.5x$

=> S.P. of DVDs = $100x - 35x - 52.5x = 12.5x$

40% profit is earned in music CDs and 25% profit in books.

=> C.P. of music CDs = $^{100}_{140} \times 35x = 25x$

and C.P. of books = $^{100}_{125} \times 52.5x = 42x$

It is given that Books and More made 50% loss in film DVDs

=> C.P. of DVDs = $^{100}_{50} \times 12.5x = 25x$

Thus, total C.P. of books and more = $25x + 42x + 25x = 92x$

∴ Profit made by books and more = $^{100x-92x}_{92x} \times 100$

= $^{8}_{92} \times 100 = 8.69\% \approx 8.7\%$

Instructions

Answer the questions based on the following information.

Rajat is sales manager of Dubin Computers Ltd. and looks after Delhi market. The company sells laptops in India. He is currently trying to select a distributor for coming five years. The distributor ensures that the products are accessible to the customers in the market. Market share of a company depends on the coverage by the distributor. The total profit potential of the entire laptop market in Delhi is Rs. 5 crores in the current year and present value of next four years' cumulative profit potential is Rs. 15 crores. The first choice for Rajat is to enter into long-term contract with a distributor M/s Jagan with whom Dubin has done business in the past, and whose distribution system reaches 55 percent of all potential customers. At the last moment, however, a colleague suggests Rajat to consider signing a one-year contract with other distributors. Distributors M/s Bola and M/s James are willing to be partner with Dubin. Although a year ago M/s Bola's and M/s James's coverage reached only 40 and 25 percent of customers respectively, they claim to have invested heavily in distribution resources and now expect to be able to reach 60 percent and 75 percent of customers respectively. The probability of M/s Bola's claim and M/s James's claim to be true is 0.60 and 0.20 respectively. The knowledge about distributors' coverage will evolve over time. The assumption is that the true level of coverage offered by the new distributors could be discovered, with certainty, through a one-year trail, and this trail will reveal exactly one of the two levels of coverage: for example in case of M/s Bola – 40 percent (as it was last year) or 60 percent (as claimed). In addition, it is also assumed that whatever the coverage is for both distributors, it will not change over time. Rajat narrows down on three choices, which are as follows:

Choice 1. Give a five year contract to the familiar distributor M/s Jagan.
Choice 2. Give a one year contract to the new distributor M/s Bola, and base next year's decision to renew contract with M/s Bola on observed coverage for next four years or enter into a four years' contract with M/s Jagan.
Choice 3. Give a one-year contract to the new distributor M/s James, and base next year's decision to renew contract with M/s James on observed coverage for next four years or enter into a four years contract with M/s Jagan..

Question 5

The expected present value of the five years cumulative profit with choice 3 is:

A Rs. 12.7 crores

B Rs. 10.6 crores

C Rs. 11.7 crores

D None of the above

Answer: B

Explanation:
We are left with 3 choices.

Choice 1:

The first choice is to give the contract to M/S Jagan. In this case, we know that Jagan's market reach is 55%. It has been given that the total profit potential is 5 crores in the present year and 15 crores in the next 4 years.

Therefore, the expected value of profit earned for choice 1 is 0.55*(5+15) = Rs.11 crore.

Choice 2:

Give the contract to M/s Bola for one year and based on the performance, renew the contract with him for the next 4 years or give M/S Jagan the contract for the next 4 years.

Let us assume that M/S Bola retains the contract for all 5 years. Rajat will renew the contract only if M/S Bola's claim that their market reach is 60% is true. The probability of the claim being true is 0.6.

Therefore, the EV of return if M/S Bola bags the contract for all 5 years = 0.6*0.6*(5+15) = Rs. 7.2 crores.

Let us assume that M/S Bola's claim is false. The probability of the claim being false is 1-0.6 = 0.4.
Now, if the claim is false, Rajat will terminate the contract by the end of the year and will partner with M/S Jagan for the next 4 years. Also, we have historic data that M/S Bola reaches 40% of the customers. Even if the claim is false, the laptops will reach 40% of the customers in the first year and 55% of the customers from the second year (Since M/S Jagan will bag the contract).

Therefore, the EV of profit in this case is 0.4*0.4*5+0.4*0.55*15 = 0.8 + 3.3 = Rs.4.1 crores.

Therefore, the total EV if M/S Bola bags the contract the first year is 7.2+4.1 = Rs.11.3 crores.

Choice 3:

Give the contract to M/s James for one year and based on the performance, renew the contract with him for the next 4 years or give M/S Jagan the contract for the next 4 years.

Let us assume that M/S James retains the contract for all 5 years. Rajat will renew the contract only if M/S Jame's claim that their market reach is 75% is true. The probability of the claim being true is 0.2.

Therefore, the EV of return if M/S James bags the contract for all 5 years = 0.2*0.75*(5+15) = Rs. 3 crores.

Let us assume that M/S James's claim is false. The probability of the claim being false is 1-0.2 = 0.8.
Now, if the claim is false, Rajat will terminate the contract by the end of the year and will partner with M/S Jagan for the next 4 years. Also, we have historic data that M/S James reaches 25% of the customers. Even if the claim is false, the laptops will reach 25% of the customers in the first year and 55% of the customers from the second year (Since M/S Jagan will bag the contract).

Therefore, the EV of profit in this case is 0.8*0.25*5+0.8*0.55*15 = 1 + 6.6 = Rs.7.6 crores.

Therefore, the total EV if M/S Bola bags the contract the first year is 3+7.6 = Rs.10.6 crores.

EV of choice 1 = Rs. 11 crores
EV of choice 2 = Rs. 11.3 crores
EV of choice 3 = Rs. 10.6 crores

The expected value of choice 3 is Rs.10.6 crores. Therefore, option B is the right answer.

Instructions
For the following questions answer them individually

Question 6

If a seller gives a discount of 15% on retail price, she still makes a profit of 2%. Which of the following ensures that she makes a profit of 20%?

A Give a discount of 5% on retail price.

B Give a discount of 2% on retail price.

C Increase the retail price by 2%.

D Sell at retail price.

Answer: D

Explanation:
Let the retail price be M and cost price be C.

Given,

0.85 M = 1.02 C

M = 1.2 C

If he wants 20% profit he has to sell at 1.2C, which is nothing but the retail price.

Question 7

Rohit bought 20 soaps and 12 toothpastes. He marked-up the soaps by 15% on the cost price of each, and the toothpastes by Rs.20 on the cost price each. He sold 75% of the soaps and 8 toothpastes and made a profit of Rs.385. If the cost of a toothpaste is 60% the cost of a soap and he got no return on unsold items, what was his overall profit or loss?

A Loss of Rs.355

B Loss of Rs.210

C Loss of Rs.250

D None of the above

Answer: A

Explanation:
Let the CP of 1 soap = S
Thus, the CP of 1 toothbrush = 0.6S
Given that, SP of 1 soap = 1.15 S and SP of 1 toothbrush = 0.6S+20
Also, 15*1.15*S + 8*(0.6S+20) - 15S - 8*0.6*S = 385
Thus, solving we get S = 100
Hence, Total CP of 20 soaps and 12 toothbrush = 20*100 + 12*60 = 2720
SP of 15 soaps and 8 toothbrush = 15*1.15*100 + 8*80 = 2365
Thus, the overall loss = 2365 - 2720 = 355 Rs.
Hence, option A is the correct answer.

Question 8

A pharmaceutical company manufactures 6000 strips of prescribed diabetic drugs for Rs. 8,00,000 every month. In July 2014, the company supplied 600 strips of free medicines to the doctors at various hospitals. Of the remaining medicines, it was able to sell 4/5th of the strips at 25 percent discount and the balance at the printed price of Rs. 250. Assuming vendor's discount at the rate of a uniform 30 percent of the total revenue, the approximate percentage profit / loss of the pharmaceutical company in July 2014 is:

A 5.5 percent (profit)

B 4 percent (loss)

C 5.5 percent (loss)

D None of the above

Answer: C

Explanation:
It is given that a total of 6000 strips are manufactured out of which the company supplied 600 strips of free medicines to the doctors.

Hence, the number of strips which were sold = 6000 - 600 = 5400.

It is given that the company was able to sell 4/5th of the strips at 25 percent discount and the balance at the printed price of Rs. 250.

Total revenue generated by the firm = $(0.75 * 250) * (5 * 5400) + (250) * (5 * 5400)$ = Rs. 1080000

Net revenue after vendor's discount = 0.7*1080000 = Rs. 756000

We can see that the company invested Rs. 800000 for the drug creation.

Hence, percentage loss incurred by the company = $\frac{800000 - 756000}{800000} * 100 = 5.5\%$

Therefore, option C is the correct answer.

Question 9

The manufacturer of a table sells it to a wholesale dealer at a profit of 10%. The wholesale dealer sells the table to a retailer at a profit of 30% Finally, the retailer sells it to a customer at a profit of 50%. If the customer pays Rs 4290 for the table, then its manufacturing cost (in Rs) is

A 1500

B 2000

C 2500

D 3000

Answer: B

Explanation:
Let the manufacturing price of the table = x
Hence the price at which the wholesaler bought from the manufacturer = $1.1 \times x$
The price at which the retailer bought from the wholesaler = $1.3 \times 1.1 \times x$
The price at which the customer bought from the retailer = $1.5 \times 1.3 \times 1.1 \times x$
$1.5 \times 1.3 \times 1.1 \times x = 4290$
=> x = 2000

Question 10

Rani bought more apples than oranges. She sells apples at Rs. 23 apiece and makes 15% profit. She sells oranges at Rs. 10 apiece and marks 25% profit. If she gets Rs. 653 after selling all the apples and oranges, find her profit percentage.

A 16.8%

B 17.4%

C 17.9%

D 18.5%

E 19.1%

Answer: B

Explanation:

Let number of apples = x and oranges = y

=> $23x + 10y = 653 \quad (x > y)$

Since, 653 has last digit 3, which is possible when 23 is multiplies by 1,11,21,31 and so on.

Also, $x > y$ => $x = 21$ and $y = 17$

=> C.P. of 1 apple = $\frac{100}{115} \times 23 = 20$

C.P. of 1 orange = $\frac{100}{125} \times 10 = 8$

=> Total C.P. = $(21 \times 20) + (17 \times 8) = 420 + 136 = 556$

$\therefore$ Profit % = $\frac{653-556}{556} \times 100 = 17.4\%$

Question 11

Shyam, Gopal and Madhur are three partners in a business. Their capitals are respectively Rs 4000,Rs 8000 and Rs 6000. Shyam gets 20% of total profit for managing the business. The remaining profit is divided among the three in the ratio of their capitals. At the end of the year, the profit of Shyam is Rs 2200 less than the sum of the profit of Gopal and Madhur. How much profit, Madhur will get?

A Rs.1600

B Rs.2400

C Rs.3000

D Rs.5000

Answer: B

Explanation:

Let the total profit be P. Shyam will get 0.2P for managing the business rest 0.8 P will be divided in the ratio of 2:4:3

i.e. shyam will get 0.2P+0.8P* $\frac{2}{9}$ and Gopal and Madhur will together get 0.8P* $\frac{7}{9}$

Given that 0.8P* $\frac{7}{9}$ - (0.2P+0.8P* $\frac{2}{9}$) = 2200

Solving we get P = 9000 therefore profit madhur will get is $0.8 * 9000 * \frac{1}{3}$ = 2400

Therefore our answer is option 'B'

Question 12

A small and medium enterprise imports two components A and B from Taiwan and China respectively and assembles them with other components to form a toy. Component A contributes to 10% of production cost. Component B contributes to 20% of the production cost. Usually the company sells this toy at 20% above the production cost. Due to increase in the raw material and labour cost in both the countries, component A became 20% costlier and component B became 40% costlier. Owing to these reasons the company increased its selling price by 15%. Considering that cost of other components does not change, what will be the profit percentage, if the toy is sold at the new price?

A 15.5%

B 25.5%

C 35.5%

D 40%

Answer: B

Explanation:
Let the production cost be Rs. 100
The, Selling Price = Rs. 120
Price of component A = Rs. 10
Price of component B = Rs. 20
Price of other components = Rs. (100 - 10 - 20) = Rs. 70

After increase in prices,

Price of component A = Rs. 12
Price of component B = Rs. 28
Price of other components = Rs. 70
Total Cost of production = Rs. (12 + 28 + 70) = Rs. 110
Selling price = Rs. (1.15 * 120) = Rs. 138
Profit = Rs. 28
Profit % = 25.45%

Hence, option B is the correct answer.

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Question 13

Suppose, C1, C2, C3, C4, and C5 are five companies. The profits made by Cl, C2, and C3 are in the ratio 9 : 10 : 8 while the profits made by C2, C4, and C5 are in the ratio 18 : 19 : 20. If C5 has made a profit of Rs 19 crore more than C1, then the total profit (in Rs) made by all five companies is

A 438 crore

B 435 crore

C 348 crore

D 345 crore

Answer: A

Explanation:
Given,

C1 : C2 : C3 = 9 : 10 : 8 ... i

C2 : C4 : C5 = 18 : 19 : 20 ... ii

Let's multiply i by 9 and ii by 5

C1 : C2 : C3 = 81 : 90 : 72

C2 : C4 : C5 = 90 : 95 : 100

Therefore, C1 : C2 : C3 : C4 : C5 = 81 : 90 : 72 : 95 : 100

Given,

100x - 81x = 19

x = 1

Hence, total profit = 100 + 95 + 72 + 90 + 81 = 438

Question 14

If Fatima sells 60 identical toys at a 40% discount on the printed price, then she makes 20% profit. Ten of these toys are destroyed in fire. While selling the rest, how much discount should be given on the printed price so that she can make the same amount of profit?

A 30%

B 25%

C 24%

D 28%

Answer: D

Explanation:
Let the cost price be C and the marked price be M.

Given,

0.6 M = 1.2 C

M = 2C

CP of 60 toys = 60C

Now only 50 are remaining.

Hence,

M (1 - d) * 50 = 72C

1- d = 0.72

d = .28

Hence 28%

Question 15

In a local shop, as part of promotional measures, the shop owner sells three different varieties of soap, one at a loss of 13 percent, another at a profit of 23 percent and the third one at a loss of 26 percent. Assuming that the shop owner sells all three varieties of soap at the same price, the approximate percentage by which average cost price is lower or higher than the selling price is

A 10.5 higher

B 12.5 lower

C 14.5 lower

D 8.5 higher

Answer: A

Explanation:

Let SP of each soap be X.

Let's calculate Cost Price (CP) of each soap separately.

$CP_1 = \frac{100}{100-13} * X = \frac{100X}{87}$

$CP_2 = \frac{100}{100+23} * X = \frac{100X}{123}$

$CP_2 = \frac{100}{100-26} * X = \frac{100X}{74}$

Total cost price of 3 soaps= $\frac{100X}{87} + \frac{100X}{123} + \frac{100X}{74} = 3.31X$

Total selling price of 3 soaps= $3X$

Cost price is higher than the selling price by = $\frac{3.31X-3X}{3X} * 100 \approx 10.5$ percent

Therefore, option A is the correct answer.

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