SF-504

Total No. of Pages : 04

Seat No.	

M.Sc. (Part-I) (Semester-I) (NEP)

Examination, December 2024

CHEMISTRY

MMT-103: Organic Chemistry-II

Sub. Code : 92121

Day and Date: Wednesday, 11-12-2024 **Total Marks: 80**

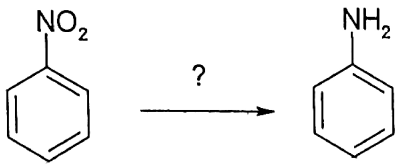
Time: 10.30 a.m. to 01.30 p.m.

Instructions:

1) **Question No. 1 is compulsory.**
2) **Attempt ANY TWO questions from EACH section.**
3) **A total of FIVE questions are to be answered from the entire paper.**
4) **All questions carry equal marks.**
5) **Figures to the right indicate full marks.**
6) **Draw neat labelled diagrams wherever necessary.**

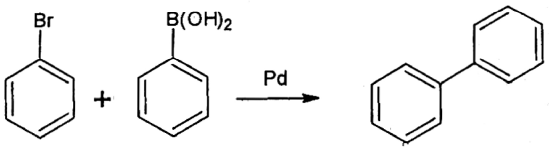
Q.1 Answer the following. **(16)**

1) Name the reactants in Sonogashira coupling.
2) Identify the reagent required in following transformation.



3) Name the reagents used in Swern oxidation.
4) Reduction employing *Na* in alcohol proceeds through which type of mechanism?
5) Enlist the rearrangement which proceeds through isocyanate as an intermediate.
6) Name the reagent used in Etard reaction.

7) Identify the following coupling reaction.



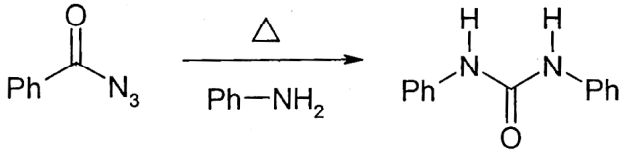
8) What is Carroll rearrangement?

9) Identify the ylide in Sommelet-Hauser rearrangement.

10) Write steps involved in mechanism of Heck coupling.

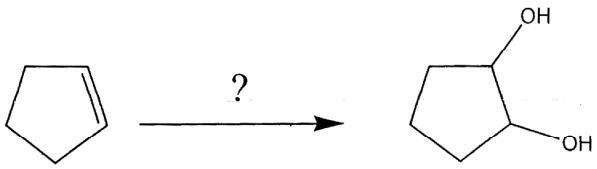
11) Write coupling partners for Buchwald-Hartwig coupling.

12) Identify the following rearrangement.



Complete the following transformations.

13)



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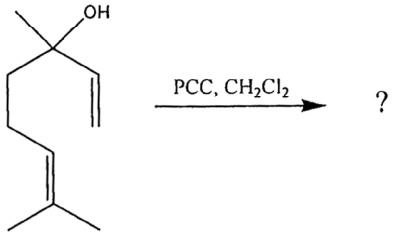

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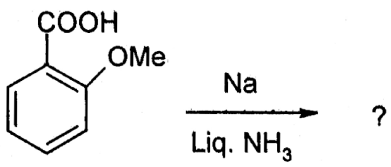
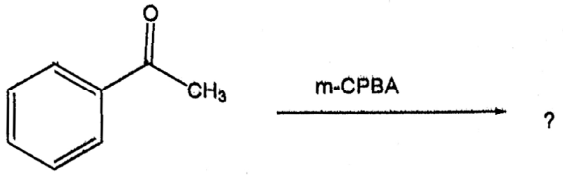


16)



SECTION - I

Q.2 Write the mechanism of the following rearrangements: **(16)**

a) Favorskii

b) Hofmann-Martius

c) Sommelet-Hauser

d) Orton

Q.3 **a)** Explain catalytic hydrogenation using homogeneous and heterogeneous catalysts. **(10)**

b) State the difference between Woodward and Prevost hydroxylation with suitable examples. **(06)**

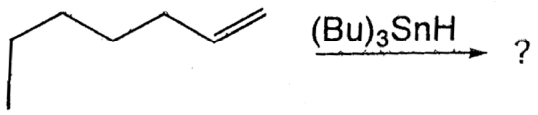
Q.4 **a)** Explain in detail, any two coupling reactions for C-C bond formation. **(10)**

b) Explain with examples, stereochemistry in Kumada coupling. **(06)**

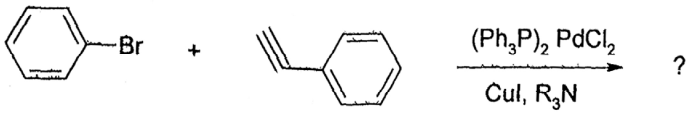
SECTION - II

Q.5 **a)** Predict the product(s) and justify your prediction. **(10)**

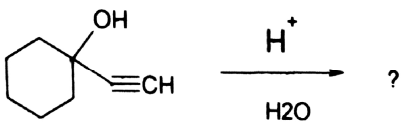
a)



b)



c)



b) Match the following. **(06)**

Column A		Column B	
1)	Suzuki coupling	i)	$Ph–SiF_3$
2)	Stille coupling	ii)	$R–B(OH)_2$
3)	Kumada coupling	iii)	$PhCO(CH_2)_3ZnI$
4)	Hiyama coupling	iv)	$PhMgBr$
		v)	$Ph–Sn(alkyl)_3$

Q.6 a) Explain the applications of following reagents in organic synthesis. **(10)**

i) $NH_2–NH_2$

ii) CrO_3

iii) PDC

b) Give synthetic evidence for Neber rearrangement proceeds through azirine intermediate. **(06)**

Q.7 Write short notes on the following. (Any four) **(16)**

a) Gabriel-Colman rearrangement

b) Effect of substitution in Birch reduction

c) Wacker Oxidation

d) Luche reduction

e) Ceric Ammonium Nitrate (CAN)