Hall Ticket Number :										

R-11 / R-13

Code: 1G252

III B.Tech. I Semester Supplementary Examinations May 2019

Transmission of Electric Power

(Electrical and Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any **five** questions

All Questions carry equal marks (**14 Marks** each)

****

1. Derive the mathematical Expression of Inductance per phase of 3-phase double circuit unsymmetrical line which is transposed by using GMD-GMR method

2. Discuss in detail about the following
   a) Skin Effect
   b) Proximity Effect
   c) Charging Current

3. a) Derive the approximate voltage regulation expression for short transmission line and also derive the condition for Zero regulation.
   b) Evaluate ABCD constants for Short Transmission line

4. Determine the relation between sending end parameters and receiving end parameters of a long transmission line using rigorous solution.

5. a) Give a mathematical analysis to show the velocity of propagation of wave depends on the inductance and capacitance of the line
   b) Derive the transmission and reflection coefficients for voltage and currents of a line of impedance 'Z' is terminated by a resistor of value 'R'.

6. Explain the different types of supporting structures with neat diagrams and also give their applications.

7. Determine the sag at 32.2 ^{0}C of a copper conductor erected on 45.7m span length. The wind pressure is 48.82kg/sq.metre of projected area at a temperature of 4.5^{0}C, weight of wire is 0.1156kg/metre. The working stress shall not exceed ½ the ultimate tensile strength.
   Modulus of Elasticity =1.26 x 10^4kg/mm^2
   Coefficient of linear expansion = 16.6 X 10^{-6}/^{0}C
   Ultimate stress =42kg/mm^2
   Diameter of Conductor =4.1mm

8. Give an elaborate discussion on types of insulating materials used for UGC and different varieties of Underground Cables.

***

Hall Ticket Number :										

R-11 / R-13

Code: 1G254

III B.Tech. I Semester Supplementary Examinations May 2019

Electrical and Electronics Measurements

(Electrical and Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any **five** questions

All Questions carry equal marks (**14 Marks** each)

****

1. Describe the construction and working of PMMC Instrument along with a neat sketch. Also derive the expression for torque and list out the advantages and disadvantages.

2. a) Give the classification of moving iron type frequency meter and explain any one in detail
   b) Explain the design considerations of current transformer

3. a) Explain about the construction and functioning of a single phase energy meter along with a neat labeled diagram. Also derive the expression for driving and braking torques.
   b) The meter constant of a 230V, 10A watt hour meter is 1800 revolutions per KWh. The meter is tested at half load rated voltage and unity power factor. The meter is found to make 80 revolutions in 138 sec then determine the error at half load

4. a) Explain the process of measuring unknown emf using DC Cromptons Potentiometer with the help of a neat labeled diagram
   b) Define the term standardization

5. a) Describe how an unknown capacitance can be measured using Schering bridge along with the phasor diagram
   b) Describe how an unknown inductance can be measured using Hays bridge along with the phasor diagram

6. Explain the theory of ballistic galvanometer and derive the equation of motion

7. Explain the functioning of Cathode Ray Tube with the help of a suitable diagram

8. a) Draw and explain the circuit of Digital Frequency meter
   b) Explain the working of Digital tachometer with the neat diagram

***

Hall Ticket Number :										

R-11 / R-13

Code: 1G253

III B.Tech. I Semester Supplementary Examinations May 2019

Power Electronics

(Electrical and Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any **five** questions

All Questions carry equal marks (**14 Marks** each)

****

1. a) Describe the constructional details of an SCR with the help of schematic diagram and the circuit symbol.
   b) Explain the different modes of operation of a thyristor with the help of its static characteristics.

2. a) Explain the two transistor analogy of an SCR
   b) Describe when the SCRs need to operate in series and parallel operation.

3. a) Develop the detailed circuit diagram showing all protection equipment used for SCR.
   b) What are dv/dt and di/dt rating of SCRs? What happens if these ratings are exceeded? Explain?

4. a) Show that the effect of source inductance on the performance of single phase fully converter is present an equivalent resistance of $\omega L_s/\pi$ ohms in series with the internal rectifier voltage.
   b) A single phase fully controlled bridge converter is supplied at 230V, 50Hz with source inductance of 3mH. Neglect resistance voltage drop, when the converter is operating at firing angle of 45^o and the load current is constant at 15A. Determine the load voltage.

5. Derive the average output voltage, load current expressions for six pulse converter.

6. a) Derive the expression for output current in terms of source voltage, load impedance and firing angle for a 1-Φ full-wave ac voltage regulator with RL load.
   b) List out the advantages and disadvantages of 1-Φ half-wave (unidirectional) ac voltage regulator.

7. a) Explain the steady state time-domain analysis of type-A chopper.
   b) A step-up chopper is used to deliver load voltage of 500V from a 220V d.c. source. If the blocking period of the thyristor is 80μs. Find the required pulse width.

8. a) With the help of neat diagram and associated wave forms, describe the operation of 1-Φ half bridge voltage source inverter with: (i) Resistive load (ii) Inductive load.
   b) Explain the operation of Series inverter?

***