

MASTER

APL 102: Introduction to Materials Science and Engineering

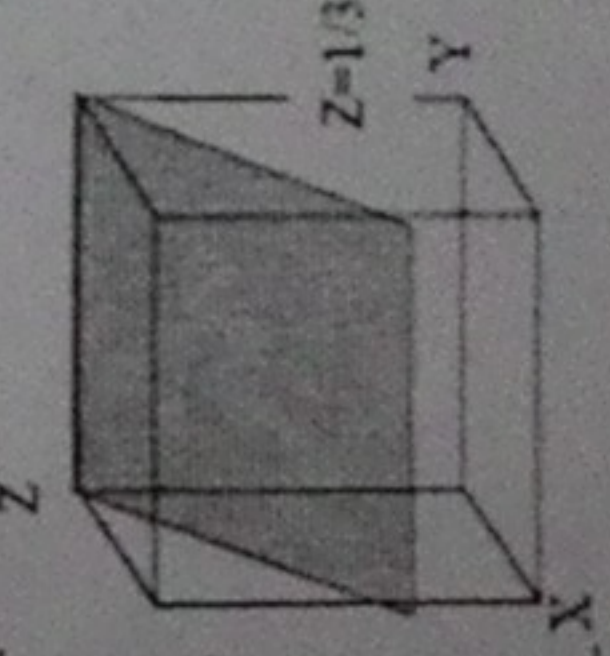
Date: 08-11-2016, Tuesday

Time: 6:00-6:20 PM

Quiz#1, Set: A

Marks: 20

Note: Write the correct choice(s). **0.5 marks** would be **deducted** to every wrong answer.
DONOT circle or tick the choice.

1	A crystal has a cubic unit cell of size 4.2 \AA . Using a wavelength of 1.54 \AA at what angle would you expect to measure the (111) peak? (2 Marks) A. 10.6° B. 18.5° C. 43.0° D. 37°	D
2.	In Fick's 1 st Law, J (the flux of atoms) is proportional to; (1 Marks) A the square root of time B the concentration gradient C the rate of change of the concentration gradient D the energy barrier Q	B
3.	In a single-component condensed system, if degree of freedom is zero, maximum number of phases that can co-exist is: (1 Marks) A. 0 B. 1 C. 2 D. 3	D
4.	If ASTM grain size number is 1, approximate grain diameter (in mm) is: (1 Marks) A. 0.1 B. 0.2 C. 0.25 D. 10	C
5.	Which of these will lower the solid solution strengthening: (1 Marks) A. Higher modulus of solute than solvent B. Lower modulus of solute than solvent C. Higher concentration of solute D. Smaller size difference between solute and solvent	B D
6.	The proeutectoid phase in a hypereutectoid steel is: (1 Marks) A. Austenite B. Ferrite C. Pearlite D. None of the above	D
7.	Which of these factors will promote easy movement of dislocations? (1 Marks) A. Larger dislocation width B. Smaller dislocation width C. Larger Burgers vector D. Smaller Burgers vector	A D
8.	The miller indices for the shaded plane is: (2 Marks) A. $(\bar{1}01)$ B. $(\bar{2}1\bar{3})$ C. (203) D. (213) 	C
9.	Substitutional diffusion A. requires existence of vacancies B. becomes faster with increasing temperature C. needs to overcome an energy barrier	D