Registration No : | | | | | | | | | | |

Total Number of Pages : 02 **M.Tech**
P2PECC10

2nd Semester Regular Examination 2018-19
POWER SYSTEM CONTROL & INSTRUMENTATION
BRANCH : POWER ELECTRO & DRIVES
Max Marks : 100
Time : 3 Hours
Q.CODE : F448

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.
The figures in the right hand margin indicate marks.

Part- I

Q1 **Only Short Answer Type Questions (Answer All-10)** **(2 x 10)**

a) Name The Different Methods Of Voltage Control And State The Importance Of Voltage Control?
b) State The Difference Between PF &QV Control Loop?
c) What Is Unit Commitment And List The Constraints In Unit Commitment Problem?
d) What Is The Need For Voltage Regulation In Power System?
e) Describe Energy Management Systems (Ems)?
f) Benefits Of Power System Automation?
g) What Are The Usual Tasks Assigned To Rtus In SCADA System?
h) Draw The Tie Line Loading Frequency Characteristics?
i) What Is The Effect Of Speed Changer On Speed Governor System?
j) Write The Operating States Of Power System?

Part- II

Q2 **Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve)** **(6 x 8)**

a) Explain The Real Time Control Of Power System.
b) Explain The Static Shunt Capacitor Method Of Voltage Control. State It Advantages And Disadvantages.
c) Explain The Operation Of On-Load Tap Changing Transformer For Reactive Power Control; Also Discuss Its Merits And Demerits.
d) What Are The Reasons For Limits On Frequency?
e) What Are The Constraints In Economic Load Dispatch, Explain Briefly?
f) What Do You Understand By Discrete Mode AGC?
g) What Are The Advantages And Disadvantages Of Interconnected Power System?
h) Explain Power System Security Analysis?
i) What Are The Operating States Of Power System?
j) With A Neat Sketch Describe The Operation Of SCADA Systems.
k) What Are The Preventive Control Strategies We Can Adopt ?
l) Discuss The Generation And Absorption Of Reactive Power?

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

Q3 With A Neat Sketch Describe The Significance Of P-F And Q-V Control Structure In Power System **(16)**

Q4 The Fuel Input To Two Plants Are Given By **(16)**

$$F_1 = 0.015P_1^2 + 16P_1 + 50$$

$$P_2 = 0.025P_2^2 + 12P_2 + 30$$

The Loss Coefficients Of The System Are Given By $B_{11} = 0.005, B_{12} = -0.0012$ And $B_{22} = 0.002$.The Load To Be Met Is 200MW, Determine The Economic Operating Schedule And The Corresponding Cost Of Generation If (I)The Transmission Line Losses Are Coordinated .

Q5 Draw And Explain The Schematic Diagram And Coordination Between Load Frequency Controller And Q-V Regulators? **(16)**

Q6 Write Short Notes On : **(16)**

a) Usage Of SCADA

b) Real-Time Monitoring And Control Using SCADA

c) SCADA Functions Like Data Acquisition, Networked Data Communication and Data Presentation In HMI.