



DON BOSCO COLLEGE

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MODEL EXAMINATION – 2024

ALLIED PHYSICS - II

Class : II B.Sc., Che/Mat/CS
Paper Code: 21UPHA02

Marks: 75
Time: 3 Hrs

PART – A

- I. Choose the correct answer: K_1 (15 × 1 = 15)
- The maximum number of electrons occupying a shell is _____.
(a) 0 (b) 0 to $n+1$ (c) n^2 (d) $2n^2$
 - Bragg's law is $2d \sin \theta =$ _____.
(a) λ^3 (b) $\frac{3}{2} \lambda$ (c) λ^2 (d) $n \lambda$
 - According to Heisenberg's uncertainty principle _____.
(a) $\Delta x \times \Delta p \approx \hbar$ (b) $\Delta x \times \Delta F \approx \hbar$
(c) $\Delta P \times \Delta F \approx \hbar$ (d) None of these
 - The expression for half life period of radioactive nucleus is _____.
(a) $\frac{\lambda}{6.93}$ (b) $\frac{\lambda}{0.693}$ (c) $\frac{0.693}{\lambda}$ (d) None of these
 - Mass of the meson = 275 X Mass of _____.
(a) Proton (b) Electron (c) Neutron (d) Positron
 - β - particle is equivalence to _____.
(a) Proton (b) Electron (c) Neutron (d) None of these
 - The Co-ordination number in case of FCC is _____.
(a) 12 (b) 8 (c) 6 (d) 4
 - Packing fraction of HCP= _____.
(a) 0.52 (b) 0.68 (c) 0.74 (d) 0.47
 - _____ is a unit assembly atom.
(a) Basic (b) Lattice (c) Space (d) Cube
 - Zener diode is used for _____.
(a) Rectification (b) Amplification
(c) Voltage Stabilization (d) Modulation
 - The energy gap of Germanium at 0 K _____.
(a) 0.78eV (b) 1.21eV (c) 7.85eV (d) 2.11eV

- At $T=0K$, semiconductors _____.
(a) Behave like Conductors (b) Behave like Insulators
(c) Has large number of holes (d) Has large number of electrons
- The decimal value of binary 10010_2 _____.
(a) 6 (b) 9 (c) 18 (d) 20
- Boolean equation $\bar{A} \cdot \bar{B} = Y$ is logic function represented by _____.
(a) AND (b) OR (c) NAND (d) NOR
- For Half adder, the Boolean expression for sum _____.
(a) $S = A \cdot B$ (b) $S = A + B$ (c) $S = A - B$ (d) $S = A \oplus B$

PART – B

II. Answer ANY TWO of the following questions: (2 × 5 = 10)

- Explain L-S coupling. K_1
- Give a note on (a) Nuclear Size (b) Nuclear mass. K_2
- Describe the procedure for finding Miller indices to crystal planes. K_2
- Compare conductor, insulator and semiconductor. K_2
- Describe the EX-OR gate. K_2

PART – C

III. Answer ALL the questions: (5 × 10 = 50)

- (a) Explain about the principle and working of Stern and Gerlach experiment. K_1
(or)
(b) Describe the construction and working of Bragg X-ray diffractometer. K_1
- (a) Give a note on liquid drop model. K_2
(or)
(b) Describe the general proportion of nucleus. K_1
- (a) Explain about the FCC structure. K_1
(or)
(b) Discuss about the types of bonds in crystals. K_2
- (a) Explain how Zener diode is acting as a voltage regulator. K_1
(or)
(b) Discuss the V-I characteristics of Zener diode. K_2
- (a) Explain the working of Full adder. K_1
(or)
(b) Explain the conversion of
(i) Octal number into binary number
(ii) Binary number into octal number K_1



MODEL EXAM - 2024 LAPLACE TRANSFORMS AND FOURIER SERIES

Class : II - B.Sc., MATHS

Marks : 75

Paper Code : 21UMA07

Time : 3 Hrs

SECTION - A

I. Multiple Choice questions: (K1)

(15 X 1 = 15)

1. Find the Laplace transform of $\cos t/2$ is _____?

a) $\frac{4s}{4s^2+1}$

b) $\frac{4s}{4s^2+1}$

c) $\frac{2s}{4s^2+1}$

d) $\frac{4s}{2s^2+1}$

2. What is the value of $L\{e^{at}\}$ is _____?

a) $1/s+a$

b) $1/s-a$

c) $s+a/1$

d) $a/s+a$

3. Write the formula of $\int e^{ax} \sin bx dx =$ _____?

a) $\frac{e^{ax}}{a^2+b^2}(a \sin bx - b \cos bx + k)$

b) $\frac{e^{ax}}{a^2+b^2}(a \sin bx - b \cos bx)$

c) $\frac{e^{ax}}{a^2+b^2}(a \sin bx)$

d) $\frac{e^{ax}}{a^2+b^2}$

4. State the change of scale property is _____?

a) $L\{f(at)\} = \frac{1}{a}$

b) $L\{f(at)\} = \frac{1}{a} \bar{f}(s)$

c) $L\{f(at)\} = \bar{f}\left(\frac{s}{a}\right)$

d) $L\{f(at)\} = \frac{1}{a} \bar{f}\left(\frac{s}{a}\right)$

5. Obtain the formula of $L^{-1}[\bar{f}^n(s)]$ is _____?

a) $(-1)^n t^n f(t)$

b) $(-1)^n t f(t)$

c) $(-1)^n t^n$

d) $(-1)^n f(t)$

6. Using inverse laplace transform, Find $L^{-1}[\cosh at]$ is _____?

a) $\frac{s}{s^2-a^2}$

b) $\frac{1}{s^2-a^2}$

c) $\frac{s}{s^3-a^3}$

d) $\frac{a}{s^2-a^2}$

7. Write the value of $\int_c^{c+2\pi} \sin mx \cos nx dx =$ _____?

a) $\frac{1}{2} \int_c^{c+2\pi} [\sin(m+n)x - \sin(m-n)x] dx$

b) $\int_c^{c+2\pi} [\sin(m+n)x - \sin(m-n)x]$

c) $\frac{1}{2} \int_c^{c+2\pi} [\sin(m+n)x] dx$

d) $\frac{1}{2} \int_c^{c+2\pi} \sin mnx dx$

8. If $x = x_0$ is a point of discontinuity, then find the value of $f(x)$ at $x = x_0$ is _____?

a) $\frac{f(x_0+0) - f(x_0-0)}{4}$

b) $\frac{f(x_0) - f(x_0-0)}{4}$

c) $\frac{f(x_0+0) + f(x_0-0)}{2}$

d) $\frac{f(x_0)}{4}$

9. Verify the function $f(-x) = -f(x)$ is _____?

a) Laplace

b) Odd

c) Even

d) Fourier series

10. What is the formula for Cosine series function is _____?

a) Even function

b) Odd function

c) a_0 & a_n

d) b_n

11. Choose one example of Even function for Fourier series?

a) $F(-x) = -x^{10}$

b) $F(-x) = -x^7$

c) $F(-x) = -x$

d) $F(-x) = x^{10}$

12. Write the value of Fourier transform of $a_n =$ _____?

a) $\frac{1}{l} \int_{-l}^l f(x) \frac{\cos n\pi x}{l} dx$

b) $\frac{1}{l} F(-x) = -x^{10}$

c) $\frac{1}{l} \int_{-l}^l \frac{\cos n\pi x}{l} dx$

d) $\frac{1}{l} \int_{-l}^l \frac{\cos n\pi x}{l}$

13. Find, which one is Fourier cosine integral _____?

- a) $\frac{2}{\pi} \int_0^{\infty} \cos x dx$ b) $\frac{2}{\pi} \int_0^{\infty} \cos sx dx \int_0^{\infty} f(t) \cos st dt$ c) $\frac{2}{\pi} \int_0^{\infty} \cos sx dx \int_0^{\infty} f(t)$ d) $\frac{2}{\pi} \int_0^{\infty} \cos dx$

14. Compute the linear property of Fourier transform is _____?

- a) $F[af(x) + bg(x)]$ b) $aF(s) + b$ c) $aF(s)$ d) $F[af(x) + bg(x)] = aF(s) + bG(s)$

15. Find which one is Parsavel's identity _____?

- a) $\int_{-\infty}^{\infty} |f(x)|^2 dx$ b) $\int_{-\infty}^{\infty} |f(x)|^2 dx = \frac{1}{2\pi} \int_{-\infty}^{\infty} |f(s)|^2 ds$ c) $\frac{1}{2\pi}$ d) $\frac{1}{2\pi} \int_{-\infty}^{\infty} |f(s)|^2 ds$

SECTION - B

II. Answer any TWO questions.

(2 x 5 = 10)

16. Find the Laplace transform of $\sin^3 2t$ and $(1 + e^{-2t})^2$. (K2)

17. Solve differential equation using LT of $y'' - 3y' + 2y = \sin t$, given $y(0) = 0, y'(0) = -1$. (K2)

18. Obtain a Fourier series for the function $f(x) = x \sin x, 0 < x < 2\pi$.

19. Explain Fourier series of Odd and Even function with one example. (K3)

20. Drive any Two properties of Fourier transforms. (K3)

SECTION - C

III. Answer ALL questions.

(5 X 10 = 50)

21. a) State and prove Periodic function theorem. (K2)

(Or)

b) (i) Find the laplace transform of $t^2 \cosh at$. (K2)

(ii) Write any Three properties of laplace transforms. (K2)

22. a) Solve the inverse laplace transform of $\frac{7s^2 + 23s + 30}{(s-2)(s^2 + 2s + 5)}$. (K2)

(Or)

b) Find $u''(t) - 2u'(t) + 5u(t) = -8e^{\pi-t}$, given $u(\pi) = 2, u'(\pi) = 12$. (K2)

23. a) Derive the Fourier series for $\sqrt{1 - \cos x}$ in the interval $(0, 2\pi)$ & deduce that $\sum_{n=1}^{\infty} \frac{1}{4n^2 + 1} = \frac{1}{2}$. (K3)

(Or)

b) If $f(x) = \left(\frac{\pi - x}{2}\right)^2$ in $(0, 2\pi)$, then show that $f(x) = \frac{\pi^2}{12} + \sum_{n=1}^{\infty} \frac{\cos nx}{n^2}$. (K2)

24. a) Obtain the Fourier for the function $f(x)$ given by $f(x) = \begin{cases} -x+1 & -\pi < x < 0 \\ x+1 & 0 < x < \pi \end{cases}$, Hence prove

$$\text{that } \frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \dots = \frac{\pi^2}{8}. \text{ (K2)}$$

(Or)

b) Find the half range cosine series for $\cos ax$ in $0 < x < \pi$, where a is not an integer. Hence show

$$\text{that } \pi \cot a\pi = \frac{1}{a} + \sum \frac{2a}{a^2 - n^2}. \text{ (K2)}$$

25. a) State and prove Convolution and Parsavel's identity theorem. (K2)

(Or)

b) Find the Fourier transform of (i) $e^{-\frac{x^2}{2}}$ (ii) $\frac{e^{ax} + e^{-ax}}{e^{\pi x} - e^{-\pi x}}$ (iii) $x^n e^{-ax}$. (K2)



MODEL EXAM – 2024 PROBABILITY THEORY

CLASS : II M.Sc., MATHS
PAPER CODE : 21PMA13

MARKS: 75
TIME : 3 Hrs

SECTION – A

I. Answer all the questions: (k1) (15 × 1 = 15)

- If (X, Y) be a random variable with probability function $f(x, y)$ then the conditional probability of X on Y is
 - $P\left(\frac{x}{y}\right) = \frac{f(x,y)}{h(y)}$
 - $P\left(\frac{x}{y}\right) = \frac{f(x,y)}{g(y)}$
 - $f(x, y) = g(x)h(y)$
 - $f(x, y) = -g(x)h(y)$
- The value of $F(-\infty) =$ _____ and $F(\infty) =$ _____
 - 0,1
 - 1,0
 - 1,1
 - 1,0
- In standardized random variable the value of mean and variance are _____.
 - 0,1
 - 1,0
 - 1,1
 - $\infty, -\infty$
- The value of $E(aX + b) =$ _____
 - $a^2E(X)$
 - $a^2E(X) + b^2$
 - b
 - $aE(X) + b$
- The absolute moments B_k is
 - x^k
 - $E(x^k)$
 - $E(|x^k|)$
 - $E(x)$
- $|\varphi(t)|$ is always less than
 - 1
 - $-\varphi(t)$
 - 0
 - $\overline{\varphi(t)}$
- Which one of the following distributions mean and variance values are always equal ---
 - Binomial distribution
 - normal distribution
 - Poisson distribution
 - uniform distribution
- The semi- invariant K_2 IS
 - m_2
 - $m_2 - m_1^2$
 - $m_1 - m_1^2$
 - $m_2 + m_1^2$
- In normal distribution μ_2 is
 - σ^2
 - σ
 - $\sigma^2 + m^2$
 - $\sigma^2 - m^2$
- The residual variance is
 - $\frac{M}{M_1}$
 - $\frac{|M|}{M_{11}}$
 - $\frac{M}{|M_{11}|}$
 - $\frac{|M|}{|M_{11}|}$

- The probability generating function $\psi(s) = \sum_k p_k s^k$ is _____, where $|s| \leq 1$.
 - divergent
 - convergent
 - oscillate
 - zero
- If a coin is tossed three times, then the probability of appearing head twice is
 - $\frac{5}{8}$
 - $\frac{6}{8}$
 - $\frac{3}{8}$
 - $\frac{2}{8}$
- The sequence $\{X_n\}$ of random variables is stochastically convergent to _____, if for every $\epsilon > 0$, the relation $\lim_{n \rightarrow \infty} P(|X_n|) > \epsilon = 0$ is satisfied.
 - 1
 - ∞
 - 0
 - $-\infty$
- The sequence $\{X_n\}$ of a random variable obeys the _____ of large numbers.
 - Strong law
 - Weak law
 - Kolmogorov inequality
 - Chebyshev inequality
- In Borel – Cantelli lemma, if the event $\{A_n\}$ are independent then $\sum_{n=1}^{\infty} P(A_n)$ is equal to
 - 1
 - ∞
 - 0
 - $-\infty$

SECTION – B

II. Answer any TWO questions: (2 × 5 = 10)

- We have two urns. There are 3 white and 2 black balls in the first urn and 1 white and 4 black ball in the second. From an urn chosen at random we select one ball at random. What is the probability of obtaining a white ball if the probability of selecting each of the urns equals 0.5? (k2)
- Find the characteristic function and moments of normal distribution whose density function is $f(x) = \frac{1}{\sqrt{2\pi}} e^{-x^2/2}$. (k2)
- Prove the additional theorem for the binomial distribution. (k3)
- Let X be a continuous random variable then show that $E[g_1(x) + g_2(x)] = E[g_1(x)] + E[g_2(x)]$. (k2)
- The sequence of random variable $\{X_n\}$ given by $P\left(Y_n = \frac{r}{n}\right) = nCr p^r q^{n-r}$ and $X_n = Y_n - p$ is stochastically convergent to zero, then show that for any $\epsilon > 0$ we have $\lim_{n \rightarrow \infty} P(|X_n| > \epsilon) = 0$. (k3)

SECTION - C

III. Answer ALL the questions: (5 × 10 = 50)

21. (a) Let $\{A_n\}, n = 1, 2, 3, \dots$ be a non-increasing sequence of events and let A be their product, then show that $P(A) = \lim_{n \rightarrow \infty} P(A_n)$.

Or

(b) Show that the function $F(x, y) = P(X < x, Y < y)$ is non decreasing and continuous at least from the left with respect to every variables.

22. (a) Find the density function of the random variable, whose characteristic function

$$\varphi(t) = \begin{cases} 0, & |t| > 1 \\ 1 - |t|, & |t| < 1 \end{cases} \quad (k2)$$

Or

(b) Derive the properties of Expected value.(k2)

23. (a) Discuss the characteristic function and its moments.(k3)

Or

(b) The joint distribution of the random variable (X,Y) is given by the density function

$$f(x, y) = \begin{cases} \frac{1}{4} [1 + xy(x^2 - y^2)] \forall |x| \leq 1, |y| \leq 1 \\ 0, & \text{otherwise} \end{cases}$$

24. (a) Compute first and second order moments of Polya distribution.

Or

(b)

25. (a) State and prove De Moivre's Laplace theorem.

Or

(b) State and prove Lapunov theorem.



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SECTION –B

MODEL EXAMINATION– EVEN SEM 2024 SOUTH ASIAN LITERATURE

Class : III B.A, English Marks: 75
Paper Code: 19UEN11 Time : 3Hrs

SECTION –A

I. Choose the best answer: (K1) (15x1=15)

- Public monument refers to _____.
a) Public people b) Public sector
c) Private property d) Government
- The sealed box refers to the arrival of _____.
a) Dead soldier b) Dead animal
c) Dead leader d) Dead captain
- The Kittens are _____ at the time of its birth.
a) Deaf b) Dumb c) Blind d) Lame
- The dog is a _____ creature.
a) Sensitive b) Revenge taking
c) Defenseless d) Ferocious
- Every creative art has a _____ base.
a) Scientific b) Historical
c) Imaginative d) Accumulate
- V. S. Naipaul is an English writer of _____ origin.
a) Indian b) British c) Irish d) European
- Abraham's father worked in the _____ administration.
a) Hospital b) School c) Police d) Railway
- Pagnols referred to the _____ people in Trinidad.
a) Spanish b) Indian
c) African d) American
- Deepak is the son of _____.
a) Vinay b) Vikram
c) Colonel Bhatia d) Suresh
- Mala wants her mother to _____ her.
a) Beat b) Praise c) Forgive d) Scold
- Vinay transfers the flat to _____.
a) Mala b) Shanta c) Deepak d) Vikram
- _____ was Abraham's wife.
a) Rose b) Lily c) Rani d) Mercy
- Mercy refused to _____.
a) Eat b) Teach c) Marry d) Study
- Somesh bought for Sumita a pair of _____.
a) Sarees b) Pants
c) Jean and T-Shirts d) Skirts
- Kale Mian was _____ complexioned.
a) Fair b) Dark
c) Brown d) White

II. Answer any two of the following in about 100 words each: (2x5=10)

- How does an ordinary man change his behavior after he becomes a politician? (K1)
- How does Varma describe the nature of Hindu Society? (K1)
- Write short notes on the stage direction of the play 'Thirty Days in September.' (K1)
- Write the story of Abraham and Issac. (K2)
- Describe the bride-viewing day. (K1)

SECTION – C

III. Answer the following questions in about 200 words each: 5x10=50

- Describe the tragic tone of the poem 'On Seeing a White Flag Across a By Road?' (K1)
(or)
b) 'The Monstrous Biped' is a poem about human cruelty. Discuss. (K1)
- How does Mahadevi Varma in her essay, 'The Art of Living' present the condition of women in Indian society? (K1)
(or)
b) Explain the views expressed by V.S. Naipaul in his essay, 'The Child of Exile'. (K2)
- Describe the feminine perspective in the play, 'Thirty Days in September.' (K1)
(or)
b) Write a critical appreciation of the play, 'Thirty Days in September.' (K1)
- Discuss the relationship between Abraham and Rose. (K2)
(or)
b) Write an account of Abraham's married life. (K2)
- How Chitra Banerjee symbolizes Indian culture through the colours. (K1)
(or)
b) Write the short story, 'The Veil' in your own words. (K1)



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MODEL EXAM - 2024 PRINT FINISHING OPERATION

Class : III JMC Marks : 75
Paper Code : 21UDP11 Time : 3 Hrs

SECTION - A

I Answer ALL questions: (15X1=15)

- Varnishing purpose is ____ K1
a) Glossy b) Matt c) Satin d) None of the above
- Eyelet machine used to ____ K1
a) Stitching b) Punching
c) Gathering d) Pasting
- Single end papers used ____ stitched book. K1
a) Out side b) Inside c) Cover page d) Last page
- Which is not the type of tube style cartons ____ K1
a) Glue end cartons b) Tuck in flap
c) Lock end cartons d) Tray cartons
- Crimp-on closures also called ____ K1
a) Lug caps b) Roll caps
c) Crown caps d) Press caps
- Create a book with a flexible cover is ____ K1
a) Case b) Comb c) Perfect d) Spiral
- The closure materials are ____ K1
a) Rubber b) Metal c) Glass d) All the above
- French sewing is also known as ____ K1
a) Library sewing b) Tape sewing
c) Flexible sewing d) None of the above
- A device that seals the content inside a container is ____ K1
a) Strap b) Dispenser c) Closure d) Tape
- The stitching types are ____ K1
a) One b) Two c) Three d) Four

- Attaching plates or maps also known as ____ K1
a) Inserting b) Stitching c) Punching d) Gathering
- Which one is not the types of perforating ____ K1
a) Round hole b) Slot c) Slit d) Stitch
- Binder's mark also known as ____ K1
a) Collating mark b) Punching mark
c) Register mark d) Center mark
- What does QR stand for in QR code ____ K1
a) Quiet Reading b) Quiet Response
c) Quick Rite d) Quick Response
- How many digits are in the standard barcode ____ K1
a) 9 digits b) 10 digits c) 12 digits d) 11 digits

SECTION - B

II Answer any two questions out of five: (2X5=10)

- What are the various types of end paper? K2
- Explain the types of perforating. K2
- Write a short notes on loose leaf binding. K2
- Explain sealing tapes. K2
- Write a short notes on skin packaging. K2

SECTION - C

III Answer the following questions: (5X10=50)

- Detail the materials used for binding and finishing. K2
(or)
b) What is lamination? Explain its types. K2
- Detail the various operations involved in case binding. K2
(or)
b) Briefly explain the types of sewing and types. K2
- What are the factors influencing the design of a package? K2
(or)
b) Describe the introduction to food and Aseptic packaging. K2
- Detail the thermo forming machine. K2
(or)
b) Write brief notes on strapping and its types. K2
- Discuss the principles of folding machine and its operations. K2
(or)
b) Write in detail the blister packaging and its application. K2



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MODEL EXAM - 2024 PRINT FINISHING OPERATION

Class : III JMC Marks : 75
Paper Code : 21UDP11 Time : 3 Hrs

SECTION - A

I Answer ALL questions: (15X1=15)

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SECTION - B

II Answer any two questions out of five: (2X5=10)

- What are the various types of end paper? K2
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- Write a short notes on loose leaf binding. K2
- Explain sealing tapes. K2
- Write a short notes on skin packaging. K2

SECTION - C

III Answer the following questions: (5X10=50)

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(or)
b) What is lamination? Explain its types. K2
- Detail the various operations involved in case binding. K2
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- What are the factors influencing the design of a package? K2
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MODEL EXAM INTRODUCTION TO PRINTING TECHNIQUES

Class : IJMC Marks : 75
Paper Code: 23UDP02 Time : 3 Hrs

SECTION – A

I Answer ALL questions: (15X1=15)

- The history of printing started around _____ with the duplication of images (KI)
a) 3000 b) 2500 c) 3100 d) 1000
- _____ is the father of printing. (KI)
a) Alois Senefelter b) Johannes Gutenberg
c) Karel Klitsch d) Baron and Sons
- Around _____, Johannes Gutenberg invented the printing press and independently developed a movable type system in Europe. (KI)
a) 1455 b) 1450 c) 1458 d) 1440
- Image area (letters, lines, dots, etc.) are in raised form is _____ printing process. (KI)
a) Relief b) Recess c) Porus d) Direct
- The three primary cylinders in Offset machine are Plate cylinder, Blanket cylinder and _____ cylinder. (KI)
a) Contact b) Impression c) Indirect d) Direct
- The printing press was introduced in India during ____ K1
a) 13th century b) 14th century
c) 15th century d) 16th century
- The small groove between the cylinder body and bearer is ____ K1
a) Gutter b) Undercut c) Gear d) None
- Impression cylinder is present _____ the blanket cylinder. K1
a) Upper b) Below c) Equal d) None
- Which one is not the part of printing unit? K1
a) Plate cylinder b) Blanket cylinder
c) Impression cylinder d) Transfer cylinder
- The types of blankets are _____ K1
a) One b) Two c) Three d) Four

- Digital printing does not use film, masters, stencils, screens or _____. (KI)
a) Papers b) Plates c) Boards d) Clothes
- _____ printing is the other names of Screen printing. (KI)
a) Paper-screen b) Wood c) Metallic d) None
- News papers printing in ____ K1
a) Web offset b) Sheetfed c) Gravure d) Letter press
- Intaglio printing is ____K1
a) Raised printing b) Engraved images
c) Flat images d) Screen images
- Gravure mean ____K1
a) Engraved b) Relief
c) Planography d) letterpress

SECTION – B

II Answer any two questions out of five: (2X5=10)

- Explain about the job suitability of offset printing process K2
- How will you visually identify Flexography and Offset printing Processes? K2
- Explain about the job suitability of offset printing process.K2
- Explain the Screen printing with diagram.K2
- Write the various cylinder in web offset.K2

SECTION – C

III Answer the following questions: (5X10=50)

- a) State the various types of Screen Printing Machines and describe any two of them.K2
(or)
b) Explain the classification of the Gravure Printing machine. K2
- a) Detail the various dampening system involved in offset. K2
(or)
b) Briefly explain the types of automatic feeder.K2
- a) Explain the application of Flexographic printing on food packaging. K2
(or)
b) Describe the various auxiliary equipments used in delivery system.K2
- a) Detail the printing units in offset machine.K2
(or)
b) Detail the make ready procedure for single colour printing.K2
- a) Discuss the advantages and disadvantages of offset printing.K2
(or)
b)Write in detail the historical development of web offset press.K2

**MODEL EXAM - APRIL, 2024
INORGANIC CHEMISTRY-II**Class : III B.Sc. Che Marks : 75
Paper Code : 21UCH08 Time : 3 Hrs.**SECTION - A****Answer ALL the questions: K1 (15×1=15)**

1. Which one of the following is called as Zeise's salt?

- a) $[\text{Pt}(\text{NH}_3)_4][\text{PtCl}_4]$ b) $\text{K}[\text{PtCl}_3(\text{C}_2\text{H}_4)]$
 c) $\text{K}_4[\text{Fe}(\text{CN})_6]$ d) $[\text{Fe}(\text{CO})_5]$

2. Methyl magnesium iodide reacts with formaldehyde it gives ____.

- a) $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ b) $\text{CH}_3\text{CH}_2\text{OH}$
 c) CH_3OH d) CH_3CHO

3. Which of the following is not considered as an organometallic compound?

- a) Ferrocene b) Cis-platin
 c) Zeise's salt d) Grignard reagent

4. The EAN of nickel in $\text{Ni}(\text{CO})_4$ is ____

- a) 36 b) 38 c) 28 d) 54

5. Which is the most widely used catalyst for hydrogenation of aromatics?

- a) Cadmium b) Zinc c) Nickel d) Iron

6. Ziegler-Natta catalyst is used to prepare ____

- a) Low-density polythene b) Teflon
 c) High density polythene d) Nylon-6

7. Which of the following factors can affect the affinity of hemoglobin for oxygen?

- a) Temperature b) Carbon dioxide
 c) pH d) All of the above

8. Proteins are made up of which of the following?

- a) Nucleic acids b) Amino acids
 c) Nuclease d) None of these

9. The oxidation state of iron in met-hemoglobin is ____.

- a) Three b) Two c) Four d) Zero

10. The general formula of silicate ion present in cyclic silicates is ____

- a) SiO_4^{4-} b) $\text{Si}_2\text{O}_5^{2-}$ c) $\text{Si}_2\text{O}_7^{6-}$ d) $(\text{SiO}_3)_n^{2n-}$

11. $(\text{SiO}_3)_n^{2n-}$ may be the empirical formula of ____.

- a) Cyclic silicates b) Pyro silicates
 c) Chain silicates d) Both A & C

12. Which bond is present in the polynitrogen sulphur compound ____

- a) Ionic bond b) Covalent bond
 c) Coordinate bond d) Both A & B

13. The ion or molecule containing one or more unpaired electrons will be ____

- a) Diamagnetic b) Paramagnetic
 c) Both A & B d) None of these

14. The directions of Anti-Ferromagnetism of magnetic moments in ____

- a) Same Directions b) Opposite directions
 c) Both A & B d) None of these

15. The value of diamagnetic substance is ____

- a) 2 b) 4 c) 0 d) 1

SECTION - B**Answer any TWO questions: (2×5=10)**

16. Discuss about the properties, structure and uses of

Lithium. **K1**17. Explain uses of IR absorption spectra of metallic carbonyls. **K2**18. Discuss about the structure and function of myoglobin. **K2**19. Classify the various types of silicones. **K2**20. Describe paramagnetism and give the characteristics. **K2****SECTION - C****Answer ALL the questions: (5×10=50)**21. a. Explain preparation, properties, structure and uses of ferrocene. **K2**

Or

b. Draw and explain structure of Zeise's salt. **K2**22. a. Discuss about the Ziegler-Natta catalyst and give the mechanism. **K2**

Or

b. Write a note on: i) Hydroformylation.

ii) Wacker process. **K1**23. a. Discuss about the structure and function of Chlorophyll and Vitamin B₁₂. **K2**

Or

b. Explain roles played by the Na⁺ and K⁺ ions in biological systems. **K2**24. a. Explain preparation, properties, structure and uses of borazole. **K2**

Or

b. What are Silicones? Give the preparation, Properties and uses of silicones. **K1**25. a. Describe the determination of magnetic moment using Guoy Balance. **K2**

Or

b. Write a note on the following: **K1**

i) Ferromagnetism ii) Anti-Ferromagnetism



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MODEL EXAM – APRIL 2024 POLYMER CHEMISTRY

Class : II- B.Sc. Chemistry Marks : 75
Paper Code: 21UCHS02 Time : 3 Hrs

SECTION – A

Answer ALL the questions: K1 (15X1=15)

- Which of the following is a thermoplastic polymer?
a) Polystyrene b) PVC c) Nylons d) None
- Which of the following are natural polymers?
a) Proteins b) Nylon c) PVC d) None
- Small molecules which combine to form polymer are called ____
a) Resins b) Monomers c) Plastic d) Blocks
- The functionality of ethylene glycol is ____
a) 2 b) 3 c) 4 d) 5
- Which among the following is a cross-linked polymer?
a) Polyesters b) PVC c) Bakelite d) Nylon
- How many types the structure of polymers.
a) 2 b) 4 c) 3 d) 1
- Molecular mass of polymer are expressed is an ____
a) Average b) Median c) Mode d) Percentage
- An examples of blow molding process is ____
a) Polyethylene b) Polyester
c) Butadiene d) None of these
- Which of the following plastics is not used in blow moulding?
a) Terephthalate b) Polypropylene
c) Polyethene d) PVC
- Low density polyethylene melting point at ____
a) 110 °C - 125 °C b) 200 °C - 300 °C
c) 50 °C - 100 °C d) None of these
- High density polyethylene structure is ____
a) No linear b) linear c) cross linked d) None
- What are the uses of the polypropylene is ____
a) Cables b) Motor cycle c) Blankets d) Wires

- The percentage of the fillers is up to ____ total molding mixture.
a) 20% b) 30% c) 40% d) 50%
- Which of the following are not used lubricants?
a) Oils b) Waxes c) Oleates d) Salts
- Thermo plastics becomes ____
a) Rigid b) Molded c) Soft d) Brittle

SECTION – B

Answer any TWO questions: (2X5=10)

- Explain degree of polymerization and their types. K2
- What a note on stereochemistry of polymers and Give the types of polymers. K1
- Draw the diagram of wet spinning process and its uses. K2
- Briefly explain the poly vinyl chloride and its uses. K2
- Discuss about the thermoplastic resins and with and example. K2

SECTION – C

Answer ALL the questions: (5X10=50)

- Explain detail about on polymerization through functional groups and multiple bonds. K2
or
b) Briefly explain the ring opening and coordination polymer. K2
- Illustrate on the block and graft co polymers and homo, hetero polymers. K2
or
b) Briefly explain the linear, branched and cross linked polymers and examples. K2
- Explain the number average and weight average molecular of polymers. K2
or
b) Discuss about the die casting and blow molding. K2
- Explain the preparation, properties of polyethylene and uses. K2
or
b) Write short note on Buna-N, Thiocol of the polymers. K1
- Explain the types of constituents of polymers and with an example. K2
or
b) Discuss about the filters and dyes, pigments of polymer. K2