

STUDY GUIDE

Answer all Questions

N/B: The use of calculator and phones are not allowed in the examination hall.

TIME: 45 minutes

YEAR 11/12

- What must be added to $4x^2 + 5x$ to make it perfect square? (a) $\frac{25}{2}$ (b) $\frac{25}{16}$ (c) 20 (d) 25
- Find the 20th term of the A.P, 7, 2, -3, -6, ____ (a) -37 (b) -88 (c) -91 (d) -56
- Solve the equation $4^x + 4 = 5$ (2^x) (a) 5, 1 (b) 1, 4 (c) 2, 0 (d) -1, 6
- Evaluate $(73.8)^2 - (26.2)^2$, correct to the nearest 100 (a) 4760 (b) 4700 (c) 4800 (d) 5000
- The length of a book 15cm was measured as 16.8cm. Calculate the percentage error to 2 s.f (a) 10% (b) 13% (c) 0.12% (d) 12%
- Which of these is a root of the equation $6x^2 = 5 - 7x$? (a) $1\frac{1}{2}$ (b) $-\frac{1}{3}$ (c) $\frac{1}{2}$ (d) $\frac{2}{3}$
- If $U_n = n(n^2 - 1)$, evaluate $U_4 + U_3$ (a) 68 (b) 62 (c) 130 (d) 84
- If $A = \begin{bmatrix} -5 & 3 \\ -7 & 4 \end{bmatrix}$, find $|A^T|$ (a) -1 (b) 5 (c) 1 (d) 2
- Find the value of which ~~N~~3, 000 will amount in 5 years at 6% per annum simple interest (a) ~~N~~3, 600 (b) ~~N~~3, 750 (c) ~~N~~3, 900 (d) ~~N~~3, 300
- Mr. Muoha, bought two advanced mathematics textbooks for his two sons from the United State of America at the rate of \$180, 000 per unit. He paid an import duty of 45% on arrival to Nigeria. If \$22.5 = ~~N~~31.00, what was the total cost of the textbooks? (a) ~~N~~719, 200 (b) ~~N~~272, 500 (c) ~~N~~721, 400 (d) ~~N~~30, 500
- What is the value of x in the expression $16^{3x} = \frac{1}{4} (32^{x-1})$? (a) 4 (b) 1 (c) $\frac{3}{5}$ (d) $-\frac{1}{2}$
- Solve simultaneously $2x + 3y = 0$ and $4y + 3x = 1$ (a) 2 and 3 (b) 3 and -2 (c) 4 and 2 (d) 5 and 2
- If $2x + y = -1$ and $x + 2y = 7$, find the value of $(x - y)$ (a) 8 (b) 2 (c) -2 (d) -8
- The lengths of a right – angled triangle are xcm, $(3x + 1)$ cm, and $(3x - 1)$ cm. Find the value of x (a) 7 (b) 8 (c) 14 (d) 12
- Find the gradient of the line joining (5, -5), (2, 4) (a) -4 (b) -2 (c) 3 (d) -3

16. Find the value of x if $3^{x+8} = 27^{2x+1}$ (a) -2 (b) 7 (c) 3 (d) 1
17. In a class of 45 students, 10 of them are good in Mathematics and Science, 15 are good in English Language, while 20 are good in Crafts. What is the probability of getting from this class, a Scientist, a Broadcaster and an Artist on graduation day? (a) $\frac{1}{4}$, $\frac{3}{8}$ and $\frac{1}{2}$ (b) $\frac{1}{10}$, $\frac{1}{4}$ and $\frac{1}{6}$ (c) $\frac{5}{6}$, $\frac{2}{3}$ and $\frac{1}{4}$ (d) $\frac{1}{5}$, $\frac{3}{5}$ and $\frac{4}{5}$
18. What is the value of x and y in the equation $8 = 2^{(x+y)}$ and $1 = 3^{(x-y)}$ (a) $x = 1$, $y = \frac{1}{2}$ (b) $x = \frac{1}{2}$, $y = \frac{1}{4}$ (c) $x = \frac{3}{2}$, $y = \frac{3}{2}$ (d) $x = 4$, $y = -3$
19. If $2 = \log_x 16$. Find x (a) 2 (b) 4 (c) 8 (d) 16
20. If α and β are the roots of the equation $2x^2 - x + 6 = 0$, find the value of $\alpha + \beta$ (a) 2 (b) $\frac{1}{3}$ (c) $\frac{3}{2}$ (d) $\frac{1}{2}$
21. If a ladder of length 5cm resting on a vertical wall makes an angle of 60° with the ground, how far is the foot of the ladder from the wall? (a) 5m (b) $\sqrt{3/2}m$ (c) $2\frac{1}{2}m$ (d) $5\frac{\sqrt{3}}{2}m$
22. The 4th term of an A.P is 13, while the 10th term is 31. Find the 21st term (a) 175 (b) 85 (c) 64 (d) 45
23. The 8th term of an A.P is twice the 4th term. If the sum of the first 5 terms is 47, find the common difference (a) 6.31 (b) 3.13 (c) 4.42 (d) 2.24
24. A box contains 13 currency notes, all of which are either ₦50.00 notes or ₦20.00 notes. If the total value of currency notes is ₦530, how many ₦50 notes are in the box? (a) 4 (b) 6 (c) 8 (d) 9
25. The population of a town increased by 15% in 2018 and 10% in 2019. Due to a pandemic, it decreased by 10% in 2020. Calculate the percentage increase in the population of the town in 3 years (a) 17.5% (b) 13.85% (c) 15% (d) 12.5%