

Name **Kashif Ahmed**
Id **14225**
Subject **Business Maths**
Program **BBA**
Submitted To **Sir Liaqat Ali**

Summers (Final Term)

Question No.1

1	E
2	B
3	B
4	E
5	C
6	E
7	E
8	E
9	E
10	A



Question No.2

- a. A father is four times as old his son now. After 24 years he would be twice as old as his son. What are the present ages of the father and the son?

Solution

Let x and y be present ages of son and father respectively

$$Y = 4x \dots\dots\dots (1)$$

After 24 year the ages of son will be

$$Y + 24 = 2(x + 24)$$

Or $Y + 24 = 2x + 48$

$$Y-2x=48-24$$

$$Y-2x=24 \dots\dots\dots (2)$$

Put $y=4x$ in eq. (2) i.e.

$$Y-2x=24$$

$$4x-2x=24$$

$$2x=24$$

$$X=12$$

Put $x=12$ in eq. (1)

$$Y=4 \times 12$$

$$Y=48$$

Present age of father = $y= 48$

Present age of son = $x= 12$ Answer

b. Solve the following simultaneous equations for x and y .

$$x + 3y = -1/3$$

$$4x - 1/5 = 2/2$$

Solution:

$$X+3y=-1/3$$

$$4x-1/5y=2/2$$

Let,

$$X+3y=-1/3 \rightarrow \text{eq (1)}$$

$$4x-1/5y=2/2 \rightarrow \text{eq (2)}$$

Now, multiply eq (1) by 4 then subtract eq (2) from eq(1)

$$4x + 12y = -4/3$$

$$+4x - 1/5y = +2/2$$

$$\begin{array}{r} - \quad + \quad - \\ \hline 12y + 1/5y = -4/3 - 1 \end{array}$$

$$61y/5 = -7/3$$

$$61y = -7 \cdot 5/3$$

$$61y = -35/3$$

$$y = -35/61 \cdot 3$$

$$y = -35/183$$

Now putting value at y in eq (2)

$$4x - 1/5(-35/183) = 2/2$$

$$4x + 7/183 = 1$$

$$4x = 1 - 7/183$$

$$4x = 183 - 7/183$$

$$4x = 176/183$$

$$X = 176/183 \cdot 4$$

$$X = 44/183$$

So,

$$\mathbf{X = 44/183 \text{ and } y = -35/183}$$



Question No.3

a. Simplify by using exponential laws $\frac{x^{-3}}{x^{-3/2}} \div \frac{x}{x^{3/4}y^{-2}} \times \frac{x^2y^{-3}}{y^{1/3}}$

Solution

$$\frac{x^{-3}}{x^{-3/2}} \div \frac{x}{x^{3/4}y^{-2}} \times \frac{x^2y^{-3}}{y^{1/3}}$$
$$\frac{x^{-3}}{x^{-3/2}} \times \frac{x^{3/4}y^{-2}}{x} \times \frac{x^2y^{-3}}{y^{1/3}}$$

$$\frac{x^{-3}}{x^{-3/2}} = \frac{1}{x^{3/2}}$$

$$= \frac{1}{x^{3/2}} \times \frac{x^{3/4}y^{-2}}{x} \times \frac{x^2y^{-3}}{y^{1/3}}$$

$$\frac{x^{3/4}y^{-2}}{x} = \frac{1}{x^{1/4}y^2}$$

$$= \frac{1}{x^{3/2}} \times \frac{1}{x^{1/4}y^2} \times \frac{x^2y^{-3}}{y^{1/3}}$$

$$\frac{x^2y^{-3}}{y^{1/3}} = \frac{x^2}{y^{10/3}}$$

$$= \frac{1}{x^{3/2}} \times \frac{1}{x^{1/4}y^2} \times \frac{x^2}{y^{10/3}}$$

$$\frac{1 \times 1 \times x^2}{x^{3/2}x^{1/4}y^2y^{10/3}}$$

$$\frac{x^2}{x^{\frac{3}{2}+1/4}y^{2+10/3}}$$

Apply eponent rule:-

$$\frac{x^{2-(\frac{3}{2}+\frac{1}{4})}}{y^{2+10/3}}$$

$$\frac{x^{1/4}}{y^{16/3}}$$

b. Find the value of x by using logarithmic laws $x^3 = \frac{7^3 \times (0.4500)^2}{0.0004 \times (0.0205)^4}$

Solution:

Find the value of x by using logarithmic laws

Solution

$$x^3 = \frac{7 \times 7 \times 7 (0.4500 \times 0.4500)}{0.0004 (0.0205)^4}$$

$$x^3 = \frac{69.4575}{7.0644 \times 10^{11}}$$

$$x^3 = 69.457 \times 7.0644 \times 10^{11}$$

$$(x^3)^{1/3} = (69.457 \times 7.0644 \times 10^{11})^{1/3}$$

$$x = 9943.67 \text{ Answer}$$



Question No.4

If

U= the set of even numbers less than 24,

A=the set of numbers divisible by 4 less than 20,

B= the set of numbers divisible by 4 or 8 less than 16,

C= the set of numbers which are multiples of 2 and less than 20,

Then find the following

Show that $(A \cup B)^c = (A^c \cap B^c)$ and b. $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

Solution:

$$U = (2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22)$$

$$A = (4, 8, 12, 16)$$

$$B = (4, 8, 12)$$

$$C = (2, 4, 6, 8, 10, 12, 14, 16, 18)$$

Show that

$$A \cap (A \cup B) = A \cap B$$

$$A \cup B = \{4, 8, 12, 16\} \cup \{4, 8, 12\}$$

$$A \cup B = \{4, 8, 12, 16\}$$

$$A \cup B = U \cap (A \cup B) = \{2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22\}$$

$$\{4, 8, 12, 16\}$$

$$A \cup B = \{2, 6, 10, 14, 18, 20, 22\}$$

$$A = U \cap A = \{2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22\}$$

$$\{4, 8, 12, 16\}$$

$$A \cap \{2, 6, 10, 14, 18, 20, 22\}$$

$$B \cap U = \{2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22\}$$

$$\{4, 8, 12\}$$

$$B \cap \{2, 6, 10, 14, 16, 18, 20, 22\}$$

$$A \cap B \cap \{2, 6, 10, 14, 16, 18, 20, 22\} \cup \{2, 6, 10\}$$

$$\{14, 16, 18, 20, 22\}$$

$$A \cap B \cap \{2, 6, 10, 14, 16, 18, 20, 22\}$$

$$A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$$

$$A \cap (B \cup C)$$

$$B \cup C = \{4, 8, 12\} \cup \{2, 4, 6, 8, 10, 12, 14, 16, 18\}$$

$$B \cup C = \{2, 4, 6, 8, 10, 12, 14, 16, 18\}$$

$$A \cap (B \cup C) = \{4, 8, 12, 16\} \cap \{2, 4, 6, 8, 10, 12\}$$

$$A \cap (B \cup C) = \{4, 8, 12, 16\}$$

$$(A \cap B) \cup (A \cap C) = ?$$

$$A = (4, 8, 12, 16), B = (4, 8, 12)$$

$$A \cap B = (4, 8, 12, 16) \cap (4, 8, 12)$$

$$A \cap B = (4, 8, 12) \text{ ----- 1}$$

$$A \cap C = (4, 8, 12, 16) \cap (2, 4, 6, 8, 10, 12, 14, 16, 18)$$

$$A \cap C = (4, 8, 12, 16) \text{ ----- 2}$$

Eq 1 and Eq2

$$(A \cap B) \cup (A \cap C) = (4, 8, 12) \cup (4, 8, 12, 16)$$

$$(A \cap B) \cup (A \cap C) = (4, 8, 12, 16)$$

$$\text{Therefore } A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$$

Hence proved



Question No.5

a. List price = \$150

Trade discount = 20%, Find the net cost.

c. Cost price = \$10

Markup = \$6.20

Find markup percent on cost, also find Selling price

List price = \$150

Trade discount = 20%, Find the net cost.

SOLUTION:

List price = \$150

Trade discount = 20%

Find the net cost

List price = \$ 150

$$\text{Trade discount} = 20\% = 20 \times 1/100 \times 150 = 30$$

Net cost = ?

Net cost = list price – trade discount

$$= 150 - 30$$

$$= \mathbf{120}$$

PART (B)

Cost price = \$10

Markup = \$6.20

Find markup percent on cost, also find Selling price

Finding markup percentage cost: markup percentage = (markup cost)/(cost price) x 100

$$6.20/10 \times 100$$

Markup percent = 62

Selling price =

Solution as we have formula for the selling price

Markup on Cost = ((price - cost)/cost)

Markup on Cost = 0.62((price - 10)/10)

By performing the cross multiplications we will get the following solution in The following ways

$$0.62 \times 10 = \text{price} - 10$$

$$6.2 = \text{price} - 10$$

$$\text{Price} = 6.2 + 10$$

Selling Price = 16.2

So we came across with the value of selling price that is “16.2”

