Section A: Place the letter which corresponds to the correct answer in the space at the right. (10 Marks)

1. Which number is an irrational number?   1._____

   (A) $\sqrt{10}$ (B) $\dfrac{1}{2}$ (C) 0.825   (D) $0.\overline{3}$

2. What is the index of $5\sqrt{3^7}$?   2._____

   (A) 5   (B) 3   (C) 7   (D) 2

3. What is $(4)^{\frac{5}{3}}$ written as a radical?   3._____

   (A) $\sqrt[5]{3^4}$ (B) $\sqrt[4]{3^5}$ (C) $\sqrt[5]{4^3}$ (D) $\sqrt[3]{4^5}$

4. What is $-\sqrt[7]{5^3}$ written as a power?   4._____

   (A) $\left(-5\right)^{\frac{7}{3}}$ (B) $-5^{\frac{7}{3}}$ (C) $\left(-5\right)^{\frac{3}{7}}$ (D) $-5^{\frac{3}{7}}$

5. What is $2\sqrt[3]{3}$ written as an entire radical?   5._____

   (A) $\sqrt[3]{12}$ (B) $\sqrt[3]{24}$ (C) $\sqrt[3]{54}$ (D) $\sqrt[3]{216}$

6. What is $\sqrt{48}$ written as a mixed radical in simplest form?   6._____

   (A) $2\sqrt{12}$ (B) $4\sqrt{12}$ (C) $4\sqrt{3}$ (D) $16\sqrt{3}$

7. What is the value of $27^{\frac{1}{3}}$?   7._____

   (A) 9   (B) 3   (C) 24   (D) $27\dfrac{1}{3}$

8.   Evaluate: $\sqrt[3]{-\dfrac{64}{125}}$

                                                                                 8._____

   (A) $\dfrac{4}{5}$ (B) $-\dfrac{4}{5}$ (C) $\dfrac{5}{4}$ (D) $-\dfrac{5}{4}$

9. Simplify: $\left(\dfrac{1}{3}\right)^{3.5} \cdot \left(\dfrac{1}{3}\right)^{1.5}$ 9._____

   (A) $\dfrac{1}{3}$ (B) $\left(\dfrac{1}{3}\right)^{2}$ (C) $\left(\dfrac{1}{3}\right)^{4}$ (D) $\left(\dfrac{1}{3}\right)^{5}$

10.   Given the prime factorization of $48 = 2^4$ x 3 and $90 = 2$ x 3^2 x 5,   10._____
      what is the GCF?

   (A) 6   (B) 30   (C) 720   (D) 4320

Section B: Constructed Response (25 Marks)
Answer all of the following questions showing all work.

11. Cody washes his car every 6 days. Derrick washes his car every 15 days. If they both wash their car today, how many days will pass before they wash their car on the same day again? Show your workings. (2 Marks)

12. Arrange the following in order from least to greatest. (2 Marks)

$$4\sqrt{3}, \ 2\sqrt{6}, \ 6, \ 5\sqrt[3]{2}$$

13. Identify each number as either rational or irrational. (3 Marks)

$$\sqrt{48}, \ \sqrt{\frac{4}{169}}, \ 1.5, \ \sqrt[3]{27}, \ \sqrt{0.9}, \ 5\sqrt{4}$$

Rational Number	Irrational Number

13. The volume of a cube is 6859 m^3. What is the surface area of the cube? (3 Marks)

14. What is the side length of a square in mixed radical form, if its area is 150 cm^2?

(2 Marks)

15. Without technology, evaluate $(0.49)^{\frac{3}{2}}$. Show all workings to receive full credit.

(2 Marks)

16. Evaluate the following:

(A) $\left(\dfrac{8}{27}\right)^{\frac{1}{3}}$ (2 marks)

(B) $100^{\frac{1}{2}}$ (1 Mark)

(C) $16^{\frac{5}{4}}$ (2 Marks)

(D) $\left(\dfrac{16}{9}\right)^{\frac{3}{2}}$ (2 Marks)

17. Write the following in simplest mixed radical form.   (4 Marks)

(A) $\sqrt[3]{56}$ (B) $\sqrt{162}$