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SEAT No._____

[36/A13]

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SARDAR PATEL UNIVERSITY

B.Sc. EXAMINATION MARCH-2018 (VIth SEMESTER)

SUBJECT : ORGANIC CHEMISTRY (US06CCHE01)

TIME: 10.00 am to 1.00pm

DATE : 26/03/2018

TOTAL MARKS : 70

DAY : MONDAY

Q. 1 : Choose the correct option for the following multiple choice questions. 10

i) Glucose and Galactose are----------

a) Isomers b) Epimers c) Enantiomers d) Anomers

ii) ---------- units are present in cellulose.

a) Mannose b) Fructose c) Glucose d) Galactose

iii) Lactose on acidic hydrolysis gives _____

a) 2 molecules of glucose b) Glucose and Galactose c) Glucose and Fructose d) None

iv) Vigorous catalytic hydrogenation of tetralin gives--------

a) Naphthalene b) 1, 4-dihydronaphthalene c) Decalin d) None

v) Electrophilic substitution reaction of anthracene occurs at ----------

a) 9,10-position b) 3-position c) 9- position d) 1,3-position

vi) According to Huckel rule cyclopentadienyl anion is ----------

a) Antiaromatic b) Non aromatic c) Aromatic d) None

vii) Cis-3,4-dimethyl cyclobutene upon thermal reaction gives_____

a) trans,trans-2,4-hexadiene b) trans,cis-2,4-hexadiene c) cis,cis-2,4-hexadiene d) None

viii) Which of the following dye is belongs to benzanthrone class?

a) Direct yellow b) New magenta c) Caledon jade green d) Mercurochrome

ix) Which of the following functional group acts as an dependent chromophore?

a) –N=N - b) NO_2 c) >C=O d) NH_2

x) The compound which contains chromopheric group is called _____

a)Auxochrome b) Chromophore c) Chromogen d)None

(P.T.O.)

Q. 2 : Answer the following questions. (Any 10) **20**

1) Write a note on anomeric effect.

2) Give the synthesis of D(-)-lactic acid from (D)(+)-glyceraldehyde.

3) Explain the oxidation of glucose using Br_2/H_2O and conc. HNO_3.

4) Draw all resonating structures of naphthalene and anthracene.

5) Discuss the sulphonation reaction of naphthalene.

6) Explain the Bucherer reaction.

7) Write the characteristics of pericyclic reactions.

8) Give the difference between suprafacial and antrafacial modes of cycloaddition reactions.

9) Write a note on cope rearrangement.

10) Explain the term chromophore and auxochrome with example.

11) Write a note on pigment.

12) Write requisites of a true dye.

Q. 3 : Answer the following questions.

a) Prove that (+)-lactose is a galactoside and not glucoside. 03

b) (+)-sucrose is an invert sugar. 03

c) Give the synthesis of Ribitol from glucose. 04

OR

Q. 3 : Answer the following questions.

a) Discuss the effect of cyclodextrin on chemical reactions. Also write the uses of cyclodextrin. 03

b) Give the synthesis of mannose from glucose. 03

c) Prove that glucose is an aldohexose sugar. 04

Q. 4 : Answer the following questions.

a) Give the synthesis of 1, 7-dimethyl naphthalene from toluene. 03

b) Give the name of few potent carcinogenic hydrocarbons and discuss how do they induce human cancer? 04

c) Electrophilic substitution reaction in naphthalene takes place exclusively at α-position and not at β-position. 03

OR

Q. 4 : Answer the following questions.

a) What is aromatization? Explain its importance in synthesis and application of naphthalene chemistry. 03

b) C_1-C_2 bond in naphthalene is shorter than C_2-C_3. Explain 03

c) Give the synthesis of phenanthrene by Bogert-Cook method starting from benzene. 04

Q. 5 : Answer the following questions.

a) Thermal cyclization of ethene is symmetry forbidden but photochemical cyclization is symmetry allowed. Explain 05

b) Predict the product and give appropriate stereochemistry. 05

i) Cis,trans-2,4-hexadiene + heat $\longrightarrow$?

ii) 2 moles of trans -2-butene + light $\longrightarrow$?

OR

Q. 5 : Answer the following questions.

a) Explain the Diels-Alder reaction and give favourable conditions for it. 03

b) Electrocyclic reactions are highly stereospecific. Explain 04

c) Justify with suitable example that [1,3]-C shift proceeds with inversion in configuration in the migrating group. 03

Q. 6 : Write the various postulates of resonance theory. Also give the synthesis and applications for the following. 10

i) Dye use as an indicator ii) Dye used in carbonate beverages.

OR

Q. 6 : What is Fastness? Explain various Fastness properties. Also give the synthesis and applications for the following. 10

i) Mercurochrome ii) New Magenta

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