Max Marks: 200 **Date: 11.09.2022**

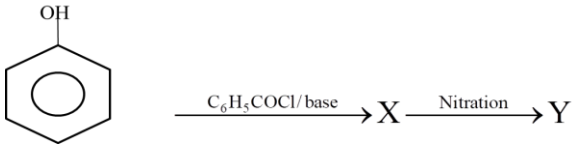
ABHIMANYU BATCH
CHEMISTRY : PART TEST
Topic: Alcohols, Phenols and Ethers

1. Which of the following is not a characteristic of alcohol?
   (a) They are lighter than water
   (b) Their boiling points rise fairly and uniformly with rising molecular weight
   (c) Lower members are insoluble in water and in organic solvents but the solubility regularly increases with molecular mass.
   (d) Lower members have a pleasant smell and burning taste, higher members are colourless and tasteless

2. When primary alcohol is oxidised with Cl_2, it gives
   (a) CH_3CHO (b) CH_3COCH_3 (c) CH_3COCl (d) $COCl_2$

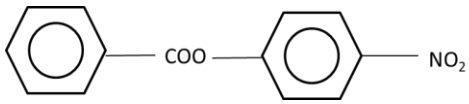
3. The best reagent to convert pent-3-en-2-ol into pent -3-en-2-one is
   (a) pyridinium chlorochromate (b) chromic anhydride in glacial acetic acid
   (c) acidic dichromate (d) acidic permanganate

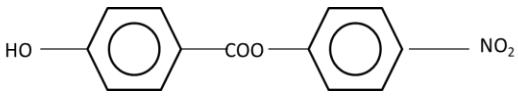
4. In which of the following reactions of alcohol there is no cleavage of C-O bond?
   (a) Dehydration reaction of alcohol (b) Oxidation reaction of alcohol
   (c) Reduction reaction of alcohol (d) Reaction of alcohol with phosphorus tribromide

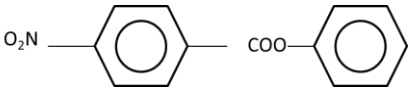
5. 

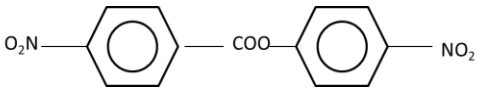
(major Product)

   Y is

   (a) 

   (b) 

   (c) 

   (d) 

Space for Rough Work

6. A compound is soluble in conc. H_2SO_4. It does not decolourise Br_2 in CCl_4 but oxidised by chromic anhydride in sulphuric acid, within two second, turning orange solution to blue green, then opaque. The original solution contains.

(a) secondary alcohol (b) an ether (c) an alkene (d) a primary alcohol

7. Which one of the following is not expected to undergo iodoform reaction?

(a) Propan-2-ol (b) 1-phenylethanol (c) 2-butanol (d) Diphenyl methanol

8. The correct order of boiling point for primary (1º). Secondary (2º) and tertiary (3º) alcohol is

(a) 1º > 2º >3º (b) 3º > 2º > 1º (c) 2º > 1º > 3º (d) 2º > 3º >1º

9. When ethylene glycol is heated with acidified potassium permanganate, the mail organic compound obtained is

(a) oxalic acid (b) glyoxal (c) formic acid (d) acetaldehyde

10. The alcohol obtained by the hydrolysis of oils and fats is

(a) glycol (b) glycerol (c) propanol (d) pentanol

11. When compound X is oxidised by acidified potassium dichromate, compound Y is formed. Compound Y on reduction with $LiAlH_4$ gives X. X and Y respectively are

(a) C_2H_5OH, CH_3COOH (b) CH_3COCH_3, CH_3COOH
(c) C_2H_5OH, CH_3COOH_3 (d) CH_3CHO, CH_3COCH_3

12. Upon treatment with I_2 and aqueous NaOH, which of the following compounds will form iodoform?

(a) $CH_3CH_2CH_2CH_2CHO$ (b) $CH_3CH_2COCH_2CH_3$
(c) $CH_3CH_2CH_2CH_2CH_2OH$ (d) $CH_3CH_2CH_2CH(OH)CH_3$

13. Which among the following compounds will give a secondary alcohol on reacting with Grignard reagent followed by acid hydrolysis?

I. HCHO II C_2H_5CHO III CH_3COCH_3 IV C_2H_5COOH

Select the correct answer using the codes given below.

(a) Only II (b) Only III (c) Both I and IV (d) Both II and IV

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14. Ethylene oxide when treated with Grignard reagent yield

(a) secondary alcohol (b) tertiary alcohol (c) cyclopropyl alcohol (d) primary alcohol

15. Which of the following combinations can be used to synthesise ethanol?

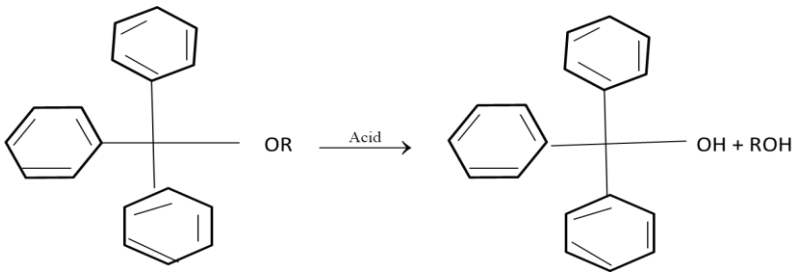
(a) CH_3MgI and CH_3COCH_3 (b) CH_3MgI and C_2H_5OH

(c) CH_3MgI and $CH_3COOC_2H_5$ (d) CH_3MgI and HCHO

16. The reaction involved in the oil of winter green test is salicylic acid $\xrightarrow[\text{Conc.}H_2SO_4]{\Delta}$ product. The product is treated with Na_2CO_3 solution. The missing reagent in the above reaction is

(a) phenol (b) NaOH (c) ethanol (d) methanol

17. The acidic hydrolysis of ether (X) shown below is fastest when



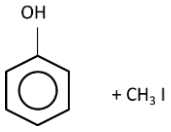
(a) one phenyl group is replaced by a methyl group

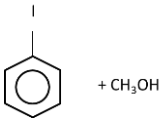
(b) one phenyl group is replaced by a para - methoxy phenyl group

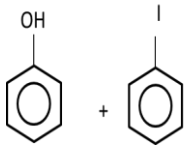
(c) two phenyl group are replaced by two para-methoxy phenyl groups

(d) no structural change is made to X

18. The products obtained when anisole is heated in a sealed tube with HI are

(a) 

(b) 

(c) 

(d) None of these

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19. The reaction,

$$CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-O-CH_2-O-CH_2-CH_3 + HI \xrightarrow{\text{Heated}}$$

Which of the following compounds will be formed?

(a) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2I + CH_3CH_2OH$

(b) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_3 + CH_3CH_2OH$

(c) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2OH + CH_3-CH_3$

(d) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2OH + CH_3CH_2I$

20. Salicylic acid is prepared from phenol by

(a) Reimer – Tiemann reaction.
(b) Kolbe's reaction
(c) Kolbe's electrolysis reaction
(d) None of the above

21. The correct order of reactivity of hydrogen halides with enthyl alcohol is

(a) HF > HCl > HBr >HI
(b) HCl > HBr > HF >HI
(c) HBr > HCl > HI >HF
(d) HI > HBr > HCI > HF

22. C_4H_8O(A) changes to 3º alcohol by reduction with $LiAlH_4$. Thus, A is

(a) $CH_3-\overset{\displaystyle O}{\overset{||}{C}}-CH_2CH_3$

(b) $CH_3CH_2CH_2CHO$

(c) $(CH_3)_2C-CH_2$ (O)

(d) $CH_3CH-CHCH_3$ (O)

23. The compound which gives turbidity immediately with Lucas reagent at room temperature is

(a) butan -1-ol
(b) butan-2-ol
(c) 2-methyl propan-2-ol
(d) 2-methyl propan-1-ol

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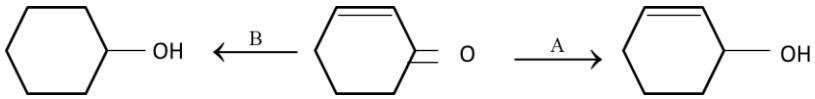
24. 

A and B respectively are

(a) H_2 / Pt, $LiAlH_4$ /H_2O

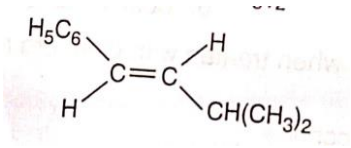
(b) H_2 /Pt, H_2 /Pt

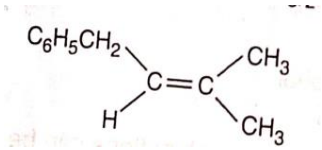
(c) $LiAlH_4$ / H_2O, $LiAlH_4$ / H_2O

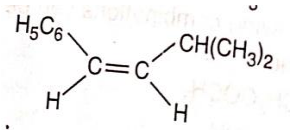
(d) $LiAlH_4$ / H_2O, H_2 /Pt

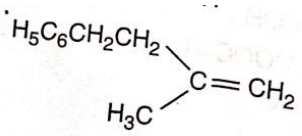
25. The main product of the following reaction is

$$C_6H_5CH_2CH(OH)CH(CH_3)_2 \xrightarrow{\text{Conc.}H_2SO_4} ?$$

(a) 

(b) 

(c) 

(d) 

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Space for Rough Work

Date: 11.09.2022

ABHIMANYU BATCH
MATHEMATICS : PART TEST
Topic: Definite Integration

26. $\int_0^1 x^2(1-x)^{5/2}dx =$

(a) $\frac{16}{693}$ (b) $\frac{693}{16}$ (c) 1 (d) 0

27. If $\int_1^3 x^2 \log x dx = p\log 3 - \frac{26}{q}$, then $\frac{p}{q} =$

(a) 0 (b) $\frac{1}{2}$ (c) $-\frac{1}{2}$ (d) 1

28. $\int_0^1 x^2 e^x dx =$

(a) e – 1 (b) e – 2 (c) e – 3 (d) e + 3

29. $\int_0^1 \tan^{-1}\left(\frac{x}{\sqrt{1-x^2}}\right)dx =$

(a) $1+\frac{\pi}{2}$ (b) $1-\frac{\pi}{2}$ (c) $\frac{\pi}{2}-1$ (d) $\pi + 1$

30. If $\int_0^{1/\sqrt{2}} \frac{\sin^{-1}x}{(1-x^2)^{3/2}}dx = A - B\log 2$, then the values of A and B are

(a) $-\frac{\pi}{4}, \frac{1}{2}$ (b) $-\frac{\pi}{4}, -\frac{1}{2}$ (c) $\frac{\pi}{4}, -\frac{1}{2}$ (d) $\frac{\pi}{4}, \frac{1}{2}$

31. The value of $\int_0^1 \tan^{-1}\left(\frac{2\sin x\cos x}{2\cos^2 x - 1}\right)dx$ is

(a) 1 (b) 0 (c) –1 (d) 2

Space for Rough Work

32. The value of $\int_0^{\infty} \frac{x}{(1+x^2)(1+x)} dx =$

(a) $\frac{\pi}{6}$ (b) $\frac{\pi}{2}$ (c) $\frac{\pi}{4}$ (d) $-\frac{\pi}{2}$

33. Which of the following is true?

(a) $\int_0^1 e^x dx = e$ (b) $\int_0^1 2^x dx = \log 2$ (c) $\int_0^1 \sqrt{x} dx = \frac{2}{3}$ (d) $\int_0^1 x dx = \frac{1}{3}$

34. If $\int_1^{\pi/2} [\sin(\log x) + \cos(\log x)] dx = A \sin[\log B]$, then the value of A and B are

(a) $-\frac{\pi}{2}, \frac{\pi}{2}$ (b) $\frac{\pi}{2}, -\frac{\pi}{2}$ (c) $\frac{\pi}{2}, \frac{\pi}{2}$ (d) $-\frac{\pi}{2}, -\frac{\pi}{2}$

35. If $\int_0^{\pi/2} \frac{x}{1+\cos x} dx = A - \log 2$, then the value of A is

(a) 2π (b) $-\pi$ (c) π (d) $\frac{\pi}{2}$

36. $\int_0^2 \sqrt{e^x} \cdot e^x dx =$

(a) $\frac{2}{3}(e^3 - 1)$ (b) $\frac{2}{3}(e^2 - 1)$ (c) $-\frac{2}{3}(e^3 - 1)$ (d) $\frac{2}{3}(e^3 + 1)$

37. $\int_0^{50\pi} \sqrt{1 - \cos 2x} dx =$

(a) $50\sqrt{2}$ (b) $-50\pi\sqrt{2}$ (c) $100\sqrt{2}$ (d) $-100\sqrt{2}$

38. $\int_0^{\pi} x \log \sin x dx =$

(a) $\pi^2 \log \frac{1}{2}$ (b) $\pi \log \frac{1}{2}$ (c) $\frac{\pi^2}{2} \log \frac{1}{2}$ (d) $\frac{\pi}{2} \log \frac{1}{2}$

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39. Evaluate $\int_0^5 \frac{1}{x+\sqrt{25-x^2}}dx$

(a) $\frac{\pi}{2}$ (b) $\frac{\pi}{3}$ (c) $\frac{\pi}{4}$ (d) $\frac{\pi}{5}$

40. $\int_1^{11} \frac{(12-x)^2}{x^2+(12-x)^2}dx =$

(a) 1 (b) 2 (c) 5 (d) 10

41. $\int_2^9 \frac{x^2}{2x^2-22x+121}dx =$

(a) $\frac{7}{2}$ (b) $\frac{2}{7}$ (c) $\frac{9}{2}$ (d) $\frac{2}{9}$

42. The value of $\int_0^{\pi/2} \frac{\sin^{5/2} x}{\sin^{5/2} x+\cos^{5/2} x}dx =$

(a) $\frac{\pi}{2}$ (b) $\frac{\pi}{4}$ (c) $\frac{\pi}{12}$ (d) 0

43. If $\int_0^{\pi/2} \frac{\sin^2 x}{\sin x+\cos x}dx = \frac{1}{A}\log(3+2\sqrt{2})$, then A =

(a) 2 (b) $\sqrt{2}$ (c) $2\sqrt{2}$ (d) $\frac{1}{2\sqrt{2}}$

44. $\int_0^{\pi/2} \frac{\cos x}{(\sin x+\cos x)^3}dx =$

(a) 1 (b) $\frac{1}{2}$ (c) 2 (d) $-\frac{1}{2}$

45. $\int_0^{\pi/2} \log(\tan x+\cot x)dx =$

(a) $-\pi \log 2$ (b) $\pi \log 2$ (c) $\pi^2 \log 2$ (d) 0

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46. $\int_{-x/4}^{x/4} x^3 \sin^4 x dx =$

(a) 1 (b) 0 (c) 2 (d) 3

47. The value of $\int_{-\pi}^{\pi} (1-x^2)\sin x \cos^2 x dx =$

(a) $2\pi - \pi^3$ (b) $\frac{7}{3} - 2\pi^3$ (c) 0 (d) $\pi + \frac{\pi^2}{3}$

48. $\int_{-\pi/2}^{\pi/2} \frac{\sin^4 x}{\sin^4 x + \cos^4 x} dx =$

(a) $\frac{\pi}{4}$ (b) π (c) $\frac{\pi}{12}$ (d) $\frac{\pi}{2}$

49. $\int_{-1/2}^{1/2} \frac{1+x^3}{4-x^3} dx =$

(a) $2\log\left(\frac{5}{3}\right)$ (b) $2\log\left(\frac{3}{5}\right)$ (c) $\frac{1}{2}\log\left(\frac{5}{3}\right)$ (d) $\frac{1}{2}\log\left(\frac{3}{5}\right)$

50. $\int_{-\pi/2}^{\pi/2} \sin^8 x dx =$

(a) $\frac{35}{128}$ (b) $-\frac{35}{128}\pi$ (c) $\frac{35}{128}\pi$ (d) $\frac{35}{256}\pi$

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Space for Rough Work

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विद्या ददाति विनयम्
Knowledge is Discipline

Learning with the Speed of Mumbai and the Tradition of Kota

Max Marks: 200 **Date: 11.09.2022**

ABHIMANYU BATCH
CHEMISTRY: PART TEST ANSWER KEY
Topic: Alcohols, Phenols and Ethers

1.	(c)	2.	(a)	3.	(b)	4.	(b)	5.	(a)
6.	(d)	7.	(d)	8.	(a)	9.	(c)	10.	(b)
11.	(a)	12.	(d)	13.	(d)	14.	(d)	15.	(d)
16.	(d)	17.	(c)	18.	(a)	19.	(d)	20.	(a)
21.	(d)	22.	(c)	23.	(c)	24.	(d)	25.	(a)

Date: 11.09.2022

ABHIMANYU BATCH
MATHEMATICS : PART TEST ANSWER KEY
Topic: Definite Integration

26.	(a)	27.	(d)	28.	(b)	29.	(c)	30.	(d)
31.	(a)	32.	(c)	33.	(c)	34.	(c)	35.	(d)
36.	(a)	37.	(c)	38.	(c)	39.	(c)	40.	(c)
41.	(a)	42.	(b)	43.	(c)	44.	(b)	45.	(b)
46.	(b)	47.	(c)	48.	(d)	49.	(c)	50.	(c)