Q.32 Explain kelvin planck statement of second law of thermodynamics.

SECTION-D

Note: Long answer type questions. Attempt any three questions out of four questions. (3x10=30)

Q.33 Estimate the heat loss per m^2 of the surface through a brick wall 0.5m thick when the inner surface is at 400k and the outside surface is at 310k. The thermal conductivity of the brick may be taken as 0.7 W/m-k.

Q.34 Drive an expression for heat transfer through a composite wall consisting of three different materials.

Q.35 A tank containing air is stirred by a paddle wheel. The work input to paddle wheel is 8500 KJ and the heat transfer to surroundings from the tank is 2700 KJ. Find change in internal energy of the system.

Q.36 Drive the general mass transfer equation.

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4th Sem. / Rubber Tech.

Subject : Unit Operations-II

Time : 3 Hrs. M.M. : 100

SECTION-A

Note: Objective type questions. All questions are compulsory (10x1=10)

Q.1 A closed system is that _____.

Q.2 At absolute zero temperature, the volume of gas becomes _____.

Q.3 Constant pressure process is also known as _____.

Q.4 The change of entropy when heat is rejected by gas is _____.

Q.5 The unit of thermal conductivity is _____.

Q.6 The temperature profile is _____ in case of plane wall.

Q.7 The heat transfer is constant when _____.

Q.8 Thermal conductivity of solid metals _____ with rise in temperature.

Q.9 _____ occurs whenever a change from phase to another takes place.

Q.10 The molar concentration of species is defined as the number of moles of species per unit volume of the _____.

SECTION-B

Note: Very short answer type questions. Attempt any ten questions out of twelve questions. (10x2=20)

Q.11 Define temperature.

Q.12 Define Boyle's law.

Q.13 Define isentropic process.

Q.14 Define pump.

Q.15 Define boiler.

Q.16 Define conduction.

Q.17 Define natural convection.

Q.18 Define black body.

Q.19 Define boiling point.

Q.20 Define packed column.

Q.21 Define supresaturation.

Q.22 Define critical moisture content.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x5=40)

Q.23 Explain in brief drying curve.

Q.24 Explain the selection criteria for solvent to be used for liquid-liquid extraction.

Q.25 Explain disadvantages of a packed column.

Q.26 Explain concept of a gray body.

Q.27 Explain the physical significance of Nusselt number.

Q.28 Write a short note on optimum thickness of insulation.

Q.29 Explain difference between homogenous system and heterogeneous system.

Q.30 Drive the characteristic equation for gas.

Q.31 Explain law of conservation of energy.