GANPAT UNIVERSITY
B.TECH SEM-VIII (ELECTRICAL ENGINEEARING)
REGULAR EXAMINATION APRIL-JUNE 2016
2EE 833:- EHVAC & HVDC Transmission

Time: 3 Hours   Total Marks:-70

Instructions: - 1. All questions are compulsory.
2. Answers of each section must be written in separate answer book.
3. Figures to the right indicate full marks.
4. Assume suitable data wherever necessary.

SECTION-I

Q:1 (A) Explain configuration of EHVAC transmission line with neat diagram. (06)

(B) Why transmission of electrical power at extra-high voltage is preferred? Explain in detail. (06)

OR

Q:1 (A) Discuss the technical considerations in design of EHVAC lines in detail. (06)

(B) How can we decide the power handling capacity of a transmission line and what are the (06)
trends relating to power handling capacity of ac transmission line and line losses? Give the
average values of line parameters.

Q:2 (A) What do you mean by bundled conductor? Explain the necessity of bundled conductor in (05)
EHVAC transmission system with different configurations.

(B) What is heat balance? Explain temperature rise of conductor in detail. (06)

OR

Q:2 (A) For EHVAC transmission system, explain the resistance of the conductor and factors (05)
affecting it.

(B) The configuration of some EHV lines for 400 kV to 1200 kV are given. Calculate GMR (06)
for each bundle conductor

a)	400 kV :	N=2	d=3.18 cm	B=45 cm
b)	750 kV :	N=4	d=3.46 cm	B=45 cm
c)	1000 kV :	N= 6	d=4.6 cm	B=12 d
d)	1200 kV :	N= 8	d=4.6 cm	R=0.6 m

Q:3 (A) Discuss role of critical disruptive voltage and visual disruptive voltage in corona (06)
consideration.

(B) Discuss the following types of bundle conductors (06)
A) ACSR   B)AAAC   C)ACAR

SECTION-II

Q:4 **(A)** Discuss important point of advatages of EHVAC transmission over the HVDC power transmission. **(06)**

(B) A 3-phase, 230 kV, 50 Hz transmission line consists of 1.6 cm radius conductor spaced 2 meters apart in equilateral triangular formation. If the temperature is 45°C and atmospheric pressure is 76 cm, calculate the corona loss per km of the line. Take m_o=0.80. **(06)**

OR

Q:4 **(A)** Write a short note on various devices used for Reactive power insertion to the HVDC System. **(06)**

(B) A certain 3-phase equilateral transmission line has a total corona loss of 53 kW at 106 kV and a loss of 98 kW at 110.9 kV. What is the disruptive critical voltage? What is the corona loss at 113 kV? **(06)**

Q:5 **(A)** Discuss working of converter station including important components. **(05)**

(B) The spacing between two circuits of a 3-phase, vertically configured double circuit overhead line is 6m and distance between adjacent phase conductors in individual circuit is 3m. The phase sequence is ABC and the line is completely transposed. The conductor radius in 1.3cm. Find the inductance per phase per kilometer. **(06)**

OR

Q:5 **(A)** Explain measuring devices of audible noise also derive equation of selection of frequency in octave band as well as third octave band. **(05)**

(B) Enlist the applications of HVDC power transmission system. **(03)**

(C) Discuss the effect of ground on capacitance of line. **(03)**

Q:6 **(A)** Describe in brief operating problem of HVDC transmission system? **(06)**

(B) The AN level of one phase of a three phase transmission line at a point is 50 dB. Calculate (a) the SPL in pascals. (b) if a second source of noise contributes 48dB at the same location, calculate the combined AN level due to the two sources **(03)**

(C) Discuss the equidistant phase control of firing of valve. **(03)**

END OF PAPER
Best of Luck