[Time: 3 Hours] [Total Marks: 100]

## Please check whether you have got the right question paper.

1.	Al	l Questions are compulsory.	
2,	Fig	gures to the right indicate full marks.	)
3.	Th	e use of log-table/non-programmable calculator is allowed.	
4.	An	swers for the same question as far as possible should be written together.	
	20		-
Q.1	6	Answer ANY FOUR of the following:	S
9	$\mathbf{A}$	Give the full form of NGP. Explain with a suitable example the effect of NGP on	<sup>5</sup> 5
VOE)		kinetics and stereochemistry of the reaction.	
\$1	B	Explain the following terms:	5
	10	i) pyrolytic elimination ii) A <sub>Ac</sub> 2	4
	\$	iii) heterolytic fission iv) basicity	(9)
£°	)	v) saponification	7
2/3	C	With the help of a well labelled Jablonski diagram explain any three relaxation	5
٠	_	(decay) processes which an electronically excited molecule undergoes to loose	
7	-0	energy.	<
	D	What are pericyclic reactions? List how they are classified? Explain	25
20	7	Electrocyclic reactions with a suitable example.	)"
70,	E	What is photoreduction? Explain the mechanism of photoreduction of	5
9	4	benzophenone.	
Y	F	Distinguish between the following:	, (
	30	i) acidity and electrophilicity	3
E.C	, ,	ii) transition state and reaction intermediate	2
D,			
Q.2	<u> </u>	Answer ANY FOUR of the following:	
ζ ~	A	Write a note on the following-	-5
-	X2	a. Centre of symmetry,	8
3	^	b. Plane of symmetry	
200		c. Atropisomerism	
'X'	B	Write a note on stereochemistry of allenes.	5
Y	C	Define: Agrochemicals. Give advantages and disadvantages of Agrochemicals.	5
_	D	(a) Give synthesis of indole-3-acetic acid.	3
279	7	(b) Give preparation of pyridine-N-oxide from pyridine.	2
3	$\mathbf{E}$	Write the reaction of following reagents with quinoline-	5
5	Ź	(a) bromine in concentrated H <sub>2</sub> SO <sub>4</sub> at 75°C,	
	200	(b) fuming HNO <sub>3</sub> and concentrated H <sub>2</sub> SO <sub>4</sub> at 0°C	3
	3	(c) H <sub>2</sub> , Pt in methanol	5)
3	<b>F</b>	Write Bischler-Napieralski synthesis for 1-methyl isoquinoline.	5

84056 Page 1 of 5

## **Q.3** Answer any **four** of the following:

- A a. Define Regioselectivity? Give an example of Chemoselectivity?
  - b. What is E-factor? Give its significance.
- **B** a. Give an example of Multicomponent synthesis?
  - b. Give the preparation of adipic acid from D-glucose using green chemistry reactions?
- C Define Atom economy? Calculate the percentage atom economy of the following reaction?

$$NH_2$$
  $+$   $(CH_3CO)_2O$   $+$   $COCH_3$   $+$   $CH_3COOH$ 

Atomic Weights: C=12, H=1, O= 16, N=14

- **D** Give the synthesis of the following from a suitable starting compound:
  - 1) 2-pentanol using a suitable Grignard reagent
  - 2) p-nitroaniline
- E Write the structural formula for each of the following compounds:
  - 1) 4,4'- dimethyl diphenyl
  - 2) 4-chloro-benzo[b] pyridine
  - 3) Penta-2,3-diene-1-oic acid
  - 4) Spiro [4.4] non-1-ene
  - 5) 2-methyl bicyclo [4.2.0] oct-3-ene
- **F** Give IUPAC names for each of the following compounds:

1) SO<sub>3</sub>H 2)

3)  $\begin{array}{c}
NH_2 & H \\
C = C = C \\
H & CH_3
\end{array}$ 

## Answer **any four** of the following: Explain the following terms used in uv-visible spectroscopy with example: a) Chromophore Chromophore interactions b) Various possible electronic transitions Explain the mass spectral fragmentation pattern of 2-methyl pentane b) Discuss in brief the principle of mass spectrometry. Give the synthesis of: a) Adrenaline by Ott's synthesis method Citral from 6-Methyl hept-5-en-2-one What are alkaloids? Write any two class of alkaloids with suitable example. b) State isoprene rule. Complete the following reaction. $(A) \frac{\text{i) } \text{CH}_3\text{I/K}_2\text{CO}_3}{\text{ii) AgOH}} (B) \frac{\Delta}{\text{-H}_2\text{O}} (C) \frac{\text{i) } \text{CH}_3\text{I/K}_2\text{CO}}{\text{ii) AgOH}}$ Give analytical evidence to prove the following: a) Citral is acyclic monoterpenoids. b) Presence of isopropylidine group in citral. Do as Directed Choose the most appropriate option (answer any 5): i) Which of the following reactions is a thermal decomposition of xanthate esters? Cope elimination Chugaev reaction Sigmatropic reaction Pyrolysis of acetates d) ii) How is an electrophile defined? Electron deficient species Negatively charged species b) Electron rich species d) Lewis base c) Which of the following is not a nucleophile? iv) Identify the reaction. $(2\pi + 2\pi)$ Cycloaddition Cheletropic reaction a) b) **Group Transfer reaction** d) $(4\pi + 2\pi)$ Cycloaddition $CH_3COOH + C_2H_5OH =$ CH<sub>3</sub>COOC<sub>2</sub>H<sub>5</sub> + Classify the above reaction. Acyl Electrophilic substitution Alkyl Electrophilic substitution a) b) Acyl Nucleophilic substitution d) Alkyl Nucleophilic Substitution Page 3 of 5

		So Barra S	
33 TX 2.CE3V	vi) In which of the following reaction product?	s is carbon monoxide eli	minated as a by-
Soliday William Stage	a) Norrish Type I at room temperature	b) Norrish Type I a temperature	at elevated
Stolight allight	c) Norrish Type II	d) Cope Elimination	on apply the
LOEIN LOUIS	vii) What does ISC stand for?		ARIT ARIT
St. Libital School	<ul><li>a) Internal System Crossing</li><li>c) Internal Sensitised Crossover</li></ul>	b) Inter-System Cr d) Intra-System Cr	
State of State of	viii) Pick the correct statement with r a) It is a direct reaction that takes place	e via the Singlet state.	ion of stilbene.
	<ul><li>b) It is a direct reaction that takes pla</li><li>c) It is a photosensitised reaction that</li></ul>		et state
	d) It is a photosensitised reaction that		
$\mathbf{B}$	State whether following are True or I		5
(a)	Always an optically active compound atom	must contain at least one	e chiral carbon
(b)	Alternating axis of symmetry is also		on axis.
(c)	Endosulfan is a plant growth regulati		a constitute of
(d)	Fungicides are the chemicals that des weeds.	roy, prevent or minor th	e growin or
(e)	Electrophilic substitution reactions or	isoquinoline takes place	preferably at
	positions 5 and 8.		BY CE
(f) (g)	Isoquinoline is also known as 2-azana Pyridine-N-oxide is less basic than py		By Silving
Ely By			Son Barrier
	Fill in the blanks (Answer <b>any five</b> ) There are principles	f Green Chemistry	, Ch. 1852
	The concept of Atom economy was d		
3	In a greener pathway to synthesize		g material used is
4	Synthesis of p-bromoaniline from An		synthesis.
5	In the reduction of m-dinitrobenze reagent used is	6,	
6	In spiro [2.3] hexane, the smaller ring To name the fused and bridged ring		
	carbon atom.	g systems the numbern	ig starts from the
8	Two phenyl rings bonded by a single	covalent bond is called	a
and and		By Egy	
Section Section		College Missilly	59 <sup>1</sup> 108 <sup>1</sup>
84056	Page	of 5	Se <sup>to</sup>
akin of o	N AF ASS		B
Sto LB Section	64B44B1DFCE927CE	AC3373F93F79E495	D. C.

P	aper /	Subject Code	e: 24243 / Ch	emistry:	: Organic Chemistry (	6 Units)	COSE.	OFIN,
5.33°	E ST	TOFIL!		ARD I	25,00	Sept. Sept.		SE CO
A CONTRACTOR OF THE PARTY OF TH	7,5,	Sept.	GER G	×,	RB RECEIVE			, ,
	´	ST ST	E. S. S.	A. C. C.			6,	W.
	600		£19,	NA PORT	Byr O'D'	(E)	Bi	گ <sub>ې</sub> .
	100 ×	(A)	139	90	Short Shart	Die En	, 82 h	7
D N	Match t	he following	columns. (Att	empt an	y five)	, DEC.	5	BA
Car String Die	49	Column	P o	1000	Column Q		SECTION OF THE PROPERTY OF THE	2,0
CONT. NED.	a.	Codenine		1.	Insulin	B	<i>y</i>	, , , , , , , , , , , , , , , , , , ,
	b. c.	Citral Peptide	(C) (C)	2.	Mass spectrometry Endocrine glands	5 B/K		Æ.
2197 BY	d.	Adrenaline	189	4.	Lemon grass oil		NA	OF.
by topy	e.	Hormones	.97	5.	-NH <sub>2</sub> group		C. C.	B
SEE SEE	f.	Auxochrome m/z value	e A	6.	Epinephrine Onium poppy		3	× ·
	g.	iii/z vaiue	<del>5</del> , <del>5</del> 9	1 /.	Opium poppy		10,00	O.A.
	0	S. S. M.	DE	(S)	Spr Spr	Ti-ON	19E/X	26 N.
	19E/X	26 pr	LAB,	SEO,	ST ST	(h)	§ )	
	5°,	SEP.	, Co	, , , , , , , , , , , , , , , , , , ,		A. 195	, SELO	^
V. E. V.	′	E C	BAN	5	?' '&?' '&	S. S.		2/0/2
	200	1,	950	2 Killy	19th (19th)	BT		5000
FB, FBL	3	5.93	AST A	COLL	TB, ECA			3
Sich Sich Si			SE SE		By By		6	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
BILL SEE, VOI				10	Sharing D		Spr	~ ~ ~ ,
	100	(J.)	£0,5,	105	P. Commission of the Commissio	OF CO.	9	80 <sup>T</sup>
adition of	3	S. T.	(A)	St.	SELE)	By Ec	5	<sup>ر</sup> ک
with the contraction of the cont	<b>Y</b>			, i		P <sub>V</sub>		10
By By	ć	\$ 16°	6	NO SEO	£1934 1940	SALA	Die	189V.
Sto Style	Di	18 JV.	ST	~	LEAN ASTIN	2017	Ro'	Si.
Coff. Soy.	NO,	OF.	(9) S	T .		ER)	B	γ - Δ
COST. SELECT		By of	20°	No.			Bh	
A SEL SEL	B	X ODY		VSD,		5798	050	SALV
ARING AND	200	SKA	Pag  844B1DFCE927	\$3°,	STATE OF THE PROPERTY OF THE P	20934 10	SIX.	NY .
Sylvin February 19	\$ X	26 KY	NB, E	<i></i>		Sy. St.		
	4	E. C.	B	a Co			E CO	
D. C. C.	£(5)		Boliv		LEDV LEDV	€£,	SEO ?	
	St.		of or	MA		Sold Sold		
By By		100 100 100 100 100 100 100 100 100 100	ELY LOW	,	St. St.			
EC. SUL TE.	~	BY SEL	· AND	( R				
	5		10/0	1970	Ship.			
84056	BY	3	Pag	e 5 of 5	Phys.	OF C		
The second		ST S	(2)	Ŕ	N B	Y		
RY BY LEE		64I	344B1DFCE927	CBAC337	73F93F79E495			
		041	JTHD I DI CE92 /	CDACSS	31 931 191 <mark>4</mark> 93			