University of Ruhuna – Faculty of Technology

Bachelor of Biosystems Technology Degree
Level I (Semester II) Examination
September 2020
Course Unit: BST 1232 – Organic Chemistry (Theory)

Index No: .....

INSTRUCTIONS: Please read the instruction carefully before answering the paper.
Number of pages: Five (5)
Time allowed: One hour (1 hour)
Please ensure that you have written your **index number** in the space provided above.
There are 20 questions and answer all the questions.
Questions no. 1 – 12 - Each question has four answers, indexed under a, b, c, d. Mark the correct answer with '✓' (e.g. ✓b. Correct answer.)
Only one answer should be marked in each question. If more than one answer is marked for a question, that question will not be evaluated.
Mobile phones and calculators are not permitted.

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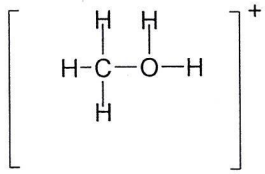
1. Select the element that corresponds to the electronic configuration of $1s^2 2s^2 2p^6 3s^2$

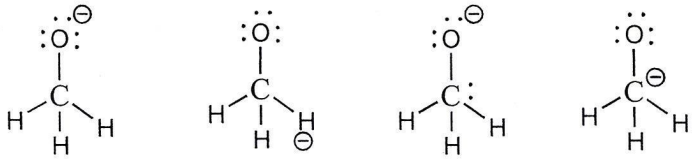
(a) P (b) O (c) Mg (d) Cl

2. What is the formal charge on O in the following ion?



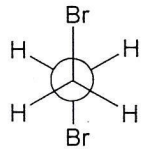
(a) 0 (b) +1 (c) -2 (d) +2

3. Select the correct Lewis structure for CH_3O^-

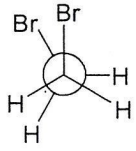


(a) (b) (c) (d)

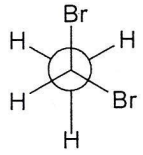
4. Select the lowest energy conformation of 1,2-dibromoethane.



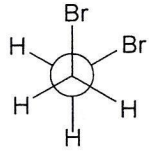
(a)



(b)

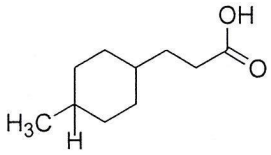


(c)



(d)

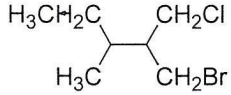
5. The functional group on the following compound is



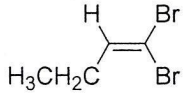
(a) Ketone
(b) phenol
(c) aldehyde
(d) Carboxylic acid

6. Select the compound that shows geometrical isomerism.

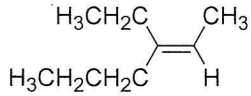
(a)



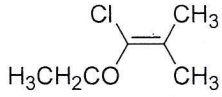
(b)



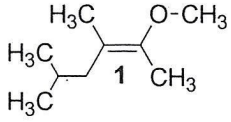
(c)

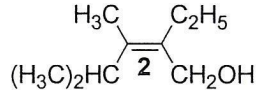


(d)



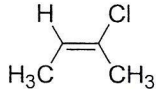
7. The correct E,Z configurations of the following compounds are respectively



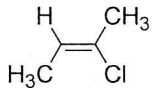


(a) **1** E, **2** E (b) **1** E, **2** Z (c) **1** Z, **2** Z (d) **1** Z,**2** E

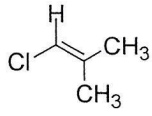
8. Select the correct structure for (Z)-2-chloro-2-butene.



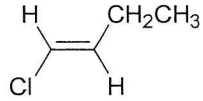
(a)



(b)

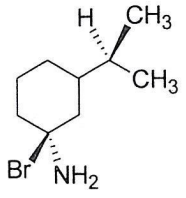


(c)



(d)

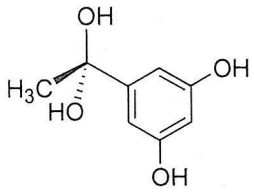
9. How many chiral carbons are present in the molecule given below?



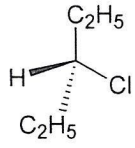
(a) 1 (b) 4

(c) 2 (d) 3

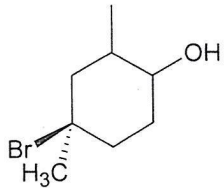
10. Select the chiral molecul from the following compounds.



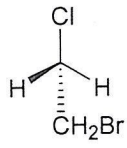
(a)



(b)

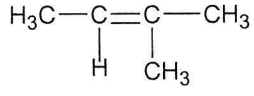


(c)

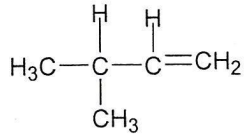


(d)

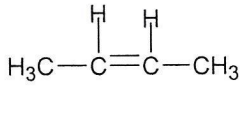
11. Correct structure for 2-methyl-2-butene is.



(a)



(b)



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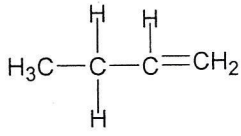
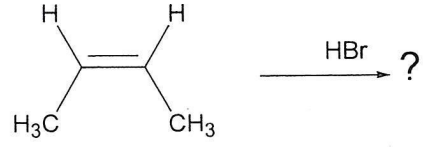
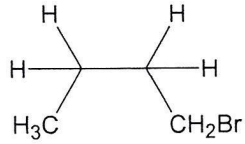


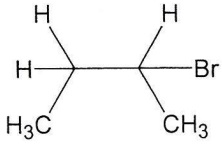
(d)

12. The product of the following reaction is

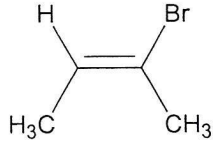




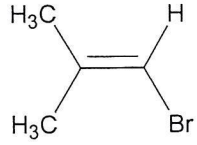
(a)



(b)



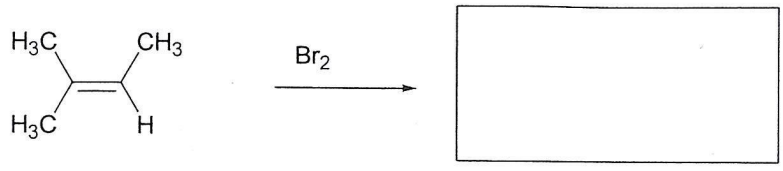
(c)



(d)

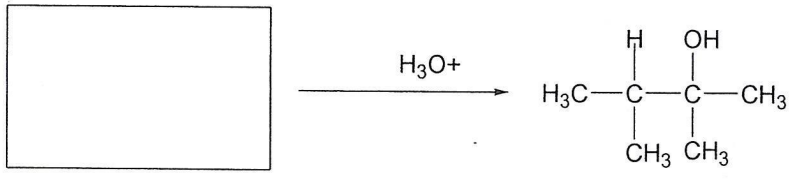
(12 x 03 marks)

13. Write down the product of the following reaction.



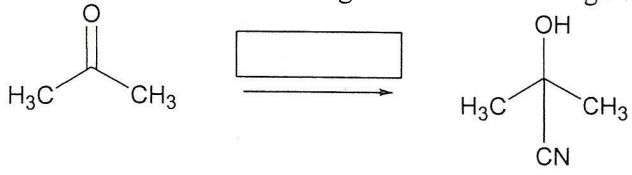
(06 marks)

14. Write down the reactant of the following reaction



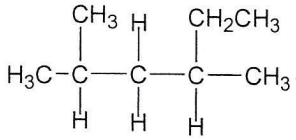
(06 marks)

15. Write down the correct reagent for the following conversion.



(04 marks)

16. Give the IUPAC name of the following compound.



(06 marks)

17. Draw the structure of 3-ethyl-2-methylhexane.

(06 marks)

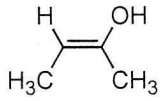
18. Draw the structures for the following compounds.

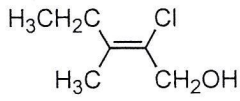
trans- 2-butene

cis- 2,3-dichloro-2-pentene

(2 x 06 marks)

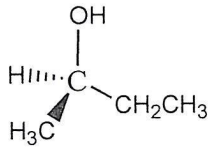
19. Assign the E , Z designations to the following structures.

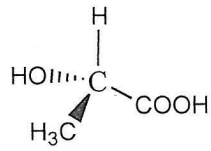




(2 x 06 marks)

20. Determine the configuration (R/S) of the following molecules.





(2 x 06 marks)

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