Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(EE/Electrical & Electronics) (2011 Onwards E-I)
(Sem.–6)

INSTRUMENTATION IN POWER SYSTEM

Subject Code : BTEE-605C
Paper ID : [A2341]

Time : 3 Hrs. **Max. Marks : 60**

INSTRUCTION TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Q1. Answer briefly :

(a) List and classify uses for measurement of DC and AC quantities.

(b) Explain one method of analog to digital conversion.

(c) What is the difference between C.T. and a normal power transformer? What are the applications of a current transformer?

(d) The tuned circuit in a simple AM transmitter uses a 50 micro henry inductance and 1 nano farad capacitance. If the oscillator output is modulated by radio frequencies upto 10 kHz, what is the frequency range occupied by the side bands?

(e) Explain time division multiplexing and frequency division multiplexing as applied to telemetry.

(f) Write down various instruments used in a nuclear power plant.

(g) What are the telemetry errors? How they are detected and corrected?

(h) Explain applications of SCADA system to Indian power system.

(i) Explain digital modulation in telemetry systems.

(j) What is the use of FM transmitter and receiver?

SECTION-B

Q2. Explain functioning of energy meter. An energy meter is designed to make 100 revolutions of disc for one unit of energy. Calculate the number of revolutions made by it when connected to load carrying 40 A at 230 V and 0.4 power factor for an hour. If it actually makes 360 revolutions, find the percentage error.

Q3. What are the applications of a potential transformer? Describe with the help of connection diagram. What are the errors in P.Ts?

Q4. Explain digital data transmission techniques.

Q5. How communication is performed between different control centres of a SCADA system?

Q6. Write a short note on thermal power plant instrumentation.

SECTION-C

Q7. (a) Explain functions and components of a SCADA system. What is the purpose of remote terminal unit?

(b) Explain various instruments used in a hydro power plant.

Q8. Differentiate between amplitude modulation (AM), frequency modulation (FM) and pulse modulation. Explain with the help of sketch.

Q9. What are the different instruments used for measurement of real and reactive power? Explain various sources or errors of these instruments.