**Phys11 Nuclear Physics, Investigation 2 : Nuclear Reactors and Applications: Validation Test**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Mark: Test \_\_\_\_\_\_\_/22\_\_Notes \_\_\_/7 Total \_\_\_\_\_\_/29

Notes: Q1\_\_/2;Q2\_\_\_/3; Q 3\_\_\_/1; Q4 \_\_\_/1; Q5 \_\_\_/2

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| **1** | In a nuclear reaction, neutrons are produced. Which statements are correct in a nuclear reactor.  (i)The moderator reduces the number of neutrons.  (ii) The control rods act as a neutron poison.  (iii) Uranium 238 produces neutrons in the fission reaction.  (iv) Deuterium reduces the speed of the neutrons.   1. (ii) and (iii) 2. (i), (ii) and (iv) 3. (ii) and (iii) 4. (i) and (iv) | (2) |
| **2** | a) Write a reaction for nuclear fission?  b) Explain the difference between a controlled nuclear reaction and an uncontrolled nuclear reaction.  c) State and describe two features of a nuclear reactor that enable a controlled nuclear reaction to continue and be controlled? | (1)  (2)  (2)  (2) |
| **3.** | (a)  (i)What high level nuclear waste products are produced in a nuclear facility?  (ii) How are they stored? | (1)  (2) |
| 4 | 1. List two effects of radiation on humans? 2. List two ways to make it safer for humans working in the nuclear industry. | (2)  (2) |
| 5 | (a) In the following table list advantages and disadvantages of nuclear power   |  |  | | --- | --- | | Advantages | Disadvantages | |  |  |  1. Write a short paragraph explaining your view on nuclear power and whether it is a viable long term solution to global warming.   *Be concise and use scientific reasons to support your statement,*  *You should state your view and then give 3 supporting reasons.* | (3)  (3) |