B.E DEGREE EXAMINATIONS: MAY 2015

(Regulation 2013)

Fourth Semester

ELECTRONICS AND INSTRUMENTATION ENGINEERING

U13MET405: Applied Thermodynamics and Fluid Mechanics

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

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Cyclic integral of any property is

    a) Unity   b) Zero

    c) Infinity   d) Non zero

2. For a constant temperature process, pressure and volume relation is……………..

3. Steam coming out of the whistle of a pressure cooker is most likely to be

    a) Wet vapour   b) Dry and saturated vapour

    c) Super heated vapour   d) Very wet vapour with dryness fraction less than 0.5

4. Compression ratio is the ratio between……………..and ……………..

5. Ratio of the actual specific humidity and the saturated specific humidity is

    a) Latent heat   b) Relative humidity

    c) Humidity ratio   d) Degree of saturation

6. FAD means ……………..

7. Pressure at any point in a fluid at rest is obtained by

    a) Hydro static law   b) Newton's law of viscosity

    c) Continuity equation   d) Bernoulli's theorem

8. Pitot tube is used for measurement of ……………..

9. Francis turbine is

    a) Inward flow radial turbine   b) Outward flow radial turbine

    c) Axial flow turbine   d) Used for high heads

10. Hydraulic pump converts …………….. energy into…………….. energy

PART B (10 x 2 = 20 Marks)

(Not more than 40 words)

11. Differentiate between path function and point function

12. Classify thermodynamic systems

13. List the boiler mountings and accessories

14. Compare otto,diesel and dual cycles for the same compression ratio

15. List the various psychrometric processes

16. Draw the p-h and T-s diagram of vapour compression refrigeration system

17. Tell an example where the viscosity of fluid needs to be measured

18. Label the relationship between the various fluid pressures

19. Briefly outline the difference between the centrifugal pump and Francis turbine

20. What do you infer from the performance curves of centrifugal pumps

PART C (5 x 14 = 70 Marks)

(Not more than 400 words)

Q.No. 21 is Compulsory

21.   Discuss the following :

    (i) First law applied to flow process (7)

    (ii) Cooling of electronic components (7)

22. a) Explain the working principle of four stroke compression ignition engine with neat sketches

(OR)

b) (i) Discuss the impulse and reaction turbine principles with neat sketches (7)

    (ii) Demonstrate the formation steam (7)

23. a) Compare the working of centrifugal and axial flow compressors

(OR)

b) Classify air conditioning systems and explain summer air conditioning system with neat sketch

24. a) Analyze the applications of Bernoulli's equation and its importance in the measurement of fluid properties

(OR)

b) Discuss the following:
   i) Flow lines   ii) Surface tension   iii) Chezy's equation

25. a) Explain the working principle of Reciprocating pump with neat sketch

(OR)

b) Justify the use of Pelton turbine and also explain the working principle

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