No. of Printed Pages : 2

BIMEE-017

B.Tech. – VIEP – MECHANICAL ENGINEERING (BTMEVI)

Term-End Examination

00706

June, 2016

BIMEE-017 : NUCLEAR POWER ENGINEERING

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. All questions carry equal marks. Use of scientific calculator is permitted.*

1. (a) What is meant by nuclear fission ? Discuss the conditions necessary for nuclear fission. 7

(b) Explain the nuclear reaction with a neat sketch. 7

2. (a) What do you understand by natural radioactivity ? Describe the various types of radioactive emissions. 7

(b) Briefly explain CANDU type reactor with its merits and demerits. 7

3. (a) What are the desirable properties of a good moderator ? Explain. 7

(b) Why is cladding necessary ? What are the requirements for a good cladding material ? 7

4. (a) Explain clearly the difference between 'fast neutrons' and 'thermal neutrons'. Explain clearly why thermal neutrons can cause fission of $_{92}U^{235}$ but not of $_{92}U^{238}$. 7

(b) What do you understand by breeding ? Discuss the factors responsible for controlling the breeding. 7

5. (a) What factors are considered in selecting an economical site for a nuclear power plant ? 7

(b) Why is shielding of a reactor necessary ? What do you understand by thermal shielding ? 7

6. (a) What are the different types of nuclear wastes ? Which are more dangerous and why ? 7

(b) Explain the working of electrostatic precipitator with a neat sketch. 7

7. Write short notes on the following : $4 \times 3\frac{1}{2} = 14$

(a) Radioactive Decay

(b) Electromagnetic Pumps

(c) Liquid Metal Techniques

(d) Effect of Delayed Neutrons