IIT-JAM CHEMISTRY 2023

TEST : NAMED REACTION & REARRANGEMENTS

Time 00 : 45 Hour **Date : 29-09-2022**

M.M. : 35

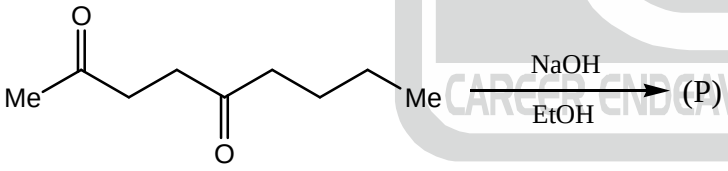
INSTRUCTION:

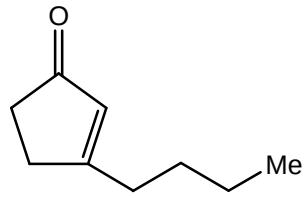
1. **Attempt all the questions.**
2. **Section-A contains 10 Multiple Choice Questions (MCQ). Each question has 4 choices (a), (b), (c) and (d), for its answer, out of which ONLY ONE is correct. From Q.1 to Q.5 carries 1 Marks and Q.6 to Q.10 carries 2 Marks each.**
3. **Section-B contains 05 Multiple Select Questions(MSQ). Each question has 4 choices (a), (b), (c) and (d) for its answer, out of which ONE or MORE than ONE is/are correct. For each correct answer you will be awarded 2 marks.**
4. **Section-C contains 06 Numerical Answer Type (NAT) questions. Q.16 to Q.17 carry 1 Mark and Q.18 to Q.21 carries 2 Marks each. The answer of each (NAT) is a real number.**
5. **In all sections, questions not attempted will result in zero mark. In Section–A (MCQ), wrong answer will result in negative marks. For all 1 mark questions, 1/3 marks will be deducted for each wrong answer. For all 2 marks questions, 2/3 marks will be deducted for each wrong answer. In Section–B (MSQ), there is no negative and no partial marking provisions. There is no negative marking in Section–C (NAT) as well.**

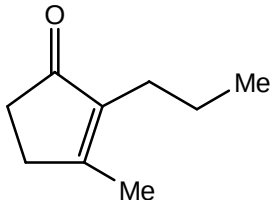
PART-A

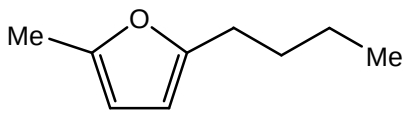
Q.1 to Q.05: Carry 1 Mark each.

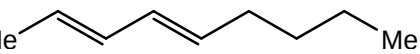
1. The major product (P) formed in the following reaction



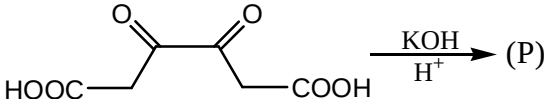
(a) 

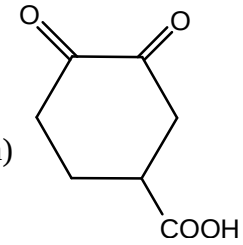
(b) 

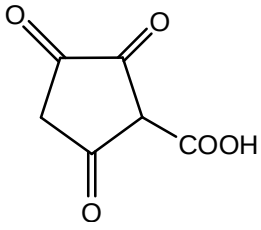
(c) 

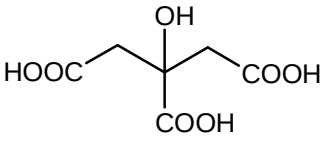
(d) 

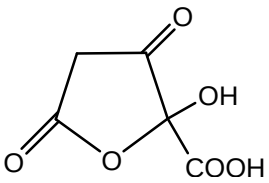
2. The major product (P) formed in the following reaction is



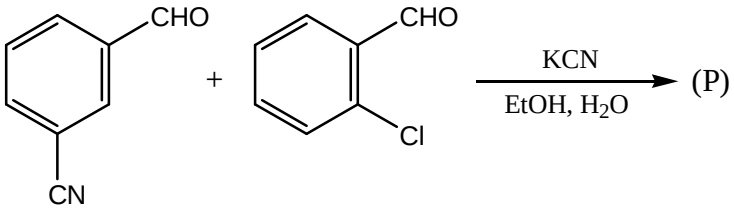
(a) 

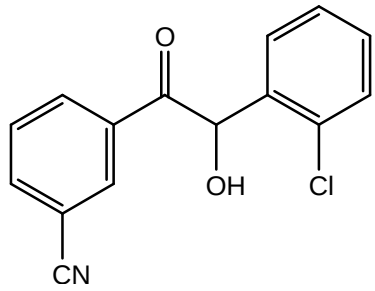
(b) 

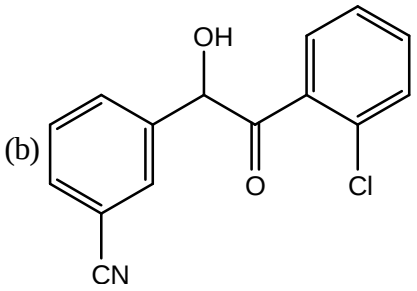
(c) 

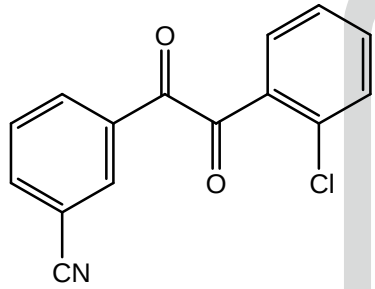
(d) 

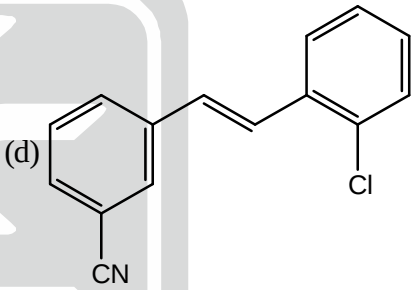
3. The major product (P) formed in the following reaction



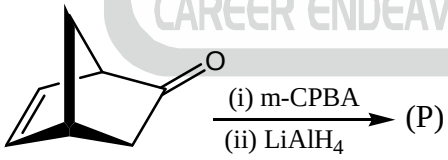
(a) 

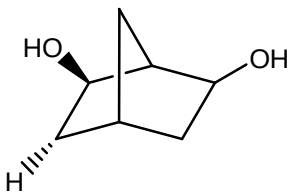
(b) 

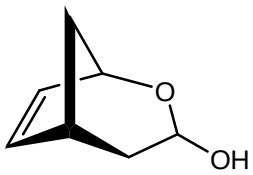
(c) 

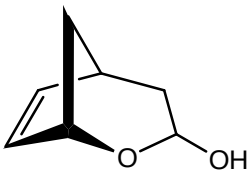
(d) 

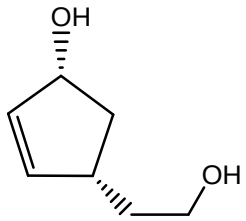
4. The major product (P) formed in the following reaction,



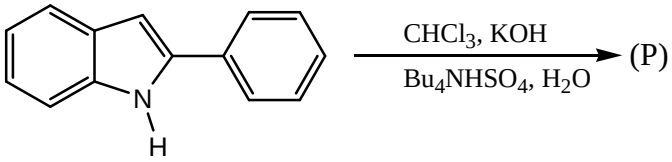
(a) 

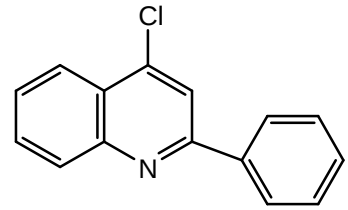
(b) 

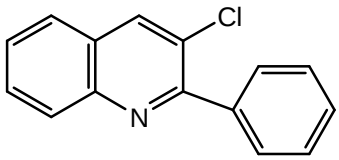
(c) 

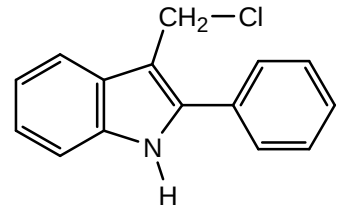
(d) 

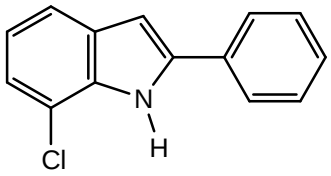
5. The major product (P) formed in the following reaction



(a) 

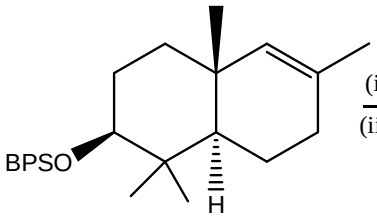
(b) 

(c) 

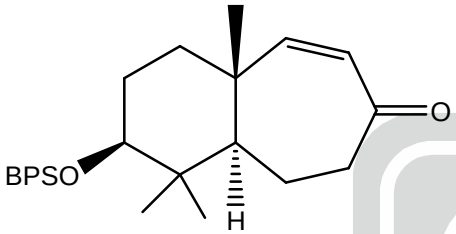
(d) 

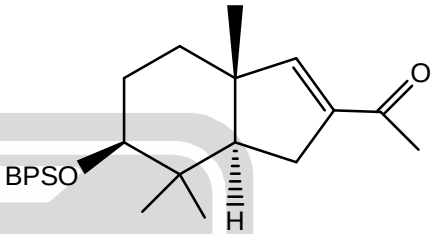
Q.6 to Q.10: Carry 2 Marks each.

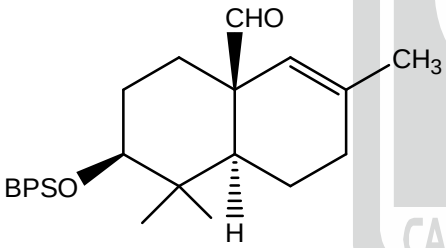
6. The major product (P) formed in the following reaction

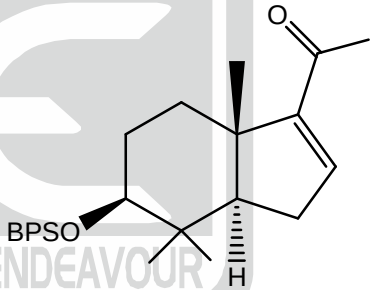


(i) O_3, Me_2S
(ii) K_2CO_3, MeOH/Δ → (P)

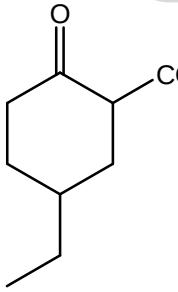
(a) 

(b) 

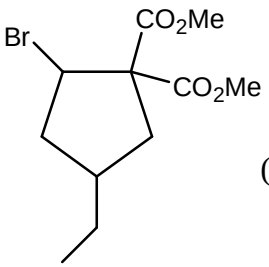
(c) 

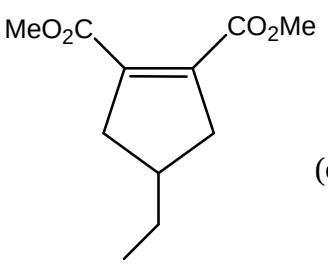
(d) 

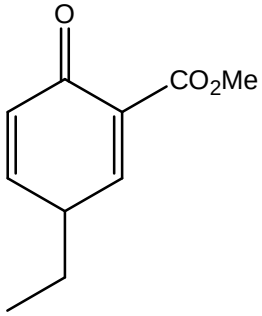
7. The major product (P) formed in the following reaction

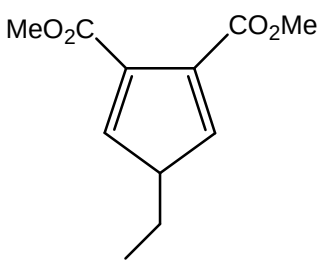


(i) Br_2/Et_2O (2 eq.)
(ii) NaOMe/MeOH → (P)

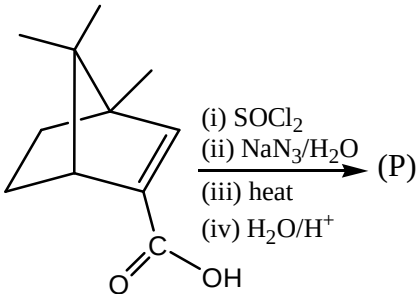
(a) 

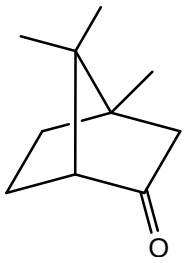
(b) 

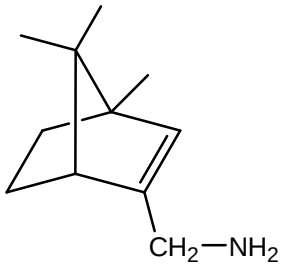
(c) 

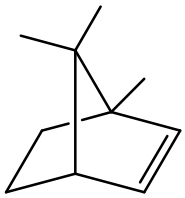
(d) 

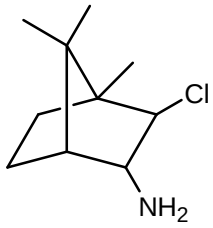
8. The major product (P) formed in the following reaction



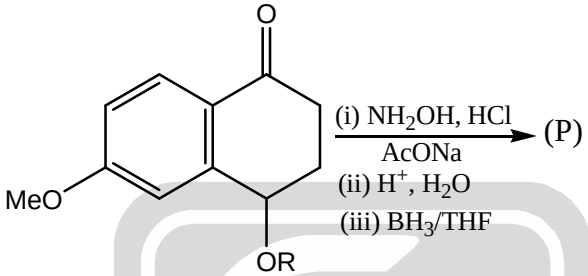
(a) 

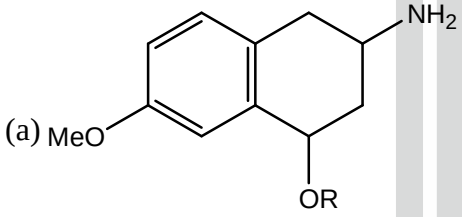
(b) 

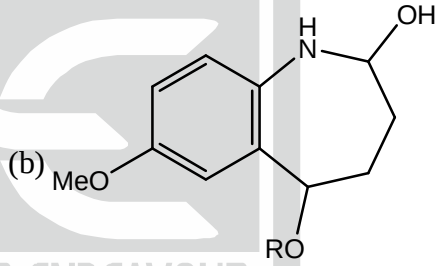
(c) 

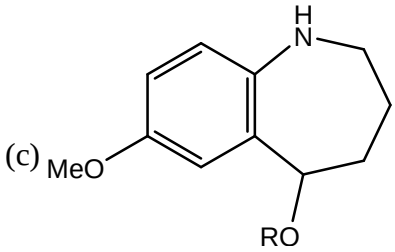
(d) 

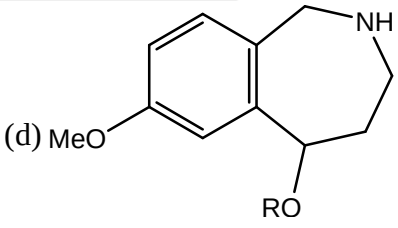
9. The major product (P) formed in the following reaction,



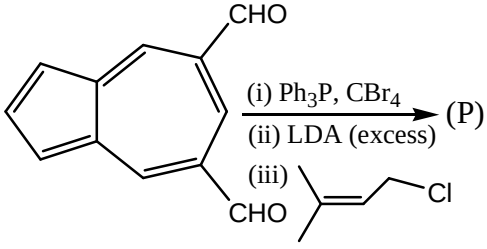
(a) 

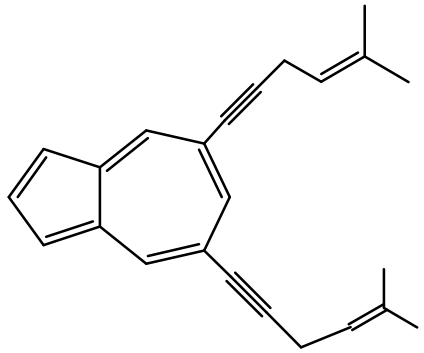
(b) 

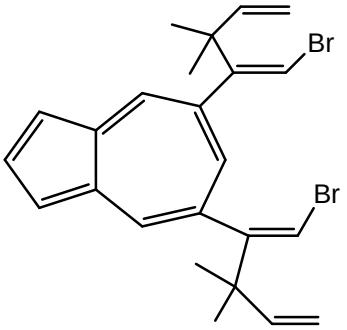
(c) 

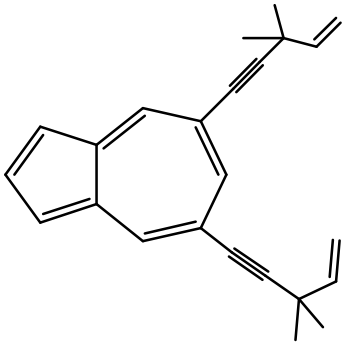
(d) 

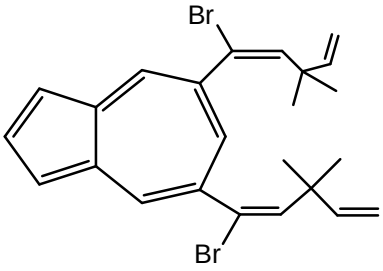
10. The major product (P) is



(a) 

(b) 

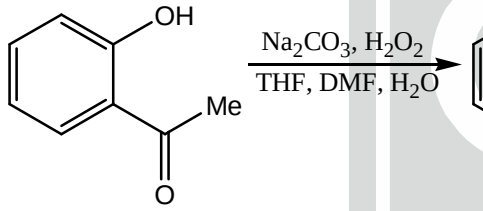
(c) 

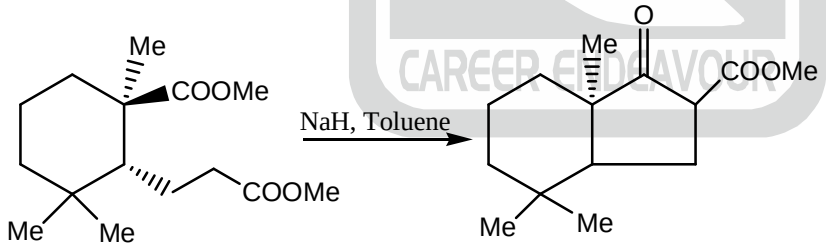
(d) 

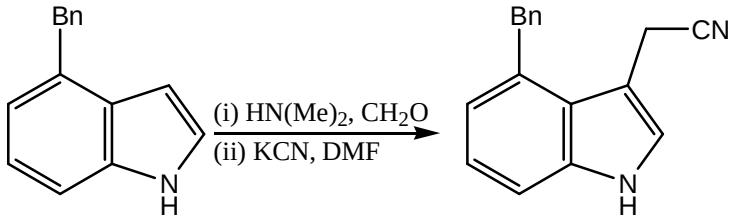
PART-B

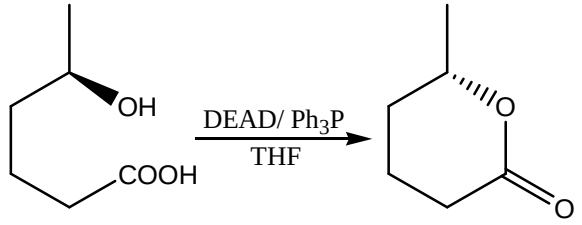
Q.11 to Q.15: Carry 2 Marks each.

11. Select the option(s) in which correct major product formed with their reaction condition,

(a) 

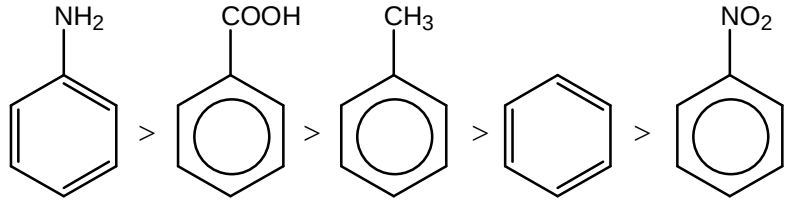
(b) 

(c) 

(d) 

12. Correct statement(s) in the following is/are

(a) In Pinacol-Pinacolone rearrangement, migratory aptitude order is



(b) In Baeyer-villiger oxidation reaction, migratory aptitude order is
$3^o > 2^o >$ Benzylic $\approx$ Phenylic > methyl

(c) In Beckmann rearrangement migratory group are anti to hydroxyl group

(d) Carbanion intermediate formed in semipinacolone rearrangement.

13. Select the correct relationship in the following

	Intermediate	**Product**
(a) Benzoin condensation	Carbanion	α-hydroxy ketone
(b) Cannizzaro reaction	Carbanion	Acid + Alcohol
(c) Curtius	Nitrene	Amine
(d) Simmon's Smith	Carbene	Three membered cyclic product

14. Correct statement(s) in the following

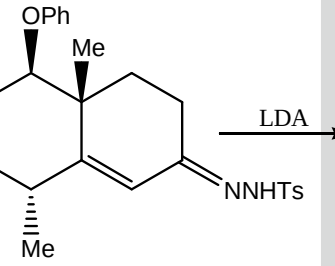
(a) Carbocation can rearrange in the Pinacol-Pinacolone rearrangement

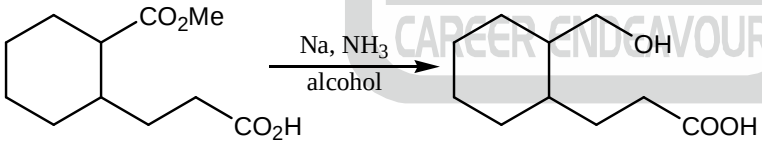
(b) Carbocation can rearrange in Friedal Craft acylation reaction

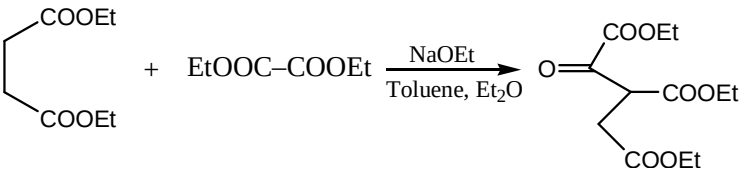
(c) In Mitsunobu reaction inversion of configuration occur

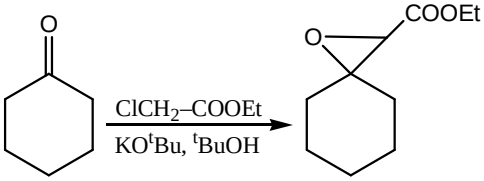
(d) In wittig reaction, formation of four membered ring transition state

15. Correct major product with appropriate condition

(a)


(b)


(c)


(d)


PART-C

Q.16 to Q.17: Carry 1 Mark each.

16. Carbene intermediate formed in the following reaction

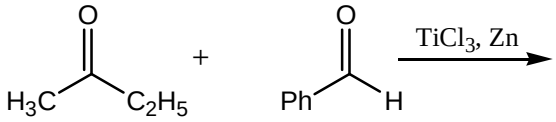
(1) Reimer Tiemann reaction
(2) Simmons smith reaction
(3) Wolff rearrangement
(4) Wagner Meerwein rearrangement
(5) Wittig reaction
(6) Corey fuchs reaction

17. Number of radical initiated reactions in the following is _____

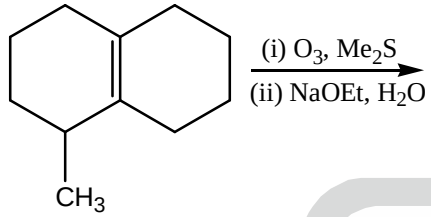
(1) Cannizzaro reaction
(2) Clemmension reduction reaction
(3) Acyloin condensation
(4) Mc-murry reaction
(5) Birch reduction
(6) Perkin reaction

Q.18 to Q.21: Carry 2 Marks each.

18. Number of product(s) formed in the following reaction,



19. Number of aldol product(s) formed in the following reaction,



20. Number of reactions/rearrangements in the following in which Isocyanate intermediate formed _____

(1) Hofmann rearrangement
(2) Curtius rearrangement
(3) Lossen rearrangement
(4) Schmidt rearrangement
(5) Baeyer villigers oxidation
(6) Beckmann rearrangement
(7) Bamford-stevens reaction
(8) Chichibabin reaction

21. Carbon-carbon bond formation occur in the following

(1) Perkin condensation
(2) Benzoin condensation
(3) Clemmension reduction
(4) Cannizzaro reaction
(5) Stobbe condensation
(6) Claisen ester condensation
(7) Mc-Murry reaction
(8) Baeyer villigers oxidation
(9) Fries rearrangement
(10) Reimer-Tiemann Reaction

IIT-JAM CHEMISTRY 2023

TEST : NAMED REACTION & REARRANGEMENTS

Time 00 : 45 Hour **Date : 29-09-2022**

M.M. : 35

PART - A

1. (b)	2. (c)	3. (b)	4. (d)	5. (b)	6. (b)	7. (b)
8. (a)	9. (c)	10. (a)				

PART - B

11. (a,b,c,d)	12. (b,c)	13. (a,c)	14. (a,c,d)	15. (a,b,c,d)

PART - C

16. (2)	17. (4)	18. (6)	19. (4)	20. (4)	21. (7)