

Q1 (2, 2)

Converting the following decimals to fractions

- a)  $0.\dot{7}2$
- b)  $1.3\dot{7}\dot{5}$

Q2 (2, 4)

Compute the followings

a)  $1 + \frac{1}{5} + \frac{1}{25} + \frac{1}{125} + \frac{1}{625} + \dots$

b)  $\sqrt{12 + \sqrt{12 + \sqrt{12 + \sqrt{12 + \sqrt{12 + \sqrt{12 + \dots}}}}}}$

Q3 (4, 8)

Simplify the following surds

a)  $\sqrt{4536}$    b)  $\sqrt{25600}$

c)  $\sqrt[3]{10368}$    d)  $\sqrt[5]{\frac{93312}{15625}}$

Q4 Simplify the following (2, 4)

a)  $(\sqrt{45} + \sqrt{72})(\sqrt{24} - \sqrt{15})$   
b)  $(-\sqrt{24} + \sqrt{128})(\sqrt{12} - \sqrt{48})$

Q5 Rationalize the following (2, 6)

a)  $\frac{1}{\sqrt{2} + \sqrt{3}} + \frac{1}{\sqrt{2} - \sqrt{3}}$   
b)  $\frac{1}{2\sqrt{2} - \sqrt{3}} - \frac{4}{2\sqrt{2} + \sqrt{3}}$

Q6 Rationalize the following (2, 4)

a)  $\frac{2}{\sqrt[3]{2} - \sqrt[3]{5}}$   
b)  $\frac{4}{\sqrt[5]{5} + \sqrt[5]{2}}$

Q7 Simplify the following (2, 2)

a)  $\frac{3 - i^{17}}{2 + i^{7777}}$

Q8 Simplify the following (2, 2)

$$\frac{\sqrt[3]{120a^5b^4c^{15}d^4}}{\sqrt[4]{a^7b^6}}$$

Q9 if  $a = \log_2 5$ ,  $b = \log_2 8$  (2, 2)

Represent  $\log_2 3200$  in terms of  $a$  and  $b$ .