College of Science.
Department of Chemistry

كلية العلوم
قسم الكيمياء

Second Midterm Exam
Academic Year 1443-1444 Hijri- First Semester

Exam Information معلومات الامتحان		
Course name	Organic Chemistry (1)	اسم المقرر
Course Code	CHEM 240	رمز المقرر
Exam Date		تاريخ الامتحان
Exam Time	08: 00 AM	وقت الامتحان
Exam Duration	2 hours ساعتان	مدة الامتحان
Classroom No.	1 ب 47 م5	رقم قاعة الاختبار
Instructor Name	أ.د. حمد اللحيدان	اسم استاذ المقرر

Student Information معلومات الطالب		
Student's Name		اسم الطالب
ID number		الرقم الجامعي
Section No.		رقم الشعبة
Serial Number		الرقم التسلسلي

General Instructions: **تعليمات عامة:**

- Your Exam consists of 8 PAGES (except this paper)
- Keep your mobile and smart watch out of the classroom.
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- عدد صفحات الامتحان 8 صفحة. (بإستثناء هذه الورقة)
- يجب إبقاء الهواتف والساعات الذكية خارج قاعة الامتحان.
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هذا الجزء خاص بأستاذ المادة

This section is ONLY for instructor

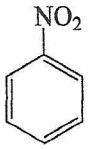
#	Course Learning Outcomes (CLOs)	Related Question (s)	Points	Final Score
1				
2				
3				
4				
5				
6				
7				
8				

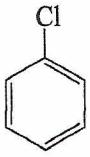
EXAM COVER PAGE

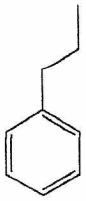
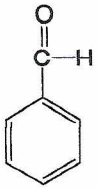
1. Which of the following group is donating group?
   (a) —OCH_3 (b) —NO_2 (c) —Cl (d) —CN

2. The meta directing group is:
   (a) CH_3CH_2— (b) —OH (c) —NH_2 (d) —SO_3H

3. Which of the following is less reactive toward electrophilic aromatic substitution?

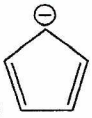
(a) 

(b) 

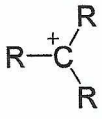
(c) 
(d) 

4. Which of the following reactions represents the alkyl halide reaction?
   (a) Electrophilic addition (b) Electrophilic substitution
   (c) Nucleophilic addition (d) Nucleophilic substitution

5. Which of the following compound obey Huckel's rule for aromaticity?

(a)  (b)  (c)  (d) 

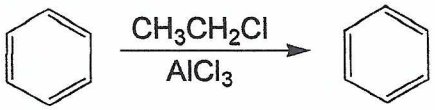
6. Which of the following is more stable?

(a) 

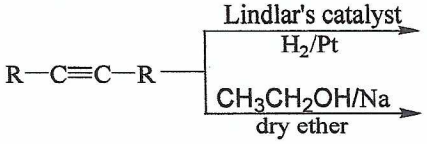
(b)

(c)  (d)

7. Write the mechanism for the following reaction:

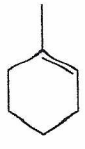


8. Complete the following reactions:



9. Complete the following reactions.

(a) $HC{\equiv}C{-}H \xrightarrow[H_2O]{H_2SO_4/HgSO_4}$

(b)  $\xrightarrow[(2)\ H_2O_2/OH]{(1)\ R_2BH}$

(c) $H_3C{-}C{\equiv}C{-}H \xrightarrow{2HBr}$

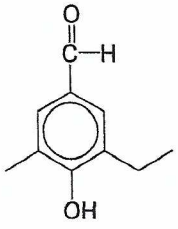
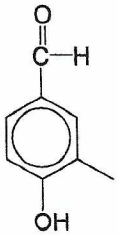
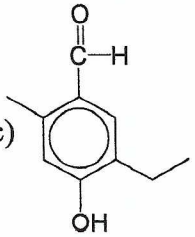
10. Which of the following is protic solvent?

(a) CH_3CH_3 (b) $CH_3CH_2{-}OH$ (c)  (d) 

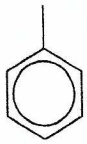
11. The reaction which distinguishes the aromatic compound is:
(a) nucleophilic addition (b) electrophilic substitution
(c) electrophilic addition (d) nucleophilic substitution

12. Electron withdrawing groups activate the:
(a) nucleophilic substitution (b) electrophilic addition
(c) electrophilic substitution (d) nucleophilic addition

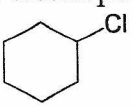
13. The structure of 3-ethyl-4-hydroxy-6-methyl benzaldehyde is:

(a)  (b)  (c)  (d) none of them

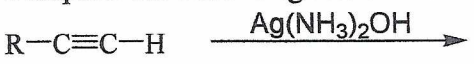
14. Designate *o*-, *m*-, *p*-, on the following structure:

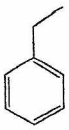


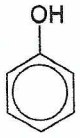
15. Which of the following is more reactive towards electrophilic addition?

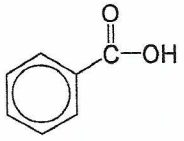
(a)  (b) R—CH=CH—R (c)  (d) none of them

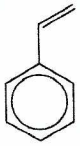
16. Complete the following reactions:



17. When  reacted with $KMnO_4/OH$ the product will be:

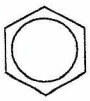
(a) 

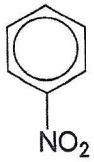
(b) 

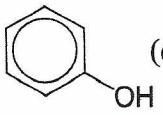
(c) 

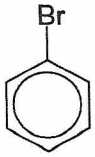
(d) 

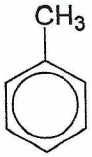
18. Which of the following is the most reactive toward electrophilic aromatic substitution?

(a) 

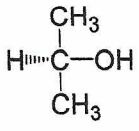
(b) 

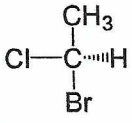
(c) 

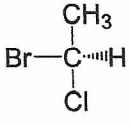
(d) 

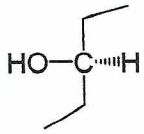
(e) 

19. Which of the following compound has R configuration?

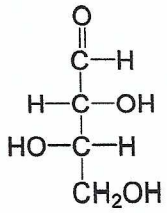
(a) 

(b) 

(c) 

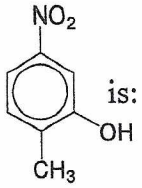
(d) 

20. How many optical isomers for the following compound?



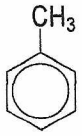
21. Excess bromine reacts with alkyne in water to give a:

(a) dibromoalkene
(b) tetrabromoalkane
(b) monobromoalkene
(d) fivebromoalkene

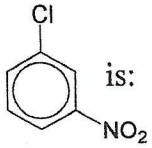
22. The IUPAC name for  is:

(a) 3-nitro-2-methyl phenol (b) 2- methyl 5-nitro- phenol

(c) 2-hydroxy-4-nitrotolene (d) 1-nitro-3-hydroxy-4-methylbenzene

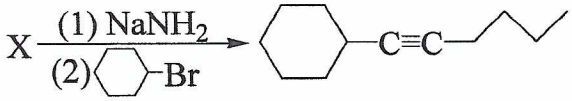
23. The common name for  is:

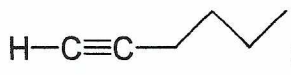
(a) phenol (b) aniline (c) toluene (d) methylbenzene

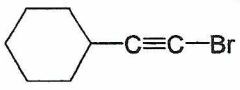
24. The common name for  is:

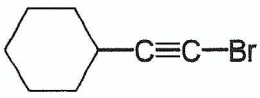
(a) o-chloronitrobenzene (b) p-chloronitrobenzene

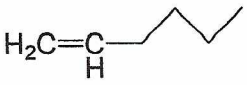
(c) m-chloronitrobenzene (d) 1-chloro-3-nitrobenzene

25. The unknown compound X is: 

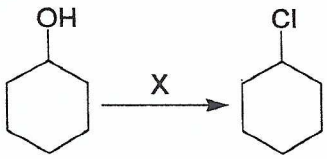
(a) 

(b) 

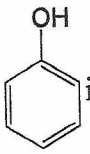
(c) 

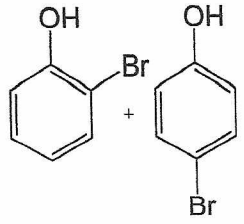
(d) 

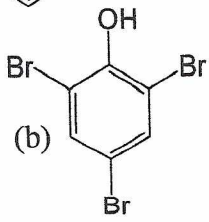
26. The reagent X needed for the following transformation is:

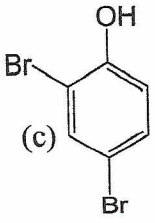


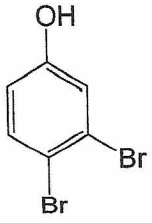
(a) HCl (b) NaCl (c) PCl_5 (d) $CHCl_3$

27. Addition of excess Br_2 to  in H_2O gives:

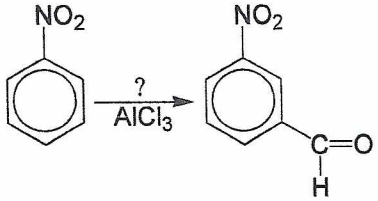
(a) 

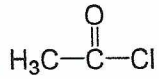
(b) 

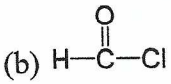
(c) 

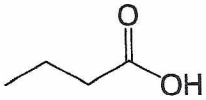
(d) 

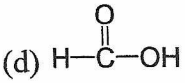
28. Which of the following reagent can be used for the following transformation:

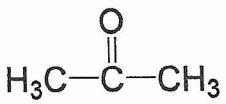


(a) 

(b) 

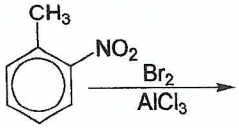
(c) 

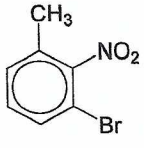
(d) 

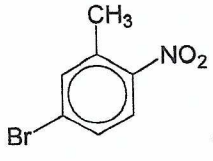
29. The common name of  is:

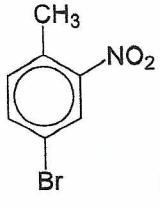
(a) Acetone (b) propanone (c) ketone (d) acetylene

30. The main product in the following reaction is:

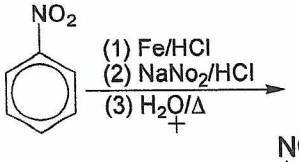


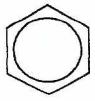
(a) 

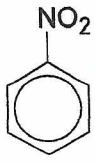
(b) 

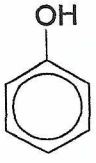
(c) 

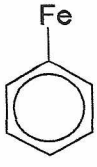
(d) none of them

31.  the product will be:

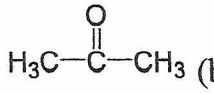
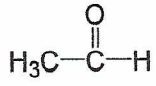
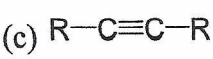
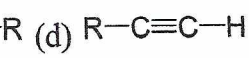
(a) 

(b) 

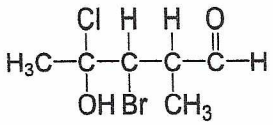
(c) 

(d) 

32. Which of the following consider to be internal alkyne:

(a)  (b)  (c)  (d) 

33. The number of optical centers in the following compound are:



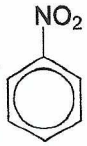
(a) 4 (b) 5 (c) 3 (d) 10

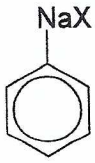
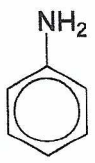
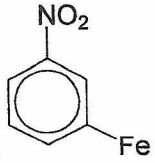
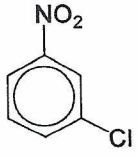
34. The number of optical isomers in the above compound are:

(a) 5 (b) 8 (c) 12 (d) 3

35. Which of the following compound has linear shape?

(a) C_2H_2 (b) C_2H_4 (c) C_2H_6 (d) C_6H_6

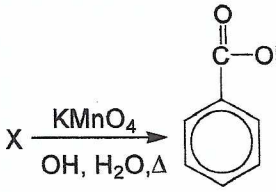
36. The product of the reaction of  with Fe/HCl is:

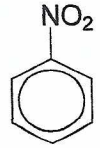
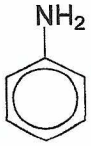
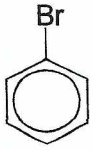
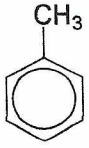
(a)  (b)  (c)  (d) 

37. Which of the following compounds can undergo electrophilic addition?

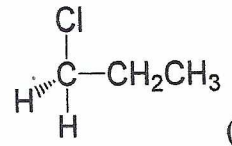
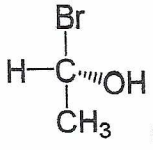
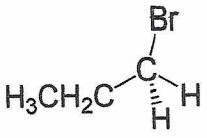
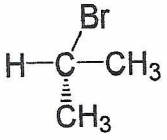
(a) Benzene (b) ethene (c) propane (d) 1-chlorobutane

38. The reactant X in the following reaction is:



(a)  (b)  (c)  (d) 

39. Which of the following is achiral compound?

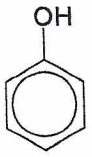
(a)  (b)  (c)  (d) 

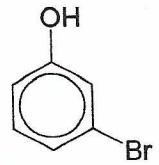
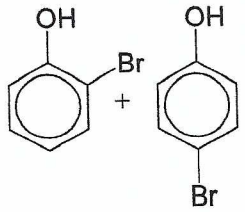
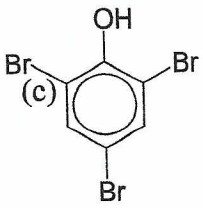
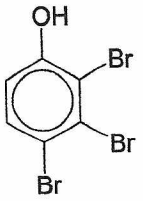
40. One of the following is incorrect:
    (a) Chlorobenzene (b) Toluene (c) Benzene (d) 3,3-dinitrobenzene

41. The bond angle in ethyne is:
    (a) 109.5° (b) 90° (c) 180° (d) 120°

42. When $R-C\equiv C-H$ reacted with CH_3MgX the product will be:

    (a) $R-C\equiv C-CH_3$ (b) $R-C\equiv CMgX$ (c) $R-CH_2-\overset{O}{\overset{\|}{C}}-H$ (d) $R-CH_2-CH_3$

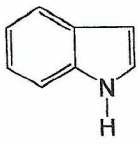
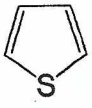
43. When  reacted with $3Br_2$ in CS_2 solvent the product will be:

    (a)  (b)  (c)  (d) 

44. Which of the following is not polar solvent?

    (a) H_2O (b)  (c) R—OH (d) ROR

45. Which of the following is not aromatic?

    (a)  (b)  (c)  (d) 

46. Give example of nitration reaction of benzene:

47. Which of the following represent charges on RMgX?