Bournemouth University

Exam Name: Zombies in Popular Media and Mathematics

Unit refs: ZPMM

INSTRUCTIONS TO CANDIDATES:

See Front Page Instruction Samples document [here].
This could include information about:

- If question paper needs to be handed in

- Questions to answer

- Allocation of marks

- Where / how to answer questions (e.g. answer books / MCQ answer sheet etc)

- Supplied materials

- Permitted materials / equipment

SECTION A
Answer ALL Questions

1 Zombies in films . . . . (15)

Consider Zombies in films.

1.1 Name some films with Zombies   [5]

> **Solution:**
>
> - Pride and Prejudice... with Zombies!
>
> - Abraham Lincoln... Zombie Hunter!
>
> - etc.

1.2 State the average number of characters eaten by a single Zombie in '"28 Days Later"'. Use the following formula:

$$\bar{x} = \frac{1}{n} \cdot \sum_{i=1}^{n} x_i$$

[10]

> **Solution:** At least 3. Zombies are awesome.

SECTION B
Answer Only ODD numbered questions

2 Zombie Programming . . . . (10)

Consider the following code segment:

```cpp
#include <iostream>
using namespace std;

int main ()
{
  cout << "Hello World!";
  return 0;
}
```

In your own words, explain:

2.1 Was this code produced by a Zombie? If so, why?   [5]

> **Solution:** Clearly, the lameness indicates that it is Zombie generated code (ZGC).

2.2 How would you improve on the above code?   [5]

> **Solution:** Don't use the std namespace! Better to give your fingers exercise and type it every time.

3 Zombie Algorithms ....(15)

3.1 Consider the following algorithm:

Require: $n \geq 0$
Ensure: $y = x^n$
$\quad y \leftarrow 1$
$\quad X \leftarrow x$
$\quad N \leftarrow n$
$\quad$ **while** $N \neq 0$ **do**
$\quad\quad$ **if** N is even **then**
$\quad\quad\quad X \leftarrow X \times X$
$\quad\quad\quad N \leftarrow N/2$
$\quad\quad$ **else** $\{N$ is odd$\}$
$\quad\quad\quad y \leftarrow y \times X$
$\quad\quad\quad N \leftarrow N - 1$
$\quad\quad$ **end if**
$\quad$ **end while**

Describe in your own words the thought processes required for a Zombie to generate this algorithm. How can the promise of fresh brains serve as a motivators? [10]

> **Solution:** Blah blah blah.

3.2 Admire our institution's mighty logo:

Draw this in a manner similar to a Zombie. Coloured pens are provided. [5]

> **Solution:** Blah blah blah.

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