Total No.	of Questions : 4] SEAT No. :
<b>PB68</b>	[Total No. of Pages : 2
	[6268] 263
	S.E. (Automobile & Mechanical Engineering) (Insem)
	APPLIED THERMODYNAMICS
	(2019 Pattern) (Semester - IV) (202048)
<i>Time</i> : 1 <i>I</i>	Hour] [Max. Marks : 30
	ons to the candidates:
	Answer Q.1 or Q.2, Q.3 or Q.4.
	Neat diagrams must be drawn wherever necessary.
	Figures to the right side indicate full marks.
<i>4</i> ) <i>5</i> )	Assume Suitable data if necessary.  Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator
,	and steam tables is allowed.
<i>Q1</i> ) a)	State the difference between Vapour compression Cycle and Vapour
QI) a)	absorption cycle? [7]
1 \	
b)	Air is supplied to a conditioned room at 17°C DBT and 50% RH. The air
	leaves the room at 25°C DBT during which RH increased by 5%. [8]
	Find the Following Properties of air
	i) DPT of supply air
	ii) Change in enthalpy during the process
	iii) Change in specific humidity during the process.
	Show it on psycholicute chart.
	OR OR
<b>Q2</b> ) a)	Define the following terms; [7]
	i) Saturated air
	ii) Wet bulb depression
O	Show it on psychometric chart.  OR  Define the following terms;  i) Saturated air  ii) Wet bulb depression  iii) Relative humidity  [7]
X	iv) Dew point temperature
) b)	In a standard vapor compression refrigeration cycle, operating between
b)	an evaporator temperature of $-10^{\circ}$ C and a condenser temperature of
	4000 d d d d cd c

an evaporator temperature of -10°C and a condenser temperature of 40°C, the enthalpy of the refrigerant, at the end of the compression is

220 kJ/kg. Show the cycle diagram on T-s plan.

[8]

T(°C)	P(bar)	hf(kJ/kg)	hg(kJ/kg)
-10	2.191	26.85	183.1
40	9.607	74.53	203.1

Calculate:

- i) COP of the cycle
- ii) The refrigerant capacity
- iii) Compressor power

Assuming a refrigerant flow rate of 1kg/min.

- Q3) a) Discuss the following engine terminology with a neat sketch
  - i) Top and Bottom Dead centre (T. D. C. and B. D. C.)

[8]

- ii) Clearance Volume (Vc)
- iii) Swept Volume (Vs)
- iv) Compression ratio (r)
- b) Draw theoretical and actual P-V diagrams for an Otto cycle and list the assumptions made. [7]

OR

- Q4) a) Enlist 4 components used in IC engine and state their function, material and manufacturing process.[8]
  - b) State comparison between Air standard with Fuel and Actual cycle. [7]