

SEM - II (2020-23)
 Mid-Sem Internal Examination
 Paper: CHE - II - C - 204 - II

Physical chemistry, - II

Answer any two questions. ($7\frac{1}{2} \times 2 = 15$ marks)

- ① Define the following terms
 - (a) Intensive & extensive properties
 - (b) Internal energy
 - (c) Reversible process
 - (d) State function
- ② State and explain the first law of thermodynamics. Derive its mathematical expression for it? — $7\frac{1}{2}$ marks
- ③ What do you mean by C_p & C_v ? Deduce a relationship between them? — $7\frac{1}{2}$ marks
- ④ Write notes on any two — ($3\frac{1}{2} + 3\frac{1}{2} = 7$ marks)
 - (a) Third law of thermodynamics
 - (b) Enthalpy
 - (c) Entropy
 - (d) Thermodynamic scale of temperature

B.Sc. Sem I

Subject - Mathematics

Paper - C-IV

Session - 2020-23

F.M. 15

Attempt any three questions

1. Solve $(y^4 + 2y)dx + (xy^3 + 2y^4 - 4x)dy = 0$

2. Solve $\frac{d^2y}{dx^2} + 2\frac{dy}{dx} - 3y = x^2$

3. Apply the variation of parameter Solve
 $\frac{d^2y}{dx^2} + 9y = \sec 3x$

4. solve the differential equation $y = px + \frac{a}{p}$
and obtain its singular solution.

SEM - II (2020-23)

Mid-SEM Internal Examination

Paper: CHE-H-C-203-I
Organic Chemistry - I

Answer any two questions ($7\frac{1}{2} \times 2 = 15$ marks)

① Describe any four methods of preparation of alkanes? — $7\frac{1}{2}$ marks

② Describe three methods of preparation of alkynes? — $7\frac{1}{2}$ marks

③ Define carbocations? classify them and discuss them with respect to generation, stability and shape? $7\frac{1}{2}$ marks

④ Write notes on any two — ($3 \times \frac{1}{2} = 7\frac{1}{2}$ marks)

(a) Inductive effect

(b) Hyperconjugation

(c) Markownikov's rule

(d) Nitration

B.Sc. Sem I Internal Exam - 2021
session - 2020-23

Subj. Mathematics -
Paper - C - II

F.M. 15

Attempt any three questions

1. Test the Convergency of the series whose general term is $\frac{n^2}{n^3+1} x^{n-1}$, ($x > 0$)

2. Test the Convergence of the series

$$\frac{x}{2} + \frac{1}{2} \cdot \frac{3}{4} \cdot \frac{2^3}{6} + \frac{1}{2} \cdot \frac{3}{4} \cdot \frac{5}{6} \cdot \frac{7}{8} \cdot \frac{x^5}{10} + \dots \infty$$

3. Prove that the sequence

$$\sqrt{2}, \sqrt{2\sqrt{2}}, \sqrt{\sqrt{2\sqrt{2}\sqrt{2}}} \dots \text{converges to } 2.$$

4. Define convergent sequence. Prove that every convergent sequence is bounded.

Internal Exam. 2021

Session- 2021-23

B.Sc. sem II

Subject- Mathematics (G.E.)

Paper- (G.E.)

F.M. 15

Attempt any three questions

1. Solve $(xy^2 + 2x^2y^3)dx + (x^2y - x^3y^2)dy = 0$

2. Solve $\frac{d^2y}{dx^2} + 9y = x \cos x$

3. Solve the P.D.E
 $p^3 + q^3 = 3pqz$

4. solve the diff. equation $y = px + a\sqrt{1+p^2}$ and find its singular solution.

SEM - II (2020-23)

Internal Examination

Subject - EVS (Environmental Study)

Tick out the correct answer (10x1 = 10 marks)

1. The gas causing the highest global warming
(a) CO_2 (b) CO (c) CH_4 (d) Water vapour
2. The type of coal found in Barua area -
(a) Peat (b) Bituminous (c) Anthracite (d) Lignite
3. Which is the non-conventional source of energy -
(a) Wind (b) Coal (c) Petroleum (d) Atomic energy
4. The chemical present in sanitizer is -
(a) Sodium chlorate (b) Sodium hypochlorite (c) Sodium methoxide (d) Perchloric acid
5. The purest form of water is -
(a) Rain water (b) River water (c) Lake water (d) distilled water
6. Which element is found in the highest percentage in the earth's crust -
(a) Al (b) Si (c) O (d) C
7. The most harmful rays are -
(a) UV-rays (b) IR-rays (c) Visible rays (d) Ultrasonic rays
8. Haemoglobin contains -
(a) Mg (b) Fe (c) Zn (d) Co
9. Deficiency of Vitamin K causes -
(a) Scurvy (b) Rickets (c) Colour blindness (d) Beri-Beri
10. The free source of Vitamin D is
(a) Sunlight (b) Milk (c) Rain water (d) UV-light