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1B3N20133   (Pages : 2),   Reg. No:...........................

                                                   Name: ....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Third Semester B.Sc Degree Examination, November 2020

BCH3B03 – Physical Chemistry – I

(2019 Admission onwards)

Time: 2 hours   Max. Marks: 60

Section A (Short answers)
(Answer questions up to 20 marks. Each question carries 2marks)

1. Distinguish between most probable velocity and root mean square velocity.

2. Define critical temperature. Mention its significance.

3. Calculate the RMS velocity of N_2 molecule at 25^0C.

4. What are intensive properties? Give examples.

5. State the zeroth law of thermodynamics.

6. Explain Joule Thomson Coefficient for an ideal gas.

7. Explain the term standard state.

8. Show that $S = k \, ln \, w$.

9. Distinguish between Statistical probability and thermodynamic probability

10. Write down Van't Hoff equation and explain the terms.

11. Define a plane of symmetry. What is the associated symmetry operation ?

12. Define an improper rotation axis.

[Ceiling of marks: 20]

Section B (Paragraph)
(Answer questions up to 30 marks. Each question carries 5 marks)

13. What are the postulates of kinetic theory of gases?

14. T_c and P_c of a gas are 390 K and 40 atm respectively. Calculate its critical constants

15. State and explain zeroth law of thermodynamics.

16. Show that Cp- Cv=R for one mole of an ideal gas.

17. Discuss the Nernst heat theorem.

18. Define K_p and K_c. Derive the relationship between them.

19. Explain the term point group and the criteria for it.

[Ceiling of marks: 30]

Section C (Essay)
(Answer any one. Each question carries 10 marks)

20. Discuss Maxwell Boltzmann distribution of molecular velocities. Account for the variation of molecular velocities at higher temperature.

21. Discuss Linde's process and Claude's process for the liquefaction of gases.

[1 x 10 = 10 marks]

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Third Semester B.Sc Degree Examination, November 2020

BCH3C03 – Organic Chemistry

(2019 Admission onwards)

Time: 2 hours   Max. Marks: 60

Section A (Short answers)
(Answer questions up to 20 marks. Each question carries 2marks)

1. Which is more stable, ethene or propene ? Why ?

2. What are nucleophiles ? Give two examples.

3. What is meant by heterolysis.

4. Define the term Conformation.

5. Explain the term Specific rotation.

6. State Hückel's Rule of Aromaticity.

7. Illustrate Friedel-Crafts reactions with an example.

8. Explain Wurt'z reaction with a suitable example.

9. Illustrate Kolbe electrolysis.

10. Explain Hoffmann's bromamide reaction ?

11. Define isoelectric point.

12. Explain the terms "enzymes" with suitable examples.

[Ceiling of marks: 20]

Section B (Paragraph)
(Answer questions up to 30 marks. Each question carries 5 marks)

13. Arrange ammonia, methylamine, dimethylamine and trimethylamine in the decreasing order of their basicities. Explain the theoretical basis of your answer.

14. Draw the conformations of methylcyclohexane and explain their relative stability.

15. Explain the optical isomerism of lactic acid with structural representation.

16. Explain the term Walden inversion?

17. How is methyl orange prepared ? What is its use?

18. What is meant by denaturation of a protein ? Explain the factors which cause denaturation of a protein.

19. State and explain isoprene rule.

[Ceiling of marks: 30]

Section C (Essay)
(Answer any one. Each question carries 10 marks)

20. Explain any five synthetic applications of benzenediazonium chloride

21. (a) What are nucleic acids ? Discuss the differences between the two types of nucleic acids.

    (b) Explain the term DNA fingerprinting and discuss its applications.

[1 x 10 = 10 marks]