Bank Job Lecture Sheet

Lecture 5

Lecture Contents

☑ Inequality, Equation & Exponent

Inequality, Equation & Exponent

Teacher's Discussion

1. **If $(2x - 1)^2 = 100$, then which one of the following could equal x?** [Combined 7 Bank Officer (Cash)-2023]

A. – 11/2 B. – 9/2 C. 11/2 D. 13/2 **Ans:** c

2. **A glass when full of milk, weights 1 kg. It weight 0.75 kg when the glass is half full. What is weight of the empty glass?** [Combined 7 Bank Officer (Cash)-2023]

A. 0.25 kg B. 0.35 kg C. 0.40 kg D. 0.50 kg **Ans:** b

3. **The total salary of X, Y and Z is Tk. 90,000. X earns twice of what Y earns and Y earns 1.5 times of what Z earns. What is the salary of Z?** [Combined 7 Bank Officer (Cash)-2023]

A. Tk. 15,000 B. Tk. 20,000 C. Tk. 25,000 D. Tk. 30,000 **Ans:** b

4. **Find the value of *k* if $(x - 1)$ is a factor of $4x^2 + 3x^2 - 4x + k$.** [Combined 7 Banks Senior Officer- 2021]

A. 1 B. – 3 C. 2 D. 3 **Ans:** B

5. **If one root of the equation $2x^2 + 3x - k = 0$ is 6, what is the value of k?**

A. 90 B. 42 C. 18 D. 10 **Ans:** A

6. **If one of the roots of the quadralic equation $x^2 + mx + 24 = 0$ is 1.5, then what is the value of m?** [Southeast Bank PO- 2020]

A. – 22.5 B. 16 C. – 17.5 D. 10.5 **Ans:** C

7. **Let C and K be constants. If $x^2 + Kx + 5$ factors into $(x + 1)(x + C)$, the value of K is-** [One Bank, Special Cadre Officer- 2022]

A. 0 B. 5 C. 8 D. 6 **Ans:** D

8. $5^{-3} + 5^{-3} + 5^{-3} + 5^{-3} + 5^{-3} = ?$ [Sadharon Bima Corporation AM- 2019]

A. 25^{-25} B. 25^{-3} C. 5^{-2} D. 5^{-15} **Ans:** C

9. If $2^x + 2^x + 2^x + 2^x = 2^n$, what is x in terms of n?

A. n/4 B. 4n C. 2n D. n – 2 **Ans:** D

10. $3^x + 3^x + 3^x = ?$

A. $9x$ B. $27x^3$ C. 3^{x+1} D. $3x^3$ **Ans:** C

11. If $y = 4^{10} + 4^{11} + 4^{12} + 4^{13}$, then y is divisible by which number?

A. 12 B. 13 C. 17 D. 19 **Ans:** C

12. If x is an integer and $y = 9x + 13$, what is the greatest value of x for which y is less than 100

A. 12 B. 11 C. 10 D. 9 **Ans:** D

13. If x is an integer and $y = -2x - 8$, what is the least value of x for which y is less than 9? [Bangladesh Bank Officer (General)- 2019]

A. – 9 B. – 8 C. – 7 D. – 6 **Ans:** B

14. If $\frac{x}{y} = \frac{1}{3}$, then the value of $\frac{(x^2 + y^2)}{(x^2 - y^2)}$ is- [Combined 9 Bank Senior Officer (General)-2023]

A. $\frac{-10}{9}$ B. $\frac{5}{4}$ C. $\frac{-5}{3}$ D. $\frac{-5}{4}$ **Ans: C**

15. If $1 - 3x \leq 4$, then- [Bangladesh Bank AD- 2018]

A. $x \leq -2$ B. $x \geq -2$ C. $x \leq -1$ D. $x \geq -1$ **Ans:** D

16. If $a + \frac{1}{a} = 3$, what is $a^3 + \frac{1}{a^3}$? [Bangladesh Bank Officer (General)- 2019]

A. 24 B. 7 C. 30 D. 18 **Ans:** D

17. If $x : y = 5 : 3$, then $(8x - 5y) : (8x + 5y) = ?$ [Bangladesh Bank Officer (General)- 2019]

A. 5 : 11 B. 6 : 5 C. 5 : 6 D. 3 : 8 **Ans:** A

18. If $2x - 1 \geq -3$, then- [Bangladesh Bank Officer (General)- 2019]

A. $x \leq -2$ B. $x \geq -2$ C. $x \leq -1$ D. $x \geq -1$ **Ans:** D

19. If $xy = 2$ and $xy^2 = 16$, what is the value of x? [Bangladesh Bank Officer (General)- 2019]

A. 4 B. 2 C. $\frac{1}{4}$ D. 8 **Ans:** C

20. If $(x - 2y)(x + 2y) = 5$ and $(2x - y)(2x + y) = 35$, then $\frac{x^2 - y^2}{x^2 + y^2} = ?$ [One Bank, Special Cadre Officer- 2022]

A. $-\frac{8}{5}$ B. $-\frac{4}{5}$ C. $\frac{7}{5}$ D. $\frac{4}{5}$ **Ans:** D

21. If $x = 3 + 2\sqrt{2}$, what is the value of $\left(\sqrt{x} - \frac{1}{\sqrt{x}}\right)$? [NRBC Bank, TO- 2022]

A. 1 B. 2 C. $2\sqrt{2}$ D. $3\sqrt{2}$ **Ans:** B

22. $(0.04)^{-1.5} = ?$

A. 25 B. 125 C. 250 D. 625 **Ans:** B

23. If $\frac{0.0015 \times 10^m}{0.03 \times 10^k} = 5 \times 10^7$, then m-k=?

A. 9 B. 8 C. 7 D. 6 **Ans:** A

24. If $(x + 4)^2 = 9$ and $(y + 3)^2 = 25$, then the minimum value of $\frac{y}{x}$ is- [UCB MTO- 2017]

A. – 1 B. – 2 C. – 8 D. $-\frac{2}{7}$ **Ans:** B

16. **If $2^x + 2^x + 2^x + 2^x = 2^n$, what is x in terms of n?**

A. n/4 B. 4n C. 2n D. n – 2 **Ans:** D

17. **If x and y are integers and $-9 < x < 9$ and $0 < y < 14$, what is the greatest possible value of $(y - x)$?**

A. 23 B. 21 C. 19 D. 17 **Ans:** B

18. **If an integer y is subtracted from an integer x, and the result is greater than x, then y must be-** [Investment Corporation of Bangladesh Assistant Programmer- 2017]

A. equal to x B. less than x C. less than 0 D. greater than 0 **Ans:** C

19. **Company C produces toy trucks at a cost of Tk. 5.00 each for the first 100 trucks and Tk. 3.50 for each additional truck. If 500 toy trucks were produced by Company C and sold for Tk. 10.00 each, what was Company C's gross profit?** [Combined 9 Banks Officer (General)- 2022]

A. Tk. 2250 B. Tk. 2500 C. Tk. 3100 D. Tk. 3250 **Ans:** C

20. **The second and third team of a geometric series are 9 and 3 respectively. The 6^{th} term of the series is-** [Combined 7 Banks Senior Officer- 2021]

A. $\frac{1}{9}$ B. $\frac{1}{3}$ C. 0 D. 1 **Ans:** A

21. **Three shirts and five ties cost Tk. 23. Five shirts and one tie cost Tk. 20. What is the price of one shirt?** [Bangladesh Bank AD- 2021]

A. Tk. 3.50 B. Tk. 2.50 C. Tk. 6.00 D. Tk. 3.00 **Ans:** A

22. **If a, b and c are the lengths of the three sides of a triangle, then which of the following is true?** [Bangladesh Bank AD- 2018]

A. a + b < c B. a – b < c C. a + b = c D. a + b > ? **Ans:** B

23. **In a zoo, each pigeon has 2 legs, and each rabbit has 4 legs. The head count of the two speces together is 12, and the leg count is 32. How many pigeons and how many rabbits are there in the zoo?** [Bangladesh Bank AD- 2012]

A. 6 & 3 B. 5 & 10 C. 8 & 4 D. 6 & 8 **Ans:** C

24. **A Zoo keeper counted the heads of the animals in a zoo and found it to be 80. When he counted the legs of the animals, he found it to be 260. If the zoo had either pigeons or horses, how many horses were there in the zoo?** [Bangladesh Bank AD- 2009]

A. 40 B. 30 C. 50 D. 60 **Ans:** C

25. **A man ate 100 bananas in five days, each eating 6 more than the previous day. How many bananas did he eat on the first day?** [Bangladesh Bank AD- 2012]

A. 6 B. 7 C. 10 D. 8 **Ans:** D

26. **A man's regular pay is Tk. 30 per hour up to 40 hours. Overtime is twice the regular payment. If he was paid Tk. 1680, how many hours overtime did he work?** [Combined 5 Banks Officer- 2022]

A. 7 B. 16 C. 9 D. 8 **Ans:** D

27. **A worker was hired for 7 days. Each day, he was paid Tk. 10 more than what he was paid for the previous day of work. The total amount he was paid in the first 4 days of work equaled the total amount he was paid in the last 3 days. What was his starting pay?** [Combined 9 Bank Senior Officer (General)-2023]

A. Tk. 90 B. Tk. 138 C. Tk. 150 D. Tk. 160 **Ans: A**

28. **The total number obtained by a student in physics Chemistry and Mathematics together is 120 more that the marks obtained by him in Chemistry. What is the average mark obtained by him in physics and Mathematics together?** [Combined 9 Bank Senior Officer (General)-2023]

A. 40 B. 60 C. 120 D. Cannot be determined **Ans: B**

29. **Salam earns Tk. 8.50 per hour on days other than Friday and twice than the rate on Friday. Last week he worked a total of 50 hours including 8 hours on Friday. What is his earning for the week?** [Combined 9 Bank Senior Officer (General)-2023]

A. Tk. 340 B. Tk. 398 C. Tk. 408 D. Tk. 493 **Ans: D**

30. **The number of rooms at Hotel G is 10 less than twice the number of rooms at Hotel H. If the total number of rooms at Hotel G and Hotel H is 425, what is the number of rooms at Hotel G?** [Southeast Bank PO- 2020]

A. 140 B. 180 C. 200 D. 280 **Ans:** D

31. **Find the value of n, if $27^{n-\frac{1}{3}} = 243$.** [Sadharon Bima Corporation AM- 2019]

A. 2 B. 3 C. 4 D. 5 **Ans:** A

32. **Bonnie has twice as many cousins as Robert. George has 5 cousins, which is 11 less than Bonnie has. How many cousins does Robert have?** [Global Islami Bank, PO- 2022]

A. 17 B. 21 C. 4 D. 8 **Ans:** D

33. **What is the prime factorization of 84?** [Global Islami Bank, PO- 2022]

A. 42×2 B. $2 \times 2 \times 4 \times 6$ C. $2 \times 7 \times 6$ D. $2 \times 2 \times 3 \times 7$ **Ans:** D

34. **If the sum of frequencies is 24, then the value of x in the observation: x, 5, 6, 1, 2 will be:** [NRBC Bank, TO- 2022]

A. 4 B. 6 C. 8 D. 10 **Ans:** D

35. **If $x = 7^9 - 6$; what is the unit digit of x?**

A. 7 B. 2 C. 0 D. 1 **Ans:** D

36. **If $n = (33)^{43}+(43)^{33}$, what is the unit digit of n?**

A. 0 B. 2 C. 4 D. 6 **Ans:** A

37. **If x and y are positive integers and $x^4y^5 = 512$ which of the following is the value of xy?**

A. 2 B. 4 C. 8 D. 10 **Ans:** B

Student's Drill

1. **If x is an integer and $y = 9x + 13$, what is the greatest value of x for which y is less than 100**

A. 12 B. 11 C. 10 D. 9 **Ans:** D

2. **If $2^x + 2^x + 2^x + 2^x = 2^n$, what is x in terms of n?**

A. n/4 B. 4n C. 2n D. n – 2 **Ans:** D

3. **If $y = \frac{a}{a+b}$ and $x = \frac{a}{b}$, then what is y in terms of x?**

A. $1 + x$ B. $1 + \frac{1}{x}$ C. $\frac{x}{1+x}$ D. $\frac{1}{1+x}$ **Ans:** C

4. **A group of 10 people plan to contribute equally to pay for a friedn's gift that costs G dollars. If n additional people want to contribute to pay for the gift, the required contribution per person will be reduced by how many dollars?**

A. $\frac{Gn}{100 + 10n}$ B. $\frac{10 + n}{Gn}$ C. $\frac{10G + Gm}{n}$ D. $\frac{Gn + 10G}{Gn - 10}$ **Ans:** A

5. **A positive number x is multiplied by 2, and this product is then divided by 3. If the positive square root of the result of these two operations equals x, what is the value of x?**

A. $\frac{9}{4}$ B. $\frac{3}{2}$ C. $\frac{4}{3}$ D. $\frac{2}{3}$ **Ans:** D

6. **One third the sum of 13 and a certain number is the same as one more than twice the number. Find out the number.**

A. 6 B. 2 C. 5 D. 3 **Ans:** B

7. **A number is doubled and 9 is added. If the resultant is trebled, it becomes 75. What is the number?**
A. 3.5 B. 6 C. 8 D. 7 **Ans:** C

8. **The sum of the two numbers is 12 and their product is 35. What is the sum of the reciprocals of these numbers?**
A. $\frac{12}{35}$ B. $\frac{1}{35}$ C. $\frac{35}{8}$ D. $\frac{7}{32}$ **Ans:** A

9. **If one root of the equation $2x^2 + 3x - k = 0$ is 6, what is the value of k?**
A. 90 B. 42 C. 18 D. 10 **Ans:** A

10. **Asad went to the market to by 12 oranges. But he found that he had the money to buy only 10 oranges. He calculated that if the price per piecse of orange was TK. 3 less, he could have bought 12 oranges. How much money did Asad have?**
A. 150 B. 160 C. 175 D. 180 **Ans:** D

11. **Faisal purchased brand A shirts for TK. 400 a price and brand B shirts for TK. 280 a piece. If Faisal purchased a total of 12 shirts for TK. 4,200; how many brand B shirts did he purchased?**
A. 4 B. 5 C. 6 D. 7 **Ans:** B

12. **The number of coins in Rafi's collection is 80% of the number of coins in Pall's collection. If both of them have 900 coins altogether, how many coins does Rafi have?**
A. 320 B. 400 C. 500 D. 620 **Ans:** B

13. **Dina purchased PRAN candy for Tk. 4.00 per box and BINGO candy for TK. 2.50 per box. If she purchased a total of 12 boxes of candy for TK. 42. 00, how many boxes of PRAN candies did she purchase?**
A. 3 B. 8 C. 5 D. 7 **Ans:** B

14. **If $0 \le x \le 4$ and $-1 \le y + 1 \le 5$, then the minimum value or $x + y$ is.**
A. – 2 B. 0 C. – 1 D. 9 **Ans:** A

15. **If $0 \le x \le 4$ and $y < 12$, which of the following CANNOT be the value of xy?**
A. –2 B. 24 C. 48 D. 28 **Ans:** C

16. **If x and y are integers and $-9 < x < 9$ and $0 < y < 14$, what is the greatest possible value of $(y - x)$?**
A. 23 B. 21 C. 19 D. 17 **Ans:** B

17. **If $y < x$ and $xm < ym$, which of the following must be true.**
A. $m < x$ B. $m < y$ C. $x < 0$ D. $m < 0$ **Ans:** D

18. **$(256)^{0.16} \times (256)^{0.09}$ =**
A. 4 B. 16 C. 64 D. 128 **Ans:** A

19. **$3^x + 3^x + 3^x$ = ?**
A. $9x$ B. $27x^3$ C. 3^{x+1} D. $3x^3$ **Ans:** C

20. **If $y = 4^{10} + 4^{11} + 4^{12} + 4^{13}$, then y is divisible by which number?**
A. 12 B. 13 C. 17 D. 19 **Ans:** C

21. **Given that x and y are integers and $x + y < 10$, and $x > 5$, what is the smallest possible value of $x-y$?**
A. 0 B. 1 C. 2 D. 3 **Ans:** D

Lecture 5

Solution of Student's Drill

1. x এর বড় মান ধরলে y এর মান 100 থেকে কম হতে হবে। x এর মান 10 ধরলে y এর মান 100 থেকে বেশি হয়। তাই x এর মান 9 ধরলে y এর মান 100 থেকে ছোট হবে। Ans: D.

2. $2^x + 2^x + 2^x + 2^x = 2^n$
$\Rightarrow 2^x(1+1+1+1) = 2^n$
$\Rightarrow 2^x \cdot 4 = 2^n$
$\Rightarrow 2^{x+2} = 2^n$
$\therefore x + 2 = n$
$\Rightarrow x = n - 2$ **(Ans.)**

3. $y = \frac{a}{a+b}$ and $x = \frac{a}{b}$, $\Rightarrow a = bx$
$\Rightarrow y = \frac{bx}{bx+b}$
$= \frac{bx}{b(1+x)} = \frac{x}{1+x}$ **(Ans.)**

4. Per person contribution $= \frac{G}{10}$
After joining n people, per person contribution
$= \frac{G}{10+n}$
$\therefore$ per person reduced contribution
$= \frac{G}{10} - \frac{G}{10+n}$
$= \frac{G10 + Gn - G10}{10(10+n)} = \frac{Gn}{100+10n}$ **(Ans.)**

5. 1st step $= x \times 2$, 2nd step $= \frac{x \times 2}{3}$
3rd step $= \sqrt{\frac{x \times 2}{3}}$ $\therefore \sqrt{\frac{x \times 2}{3}} = x$
$\Rightarrow \frac{2x}{3} = x^2$ [squaring]
$\therefore x = \frac{2}{3}$ **(Ans.)**

6. Let, the number = x
$\frac{1}{3} \times (13 + x) = 1 + 2x$
$\Rightarrow \frac{13+x}{3} - 2x = 1$
$\Rightarrow 13 + x - 6x = 3$
$\Rightarrow -5x = -10$ $\therefore x = 2$ **(Ans.)**

7. Let, The number = x
$\therefore 3(2x + 9) = 75$
$\Rightarrow 2x + 9 = 25$
$\Rightarrow 2x = 16$ $\therefore x = 8$ **(Ans.)**

8. $x + y = 12$, $xy = 35$
$\therefore \frac{1}{x} + \frac{1}{y} = \frac{x+y}{xy} = \frac{12}{35}$ **(Ans.)**

9. এখানে সমীকরণের root বলতে চলকের মান বুঝায়।
$\therefore 2x^2 + 3x - k = 0$
$\Rightarrow 2 \times b^2 + 3 \times (6) - k = 0$
$\Rightarrow 72 + 18 - k = 0$
$\Rightarrow k = 90$ **(Ans.)**

10. Let, Asad had x Tk.
$\therefore \frac{x}{10} - \frac{x}{12} = 3 \Rightarrow \frac{6x - 5x}{60} = 3$
$\Rightarrow x = 180$ **(Ans.)**

11. Let, B shirts = x, $\therefore$ A shirts = (12 – x)
$\therefore 280x + 400(12 - x) = 4200$
$\Rightarrow 280x + 4800 - 400x = 4200$
$\Rightarrow -120x = -600$ $\therefore x = 5$ **(Ans.)**

12. Let, No. of Rafi's coin = x
$\therefore x = 80\% \times (900 - x)$
$\Rightarrow x = \frac{4}{5}(900 - x)$
$\Rightarrow 5x = 3600 - 4x$
$\Rightarrow 9x = 3600$ $\therefore x = 400$ **(Ans.)**

13. Let, No. of pran candy = x
$\therefore$ no. of bingo candy = 12 – x
$\therefore 4x + 2.50(12 - x) = 42$
$\Rightarrow 4x + 30 - 2.50x = 42$
$\Rightarrow 1.5x = 42 - 30 = 12$
$\therefore x = \frac{12 \times 10}{15} = 8$ **(Ans.)**

14. $0 \le x \le 4$
$\therefore x = 0, 1, 2, 3, 4$

$-1 \le y + 1 \le 5$
$\Rightarrow -1 - 1 \le y + 1 - 1 \le 5 - 1$
$\Rightarrow -2 \le y \le 4$
$y = -2, -1, 0, 1, 2, 3, 4.$

$\therefore (x + y)_{min} = 0 + (-2) = -2$ **(Ans.)**

15. $0 \le x \le 4$
$\therefore x = 0, 1, 2, 3, 4,$

$y < 12$
$\therefore y = \infty$, ---------- 11

$(xy)_{max} = 4 \times 14 = 44$
সুতরাং 48 হতে পারবে না। Ans: 48

16. $-9 < x < 9$ and $0 < y < 14$

$\therefore x = -8, -7, \ldots\ldots + 8$ | $y = 1, 2, 3 \text{ ----- } + 13$

$(x-y)_{max} = y_{max} - x_{min}$

$= 13 - (-8) = 21$ **(Ans.)**

17. $y < x$ and $xm < ym$

এখানে, ১ম সমীকরণে x বড়, y ছোট।

২য় সমীকরণে উভয় পাশে m গুণ হওয়ার কারণে x ছোট, y বড়।

তাহলে m এর মান অবশ্যই ঋণাত্মক। Ans: D.

18. $(256)^{0.16} \times (256)^{0.09}$

$= (256)^{0.16+0.09} = (256)^{.25}$

$= (256)^{\frac{1}{4}} = (44)^{\frac{1}{4}} = 4$ **(Ans.)**

19. $3^x + 3^x + 3^x = 3^x(1 + 1 + 1) = 3^x \cdot 3^1$

$= 3^{x+1}$ **(Ans.)**

20. $y = 4^{10} + 4^{11} + 4^{12} + 4^{13}$

$= 4^{10}(1 + 4^1 + 4^2 + 4^3)$

$= 4^{10}(1 + 4 + 16 + 64)$

$= 4^{10}(85)$

সুতরাং, y is divisible by 17.

21. $x + y < 10$, | $x > 5$

$\Rightarrow 6 + 3 < 10$ | $\therefore x = 6, 7, 8, 9, \ldots\ldots\ldots$

$\Rightarrow 7 + 2 < 10$

$\Rightarrow 8 + 1 < 10$

$\therefore$ y can be 3, 2, 1

$(x - y)_{min} = x_{min} - y_{max}$

$= 6 - 3 = 3$ **(Ans.)**

Home Practice

1. If p and q are positive integers, each greater than 1, and if 37(p – 1) = 29 (q – 1) what is the least possible value of (p + q)?

A. 68 B. 67 C. 66 D. 65 **Ans:** C

2. In an examination, a student scores 4 marks for every correct answer and loses 1 mark for every wrong answer. If he attempts all 60 questions and secures 130 marks, the no of questions he attempts correctly is:

A. 35 B. 38 C. 40 D. 42 **Ans:** B

3. In a group of buffaloes and ducks, the number of legs are 24 more than twice the number of heads. What is the number of buffaloes in the group?

A. 6 B. 10 C. 8 D. 12 **Ans:** D

4. Find the number of zeros in $10 \times 20 \times 30 \times \ldots\ldots \times 1000$. [Combined 9 Bank Senior Officer (General)-2023]

A. 100 B. 124 C. 130 D. 154 **Ans: B**

5. If $33^2 - 17^2 = 25x$, what is the value of x?

A. $\frac{(14)^2}{25}$ B. 20 C. $\frac{(16)^2}{25}$ D. 32 **Ans:** D

6. Tasty Cookies sells two kinds of cakes: Lemon for Tk. 40, and Lazeez for Tk. 25. On a certain day, the shop sold 100 cakes and got Tk. 2980 in revenue from the sales. How many Lemon cakes did they sell?

A. 30 B. 32 C. 40 D. 48 **Ans:** A

7. $10^2 + 10^5 + 10^4 = ?$

A. 10^{11} B. $10^2 \times 1101$ C. $10^2 \times 10^5$ D. 11100 **Ans:** B

8. Tickets to a cricket game costs Tk. 40 for reserved seats and Tk. 30 for general seats. In all 500 tickets were sold for Tk. 17600. How many reserved seats were sold?

A. 240 B. 275 C. 270 D. 260 **Ans:** D

9. If x, y and z are chosen x from three numbers $\frac{1}{2}$, 2 and – 3, what is the largest possible value of the expression $\left(\frac{x}{y}\right) z^2$?

A. 16 B. 32 C. 36 D. 39 **Ans:** C

10. $(17)^{3.5} \times (17)^x = 17^8$

A. 2.29 B. 2.75 C. 4.25 D. 4.5 **Ans:** D

11. $(0.04)^{-1.5} = ?$

A. 25 B. 125 C. 250 D. 625 **Ans:** B

12. If $x = 7^9 - 6$; what is the unit digit of x?

A. 7 B. 2 C. 0 D. 1 **Ans:** D

13. If $n = (33)^{43} + (43)^{33}$, what is the unit digit of n?

A. 0 B. 2 C. 4 D. 6 **Ans:** A

14. If m and n are whole numbers such that $m^n = 121$, then the value of $(m-1)^{n+1}$ is:

A. 1 B. 10 C. 121 D. 1,000 **Ans:** D

15. If x and y are positive integers and $x^4y^5 = 512$ which of the following is the value of xy?

A. 2 B. 4 C. 8 D. 10 **Ans:** B

16. The value of $(9 \times 10^7)(9 \times 10^8)$ is closest to which of the following?

A. 10^{16} B. 10^{17} C. 10^{56} D. 10^{57} **Ans:** B

17. If $x + y > 5$ and $x - y > 3$, then which of the following given all and only possible values of x? [BUP (FBS): 2020-21]

A. $x < 3$ B. $x > 3$ C. $x > 4$ D. $x < 5$ **Ans:** C

18. If $x = -1$, then $\frac{(x^4 - x^3 + x^2)}{(x - 1)}$ [BUP (FBS): 2020-21]

A. $\frac{-3}{2}$ B. $\frac{-1}{2}$ C. 0 D. $\frac{1}{2}$ **Ans:** A