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**Question Paper Code : 42829**

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

Seventh Semester

Mechanical Engineering

ME 2034 – NUCLEAR ENGINEERING

(Common to Mechanical and Automation Engineering)

(Regulations 2008)

(Also common to PTME 2034 – Nuclear Engineering for B.E. (Part-Time) Seventh Semester – Mechanical Engineering – Regulations 2009)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A

(10×2=20 Marks)

1. What is amu ? What is its importance in nuclear physics ?
2. What is called plum pudding ?
3. What is neutron evaporation ?
4. State the role of fuel fabrication in nuclear fuel cycle.
5. Define reprocessing as applied to nuclear fuel.
6. Define closed nuclear fuel cycle.
7. What do you understand by moderation ?
8. Define the term "Breeding".
9. State the major reasons for nuclear accidents that classified under moderate frequency.
10. State the major problem encountered in nuclear power generation.

PART – B

(5×16=80 Marks)

11. a) Discuss in detail about Binding energy and semi-empirical mass formula with illustration. (16)
- (OR)
- b) Describe the Radio activity. Process with a schematic. (16)

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12. a) Explain in detail about Nuclear Fission and Fusion with examples. (16)  
(OR)  
b) Describe the method of production of enriched Uranium. (16)
13. a) Discuss about the Nuclear reprocessing of used nuclear fuel. (16)  
(OR)  
b) Explain in detail Liquid, Liquid-Extraction Equipment with sketches. (16)
14. a) Describe the design objects and main objects of Prototype Fast Breeder Reactor. (16)  
(OR)  
b) Explain in detail advanced heat transfer issues for gas cooled and liquid-metal-cooled reactors (16)
15. a) Discuss about the safety mechanisms of a Nuclear Power Reactor. (16)  
(OR)  
b) Discuss in detail about the Nuclear Weapons Proliferation. (16)