Hexadecimal Numbers - Tutorial Sheet

1. Calculate the decimal equivalent of the hexadecimal number $(A2F.D)_{16}$
2. Working in base 2, compute the following binary additions, showing all you workings

$$(1110)_2 + (11011)_2 + (1101)_2$$

3. Working in base 2 perform the following calculation, showing all your working.

$$110101_2 + 10111_2 - 100001_2$$

4. Express the following hexadecimal number as a decimal number: $(A32.C)_{16}$.
5. Convert the following decimal number into base 2, showing all your working: $(253)_{10}$.
6. Express the recurring decimal $0.4242424\ldots$ as a rational number in its simplest form.
7. Express the following hexadecimal number as a decimal number: $(A32.8)_{16}$.
8. Convert the following decimal number into base 2, showing all your working: $(253)_{10}$. [2]
9. Express the recurring decimal $0.4242424\ldots$ as a rational number in its simplest form.
10. Suppose 2341 is a base-5 number Compute the equivalent in each of the following forms:
    (i) decimal number
    (ii) hexadecimal number
    (iii) binary number
11. Answer the following questions about the hexadecimal number systems
    a) How many characters are used in the hexadecimal system?
    b) What is highest hexadecimal number that can be written with two characters?
    c) What is the equivalent number in decimal form?
    d) What is the next highest hexadecimal number?
12. Which of the following are not valid hexadecimal numbers?

    a) 73 b) $A5G$ c) 11011 d) EEF

13. Express the following decimal numbers as a hexadecimal number.

    a) $(73)_{10}$ b) $(15)_{10}$ c) $(22)_{10}$ d) $(121)_{10}$

14. Compute the following hexadecimal calculations.

a) $5D2 + A30$ b) $702 + ABA$ c) $101 + 111$ d) $210 + 2A1$

15. (i) Calculate the decimal equivalent of the hexadecimal number $(A2F.D)_{16}$

    (ii) Working in base 2, compute the following binary additions, showing all you workings

    $$(1110)_2 + (11011)_2 + (1101)_2$$

    (iv) Express the recurring decimal $0.727272\ldots$ as a rational number in its simplest form.

16. Suppose 2341 is a base-5 number Compute the equivalent in each of the following forms:

    (i) decimal number

    (ii) hexadecimal number

    (iii) binary number