科目： 192001
知能類：K1.02 [2.4/2.5]
序號： P545 (B1845)

Delayed neutrons are neutrons that...

A. have reached thermal equilibrium with the surrounding medium.

B. are born as thermal neutrons.

C. are born at a lower average kinetic energy than most other fission neutrons.

D. are responsible for the majority of U-235 fissions.

ANSWER: C.

遲延中子是……

A. 與周圍介質達到熱平衡的中子。

B. 生成時為熱中子。

C. 生成時的平均動能低於其他大部分分裂中子的中子。

D. 造成大部分U-235分裂的中子。

答案：C.

科目： 192001
知能類：K1.02 [2.4/2.5]
序號： P845 (B1945)

Delayed neutrons are the neutrons that...

A. have reached thermal equilibrium with the surrounding medium.

B. are born within 10^{-14} seconds of the fission event.

C. are produced from the radioactive decay of certain fission fragments.

D. are responsible for the majority of U-235 fissions.

ANSWER: C.

遲延中子是……

A. 與周圍介質達到熱平衡的中子。

B. 在分裂發生後10^{-14}秒內生成的中子。

C. 由特定分裂產物的輻射衰變產生的中子。

D. 造成大部分U-235分裂的中子。

答案：C.

科目： 192001
知能類：K1.02 [2.4/2.5]
序號： P1145 (B1545)

Which one of the following is a characteristic of a prompt neutron?

A. Born with an average kinetic energy of 0.5 MeV.

B. Usually emitted by the excited nucleus of a fission product.

C. Accounts for more than 99% of fission neutrons.

D. Released an average of 13 seconds after the fission event.

ANSWER: C.

下列何者為瞬發中子的特性？

A. 生成時具有平均動能0.5 MeV。

B. 通常由分裂產物的受激核子發射出來。

C. 佔有超過99%的分裂中子。

D. 在分裂發生平均13秒後釋出。

答案：C.

科目： 192001
知能類：K1.02 [2.4/2.5]
序號： P1245 (B2845)

In a comparison between a delayed neutron and a prompt neutron born from the same fission event, the delayed neutron is more likely to... (Assume that each neutron remains in the reactor core.)

A. cause fission of a U-238 nucleus.

B. cause fission of a U-235 nucleus.

C. travel to an adjacent fuel assembly.

D. experience resonance absorption in the core.

ANSWER: B.

比較同一分裂生成的遲延中子和瞬發中子時，遲延中子較可能.....(假設兩個中子都停留在反應器爐心。)

A. 引起U-238分裂。

B. 引起U-235分裂。

C. 進入鄰近的燃料元件。

D. 在爐心經歷共振吸收。

答案：B.

科目： 192001
知能類：K1.02 [2.4/2.5]
序號： P1445 (B1345)

A neutron that is born 1.0 x 10^{-2} seconds after the associated fission event is a _____ neutron.

A. thermal

B. delayed

C. prompt

D. capture

ANSWER: B.

分裂發生後1.0 x 10^{-2}秒生成的中子，稱做_____中子。

A. 熱

B. 遲延

C. 瞬發

D. 捕獲

答案：B.

科目： 192001
知能類：K1.02 [2.4/2.5]
序號： P1545 (B1345)

A neutron that is born 1.0 x 10^{-6} seconds after the associated fission event is a _____ neutron.

A. thermal

B. delayed

C. prompt

D. capture

ANSWER: B.

在分裂發生後1.0 x 10^{-6}秒生成的中子，稱做_____中子。

A. 熱

B. 遲延

C. 瞬發

D. 捕獲

答案：B.

科目： 192001
知能類：K1.02 [2.4/2.5]
序號： P1945 (B1146)

Which one of the following types of neutrons has an average neutron generation lifetime of 12.5 seconds?

A. Prompt

B. Delayed

C. Fast

D. Thermal

ANSWER: B.

下列何種中子的平均中子生成期為12.5秒？

A. 瞬發中子

B. 遲延中子

C. 快中子

D. 熱中子

答案：B.

科目： 192001
知能類：K1.02 [2.4/2.5]
序號： P2045 (B2046)

In a comparison between a delayed neutron and a prompt neutron born from the same fission event, the prompt neutron is more likely to...

A. require a greater number of collisions to become a thermal neutron.

B. be captured by U-238 at a resonance energy peak between 1 eV and 1000 eV.

C. be born with a lower kinetic energy.

D. cause thermal fission of a U-235 nucleus.

ANSWER: A.

比較同一分裂生成的遲延中子和瞬發中子，瞬發中子較可能……

A. 需要較多次的碰撞，才能變成熱中子。

B. 在1 eV 到 1000 eV的共振能峰之間，較可能被U-238捕獲。

C. 出生時的動能較低。

D. 較可能導致U-235核子熱分裂。

答案：A.

科目： 192001
知能類：K1.02 [2.4/2.5]
序號： P2145 (B2145)

In a comparison between a delayed neutron and a prompt neutron born from the same fission event, the prompt neutron is more likely to...

A. cause fast fission of a U-238 nucleus.

B. be captured by a U-238 nucleus at a resonance energy between 1 eV and 1000 eV.

C. be captured by a Xe-135 nucleus.

D. cause thermal fission of a U-235 nucleus.

ANSWER: A.

比較同一分裂生成的遲延中子和瞬發中子，瞬發中子較可能……

A. 引起U-238核子快分裂。

B. 在1 eV 到 1000 eV的共振能量之間，被U-238核子捕獲。

C. 被Xe-135核子捕獲。

D. 導致U-235核子熱分裂。

答案：A.

科目： 192001
知能類：K1.02 [2.4/2.5]
序號： P2345 (B2345)

A neutron that is released 1.0 x 10^{-10} seconds after the associated fission event is classified as a _____ fission neutron.

A. delayed

B. prompt

C. thermal

D. spontaneous

ANSWER: A.

在分裂後1.0 x 10^{-10}秒釋出的中子，歸類為_____分裂中子。

A. 遲延

B. 瞬發

C. 熱

D. 自發

答案：A.

科目： 192001
知能類：K1.02 [2.4/2.5]
序號： P2445 (B3345)

As compared to a prompt neutron, a delayed neutron, born from the same fission event, requires _____ collisions in the moderator to become thermal and is _____ likely to cause fission of a U-238 nucleus. (Neglect the effects of neutron leakage.)

A. more; more

B. more; less

C. fewer; more

D. fewer; less

ANSWER: D.

相較於瞬發中子，在同一分裂生成的遲延中子，在緩和劑中需要較_____的碰撞來變成熱中子，同時較_____引起U-238核子分裂(忽略中子洩漏效應)。

A. 多；可能

B. 多；不可能

C. 少；可能

D. 少；不可能

答案：D.

科目： 192001
知能類：K1.02 [2.4/2.5]
序號： P2545 (B2545)

In a comparison between a delayed neutron and a prompt neutron born from the same fission event, the prompt neutron is more likely to...

A. leak out of the core while slowing down.

B. be captured by a U-238 nucleus at a resonance energy.

C. be captured by a Xe-135 nucleus.

D. cause thermal fission of a U-235 nucleus.

ANSWER: A.

比較同一分裂生成的遲延中子和瞬發中子，瞬發中子較可能……

A. 在減能時從爐心外洩。

B. 以共振能量被U-238核子捕獲。

C. 被Xe-135核子捕獲。

D. 導致U-235核子熱分裂。

答案：A.

科目： 192001
知能類：K1.02 [2.4/2.5]
序號： P2645 (B2645)

In a comparison between a delayed neutron and a prompt neutron born from the same fission event, the delayed neutron is more likely to...

A. leak out of the core.

B. cause fission of a U-238 nucleus.

C. become a thermal neutron.

D. cause fission of a Pu-240 nucleus.

ANSWER: C.

比較同一分裂生成的遲延中子和瞬發中子，遲延中子較可能……

A. 從爐心外洩。

B. 引起U-238核子分裂。

C. 變成熱中子。

D. 引起Pu-240核子分裂。

答案：C.

科目： 192001
知能類：K1.02 [2.4/2.5]
序號： P2845 (B3145)

During a brief time interval in a typical commercial nuclear reactor operating at the beginning of a fuel cycle, 1.0×10^3 delayed neutrons were emitted.

Approximately how many prompt neutrons were emitted during this same time interval?

A. 1.5×10^5

B. 6.5×10^6

C. 1.5×10^7

D. 6.5×10^8

ANSWER: A.

一部典型商用核子反應器於燃料週期初期運轉，並在短時間內發射出1.0×10^3個遲延中子。

同一時間內，約有多少瞬發中子射出？

A. 1.5×10^5

B. 6.5×10^6

C. 1.5×10^7

D. 6.5×10^8

答案：A.

科目： 192001
知能類：K1.02 [2.4/2.5]
序號： P2945 (B2945)

Which one of the following types of neutrons in a nuclear reactor is more likely to cause fission of a U-238 nucleus in the reactor fuel? (Assume that each type of neutron remains in the reactor core until it interacts with a U-238 nucleus.)

A. Thermal neutron

B. Prompt fission neutron beginning to slow down

C. Delayed fission neutron beginning to slow down

D. Neutron at a U-238 resonance energy

ANSWER: B.

在核子反應器內，下列那種中子較可能在反應器燃料中，引起U-238核子分裂？(假設每種中子都停留在爐心，直到與U-238核子發生作用。)

A. 熱中子。

B. 開始減能的瞬發分裂中子。

C. 開始減能的遲延分裂中子。

D. 具有U-238共振能量的中子

答案：B.

科目： 192001
知能類：K1.02 [2.4/2.5]
序號： P3545 (B3545)

During a brief time interval in a typical commercial nuclear reactor operating at the beginning of a fuel cycle, 1.0×10^5 delayed neutrons were emitted.

Approximately how many prompt neutrons were emitted in the reactor during this same time interval?

A. 1.5×10^5

B. 6.5×10^6

C. 1.5×10^7

D. 6.5×10^8

ANSWER: C.

一部典型商用核子反應器於燃料週期初期運轉，並在短時間內發射出1.0×10^5個遲延中子。

同一時間內，約有多少瞬發中子射出？

A. 1.5×10^5

B. 6.5×10^6

C. 1.5×10^7

D. 6.5×10^8

答案：C.

科目： 192001
知能類：K1.02 [2.4/2.5]
序號： P4123 (B4123)

A neutron that appears 1.0 x 10^{-16} seconds after the associated fission event is classified as a _____ fission neutron.

A. delayed

B. prompt

C. thermal

D. spontaneous

ANSWER: B.

分裂後1.0 x 10^{-16}秒釋出的中子，歸類為_____分裂中子。

A. 遲延

B. 瞬發

C. 熱

D. 自發

答案：B.

科目/題號：192001/1 (2016新增)
知能類：K1.02 [2.4/2.5]
序號：P4923 (B4923)

During a brief time interval in a typical reactor operating steady-state near the beginning of a fuel cycle, 4.25×10^5 delayed neutrons were produced. Approximately how many prompt neutrons were produced in the reactor during this same time interval?
A. 1.5×10^6
B. 6.5×10^6
C. 1.5×10^7
D. 6.5×10^7
ANSWER: D.

當一典型反應器穩定運轉於接近燃料週期初期的某一短暫期間產生 4.25×10^5 遲延中子。在此相同期間內大約有多少瞬發中子產生？
A. 1.5×10^6
B. 6.5×10^6
C. 1.5×10^7
D. 6.5×10^7

答案： D

科目/題號：192001/2 (2016新增)
知能類：K1.02 [2.4/2.5]
序號：P5023 (B2245)

In a comparison between a delayed neutron and a prompt neutron produced from the same fission event, the delayed neutron is more likely to... (Assume that each neutron remains in the core unless otherwise stated.)
A. cause fission of a U-238 nucleus.
B. travel to an adjacent fuel assembly.
C. be absorbed in a B-10 nucleus.
D. leak out of the core.
ANSWER: C.

比較同一分裂中生成的遲延中子和瞬發中子，遲延中子比較可能____。(假設兩個中子都停留在爐心，除非特別聲明。)
A.會引起 U-238 分裂
B.遷移至鄰近的燃料元件
C.被B-10吸收
D.會從爐心外洩

答案： C

科目/題號：192001/3 (2016新增)
知能類：K1.02 [2.4/2.5]
序號：P7123 (B7123)

Which one of the following is the process that produces the majority of delayed neutrons in an operating nuclear plant reactor?

A. A thermal neutron is absorbed by a fuel nucleus. After a period of time, the nucleus fissions and releases a delayed neutron.
B. A thermal neutron is absorbed by a fuel nucleus. The fuel nucleus fissions. During the decay process of the fission products, a delayed neutron is emitted.
C. A fast neutron is absorbed by a fuel nucleus. After a period of time, the nucleus fissions and releases a delayed neutron.
D. A fast neutron is absorbed by a fuel nucleus. The fuel nucleus fissions. During the decay process of the fission products, a delayed neutron is emitted.

ANSWER: B.

下列何者是一運轉中核能電廠反應器產生主要遲延中子的過程？

A.一個熱中子被燃料原子核吸收。經過一段期間，原子核分裂並釋出一個遲延中子
B.一個熱中子被燃料原子核吸收。燃料原子核分裂。在分裂產物衰變的過程中，一個遲延中子被放射出來
C.一個熱中子被燃料原子核吸收。經過一段期間，原子核分裂並釋出一個遲延中子
D.一個快中子被燃料原子核吸收。燃料原子核分裂。在分裂產物衰變的過程中，一個遲延中子被放射出來

答案： B

科目/題號：192001/4 (2016新增)
知能類：K1.02 [2.4/2.5]
序號：P7523 (B7523)

During a brief time interval in a typical reactor operating steady-state near the beginning of a fuel cycle, 4.25×10^{10} prompt neutrons were produced. Approximately how many delayed neutrons were produced in the reactor during this same time interval?
A. 2.8×10^{8}
B. 6.5×10^{8}
C. 2.8×10^{9}
D. 6.5×10^{9}
ANSWER: A.

當一典型反應器穩定運轉於接近燃料週期初期的某一短暫期間產生 4.25×10^{10} 瞬發中子。在此相同期間內大約有多少遲延中子產生？
A. 2.8×10^{8}
B. 6.5×10^{8}
C. 2.8×10^{9}
D. 6.5×10^{9}

答案： A