

# BÖLÜM 9

## PROBLEMLER II

# HETEROATOMLAR VE HETEROSİKLIK BİLEŞİKLER

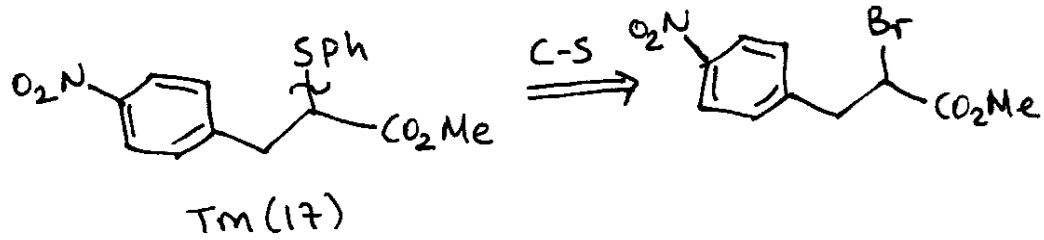
#### 4. PROBLEMLER

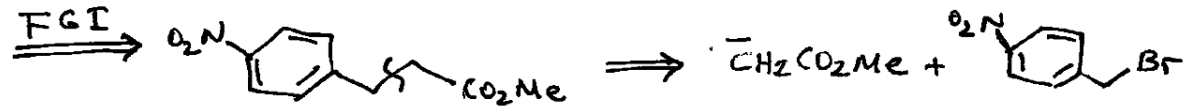
Heterosiklikler ve heteroatomlar ile ilgili bilgileri pekiştirmek için üç problem hazırlanmıştır. Bunlardan ilk ikisi kükürt içermektedir. Kükürt atomu, oksijen atomu gibi düşünülebilir.

Problem 1: Tm(17) bileşiğinin sentez tasarımını

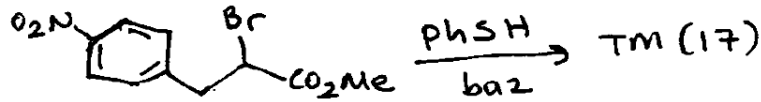
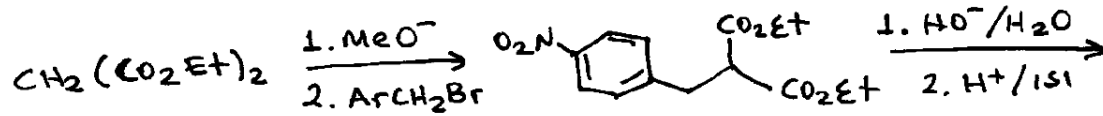
yapınız.

Analizi:



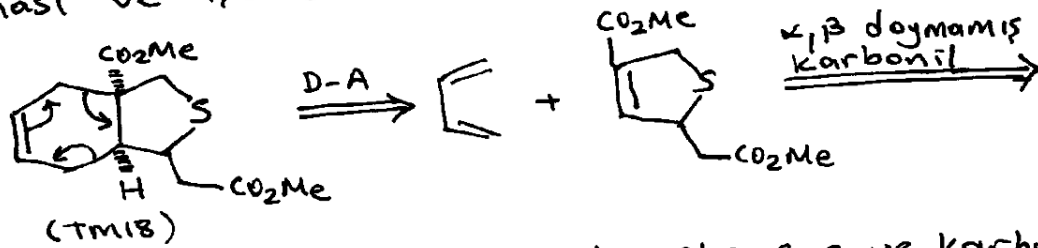


Sentezi: pHSH kolayca hazırlanabilir.

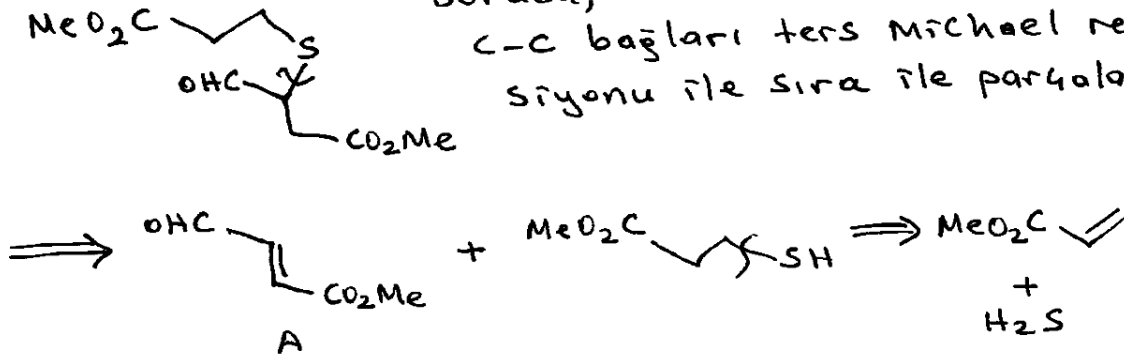


Problem 2: (TM 18) bileşiğinin sentez tasarımını yapınız.

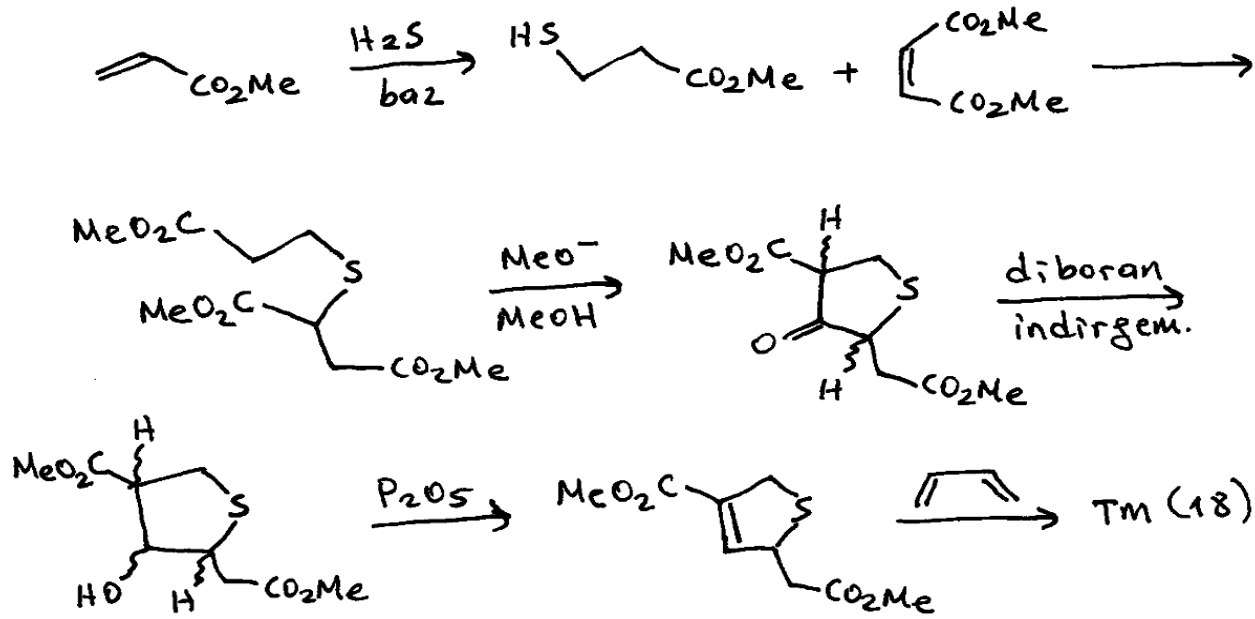
Analizi: Bazı C-S bağları için Diels-Alder parçalanması ve 1,6-dikarbonil bağıntısı kullanılabilir.



Burada, her iki C-S ve karbonil C-C bağları ters Michael reaksiyonu ile sıra ile parçalanır.

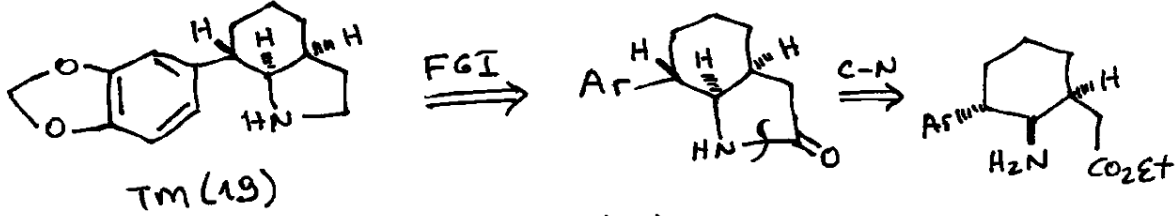


Sentezi: öncelikle A reaktifinden (synthon) senteze başlamak oldukça zor olacaktır. Bunu kolaylaştırmak için diester'e dönüştürmek gerekecektir. Bu bileşiğin gerçek sentezi Stork tarafından yapılmıştır (J. Amer. Chem. Soc., 1969, 91, 7780).



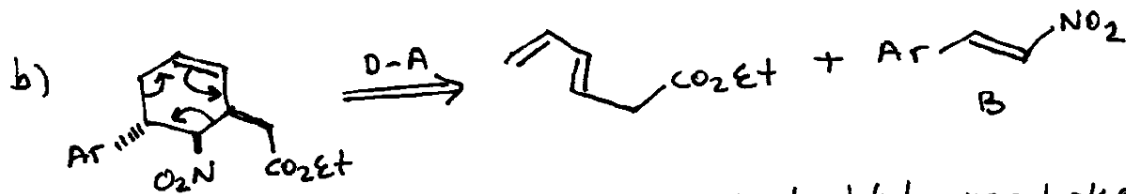
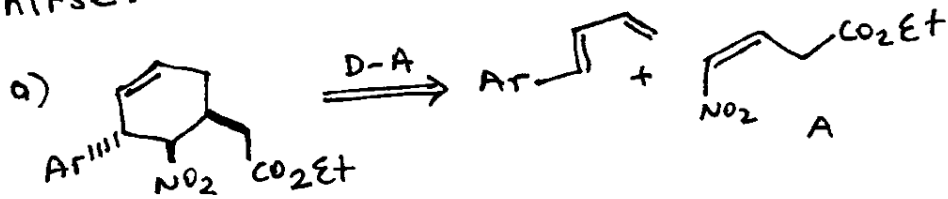
Problem 3: Aşağıdaki bileşiği (TM 19) analiz ederek sentezini yapınız.

Analizi: Belkide şimdiye kadar görülen soruların en zoru. Bir çok çözüm yolu öngörülebilir ve burada yalnızca biri verilecektir.



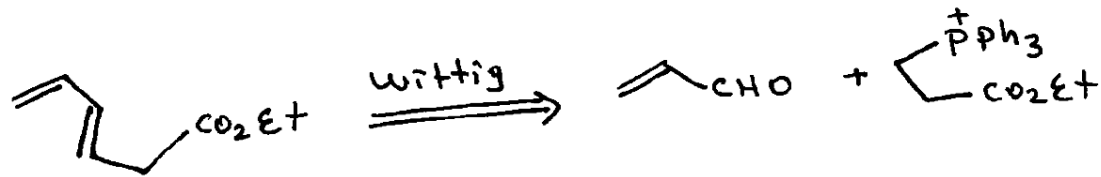
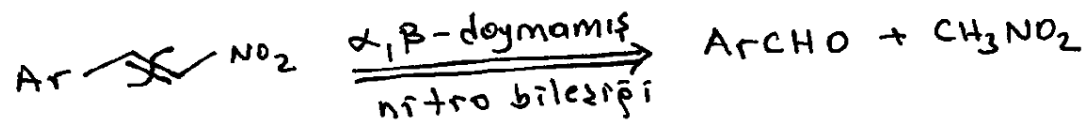
TM(19)'da N atomuna bağlı bir  $\text{CH}_2$ - gruba olduğundan, genel amin sentezinde olduğu gibi karbonil grubu yerleştirilir (FGI).

İkinci aşamada, altılı halkada parçalanma yapılmalıdır. Bunun için Diels-Alder reaksiyonu düşünülmelidir. Yerleştirilecek çift bağın yeri için iki alternatif yol vardır, eğer  $\text{NH}_2$  grubunu ihtiyacı duyulan alternatifleştirici bir gruba dönüştürmek istenirse:

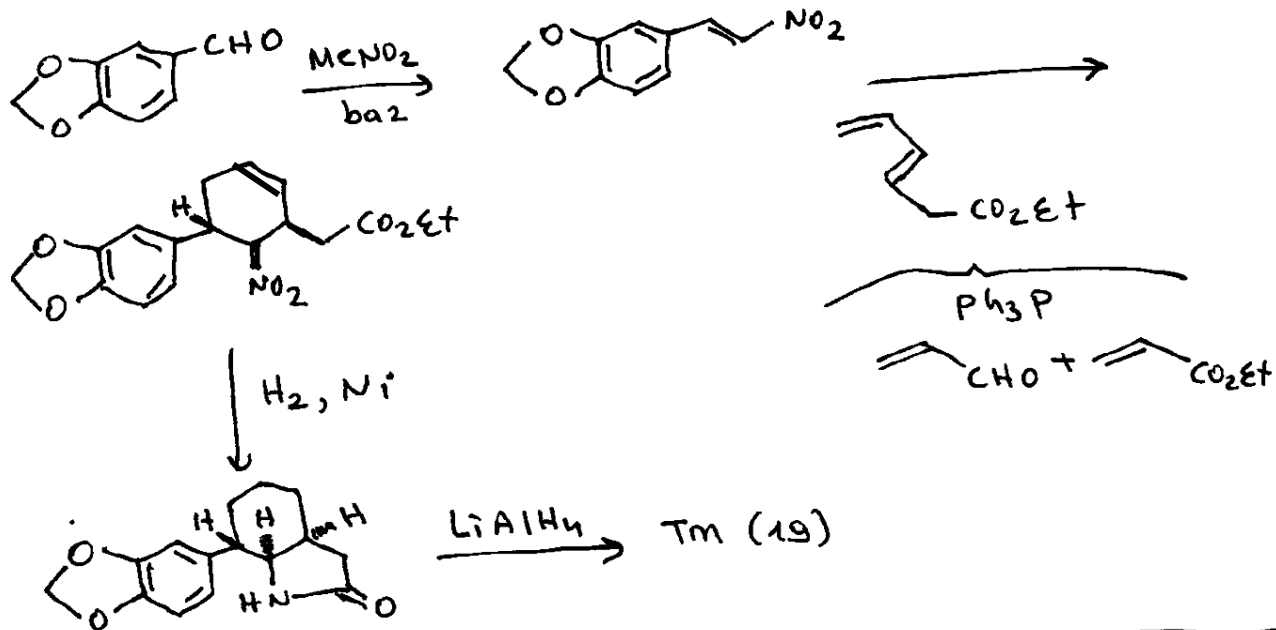


(b) yoluyla trans-nitro-alken kolaylıkla yapılırken (a) yoluyla elde edilen cis-nitroalken (A) sentezi zor olacaktır.

şimdi (b) yoluna göre analizini düşünelim:

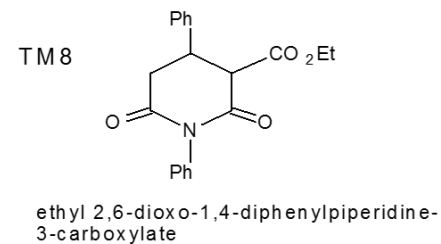
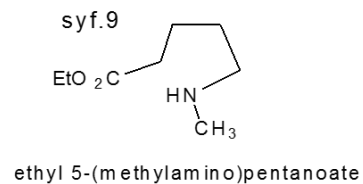
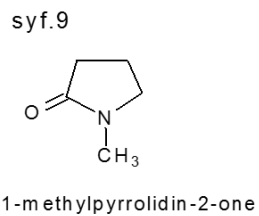
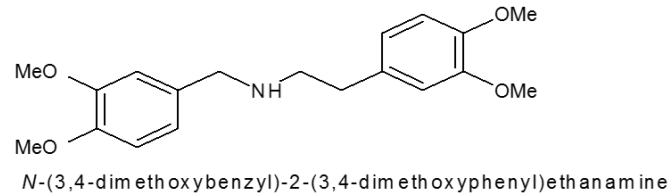
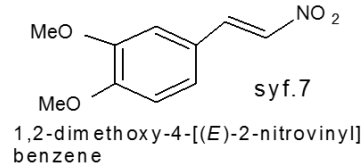
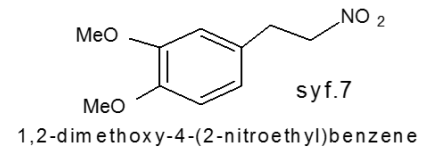
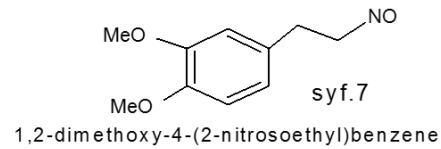
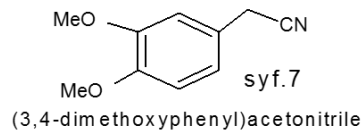
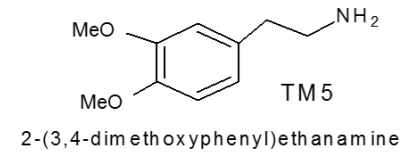
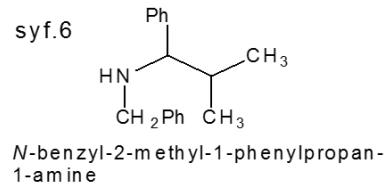
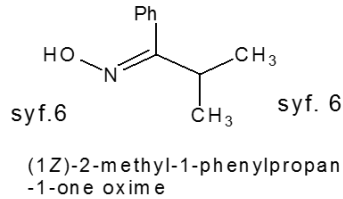
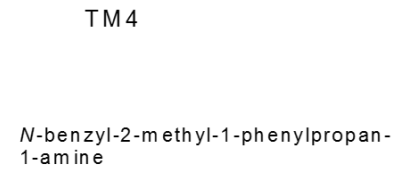
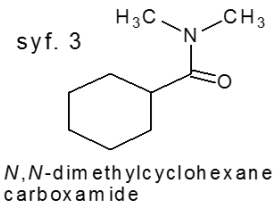
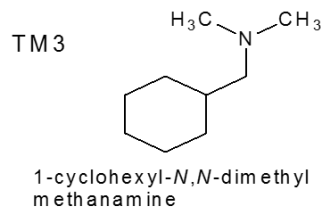


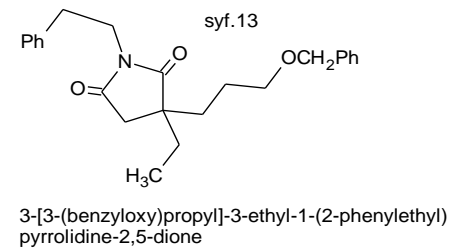
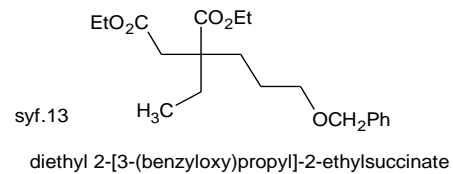
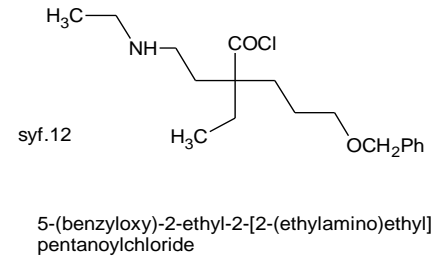
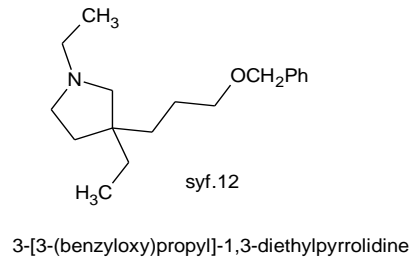
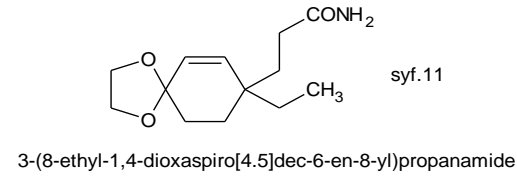
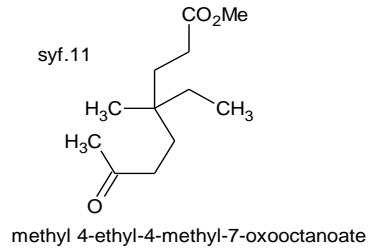
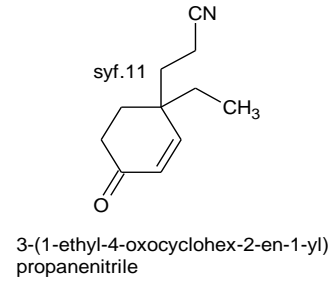
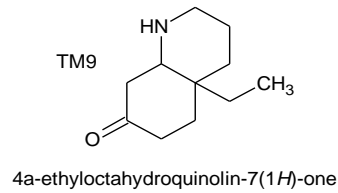
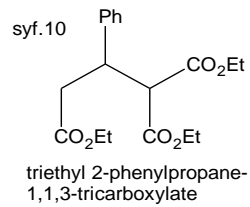
Sentezi: Sentezi,  $\alpha$ -lycorane sentezinde kullanılan yöntemi içerir (J. Amer. Chem. Soc., 1962, 84, 4951).



BÖLÜM SONU

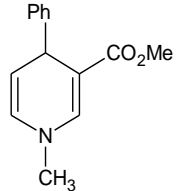
## Bölüm 7 : Bileşiklerin adlandırılması



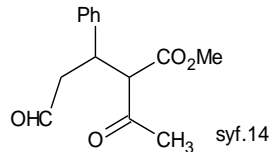




syf. 14

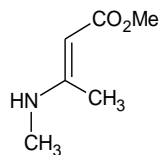


Methyl 1-methyl-4-phenyl-1,4-dihydropyridine-3-carboxylate



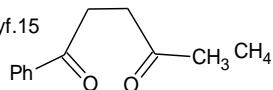
methyl 2-acetyl-5-oxo-3-phenylpentanoate

syf. 14



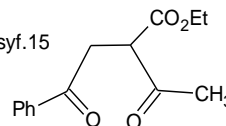
methyl (2E)-3-(methylamino)but-2-enoate

syf. 15



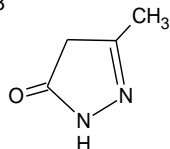
1-phenylpentane-1,4-dione

syf. 15

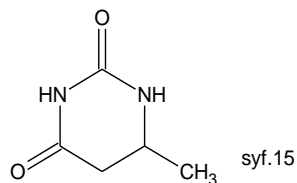


ethyl 2-acetyl-4-oxo-4-phenylbutanoate

TM13

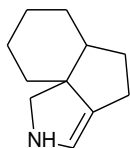


5-methyl-2,4-dihydro-3H-pyrazol-3-one

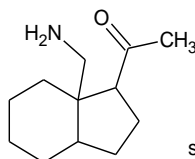


6-methyldihydropyrimidine-2,4(1H,3H)-dione

TM15

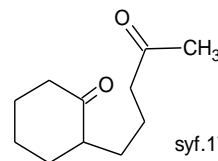


2,4,5,5a,6,7,8,9-octahydro-1H-indeno[1,7a-c]pyrrole



syf. 17

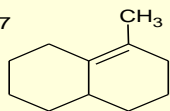
1-[7a-(aminomethyl)octahydro-1H-inden-1-yl]ethanone



syf. 17

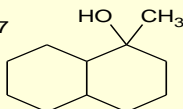
2-(4-oxopentyl)cyclohexanone

syf.17



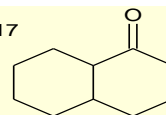
8-methyl-1,2,3,4,4a,5,6,7-octahydronaphthalene

syf.17



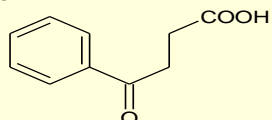
1-methyldecahydronaphthalen-1-ol

syf.17



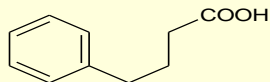
octahydronaphthalen-1(2H)-one

syf.18

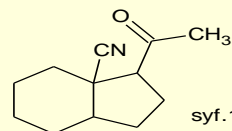


4-oxo-4-phenylbutanoic acid

syf.18

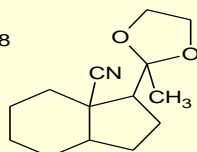


4-phenylbutanoic acid

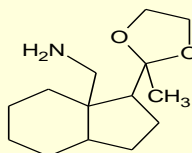


3-acetyloctahydro-3aH-indene-3a-carbonitrile

syf.18

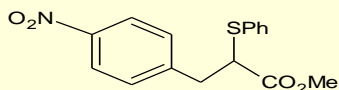


3-(2-methyl-1,3-dioxolan-2-yl)octahydro-3aH-indene-3a-carbonitrile



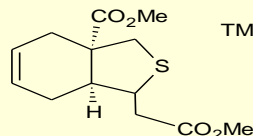
1-[3-(2-methyl-1,3-dioxolan-2-yl)octahydro-3aH-inden-3a-yl]methanamine

TM (17)



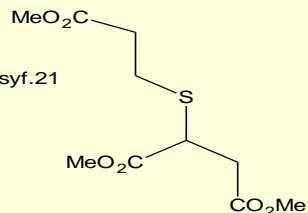
methyl 3-(4-nitrophenyl)-2-(phenylthio)propanoate

TM (18)

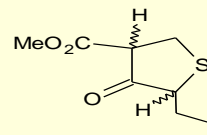


methyl (3aR,7aS)-1-(2-methoxy-2-oxoethyl)-1,4,7,7a-tetrahydro-2-benzothiophene-3a(3H)-carboxylate

syf.21

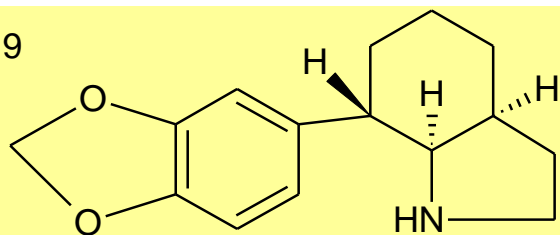


dimethyl 2-[(3-methoxy-3-oxopropyl)thio]succinate



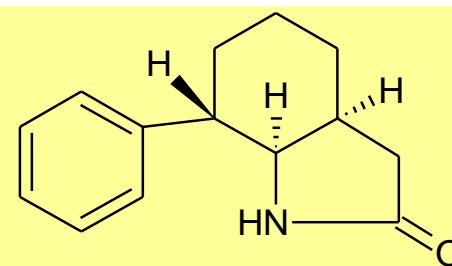
methyl 5-(2-methoxy-2-oxoethyl)-4-oxotetrahydrothiophene-3-carboxylate

TM19



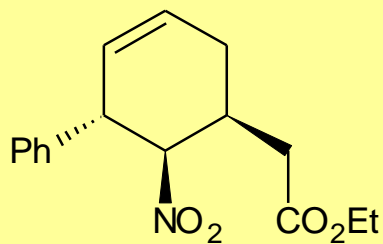
(3a*S*,7*S*,7a*R*)-7-(1,3-benzodioxol-5-yl)  
octahydro-1*H*-indole

syf.22

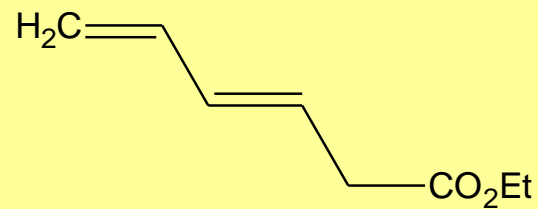


(3a*S*,7*S*,7a*R*)-7-phenyloctahydro-2*H*-indol-2-one

syf.22



ethyl [(1*S*,5*S*,6*R*)-6-nitro-5-phenylcyclohex-  
3-en-1-yl]acetate



ethyl (3*E*)-hexa-3,5-dienoate