Register Number: ……..

B.E. DEGREE EXAMINATIONS:APRIL/MAY 2014

(Regulation 2009)

Seventh Semester

ELECTRONICS AND INSTRUMENTATION ENGINEERING

EIE114: Power Plant Instrumentation

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. _____ is not a fissionable material
   a) U^{238} b) U^{233}
   c) U^{235} d) Pu^{239}
2. An example of a moderator is
   a) graphite b) Liquid sodium
   c) Molten salts d) helium
3. _____ type of meter is preferable for power and frequency
   a) PMMC b) MI
   c) Thermocouple type d) Electrodynamometer
4. A percentage obscuration allowable as per the ringlemann chart is
   a) 60% b) 40%
   c) 80% d) 20%
5. The procedure that makes Zirconia oxide permeable to oxygen
   a) Cooling b) Heating
   c) Adding water d) Adding oxygen
6. The efficiency of a chromatographic column is given by
   a) Dead time b) Retention time
   c) Height Equivalent of theoretical plate d) Capacity Factor
7. Monitoring,logging and man process communication is the function of
   a) Unit level b) Group level
   c) Sub group level d) Drive control level
8. The reheat _____ steam temperature _____is controlled by varying the
   a) Spray flow b) Throttle value
   c) Burner tilt d) Coal flow
9. Expansion of steam in the blades takes place in
   a) Impulse Turbine b) Reaction Turbine
   c) Extraction Turbine d) Topping and bottoming turbines
10. Vibration can be measured in terms of
    a) displacement b) pressure
    c) force d) All of the above

PART B (10 x 2 = 20 Marks)

11. What are relative advantages and disadvantages of nuclear power plants over thermal power plants.
12. Define cogeneration.
13. Why are temperature and pressure corrections required in boilers?
14. State the working principle of a scintillation counter.
15. What is pH?
16. Analysis of impurities in steam is important.Why?
17. What are the advantages of flow-tieback control strategy?
18. Why is air fuel ratio control necessary?
19. Give the significance of lubricating oil temperature control.
20. Mention any two disadvantages of using hydrogen cooling system.

PART C (5 x 14 = 70 Marks)

21. a) Explain in detail the working of a hydroelectric power plant.

(OR)

b) Explain with neat diagrams any two types of reactors in a nuclear power plant.

22. a) (i) Explain the working principle of electrodynamometer type instruments (10)
    (ii) Derive an expression for deflection in an electrodynamometer ammeter (4)

(OR)

b) Explain the drum level measurement and transmission for a boiler.

23. a) Explain the working of dissolved oxygen analyzers with required sketches.

(OR)

b) What is liquid chromatography? Explain the various parts of a liquid chromatographic setup.

24. a) With a neat sketch explain the implementation of distributed control systems.

(OR)

b) Explain the various control schemes adopted for super heaters in power plants.

25. a) Explain the various methods of speed monitoring and control of turbines.

(OR)

b) (i) With the required sketches explain about lubricating oil level and temperature control (8)

(ii) Explain the various cooling systems in turbines. (6)

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