


Name:	 UPES UNIVERSITY WITH A PURPOSE
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Sem Examination, December 2020

Course: Material Science	Semester: III
Program: B. Tech Mechatronics Engineering (special QP-lateral entry)	Time 03 hrs.
Course Code: MEMA 2001	Max. Marks: 100

Instructions:

SECTION A: Each ques carries 5 marks

S. No.		Marks	CO
Q 1	Write true or false: (i) Tempered martensite has better ductility than martensite. (ii) X-ray diffraction is used to identify the crystal structure of a material. (iii) Brass is an alloy of Nickel. (iv) Glasses are polycrystalline in nature. (v) Aluminium has hcp crystal structure.	5	CO1
Q 2	Classify following materials into the typing of bonding that exists (ionic/covalent/metallic/ Secondary bonding) : a) NaCl, b) Teflon, c) Bronze, d) Liquid Helium, e) Solder a) _____, b) _____, c) _____, d) _____, e) _____	5	CO1
Q 3	(a) Amount of carbon in low carbon, medium carbon and high carbon steels respectively is _____, _____ and _____. (b) Carbon steels have _____ amount of alloying elements (low/high). (c) Stainless steels have _____ as an important alloying element for corrosion protection.	5	CO1
Q 4	Creep failure is _____.	5	CO1
Q 5	Classify following materials into their class of materials (metal/alloy, polymer, ceramic, composite): a) Superalloy, b) Teflon, c) Bronze, d) Alumina, e) Carbon fibre reinforced polymer a) _____, b) _____, c) _____, d) _____, e) _____	5	CO2
Q 6	(i) For single component system when degree of freedom is '1' then number of phases are: (a) 0 (b) 1 (c) 2 (d) 3 (ii) At what temperature Fe turns paramagnetic while heating (a) 727 °C (b) 623 °C (c) 1146 °C (d) 1500 °C (iii) Phenomenon involved in phase transformation: (a) Nucleation (b) Growth (c) both a and b (d) none of these	5	CO2

