Printed Pages : 3

EEE063

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 120854

Roll No.

B. Tech.

(SEM. VIII) THEORY EXAMINATION, 2014-15

POWER CONVERTERS APPLICATIONS

Time : **3** Hours] [Total Marks : **100**

Note : Attempt all questions.

1 Attempt any two parts of the following : **10×2=20**

(a) What is meant by 'Induction Heating' ? Discuss the current source, parallel resonant inverter configuration for this purpose.

(b) Explain the working of switch-mode welder with high frequency transformer. Also discuss the limitations.

(c) Compare AC and DC transmissions in terms of economics of transmission, technical performance and reliability.

2 Attempt any two parts of the following : **10×2=20**

(a) Explain the operations of 12-pulse converter unit, transformer unit, filters and smoothing reactor units of a HVDC converter station in detail.

(b) With the help of equivalent circuit, explain how the magnitude of the current harmonics on the DC transmission line could be minimized ?

(c) Explain thyristor switched capacitor and thyristor controlled inductor schemes for reactive power compensation. Explain why a series inductor is required in thyristor switched capacitor.

3 Attempt any two parts of the following : **10×2=20**

(a) Explain the operation of a unified power flow controller (UPFC) with the help of neat schematic diagram.

(b) Discuss the static excitation control of synchronous generators. How it differs from rotary excitation ?

(c) Explain the operation of a full-bridge SMPS. What are its advantages and disadvantages ?

4 Attempt any two parts of the following : **10×2=20**

(a) Discuss the small hydro and wind generator interconnection schemes with the help of neat circuit diagrams.

(b) What are various sources of power line disturbances ? Explain different configurations of static UPS system.

(c) Describe a typical aircraft power system with the help of neat illustrations.

5 Write short notes on any two of the following : **10×2=20**

(a) Power factor correction capacitors.

(b) HVDC links

(c) Electronic ballast.