



UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program : Fifth Semester – 2020

Roll No. in Fig.

Roll No. in Words.

Paper: Applied Chemistry

Course Code: CHEM-309

Part – I (Compulsory)

Time: 15Min. Marks: 10

Attempt this Paper on this Question Sheet only.

Division of marks is given in front of each question.

This Paper will be collected back after expiry of time limit mentioned above.

Signature of Supdt.:

Q.1. Encircle the right answer cutting and overwriting is not allowed. (10x1=10)

- (i) The average composition of lime in cement is
- | | |
|-----------|-----------|
| a) 61.5 % | b) 22.5 % |
| c) 1.5 % | d) 7.5 % |
- (ii) In 'Wet Process' the slurry contains about _____ water
- | | |
|--------------|---------------|
| a) 20 – 30 % | b) 30 – 40 % |
| c) 40 – 50 % | d) 90 – 100 % |
- (iii) The formula of slaked lime is _____
- | | |
|----------------------|--------------------|
| a) Ca(OH)_2 | b) CaO |
| c) SiO_2 | d) CaCO_3 |
- (iv) Crystallization, evaporation and distillation is a mean of
- | | |
|--|---|
| a) Separating soluble substances in solution | b) Separating insoluble substances in solutions |
| c) Separating filtrate from solution | d) All of these |
- (v) Which of the following is a pressure filter?
- | | |
|---------------------------|-------------------------------|
| a) Plate and flame filter | b) Rotary drum filter |
| c) Sand filter | d) Leaf filter (Moore filter) |
- (vi) For sizing of fine materials, the most suitable equipment is a
- | | |
|-------------------|---------------------|
| a) Trommel | b) Gizzly |
| c) Shaking screen | d) Vibrating screen |
- (vii) Which element is considered one of the most corrosive components in water chemistry when found dissolved in water?
- | | |
|-------------|-----------|
| a) Ammonia | b) Carbon |
| c) Nitrogen | d) Oxygen |
- (viii) In lime/soda process of water softening, soda ash is used to primarily remove
- | | |
|---------------------------|---------------------------|
| a) Temporary hardness | b) Carbonate hardness |
| c) Non carbonate hardness | d) Bicarbonate alkalinity |
- (ix) The temperature required for conversion of SO_2 to SO_3 in catalyst tower
- | | |
|-----------------|-----------------|
| a) 300 – 400 °C | b) 400 – 500 °C |
| c) 500 – 600 °C | d) 200 – 300 °C |
- (x) Castner Kelner cell is used for
- | | |
|------------------|-----------------------------|
| a) NaOH | b) H_2SO_4 |
| c) HCl | d) Na_2CO_3 |



ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2. Give short answers of the following: (10x2=20)

- (i) Differentiate between 'Regular Portland cement' and White Portland cement'.
- (ii) Why 'Multiple effect evaporators' are superior than single effect?
- (iii) Draw a flow sheet diagram for the production of 'Soda ash'.
- (iv) State any three uses of 'Sulphuric acid'.
- (v) Discuss the principle of 'Multiple effect evaporators'.
- (vi) State any three uses of sulphuric acid.
- (vii) Write down the basic components of the distillation unit.
- (viii) Shortly describe the construction of the shell and tube heat exchanger.
- (ix) Write down the different types of cement.
- (x) Describe the structure of 'Nelson Cell' used for the manufacturing of caustic soda.

Q.3. Give brief answers of the followings. (3x10=30)

- 03** Describe the different chemical as well as physical methods used for the removal of water hardness. (10)
- 04** Describe the 'Wet' and 'Dry' processes for the manufacturing of Portland cement with flow sheet diagram and also make a comparison of these processes. (10)
- 05** Describe the 'Lead Chamber Process' for the manufacturing of the Sulphuric acid and write down its applications in different industries. (10)