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## SARDAR PATEL UNIVERSITY

M. Sc. Semester – III (Organic Chemistry) Examination
Tuesday, 30<sup>th</sup> October 2018
Time: 02.00 p.m. to 05.00 p.m.
PS03EORC21: Selected Topics in Organic Chemistry

**Total Marks: 70** 

	[1]	Methyl orange is a (an) dye.  [a] Hair [b] Photographic  [c] Indicator [d] NIR	
	[2]	Which of the following is a <b>dependent</b> chromophore?  [a] -N=O  [b] >C=O	
		[c] –NO <sub>2</sub> [d] ÷N=N-	
	[3]	Which of the following is used as magenta coupler in color photography?	
		[a] Phenol and naphthol [b] Phenylenediamine derivatives containing indoaniline dyes	
		[c] β-ketocarboxamide derivatives [d] 1-Aryl-5-pyrazolone derivatives	
344	[4]	Which of the following is NOT an organic pigment?  [a] Indigo  [b] Prussian blue  [c] Para red  [d] Hansa Yellow G	-
	[5]	Photochemical LUMO for 1,3-butadiene is the distribution of the $\Psi_1$ [b] $\Psi_2$ (cf. etc., which is the $\Psi_3$ [c] $\Psi_4$	
794 7843	[6]	PMO approach is also known as  [a] Fukii's approach  [c] Woodward-Hoffmann approach  [d] None	
ajas Pāst	[7]	Chugaev reaction is an example of  [a] syn-β-elimination [b] [4+2]-cycloaddition [c] [d] 1,3-diolar cycloaddition [c] [d] 1,3-diola	.,
	[8]	Which of the following is (are) CORRECT for Ene reaction?  [a] It is a photochemical [b] It usually requires higher temperature reaction than Diels-Alder reaction.  [c] It is a group transfer reaction [d] Both b & c	

### Q.2 Answer the following questions (ANY SEVEN) [14] Discuss quinonoid theory. [2] Explain "Malachite green has deeper color than Crystal violet". [3] Explain "Azobenzene is a colored compound but not a dye". Give differences between inorganic and organic pigments. [4] Discuss lakes of acid. [5] [6] Define: (i) Electrocyclic reactions, (ii) Cycloaddition reactions. [7] Discuss [5,5]-sigmatropic rearrangements. [8] Predict the products I and II. [9] Predict the products III and IV. 25°C cis-cyclooctene trans-cyclooctene Q.3Give synthesis of following dyes. [06] (i) Malachite green (ii) Bismark brown strong as strong as the first of galaxy plants and (iii) Picric acid [b] Answer the following questions. Write note on indicator dyes, the half to the content of the half to the content of the content [03] [2] Discuss: (i) Acid dyes (ii) Basic dyes. [03]OR Answer the following questions. [b] Give chemical classification of dyes. Discuss xanthene dyes. [03] Write note on photographic dyes. [03] $\mathbf{Q.4}$ Answer the following questions. [a] Enlist the requirements of organic pigments, and an additional and a second pigments. [03] Give synthesis of following Fluorescent Brightening Agents (FBAs): [03] (i) Tinopal RBS (ii) Bankophor R Secretaria de Boron Esta De Persona en Segui de Partir de Anglika Charles an egyl A longer to be de-

## [b] Answer the following questions.

- [1] Enlist various classes of heterocyclic pigments. Discuss (i) Thioindigo [03] pigments, (ii) Perylene and Perinone pigments.
- [2] Give definition, uses and classification of FBAs.

## <u>OR</u>

[b] Write note on evaluation of pigments.

## [06]

[03]

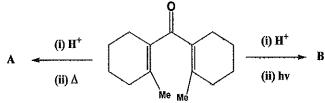
## Q.5 [a] Answer the following questions.

[1] Write note on [3,3]-sigmatropic rearrangements.

[03]

- [2] "Electocyclic ring closure of 1,3-butadiene is thermally allowed under conrotatory mode while it is photochemically allowed under disrotatory mode". Explain using FMO method.
- [b] Answer the following questions.
  - [1] Predict products A and B. Give mechanism for it.

[03]



[2] Draw and discuss molecular orbital diagram for 1,3,5-hexatriene.

[03]

## <u>OR</u>

## [b] Answer the following questions.

[1] Write note on [2,3]-sigmatropic rearrangements.

[03]

[2] Explain "endo-7-chlorobicyclo[4.1.0]heptane undergoes solvolysis [03] readily at 125°C but exo-7-chlorobicyclo[4.1.0]heptane is recovered unchanged after prolonged heating in acetic acid".

# Q.6

- [a] Answer the following questions.
  - [1] Explain "Diels-Alder reaction is a regiospecific reaction".

[03]

[2] Predict the structures of **A** to **D**.

[03]

#### [b] Answer the following questions.

[1] Write note on "Intramolecular Diels-Alder reaction".

[03]

[2] Discuss synthetic utility of diimide in organic chemistry.

[03]

#### OR

[b] Draw orbital correlation diagram for [4+2]-cycloaddition reaction of 1,3- [06 butadiene and ethylene. Predict the feasibility of reaction under thermal and photochemical condition based on it.



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