

JEE MAIN ORGANIC CHEMISTRY – SOME BASIC PRINCIPLES AND TECHNIQUES — PYQS

Max. Marks: 148

Questions: 37

Section A (MCQ) — 37 questions

Q.1 The major product of which of the following reaction is not obtained by rearrangement reaction ?

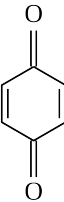
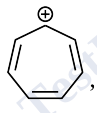
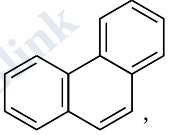
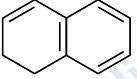
[JEE Main 2026 (Online) 8th April Evening Shift]

- (1)  + $\text{CH}_3\text{CH}_2\text{CH}_2\text{Cl} \xrightarrow{\text{Anhyd. AlCl}_3} \text{C}_6\text{H}_5\text{CH}(\text{CH}_3)_2$
- (2) $\text{CH}_3\text{C}(\text{CH}_3)_2\text{OH} \xrightarrow{\text{H}_3\text{O}^+} \text{CH}_3\text{C}(\text{CH}_3)=\text{CH}_2$
- (3) $\text{CH}_3(\text{CH}_2)_4\text{CH}_3 \xrightarrow[\text{HCl}]{\text{Anhyd. AlCl}_3} \text{CH}_3\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}_2\text{CH}_3$
- (4) $\text{CH}_3\text{C}(\text{CH}_3)_2\text{CH}_2\text{OH} \xrightarrow{\text{H}_3\text{O}^+} \text{CH}_3\text{C}(\text{CH}_3)=\text{CHCH}_3$

 Scan or tap for the
full solution
 

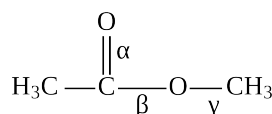
Q.2 The total number of aromatic compounds/species from the following is

[JEE Main 2026 (Online) 8th April Evening Shift]

- ,
 ,
 ,
 ,
,
 
- (1) 6 (2) 4 (3) 3 (4) 5

 Scan or tap for the
full solution
 

Q.3 Shown below is the structure of methyl acetate with three different α , β and γ carbon - oxygen bonds.



The correct order of bond lengths of these bonds is :

[JEE Main 2026 (Online) 6th April Evening Shift]

- (1) $\alpha > \beta > \gamma$ (2) $\alpha < \beta < \gamma$
 (3) $\alpha = \beta = \gamma$ (4) $\alpha < \beta = \gamma$

 Scan or tap for the
full solution
 

Q.4 Given below are two statements :
Statement-I: On the basis of inductive effect, the order of stability of alkyl carbanions is $\text{CH}_3^- > \text{CH}_3\text{CH}_2^- > (\text{CH}_3)_2\text{CH}^- > (\text{CH}_3)_3\text{C}^-$.
Statement-II: Allyl and benzyl carbanions are more stabilised by inductive effect and not by resonance effect.

In the light of the above statements, choose the correct answer from the options given below :

[JEE Main 2026 (Online) 5th April Morning Shift]

- (1) Both Statement-I and Statement-II are correct
 (2) Both Statement-I and Statement-II are incorrect
 (3) Statement-I is correct but Statement-II is incorrect
 (4) Statement-I is incorrect but Statement-II is correct

 Scan or tap for the
full solution
 

Q.5 IUPAC name of the some alkenes are given below. Find out the correct stability order.

- A. 2-Methylbut-2-ene
 B. cis-But-2-ene
 C. 2,3-Dimethylbut-2-ene
 D. Prop-1-ene

Choose the correct answer from the options given below :

[JEE Main 2026 (Online) 5th April Evening Shift]

- (1) $\text{C} > \text{A} > \text{B} > \text{D}$ (2) $\text{C} > \text{A} > \text{D} > \text{B}$
 (3) $\text{B} > \text{D} > \text{A} > \text{C}$ (4) $\text{A} > \text{B} > \text{C} > \text{D}$

 Scan or tap for the
full solution
 

Q.6 Identify the correct IUPAC name of hydrocarbon (x) containing three primary carbon atoms and with molar mass 72 g mol^{-1} .

[JEE Main 2026 (Online) 5th April Evening Shift]

- (1) 1, 1 - Dimethylcyclopropane
 (2) 2, 2 - Dimethylpropane
 (3) 2 - Methylbutane
 (4) n-pentane

Scan or tap for the full solution



Q.7 Increasing order of electron withdrawing power of following functional groups is :

- a. $-\text{CN}$
 b. $-\text{COOH}$
 c. $-\text{NO}_2$
 d. $-\text{I}$ [JEE Main 2026 (Online) 4th April Morning Shift]

- (1) $c < b < d < a$ (2) $c < a < b < d$
 (3) $d < b < a < c$ (4) $a < b < c < d$

Scan or tap for the full solution



Q.8 Match the LIST-I with LIST-II

List-I Reaction		List-II Mechanism	
A.	Williamson Synthesis	I.	Electrophilic addition
B.	Friedel Craft Reaction	II.	Free radical substitution
C.	Bromination of vinyl benzene	III.	Nucleophilic substitution
D.	Chlorination of toluene in light	IV.	Electrophilic substitution

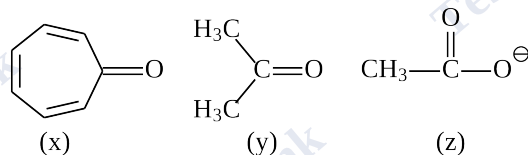
Choose the correct answer from the options given below: [JEE Main 2026 (Online) 4th April Evening Shift]

- (1) A-III, B-I, C-II, D-IV (2) A-III, B-IV, C-II, D-I
 (3) A-III, B-IV, C-I, D-II (4) A-I, B-III, C-IV, D-II

Scan or tap for the full solution



Q.9 Consider the following molecules/species :



The correct order of carbon-oxygen double bond length is :

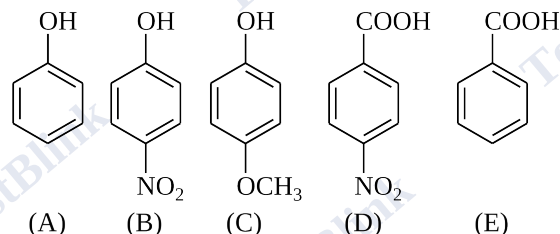
[JEE Main 2026 (Online) 4th April Evening Shift]

- (1) $x > y > z$ (2) $y > z > x$
 (3) $z > x > y$ (4) $x > z > y$

Scan or tap for the full solution



Q.10 The descending order of acidity among the following compounds is :



Choose the correct answer from the options given below : [JEE Main 2026 (Online) 4th April Evening Shift]

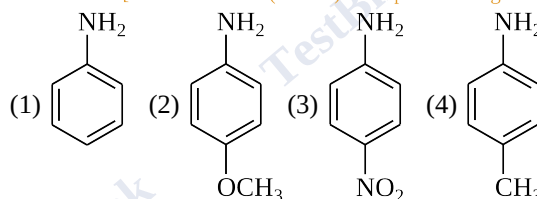
- (1) $B > D > E > A > C$ (2) $D > B > E > A > C$
 (3) $C > A > B > D > E$ (4) $D > E > B > A > C$

Scan or tap for the full solution



Q.11 The strongest conjugate acid will result from:

[JEE Main 2026 (Online) 4th April Evening Shift]



Scan or tap for the full solution



Q.12 In IUPAC nomenclature, the correct order of decreasing priority of functional group is :

[JEE Main 2026 (Online) 2nd April Morning Shift]

- (1) $-\text{CONH}_2, > \text{C}=\text{O}, -\text{CHO}, -\text{NH}_2, -\text{C}\equiv\text{C}-$
 (2) $-\text{CONH}_2, -\text{COOCH}_3, -\text{CHO}, -\text{NH}_2, -\text{OH}$
 (3) $-\text{CONH}_2, -\text{CHO}, > \text{C}=\text{O}, -\text{NH}_2, -\text{C}\equiv\text{C}-$
 (4) $-\text{CONH}_2, -\text{CHO}, -\text{CN}, -\text{NH}_2, -\text{C}\equiv\text{C}-$

Scan or tap for the full solution



Q.13 Given below are two statements :

Statement-I: In $\text{O}_2\text{N}-\text{C}_6\text{H}_4-\text{CH}^+-\text{C}_6\text{H}_4-\text{OCH}_3$, the carbocation is stabilised by +R effect of $-\text{OCH}_3$ group.

Statement-II: In $\text{O}_2\text{N}-\text{C}_6\text{H}_4-\text{CH}^--\text{C}_6\text{H}_4-\text{OCH}_3$, the carbanion is stabilised by -R effect of $-\text{NO}_2$ group.

In the light of the above statements, choose the correct answer from the options given below :

[JEE Main 2026 (Online) 2nd April Evening Shift]

- (1) Both Statement-I and Statement-II are true
 (2) Both Statement-I and Statement-II are false
 (3) Statement-I is true but Statement-II is false
 (4) Statement-I is false but Statement-II is true

Scan or tap for the full solution



Q.14 CORRECT order of stability for the following is $\text{CH}_2=\text{CH}^-$, $\text{CH}_3-\text{CH}_2^-$, $\text{CH}\equiv\text{C}^-$

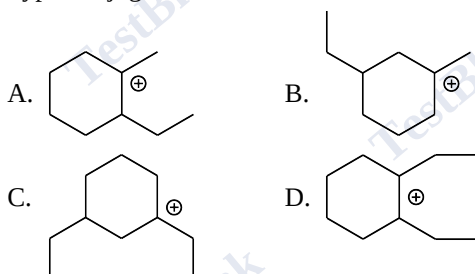
[JEE Main 2026 (Online) 28th January Morning Shift]

- (1) $\text{CH}\equiv\text{C}^- > \text{CH}_3-\text{CH}_2^- > \text{CH}_2=\text{CH}^-$
 (2) $\text{CH}_2=\text{CH}^- > \text{CH}\equiv\text{C}^- > \text{CH}_3-\text{CH}_2^-$
 (3) $\text{CH}\equiv\text{C}^- > \text{CH}_2=\text{CH}^- > \text{CH}_3-\text{CH}_2^-$
 (4) $\text{CH}_3-\text{CH}_2^- > \text{CH}_2=\text{CH}^- > \text{CH}\equiv\text{C}^-$

Scan or tap for the full solution



Q.15 The cyclic cations having the same number of hyperconjugation are :



Choose the **correct** answer from the options given below :

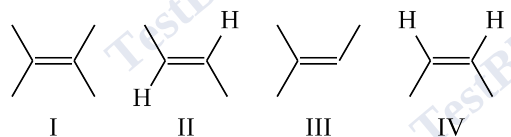
[JEE Main 2026 (Online) 28th January Evening Shift]

- (1) B and C Only (2) A and B Only
 (3) A and C Only (4) A, C and D Only

Scan or tap for the full solution



Q.16 Arrange the following alkenes in decreasing order of stability.



Choose the correct answer from the options given below:

[JEE Main 2026 (Online) 24th January Morning Shift]

- (1) III > I > II > IV (2) III > II > I > IV
 (3) I > III > II > IV (4) I > III > IV > II

Scan or tap for the full solution



Q.17 Arrange the following carbanions in the decreasing order of stability.

- I. $\text{p-Br-C}_6\text{H}_4-\text{CH}_2^-$
 II. $\text{C}_6\text{H}_5-\text{CH}_2^-$
 III. $\text{p-CH}_3\text{O-C}_6\text{H}_4-\text{CH}_2^-$
 IV. $\text{p-CHO-C}_6\text{H}_4-\text{CH}_2^-$
 V. $\text{p-CH}_3-\text{C}_6\text{H}_4-\text{CH}_2^-$

Choose the correct answer from the options given below :

[JEE Main 2026 (Online) 24th January Morning Shift]

- (1) I > II > IV > V > III (2) IV > II > I > III > V
 (3) I > IV > II > V > III (4) IV > I > II > V > III

Scan or tap for the full solution



Q.18 Find out the statements which are not true.

- A. Resonating structures with more number of covalent bonds and lesser charge separation are more stable.
 B. In electromeric effect, an unsaturated system shows +E effect with nucleophile and –E effect with electrophile.
 C. Inductive effect is responsible for high melting point, boiling point and dipole moment of polar compounds.
 D. The greater the number of alkyl groups attached to the doubly bonded carbon atoms, higher is the heat of hydrogenation.
 E. Stability of carbanion increases with the increase in s-character of the carbon carrying the negative charge.

Choose the correct answer from the options given below :

[JEE Main 2026 (Online) 24th January Evening Shift]

- (1) A, D & E only (2) A, C & D only
 (3) B & D only (4) B, D & E only

Scan or tap for the full solution



Q.19 Given below are two statements :

Statement-I: $(\text{CH}_3)_3\text{C}^\oplus$ is more stable than $\text{CH}_3^\oplus$ as nine hyperconjugation interactions are possible in $(\text{CH}_3)_3\text{C}^\oplus$.

Statement-II: $\text{CH}_3^\oplus$ is less stable than $(\text{CH}_3)_3\text{C}^\oplus$ as only three hyperconjugation interactions are possible in $\text{CH}_3^\oplus$.

In the light of the above statements, choose the **correct** answer from the options given below

[JEE Main 2026 (Online) 23rd January Evening Shift]

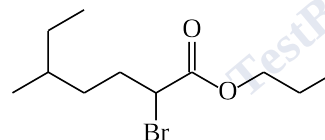
- (1) Statement-I is false but Statement-II is true
 (2) Statement-I is true but Statement-II is false
 (3) Both Statement-I and Statement-II are true
 (4) Both Statement-I and Statement-II are false

Scan or tap for the full solution



Q.20 The IUPAC name of the following compound is :

[JEE Main 2026 (Online) 22nd January Evening Shift]



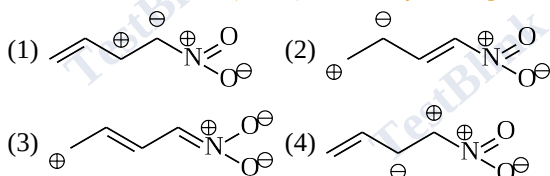
- (1) 2-bromo-5-methylhexylpropanoate
- (2) n-propyl-1-bromo-4-methylhexanoate
- (3) n-propyl-2-bromo-5-methylheptanoate
- (4) 2-bromo-5-methylpropanoate

Scan or tap for the full solution



Q.21 From the following, the least stable structure is :

[JEE Main 2026 (Online) 21st January Morning Shift]



Scan or tap for the full solution



Q.22 Match the **LIST-I** with **LIST-II**

LIST-I		LIST-II	
A.	Carbocation	I.	Species that can supply a pair of electrons.
B.	C-Free radical	II.	Species that can receive a pair of electrons.
C.	Nucleophile	III.	sp ² hybridized carbon with empty p-orbital.
D.	Electrophile	IV.	sp ² /sp ³ hybridized carbon with one unpaired electron.

Choose the **correct** answer from the options given below:

[JEE Main 2025 (Online) 8th April Evening Shift]

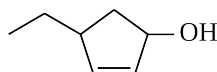
- (1) A-IV, B-II, C-III, D-I
- (2) A-II, B-III, C-I, D-IV
- (3) A-III, B-IV, C-I, D-II
- (4) A-III, B-IV, C-II, D-I

Scan or tap for the full solution



Q.23 What is the correct IUPAC name of the compound?

[JEE Main 2025 (Online) 8th April Evening Shift]



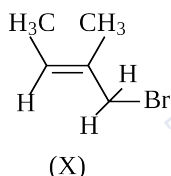
- (1) 1-Ethylcyclopent-2-en-3-ol
- (2) 4-Ethylcyclopent-2-en-1-ol
- (3) 1-Ethyl-3-hydroxycyclopent-2-ene
- (4) 4-Ethyl-1-hydroxycyclopent-2-ene

Scan or tap for the full solution



Q.24 Which of the following is the correct IUPAC name of given organic compound (X)?

[JEE Main 2025 (Online) 7th April Morning Shift]



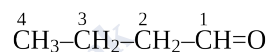
- (1) 4-Bromo-3-methylbut-2-ene
- (2) 1-Bromo-2-methylbut-2-ene
- (3) 3-Bromo-3-methylprop-2-ene
- (4) 2-Bromo-2-methylbut-2-ene

Scan or tap for the full solution



Q.25 Given below are two statements.

Statement-I: The dipole moment of $\text{CH}_3\text{-CH=CH-CH=O}$ is greater than



Statement-II: $\text{C}_1\text{-C}_2$ bond length of $\text{CH}_3\text{-CH=CH-CH=O}$ is greater than $\text{C}_1\text{-C}_2$ bond length of $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-CH=O}$

In the light of the above statements, choose the correct answer from the options given below:

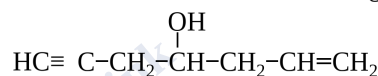
[JEE Main 2025 (Online) 4th April Morning Shift]

- (1) Both Statement-I and Statement-II are true
- (2) Statement-I is true but Statement-II is false
- (3) Statement-I is false but Statement-II is true
- (4) Both Statement-I and Statement-II are false

Scan or tap for the full solution



Q.26 The IUPAC name of the following compound is:



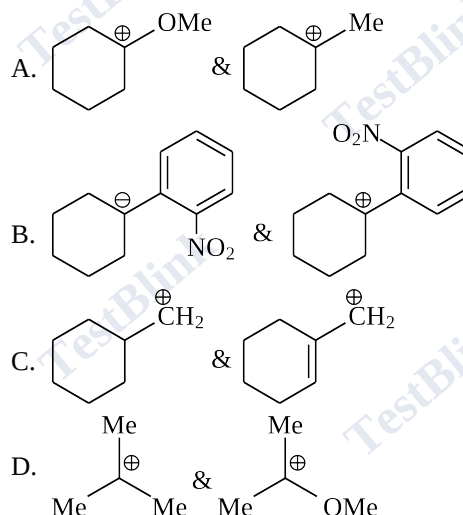
[JEE Main 2025 (Online) 4th April Evening Shift]

- (1) 4-Hydroxyhept-6-en-1-yne
- (2) Hept-1-en-6-yn-4-ol
- (3) Hept-6-en-1-yn-4-ol
- (4) 4-Hydroxyhept-1-en-6-yne

Scan or tap for the full solution



Q.27 In which pairs, the first ion is more stable than the second?



[JEE Main 2025 (Online) 4th April Evening Shift]

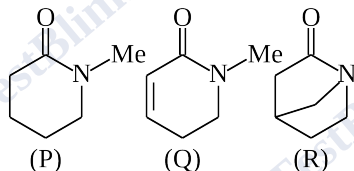
- (1) (A) & (B) only (2) (B) & (D) only
 (3) (A) & (C) only (4) (B) & (C) only

Scan or tap for the full solution



Q.28 The correct order of basicity for the following molecules is :

[JEE Main 2025 (Online) 4th April Evening Shift]



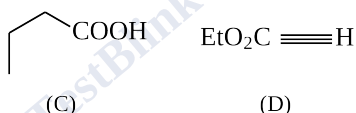
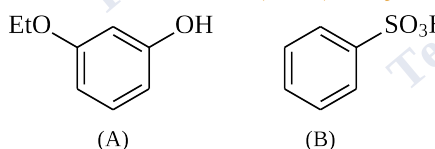
- (1) $R > P > Q$ (2) $P > Q > R$
 (3) $R > Q > P$ (4) $Q > P > R$

Scan or tap for the full solution



Q.29 The least acidic compound, among the following is:

[JEE Main 2025 (Online) 3rd April Morning Shift]



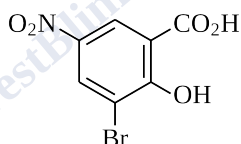
- (1) B (2) D (3) A (4) C

Scan or tap for the full solution



Q.30 What is the correct IUPAC name of ?

[JEE Main 2025 (Online) 3rd April Evening Shift]



- (1) 3-Bromo-2-hydroxy-5-nitrobenzoic acid
 (2) 2-Hydroxy-3-bromo-5-nitrobenzoic acid
 (3) 3-Bromo-4-hydroxy-1-nitrobenzoic acid
 (4) 5-Nitro-3-bromo-2-hydroxybenzoic acid

Scan or tap for the full solution



Q.31 Given below are two statements :

Statement-I: Hyperconjugation is not a permanent effect.

Statement-II: In general, greater the number of alkyl groups attached to a positively charged carbon, greater is the hyperconjugation interaction and stabilization of the cation.

In the light of the above statements, choose the correct answer from the options given below

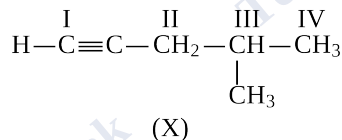
[JEE Main 2025 (Online) 3rd April Evening Shift]

- (1) Statement-I is false but Statement-II is true
 (2) Statement-I is true but Statement-II is false
 (3) Both Statement-I and Statement-II are false
 (4) Both Statement-I and Statement-II are true

Scan or tap for the full solution



Q.32 Consider the following compound (X)



(X)

The most stable and least stable carbon radicals, respectively, produced by homolytic cleavage of corresponding C–H bond are :

[JEE Main 2025 (Online) 2nd April Morning Shift]

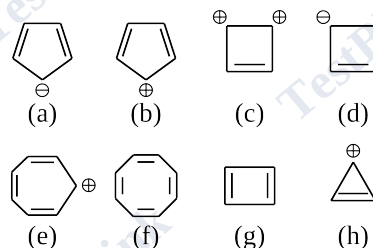
- (1) III, II (2) II, IV (3) I, IV (4) II, I

Scan or tap for the full solution



Q.33 Designate whether each of the following compounds is aromatic or not aromatic.

[JEE Main 2025 (Online) 2nd April Morning Shift]



- (1) a, c, d, e, h aromatic and b, f, g not aromatic
 (2) b, e, f, g aromatic and a, c, d, h not aromatic
 (3) a, b, c, d aromatic and e, f, g, h not aromatic
 (4) e, g aromatic and a, b, c, d, f, h not aromatic

Scan or tap for the full solution



Q.34 In 3,3-dimethylhex-1-en-4-yne, there are _____ sp^3 , _____ sp^2 and _____ sp hybridised carbon atoms respectively.

[JEE Main 2025 (Online) 2nd April Evening Shift]

- (1) 4, 2, 2 (2) 2, 4, 2 (3) 3, 3, 2 (4) 2, 2, 4

Scan or tap for the full solution



Q.35 Match List - I with List - II.

List - I Structure	
A.	$\text{H}_3\text{C}-\text{CH}_2-\underset{\text{C}_2\text{H}_5}{\text{CH}}-\text{CH}_2-\underset{\text{CH}_3}{\text{CH}}-\text{C}_2\text{H}_5$
B.	$(\text{CH}_3)_2\text{C}(\text{C}_3\text{H}_7)_2$
C.	

List - I Structure	
D.	
List - II IUPAC Name	
I.	4-Methylpent-1-ene
II.	3-Ethyl-5-methylheptane
III.	4,4-Dimethylheptane
IV.	2-Methyl-1,3-pentadiene

Choose the correct answer from the options given below :

[JEE Main 2025 (Online) 29th January Morning Shift]

- (1) (A)-(II), (B)-(III), (C)-(IV), (D)-(I)
 (2) (A)-(II), (B)-(III), (C)-(I), (D)-(IV)
 (3) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)
 (4) (A)-(III), (B)-(II), (C)-(I), (D)-(IV)

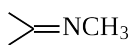
Scan or tap for the
full solution



Q.36 Total number of nucleophiles from the following is :

NH_3 , PhSH , $(\text{H}_3\text{C})_2\text{S}$, $\text{H}_2\text{C}=\text{CH}_2$, OH^- , H_3O^+ , $(\text{CH}_3)_2\text{CO}$,

[JEE Main 2025 (Online) 29th January Morning Shift]



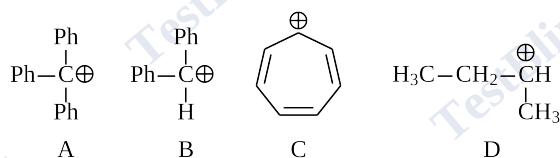
- (1) 4 (2) 6 (3) 5 (4) 7

Scan or tap for the
full solution



Q.37 The correct order of stability of following carbocations is :

[JEE Main 2025 (Online) 28th January Morning Shift]



- (1) $A > B > C > D$ (2) $C > B > A > D$
 (3) $B > C > A > D$ (4) $C > A > B > D$

Scan or tap for the
full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	2	2	2	3	1	3	3	3	4	4	3
Ques.	12	13	14	15	16	17	18	19	20	21	22
Ans.	3	1	3	3	3	4	3	2	3	4	3
Ques.	23	24	25	26	27	28	29	30	31	32	33
Ans.	2	2	2	2	1	3	2	1	1	4	1
Ques.	34	35	36	37							
Ans.	1	1	3	4							