DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Mid Semester Examination – March 2019

Course: B. Tech in - Chemical **Sem: III**

Subject Name: Heat transfer Operation **Subject Code: BTCOC403**

Max Marks: 20 **Date:-** **Duration:- 1 Hr.**

Instructions to the Students:

1. **All questions are compulsory.**
2. Question one are compulsory.
3. Solve any two from Question 2 and solve any one from question 3.
4. Assume suitable data wherever required.

Q.1	**Attempt following Questions.**	**(Level/CO)**	Marks
	1When vaporization takes place directly at the heating surface, it is called_____ a) film boiling b) nucleate boiling c) vapor binding d) None of these		6
	2. Fourier's law applies to the heat transfer by ….. a) convection b) radiation c) conduction d) all (a), (b) & (c)		
	3.For an ideal black body_____ a) absorptivity = 1 b) reflectivity = 1 c) emissivity = 0 d) transmissivity = 1		
	4. The unit of heat transfer co-efficient in SI unit is---------- a) J/M²°K b) W/m²°K c) W/m°K d) J/m°K		
	5. Which area is used in case of heat flow by conduction through a cylinder .a) Logarithmic mean area b) Arithmetic mean area c) Geometric mean area d) None of these.		
	6. Which one gives the monochromatic emissive power for black body radiation …….. a) Planck's law b) Kirchhoffs law c) Wien's law d) Stefan-Boltzman law		
Q.2	**Solve Any Two of the following.**		3 X
(A)	Describe Film Boiling.		
(B)	Define Emissivity, and Total emissive power.		
(C)	Explain Boundary layer thickness and Displacement thickness.		
Q. 3	**Solve Any One of the following.**		**8**
(A)	Derive expression for temperature distribution through hollow Sphere.		
(B)	Lubricating Oil at a temperature of 60 °C enters 1 cm diameter tube with a velocity of 3 m/s. Tube surface is maintained at 40 °C. Assuming that the oil has the following average properties calculate the tube length required to cool the oil to 45 °C. Density = 865 Kg/m³, K = 0.14 W/m k C_p = 1.78 KJ/Kg °C. assume flow to be laminar (and fully developed) Nu = 3.657		
	***** End *****		