Sri Chaitanya IIT Academy, India

A.P, TELANGANA, KARNATAKA, TAMILNADU, MAHARASHTRA, DELHI, RANCHI

A right Choice for the Real Aspirant

ICON CENTRAL OFFICE, MADHAPUR-HYD

Sec: Sr.IPLCO **JEE–ADVANCE** **Date: 02-08-15**
Time: 02:00 PM to 05:00 PM **2014-P2-Model** **Max Marks: 180**

PAPER-II

KEY & SOLUTIONS

PHYSICS

1	**D**	2	**A**	3	**B**	4	**A**	5	**A**	6	**A**
7	**A**	8	**A**	9	**A**	10	**D**	11	**C**	12	**B**
13	**B**	14	**C**	15	**C**	16	**D**	17	**C**	18	**A**
19	**D**	20	**A**								

CHEMISTRY

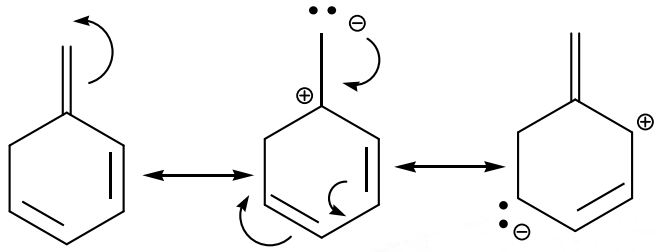
21	**D**	22	**A**	23	**D**	24	**B**	25	**B**	26	**C**
27	**A**	28	**B**	29	**B**	30	**D**	31	**B**	32	**C**
33	**B**	34	**C**	35	**C**	36	**D**	37	**C**	38	**B**
39	**A**	40	**A**								

MATHS

41	**B**	42	**A**	43	**B**	44	**C**	45	**D**	46	**C**
47	**C**	48	**D**	49	**D**	50	**C**	51	**A**	52	**B**
53	**A**	54	**C**	55	**B**	56	**D**	57	**D**	58	**A**
59	**A**	60	**C**								

CHEMISTRY

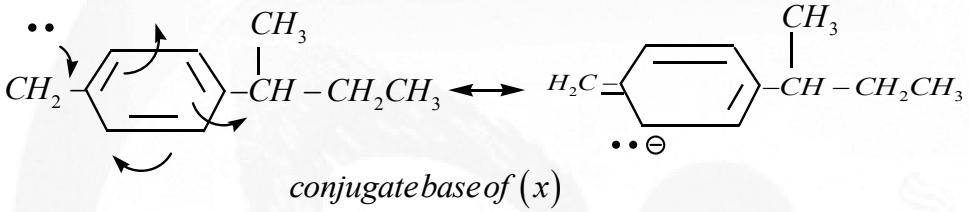
21. a,b,c are resonating structures



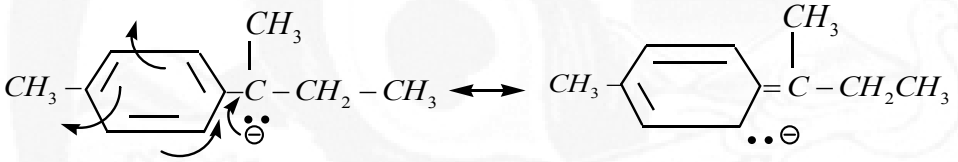
(a) (b) (c)

But d cannot be converted to any of these. It has no one αH, on the positive carbon released as $H:^{\ominus}$

22. The conjugate bases of x and y are stablised by resonance



$conjugate\,base\,of\,(x)$

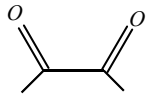
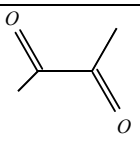


$conjugate\,base\,of\,(y)$

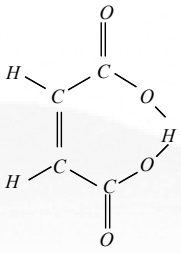
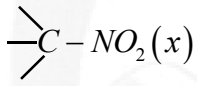
But conjugate base by of (y) is tertiary. The $-CH_3$ group releases electrons by +I effect and decreases stability

Conjugate base of 2 is not stabilized by resonance

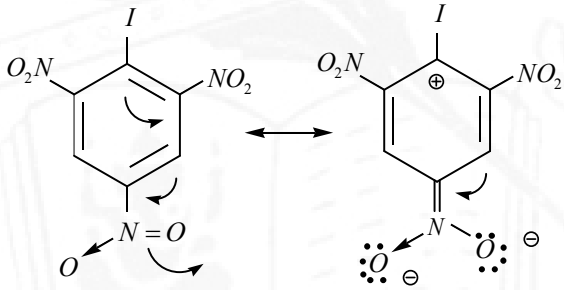
23. P and Q are identical because by rotating through 180^0, they become one and the same
P and R are diasteromers with difference in configuration at one asymmetric carbon
P & S are also diasteromers
R and S are enantiomers. One interchange at all the three asymmetric carbons – converts R into S and vice versa
24. Parent chain should have both –CHO and –COOH groups. –CHO is a substituent. Prefix alloted for it when it is part of parent chain is 'oxo'
25. a) is meso and not optically active
b) is chiral and on hydrogenation gives tran 1,4-dimethyl cyclohexane which is inactive
c) gives both cis and trans, 1,4-dimethyl cyclohexanes. Both of them are inactive. As two products are formed is not correct answer
d) is active, on hydrogenation also it gives optically active compound
26. Due to resonance the three membered ring gets relief from strain and more stable
27. a) In aceto acetic ester keto form predominates enol so $x > y$
b) y is stablised by intramolecular H-bonding. Hence it is in greater proportion

c) due to C-C bond rotation  can change into  . Its enol is not stablised by intramolecular H-bonding

d) Ring does not allow rotation of C-C bond. y is stablised by H bonding

28. Lone pair of P not involved in resonance. Lone pair of Q is involved in resonance R has a withdrawing group -C-
29. The first pk_a of maleic acid is less than that of fumaric acid as its conjugate base is  stablised by intra molecular H-bonding. Due to the same reason – the second $H^{\oplus}$ is not released from it easily and seond pk_a is greater
30. Only d exhibits geometrical isomerism, with two different groups on C_3 and C_6
31. The nitro group in ortho position is forced out of the plane of the ring due to steric repulsion exerted by large I atom. So it cannot withdraw π electrons of the ring.  remains to be single bond $1.45A^0$

    Nitro group in para position does not face any such steric inhibition. It is in the plane of the ring, and with draws π electrons from the ring. So $C-N$ bond acquires partial π bond character



32. Due to crowding in 2,4,6-trinitro – N,N-dimethyl aniline, the N,N-dimethyl group goes out of plane of the ring and the lone pairs is not involved in resonance with the ring. As it is in free state $H^{\oplus}$ is accepted easily
33. Cis isomer (c) is optically inactive with a plane of symmetry (a) has only asymmetric carbon (b) the trans isomer is optically active
34. With two asymmetric carbon atoms and cis isomer becoming inactive it has 3 – stereo isomeric forms trans and its mirror image and inactive cis isomer. cis is meso
35. Due to interamolecular H-bonding gauche form is more stable
36. Antiform of butane does not have steric strain as the two $-CH_3$ groups are farther away. As it is staggered form, it does not have torsional strain also (Both don't have angle strain)