VIT

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

SCHOOL OF ADVANCED SCIENCES

B. Tech./M.Tech - Semester- I

Continuous Assessment Test–II, September 2018

Course Code	: CHY1701	Duration	: 90 min.
Course name	: Engineering Chemistry	Max. Marks	: 50
Semester	: FALL 2018-19	Slot	: C2+TC2

==========

Instructions: Students are allowed to carry their self-hand written note books/papers and prescribed text books or their photo copies to the examination hall.

Answer *ALL* the Questions. (10Q x 5m = 50M)

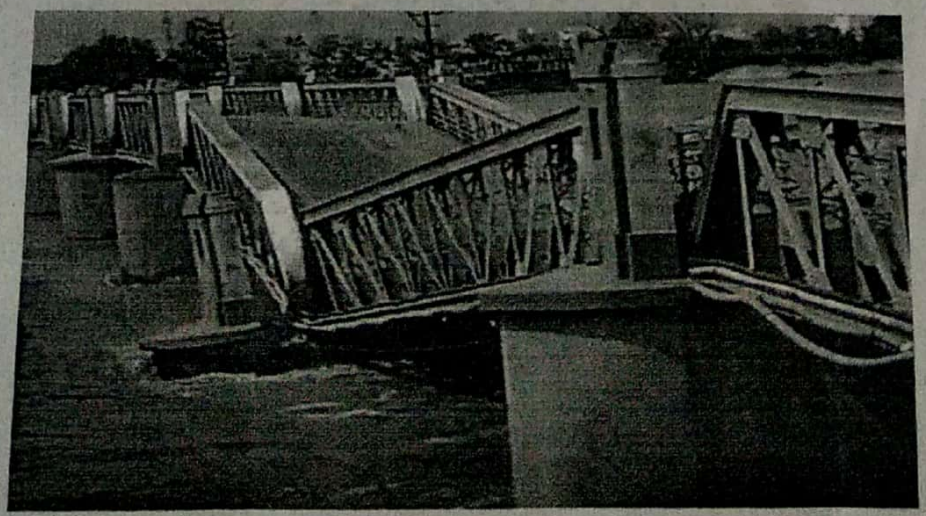
1. **Rationalize briefly the types of metal oxide films during the corrosion process and explain the stabilities of the metal oxide film from the table.**

Volume ratio of some oxides with reference to metal						
K_2O	Na_2O	MgO	Al_2O_3	NiO	Cu_2O	Cr_2O_3
0.41	0.58	0.79	1.38	1.60	1.70	2.03

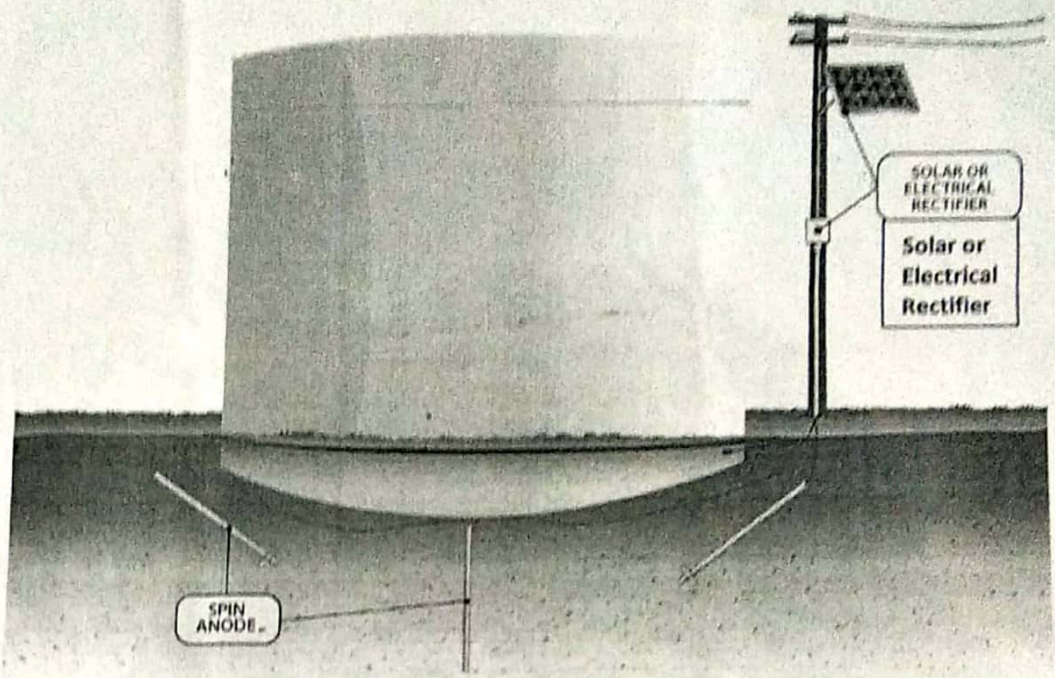
2. ***You are working in a domestic water purification industry and you have been asked to do the disinfection process by chlorine in either Galvanized iron or Glass-coated stainless steel reactor. Which one you will prefer and Why?***

3. **Based on the standard galvanic series, arrange the order of corrosion of iron (Fe) in the following galvanic couples; (i) Fe-Cu, (ii) Fe-Sn and (iii) Fe-Ag.**

4. **Recently, a section of an old steel bridge connecting the towns of Srirangam and Trichy collapsed in the Cauvery River as shown below. As an engineer, rationalize this incident and how will you prevent it?**



5. Explain the engineering chemistry techniques involved in the protection of the oil tank as shown below.



6. Three identical iron nails of the same size and weight were immersed in three different liquids (i) Drinking water, (ii) Pepsi and (iii) Hard water of same volume. Rationalize your observation after a week in the engineering chemistry point of view.

7. As an engineer, what are the preliminary steps you will carry out on any base metal before doing coating process?

8. Suggest a suitable method along with a neat diagram for converting a non-conducting polymer into a conducting material.

9. An alloy 'AB' contains 45% of metal A in 1.5 Kg. The molten 'AB' on cooling gave out metal B and an eutectic alloy (AB) with A and B at equal percentage. What is the amount of metal B formed during the eutectic formation of AB alloy?

10. In the case of Carbon steel (composition: C & Fe) vs Stainless steel (composition: Fe, C, Cr & Ni), which one is more suitable for making surgical instruments? Explain your answer in a mechanistic approach.

*****