KERALA AGRICULTURAL UNIVERSITY

B.Tech (Food.Engg) 2015 Admission
Ist Semester Final Examination-February -2016

Cat. No: Basc.1104

Title: Engineering Chemistry (2+1)

Marks: 50.00

Time: 2 hours

I Answer all Questions

(10 x 1=

1. Spectrophotometer is an instrument which functions on the basis of .... law

2. The optimum value of BOD is ....

3. The substance responsible for pollution by leaded gasoline is ....

4. The major component of stratosphere is ....

5. Define R_f value?

6. Name any two synthetic lubricants

7. What is viscosity index?

8. Calculate the pH of a solution having hydrogen ion concentration of 0.005 M

9. Nitrate concentration exceeding 45 mg/L can cause infant methaemoglobinaemia (State True/False)

10. What is electrochemical series? What is its significance

II Answer any Five questions

(5 x 2=

1. Differentiate between weak and strong electrolytes with examples

2. What is eutrophication?

3. What is fly ash? Give its composition

4. Differentiate between thermosetting and thermoplastics

5. Explain the reverse osmosis process

6. Calculate the EMF of a cell which is obtained by dipping a copper rode in 0.01 M CuSO zinc rode on 0.001 M ZnSO$_4$ solution at 25^{0}C. E^{0}Cu $^{2+}$/ Cu= +0.34Vand E^{0}zn $^{2+}$/zn=−0.76V

7. What are the different types of electrodes? Give example for any two types

III Answer any Five questions

(5 x 4=2

1. What are the factors affecting corrosion?

2. What are the major air pollutants? How are they classified

3. Differentiate between BOD and COD

4. How the lubricants are classified? Explain

5. How will you determine the calorific value of a solid fuel?

6. Write notes on (a) Cracking (b) Octane number

7. Explain the mechanism of rusting of iron

5. The following consecuative readings were taken with a dumpy level. 2.228, 1.606, 0.988, 2.090, 2.864, 1.262, 0.602, 1.982, 1.044, 2.684 metres. The level was shifted after 3rd, 6th and 8th readings. Enter the above readings in a page of a level book and calculate the RL of points if the reading was taken with a staff held on a bench mark of 432.384m

6. The following fore and back bearings were observed in traversing with a compass in place where local attraction was suspected

Line	Fore bearing	Back bearing
AB	S37° 30'E	N37° 30'W
BC	S43° 15'W	N44° 15'E
CD	N73° 00'W	S 72° 15'E
DE	N12° 45'E	S13° 15'W
EA	N60° 00'E	S59° 00'W

Compute the interior angles and correct them for observational errors assuming the observed bearing of AB to be correct

7. The following is the data relative to observations made on a vertically held staff with a tacheometer fitted with an anallatic lens. The constant of the instrument was 100.

Instrument station	Ht. of axis	Staff station	Vertical axis	Hair readings	Remarks
P	1.50	BM	-6° 12'	0.963, 1.515, 2.067	RL of BM = 460.650
P	1.50	Q	+7° 5'	0.819, 1.341, 1.863	
Q	1.60	R	+12° 27'	1.860, 2.445, 3.030	

Calculate the distances PQ and QR and also the reduced levels of P, Q and R

IV Answer any one question $\quad$ (1 x 10=10)

1. Briefly explain the chemical tests that are to be carried out to examine the quality of water

2. What do you understand by the term resection? Explain the two point problem and enumerate the advantages of plane table survey