Here is a set of **20 multiple-choice mathematics questions** for first-year undergraduates drawn from:

* Linear, simultaneous, quadratic, and exponential equations
* Indices and logarithms
* Arithmetic and geometric progressions
* Set theory

Each question is designed to be solvable within **30 seconds**, and options are formatted as requested:

**Linear, Simultaneous, Quadratic, and Exponential Equations**

Q:1) Solve for :   
A:) 2  
B:) 4  
C:) 5  
D:) 8  
Correct: B

Q:2) Solve the quadratic equation:   
A:) ±4  
B:) 4  
C:) -4  
D:) 8  
Correct: A

Q:3) If and , find the value of   
A:) 1  
B:) 2  
C:) 3  
D:) 4  
Correct: C

Q:4) Solve for : , when   
A:) Satisfies  
B:) Does not satisfy  
C:) Undefined  
D:) x is negative  
Correct: A

Q:5) Solve for :   
A:) 2  
B:) 3  
C:) 4  
D:) 5  
Correct: C

**Indices and Logarithms**

Q:6) Simplify   
A:) 125  
B:) 625  
C:) 3125  
D:) 100  
Correct: A

Q:7) What is the value of   
A:) 1  
B:) 2  
C:) 3  
D:) 4  
Correct: B

Q:8) If , what is ?  
A:) 3  
B:) 2  
C:) 1  
D:) Cannot be determined  
Correct: A

Q:9) Evaluate   
A:) 2  
B:) 3  
C:) 4  
D:) 5  
Correct: C

Q:10) Simplify:   
A:) 1  
B:) 2  
C:) 3  
D:) 4  
Correct: C

**Arithmetic and Geometric Progressions**

Q:11) Find the 6th term of the AP: 2, 5, 8, ...  
A:) 15  
B:) 16  
C:) 17  
D:) 18  
Correct: D

Q:12) What is the common difference in the AP: 4, 9, 14, 19, …?  
A:) 4  
B:) 5  
C:) 6  
D:) 7  
Correct: B

Q:13) What is the sum of the first 3 terms of GP: 2, 4, 8...?  
A:) 12  
B:) 14  
C:) 16  
D:) 10  
Correct: A

Q:14) Find the 4th term of a GP with ,   
A:) 16  
B:) 18  
C:) 24  
D:) 30  
Correct: C

Q:15) What is the common ratio in the GP: 1, 3, 9, 27...?  
A:) 1  
B:) 2  
C:) 3  
D:) 4  
Correct: C

**Set Theory**

Q:16) If , , find   
A:) {1, 4}  
B:) {2, 3}  
C:) {1, 2, 3, 4}  
D:) {3, 4}  
Correct: B

Q:17) What is the union of and ?  
A:) {a, b}  
B:) {a, b, c}  
C:) {b, c}  
D:) {a, c}  
Correct: B

Q:18) The complement of in universal set is:  
A:) {2, 4}  
B:) {1, 3, 5}  
C:) {1, 2, 3}  
D:) {3, 4, 5}  
Correct: B

Q:19) If and , then is:  
A:) True  
B:) False  
C:) Not comparable  
D:) Equal  
Correct: A

Q:20) If , , , and , find   
A:) 40  
B:) 50  
C:) 60  
D:) 70  
Correct: A

Would you like these exported to a Word document as well?

Here’s a fresh **set of 20 multiple-choice questions** based on your new request, formatted in the required style. The questions are drawn from:

1. **Future Value of a Lump Sum (Semiannual and Quarterly Compounding)**
2. **Number of Years to Achieve a Future Value**
3. **Quantitative Set Theory (Word Problems)**

Each question is designed to be answerable in under 30 seconds.

### 🔢 **1. Future Value – Lump Sum (Semiannual & Quarterly Compounding)**

Q:1) What is the future value of ₦2,000 invested at 8% per annum compounded **semiannually** for 2 years?  
A:) ₦2,320  
B:) ₦2,332.80  
C:) ₦2,160  
D:) ₦2,250  
Correct: B

Q:2) Find the FV of ₦5,000 at 6% annual interest, compounded **quarterly** for 1 year.  
A:) ₦5,306.08  
B:) ₦5,150.00  
C:) ₦5,303.00  
D:) ₦5,500.00  
Correct: A

Q:3) A sum of ₦1,000 is compounded **semiannually** at 10% p.a. for 3 years. What is the FV?  
A:) ₦1,331  
B:) ₦1,344.89  
C:) ₦1,500  
D:) ₦1,620  
Correct: B

Q:4) Find the future value of ₦3,000 invested at 12% annual rate compounded **quarterly** for 2 years.  
A:) ₦3,800.00  
B:) ₦3,797.67  
C:) ₦3,650.00  
D:) ₦3,720.00  
Correct: B

Q:5) Calculate FV of ₦1,500 invested at 16% compounded **quarterly** for 1.5 years.  
A:) ₦1,872.88  
B:) ₦1,850.00  
C:) ₦1,920.00  
D:) ₦1,700.00  
Correct: A

### ⏳ **2. Number of Years to Reach Future Value**

Q:6) How long will it take ₦1,000 to grow to ₦1,610 at 10% annual compound interest?  
A:) 4 years  
B:) 5 years  
C:) 6 years  
D:) 3 years  
Correct: B

Q:7) If ₦2,000 grows to ₦2,684.35 at 8% annual compound interest, how many years did it take?  
A:) 3 years  
B:) 4 years  
C:) 5 years  
D:) 6 years  
Correct: C

Q:8) At 5% annual compound interest, how long does it take for ₦1,500 to become ₦1,732.26?  
A:) 2 years  
B:) 3 years  
C:) 4 years  
D:) 5 years  
Correct: B

Q:9) A principal of ₦4,000 becomes ₦5,324.48 at 10% compounded annually. Find the duration.  
A:) 2 years  
B:) 3 years  
C:) 4 years  
D:) 5 years  
Correct: C

Q:10) How many years will it take ₦5,000 to double at 12% interest compounded annually?  
A:) 5.9 years  
B:) 6 years  
C:) 7 years  
D:) 7.5 years  
Correct: A

### 🧠 **3. Quantitative Set Theory (Word Problems)**

Q:11) In a class of 50 students, 30 take Math, 25 take English, and 10 take both. How many take at least one subject?  
A:) 45  
B:) 40  
C:) 35  
D:) 30  
Correct: A

Q:12) In a survey, 40 like coffee, 30 like tea, and 20 like both. How many like **either** coffee or tea?  
A:) 70  
B:) 50  
C:) 40  
D:) 60  
Correct: B

Q:13) In a group of 100 people, 60 like football, 50 like basketball, and 20 like both. How many like **neither**?  
A:) 10  
B:) 20  
C:) 30  
D:) 40  
Correct: C

Q:14) In a school, 80 students study Physics, 60 study Chemistry, and 40 study both. How many study **only** one subject?  
A:) 60  
B:) 80  
C:) 100  
D:) 120  
Correct: A

Q:15) Out of 120 students, 70 study History, 50 study Geography, and 30 study both. How many study neither?  
A:) 30  
B:) 40  
C:) 50  
D:) 60  
Correct: B

Q:16) A survey shows 100 students, 65 like Biology, 45 like Chemistry, and 25 like both. How many like only Biology?  
A:) 40  
B:) 25  
C:) 50  
D:) 30  
Correct: A

Q:17) Out of 90 students, 55 like Economics, 35 like Accounting, and 20 like both. How many like **only Accounting**?  
A:) 15  
B:) 20  
C:) 30  
D:) 25  
Correct: B

Q:18) In a conference of 200 attendees, 120 attended the morning session, 100 attended the evening session, and 40 attended both. How many attended at least one?  
A:) 180  
B:) 160  
C:) 140  
D:) 200  
Correct: A

Q:19) 80 students enrolled for Mathematics, 70 for Statistics, and 50 for both. How many enrolled for at least one course?  
A:) 100  
B:) 110  
C:) 120  
D:) 130  
Correct: B

Q:20) A survey showed 90 people like bread, 60 like butter, and 30 like both. How many like only butter?  
A:) 30  
B:) 60  
C:) 40  
D:) 20  
Correct: D

Would you like me to combine these 20 questions with the previous set into a downloadable Word document, or save them separately?

Here is a mix of 20 theory-based multiple choice mathematics questions for first-year undergraduates. These are non-calculation conceptual questions drawn from the topics you specified:

Complex Numbers

Q:1) Which of the following is a complex number?

A☺ 3

B☺

C☺

D☺ -4

Correct: B

Q:2) What is the imaginary part of the complex number ?

A☺ 7

B☺ 2

C☺ -2

D☺

Correct: C

Linear, Simultaneous, Quadratic, and Exponential Equations

Q:3) Which of the following represents a linear equation?

A☺

B☺

C☺

D☺

Correct: A

Q:4) A system of two linear equations in two variables can have:

A☺ Exactly one solution

B☺ No solution

C☺ Infinitely many solutions

D☺ All of the above

Correct: D

Q:5) A quadratic equation always has:

A☺ Two complex solutions

B☺ One real solution only

C☺ Two solutions (real or complex)

D☺ No solution

Correct: C

Q:6) Exponential equations have the variable:

A☺ In the denominator

B☺ Under a square root

C☺ As an exponent

D☺ As a constant

Correct: C

Indices and Logarithms

Q:7) Which of the following is a law of indices?

A☺

B☺

C☺

D☺ All of the above

Correct: D

Q:8) The logarithm of a number is the:

A☺ Reciprocal of the number

B☺ Exponent to which a base must be raised to get the number

C☺ Product of the number and its base

D☺ Square of the base

Correct: B

Q:9) What is the base of a common logarithm?

A☺ 2

B☺ 10

C☺ e

D☺ 1

Correct: B

Arithmetic and Geometric Progressions

Q:10) In an arithmetic progression, the difference between any two successive terms is:

A☺ Constant

B☺ Increasing

C☺ Decreasing

D☺ Zero

Correct: A

Q:11) Which of the following is a characteristic of a geometric progression?

A☺ Common ratio

B☺ Common difference

C☺ Constant sum

D☺ Equal terms

Correct: A

Q:12) The nth term of an arithmetic progression is given by:

A☺

B☺

C☺

D☺

Correct: A

Set Theory

Q:13) The symbol in set theory represents:

A☺ Intersection

B☺ Difference

C☺ Union

D☺ Complement

Correct: C

Q:14) A subset is:

A☺ Any set different from the original set

B☺ A set that contains all elements of another set

C☺ A set with unrelated elements

D☺ A set with only one element

Correct: B

Q:15) The universal set contains:

A☺ Only the empty set

B☺ No elements

C☺ All elements under consideration

D☺ Repeating elements

Correct: C

Matrices

Q:16) The determinant of a matrix is used to:

A☺ Find the square root of the matrix

B☺ Determine whether a matrix is invertible

C☺ Count the number of rows

D☺ Add the matrix to a scalar

Correct: B

Q:17) The product of a matrix and its inverse is:

A☺ A zero matrix

B☺ A diagonal matrix

C☺ The identity matrix

D☺ A triangular matrix

Correct: C

Q:18) A matrix with the same number of rows and columns is called:

A☺ Diagonal matrix

B☺ Square matrix

C☺ Scalar matrix

D☺ Row matrix

Correct: B

Annuities

Q:19) An annuity is defined as:

A☺ A loan that is never repaid

B☺ A series of equal payments made at regular intervals

C☺ A one-time investment

D☺ A random stream of cash flows

Correct: B

Q:20) The future value of an ordinary annuity assumes payments are made:

A☺ At the beginning of each period

B☺ At the end of each period

C☺ Once every five years

D☺ At irregular intervals

Correct: B

Let me know if you’d like this exported to a Word document.