



ARAB ACADEMY FOR SCIENCE & TECHNOLOGY
COLLEGE OF Engineering & Technology

Lecturer : Staff of Chemistry

Course : Eng. Chemistry

Course No. : BA118

Date: 12 -1-2014

Marks: 40

Time: 09:00 – 11:00 (2 hrs)

Final Examination Paper

SECTION I

{25 marks}

Answer the following questions

1. a- Explain in-details Galvanic corrosion {9M}
b- State and explain the factors affecting Atmospheric corrosion.
c- Compare between different cathodic protection methods.
2. a- Formation of Scale inside the boiler is very dangers. State the effects of this scale . {8M}
b- Describe and Explain removal of dissolve salts by Ion-exchange Resins.
3. a- Explain the effects of the following on the properties of liquid fuel: {8M}
(i) Surface tension.
(ii) Viscosity.
(iii) Carbon – Hydrogen content.
b- Deduce the combustion equation of Methane gas (CH_4) complete combustion.
c- Compare between combustion of Carbon (complete &incomplete) and Hydrogen.

NB; atomic mass H=1, C=12, O=16, N=14 and S=32. $CV_C=33.7$ & 10.5 , $CV_H=65.4$, $CV_S=9.1$ and $CV_{methane}=80$ MJ/Kg.

SECTION II

{15 Marks}

Encircle The Best Choice from a,b,c or d of The Following

1. The mineral acids is more corrosive than
 - a- moist air.
 - b- organic acids.
 - c- sea water.
 - d- all of the above

2. Metal-Metal oxide cell tends to
 - a- chemical corrosion
 - b- atmospheric corrosion
 - c- galvanic corrosion
 - d- non of the above

3. Tendency or resistivity of metal to corrosion depends on
 - a- the activity of metal.
 - b- the nature of metal ores.
 - c- the corrosive environment.
 - d- both a and b.

4. Intergranular corrosion can be prevented in stainless steel by
 - a- quenching and decreasing carbon content.
 - b- addition stabilizer metal such as Titanium (Ti).
 - c- slow cooling.
 - d- both a and b.

5. The following forms of corrosion are localized forms
 - a- Pitting corrosion.
 - b- Intergranular corrosion and stress corrosion cracking.
 - c- Intergranular corrosion.
 - d- both a and c.

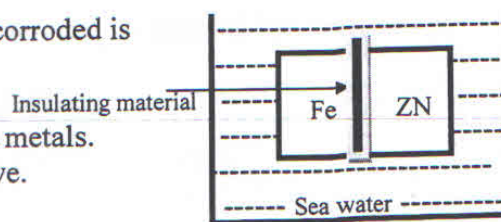
6. For steel -30 grade welding, it is welded by
 - a- stainless steel.
 - b- chromium steel.
 - c- steel-40.
 - d- steel-30.

7. sacrificial anode method of cathodic protection , can be used in the following media

- a- soil and water.
- b- sea water.
- c- neutral.
- d- all of the above.

8. As shown in Fig. metal will be corroded is

- a- Fe metal.
- b- Zn metal.
- c- both Fe and Zn metals.
- d- non of the above.



9. Incomplete combustion of Fuel is due to

- a- lower or higher viscosity.
- b- insufficient amount of air.
- c- formation of CO.
- d- all of the above.

10. Higher calorific value of fuel, it not actual value is owing to

- a- the composition of fuel.
- b- loss heat during burning the fuel.
- c- presence of hydrogen.
- d- all of the above.

11. 1 Kg. of Carbon needs to the following amount of air to burn complete combustion

- a- 8/3 kg.
- b- 5.797 kg.
- c- 11.594 kg.
- d- none of the above.

12. Decreasing specific gravity and flash point of fuel are tends to

- a- easily burning.
- b- good ignition.
- c- both a and b.
- d- decreasing calorific value.

13. To removal Dissolved oxygen of feeding water in high pressure boilers, one of the following can be use.

- a- sodium sulphite.
- b- reducing agent.
- c- hydrazene.
- d- both b and c.

14. Presence of oil and grease in water, can be removal by

- a- sedimentation.
- b- coagulation and settling.
- c- precipitation.
- d- both b and a.

15. De-ionized water is considered as

- a- pure water.
- b- water free from dissolved salts.
- c- water free from cations and anions.
- d- all of the above.

Good Luck

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MPC 6/1-4

Members of Course Examination Committee	Signature	Date
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