JEE MAIN ANSWER KEY & SOLUTIONS

SUBJECT :- CHEMISTRY
CLASS :- 11th **PAPER CODE :- CWT-10**
CHAPTER :- GOC

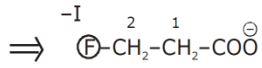
ANSWER KEY

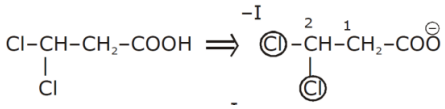
1.	(C)	**2.**	(D)	**3.**	(D)	**4.**	(B)	**5.**	(B)	**6.**	(A)	**7.**	(B)
8.	(B)	**9.**	(D)	**10.**	(C)	**11.**	(C)	**12.**	(B)	**13.**	(D)	**14.**	(B)
15.	(D)	**16.**	(C)	**17.**	(C)	**18.**	(A)	**19.**	(C)	**20.**	(C)	**21.**	24
22.	9	**23.**	5	**24.**	9	**25.**	11	**26.**	7	**27.**	10	**28.**	8
29.	84	**30.**	4										

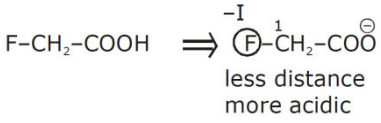
SOLUTIONS

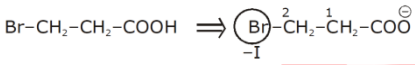
1. (C)

Sol. (a) $F–CH_2CH\ COOH$

$\Rightarrow$ 

(b) 

(c) 
less distance
more acidic

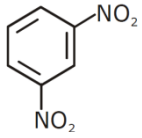
(d) 

2. (D)

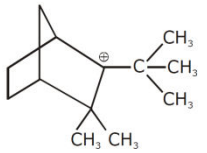
Sol. 

It has complete octet and extended conjugation.

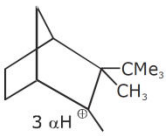
3. (D)

Sol. 

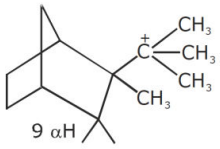
4. (B)

Sol. 

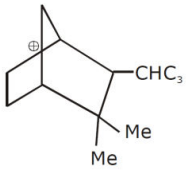
(I) No alpha hydrogen



(II)



(III)

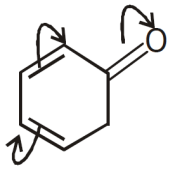


(IV)

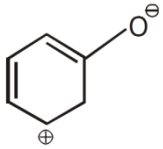
III > II > I > IV

Bredt's rule (According to bredt's rule, bridge head carbocation is unstable)

5. (B)

Sol. 

Longest C — O bond due to partial double bond character because of extended conjugation.



6. (A)

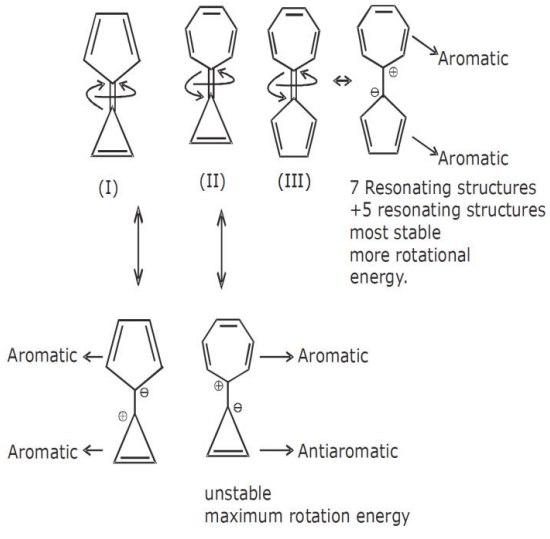
Sol. 

(I)
$\Rightarrow 4\pi e^-$
$\Rightarrow 4\times1\pi e^-$
$\Rightarrow 4\pi e^-$
Antiaromatic

(II)
$(4n + 2)\pi e^-$
$(4\times0+2)\pi e^-$
$\Rightarrow 2\pi e^-$
Aromatic

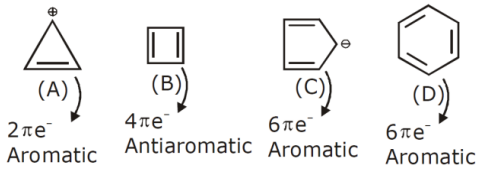
(III)
$(4n + 2)\pi e^-$
$\Rightarrow (4 + 2)\pi e^-$
$\Rightarrow 6\pi e^-$
Aromatic

7. (B)

Sol. 

8. (B)

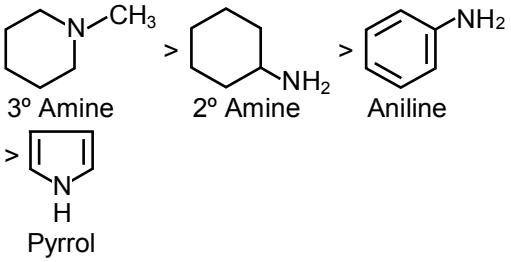
Sol.



So option (B) is anti-aromatic and remaining options are aromatic, so odd species is option (B).

9. (D)

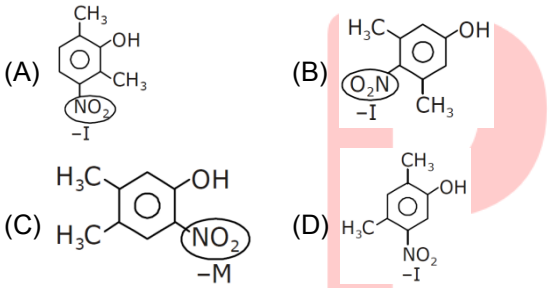
Sol.



10. (C)

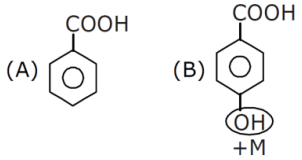
11. (C)

Sol. (A) (B) (C) (D)

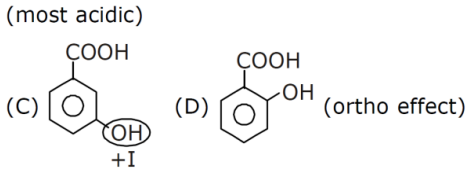


Maximum acidity (C). Ans. (C)

12. (B)



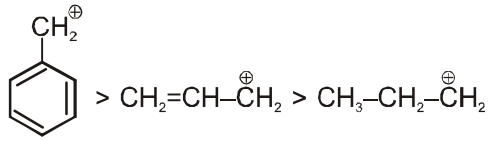
Sol.



Compound (B) is less acidic due to (+M) effect of –OH group because it is present on para position.

13. (D)

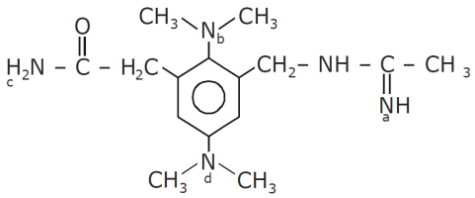
Sol. The order of stability of carbocation will be



Benzyl Allyl Propyl

14. (B)

Sol.



a is most basic due to high charge density. b is more basic than d and c due to ortho effect. c is least basic because lone pair of nitrogen is conjugated with $-\overset{\overset{O}{\|}}{C}-$ group.

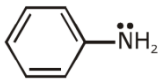
Order : a > b > d > c

15. (D)

Sol. Nitro group decreases the e^- density on benzene ring.

16. (C)

Sol.



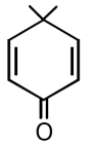
Delocalised lone pair electrons.
(least Basic)
Order of basic strength in aqueous solution⇒ 2º > 1º >3º amine > aniline.

Basic strength $\propto K_b \propto \frac{1}{pK_b}$

$(CH_3)_2NH$ is most basic so it has smallest pK_b value.

17. (C)

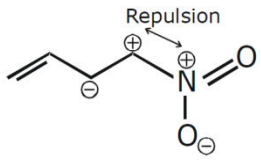
Sol.



Cross conjugation decreases stability of system.

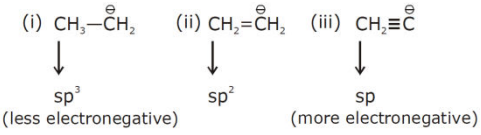
18. (A)

Sol.



19. (C)

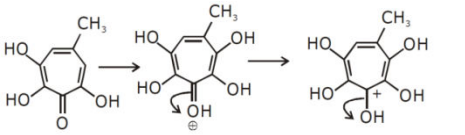
Sol.



Stability order iii > ii > i

20. (C)

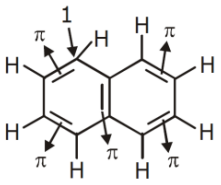
Sol.



Stable carbocation
Tropylium C^+

21. 24

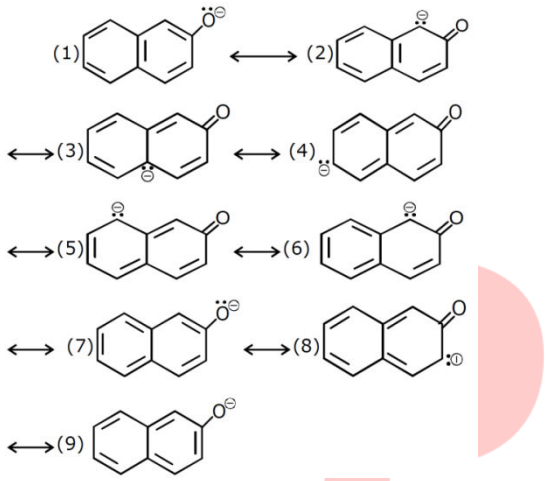
Sol.



5π Bond
19σ

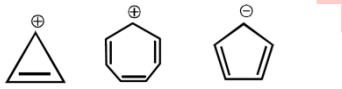
22. 9

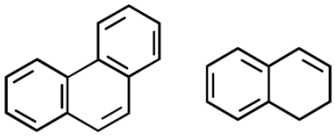
Sol.



23. 5

Sol.

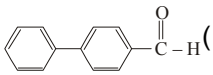




Are Aromatic

24. 9

Sol.



(7π- bond and two cyclic ring)

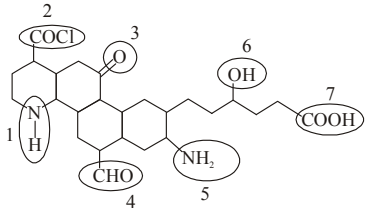
25. 11

Sol. Degree of unsaturation = Number of rings + Number of double bonds

$\Rightarrow 6 + 5 = 11$]

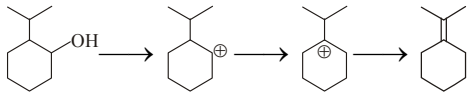
26. 7

Sol.



27. 10

Sol.



Total α-H = 10

28. 8

Sol. $\mu_{net} = \mu_{chair}\chi_{chair} + \mu_{twist\ boat}\ \chi_{twist\ boat} + \mu_{boat}\chi_{boat} + \mu_{half\ chair}\ \chi_{half\ chair}$

$\mu_{chair} = 0$

$\mu_{net} = \mu_{twist\ boat} \times 0.25$

$2 = \mu_{twist\ boat} \times 0.25 \Rightarrow \mu_{twist\ boat} = \frac{2}{0.25} = 8$

29. 84

Sol. Anthracene is 14 π e^-s system
i.e. there are 7π bonds
Expected (theoritical) heat of hydrogenation
$= -28.6 \times 7 = -200.2$ Kcal/mol
Observed (experimental)
Heat of hydrogenation $= -116.2$
R.E = observed value – expected value
$= -116.2 - (-200.2)$
= 84 kcal/mol

30. 4

Sol. All carboxylic acid and phenol are soluble in aqueous NaOH. Out of four compounds only four 3° amine is not soluble in aqueous NaOH.