

UNIVERSAL INSTITUTE OF TECHNOLOGY
SESSIONAL TEST – 3rd
BRANCH- (MECHANICAL 3rd SEM)
SUBJECT- THERMODYNAMICS

TIME-1.30HRS
M.M.-20

Attempt any two question . all question carry equal marks.

Q 1. 20 kg. of water at 90⁰c. is mixed with 30 kg. of water at 30⁰c. , and the pressure remain constant during the mixing operation . calculate the decrease in available energy , it may be presume that the surround are at 10 drg.c. temperature and for water .

Take $c_p = 4.18 \text{ kJ/kg k}$

Q 2. show that for a perfect gas, the difference between the specific heat ($c_p - c_v$) can be expressed as

$(c_p - c_v) = [p + (du/dv)_t](dv/dt)_p = pv\beta + v\beta(du/dv)_t$
where β is the coefficient of volume expansion.

Q 3. explain relation for internal energy and enthalpy.