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**6th Sem / ELECTRICAL**

**Subject : HVDC and Flexible AC Transmission Systems**

Time : 3 Hrs.

M.M. : 60

**SECTION-A**

**Note:** Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 The main advantage of HVDC transmission over AC transmission is : (CO1)

- a) Lower cost of transformers
- b) Reduced transmission losses
- c) Higher insulation requirements
- d) Increased line reactance

Q.2 In HVDC transmission, power is transmitted using : (CO1)

- a) Three-phase AC      b) Single-phase AC
- c) Direct Current (DC)      d) Pulsating DC

(1)

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Q.3 HVDC transmission is preferred for : (CO2)

- a) Short-distance power transfer
- b) High-voltage, long-distance transmission
- c) Low-voltage applications
- d) Local distribution networks

Q.4 Which of the following is a major component of an HVDC System ? (CO2)

- a) Rectifier                      b) Inductor
- c) Transformer                d) Circuit breaker

Q.5 FACTS devices are used to : (CO4)

- a) Improve power quality
- b) Enhance power transmission capability
- c) Reduce losses in AC transmission
- d) All of the above

Q.6 FACTS devices are classified into : (CO3)

- a) Series compensation
- b) Shunt compensation
- c) Combined series-shunt compensation
- d) All of the above

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### SECTION-B

**Note:** Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 In an HVDC system, the conversion of AC to DC is done by a \_\_\_\_\_. (CO1)
- Q.8 A key component in an HVDC system that smooths out DC voltage variations is called a \_\_\_\_\_. (CO1)
- Q.9 FACTS technology is mainly implemented using \_\_\_\_\_ devices for fast switching and control. (CO3)
- Q.10 HVDC eliminates reactive power loss issues that occur in AC transmission systems. T/F (CO4)
- Q.11 HVDC systems can provide better stability to the power grid than AC transmission. T/F (CO2)
- Q.12 Expand FACTS. (CO4)

### SECTION-C

**Note:** Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Compare AC and DC Transmission Systems. (CO1)
- Q.14 What are the applications of DC transmission System. (CO1)

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- Q.15 Explain the advantages and disadvantages of HVDC Transmission systems. (CO2)
- Q.16 Explain the types of dc link. (CO2)
- Q.17 Describe the working of an HVDC system with a block diagram. (CO2)
- Q.18 What are the objection of FACTS. (CO3)
- Q.19 Explain the Concept of FACTS. (CO3)
- Q.20 What is the need of Compensation? (CO4)
- Q.21 Discuss the classification FACTS Controllers (CO4).
- Q.22 Explain the principle of operation of unified power flow Controller (CO4)

### SECTION-D

**Note:** Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Explain the equipments of HVDC Transmission Systems in details. (CO1)
- Q.24 Define the FACTS. Explain its importance in modern Power systems (CO3)
- Q.25 Explain the Shunt and Series Compensation with diagrams (CO4)

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