

**UNIT 7** *Number System and Bases***CSEC Multiple Choice Questions**

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For each of these questions, choose the option (A, B, C or D) that is TRUE.

1. Which of the following numbers are irrational?

$$0.45, \frac{1}{4}, \sqrt{13}, 0.666\dots, \sqrt[3]{27}, \pi$$

- (A)  $\sqrt{13}$  and  $\pi$   
(B)  $\sqrt{13}$ ,  $0.666\dots$  and  $\pi$   
(C)  $0.666\dots$  and  $\pi$   
(D)  $\sqrt[3]{27}$  and  $\pi$
2. Which of the following numbers is irrational?

- (A)  $1 - \sqrt{4}$   
(B)  $\pi^2$   
(C)  $\frac{3}{7}$   
(D)  $3^0 - 3^{-1} - 3^{-2}$

3.  $(1 + \sqrt{2})(3 - \sqrt{2}) =$

- (A) 1  
(B)  $2\sqrt{2}$   
(C)  $2\sqrt{2} - 1$   
(D)  $1 + 2\sqrt{2}$

4.  $a = 1 + \sqrt{2}$  and  $b = 1 - \sqrt{2}$ . Which one the following numbers is irrational?

- (A)  $a + b$   
(B)  $ab$   
(C)  $(a + b)^2$   
(D)  $a - b$

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5.  $(2 + \sqrt{3})(2 - \sqrt{3}) =$

- (A) 1  
(B)  $4 + 4\sqrt{3}$   
(C)  $4 - 4\sqrt{3}$   
(D) 7

6.  $a = \sqrt{3} + 1, b = \sqrt{3} - 1$

Which of the following numbers are rational?

- (A)  $a + b$   
(B)  $a^2$   
(C)  $b^2$   
(D)  $(a + b)^2$

7. The following number is in base 2.

1 1 1 0 0 1

What is its value in base 10 ?

- (A) 22  
(B) 39  
(C) 57  
(D) 114

8. The number 102 written in binary is

- (A) 0 1 1 0 0 1 1  
(B) 1 1 0 0 1 1  
(C) 1 1 0 1 1 0  
(D) 1 1 0 0 1 1 0

9. In binary arithmetic, calculate

1 1 0 1 0 - 1 1 0 1

- (A) 1 0 1  
(C) 1 0 1 1  
(D) 1 1 0 1  
(D) 1 0 1 0 1

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10. The base 6 number 1 1 2 5 converted to base 10 is

- (A) 253
- (B) 269
- (C) 538
- (D) 1159

11. The number 362 in base 8 is

- (A) 255
- (B) 363
- (C) 472
- (D) 552

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## ***ANSWERS***

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1. A
2. B
3. D
4. D
5. A
6. D
7. C
8. D
9. C
10. B
11. D