

Seat	
No.	

SM - 21

Total No. of Pages : 3

B.Sc. (Part I) (Semester – I) (NEP 2.0)
Examination – May 2025
MATHEMATICS (Optional) (Paper – II)
DSC II : Calculus
Sub. Code : 106597-P2

Day and Date : Saturday, 03/05/2025

Total Marks : 40

Time : 02.30 pm to 04.00 pm

Instructions : 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q. 1. Select correct alternative for each of the following.

[8]

1) If $y = x^m$ then $y_n = m!$ for

a) $n > m$

b) $n = m$

c) $n < m$

D) none of these

2) $\frac{d^{99}}{dx^{99}} \log(5 - 2x) = \dots\dots\dots$

a) $\frac{2^{99} 99!}{(5 - 2x)^{100}}$

b) $-\frac{2^{99} 99!}{(5 - 2x)^{100}}$

c) $\frac{2^{99} 98!}{(5 - 2x)^{99}}$

d) $-\frac{2^{99} 98!}{(5 - 2x)^{99}}$

3) $\frac{d^n}{dx^n} \cos(2x) = \dots\dots\dots$

a) $2^{n-1} \cos\left(2x + \frac{n\pi}{2}\right)$

b) $2^{n+1} \cos\left(2x + \frac{n\pi}{2}\right)$

c) $\cos\left(2x + \frac{n\pi}{2}\right)$

d) $2^n \cos\left(2x + \frac{n\pi}{2}\right)$

4) If $z = x^y$ then $\frac{\partial z}{\partial y} = \dots\dots\dots$

a) $x^y \log x$

b) yx^{y-1}

c) $x^y \log y$

d) x^y

- 5) If $f'(x) = x^2 - 3x - 4$, $x \in [-1, 4]$ then the value of c lying in $(-1, 4)$ satisfying $f'(c) = 0$ is
- a) 1 b) 0 c) $\frac{1}{2}$ d) $\frac{3}{2}$
- 6) $\lim_{x \rightarrow a} \frac{x^a - a^x}{x - a} = \dots\dots\dots$
- a) $a^a(1 - \log a)$ b) $a^a(1 + \log a)$
c) 0 d) ∞
- 7) Rolle's theorem is not applicable for the function $f(x) = |x|$, $x \in [-1, 1]$ because
- a) $f(x)$ is not continuous on $[-1, 1]$
b) $f(x)$ is not differentiable in $(-1, 1)$
c) $f(-1) \neq f(1)$
d) $f(x)$ does not exist on $[-1, 1]$
- 8) The Maclaurin's power series expansion of $f(x) = \frac{1}{1-x}$, $|x| < 1$, in ascending powers of x is
- a) $1 - x + x^2 - x^3 + \dots$ b) $1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots$
c) $1 + x + x^2 + x^3 + \dots$ d) $1 - x + \frac{x^2}{2!} - \frac{x^3}{3!} + \dots$

Q. 2. Attempt any two of the following.

[16]

- 1) State and prove Leibnitz theorem.
- 2) For each of the following functions, verify that $\frac{\partial^2 z}{\partial x \partial y} = \frac{\partial^2 z}{\partial y \partial x}$.
i) $z = \sin(xy)$ ii) $z = \log(x^2 + y^2)$
- 3) State and prove Cauchy mean value theorem.

Q. 3. Attempt ANY FOUR out of the following.

[16]

- 1) If $y = \frac{1}{(ax+b)^m}$, then show that $y_n = \frac{m!}{(m-n)!} \frac{1}{(ax+b)^{m-n}} a^n$.
- 2) Find n^{th} order derivative of $y = x^2 \sin 3x$.

- 3) Find the value of c in the conclusion of Lagrange's mean value theorem for the function $f(x) = \log x$ on $[1, e]$.
- 4) Using Maclaurin's series expansion formula, find the expansion of $f(x) = \cos x$ in ascending powers of x .
- 5) Find the values of constants a, b such that

$$\lim_{x \rightarrow 0} \frac{x(1 + a \cos x) - b \sin x}{x^3} = 1.$$

- 6) Evaluate $\lim_{x \rightarrow \frac{\pi}{2}} (\sin x)^{\tan x}$.
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Seat No.	
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B. Sc. (Part - I) (Semester -II) (NEP 2.0)**Examination, April-2025****STATISTICS****Statistical Methods (Paper - III)****Sub. Code : 110358 - P3****Day and Date : Monday, 05/05/2025****Total Marks : 40****Time : 10:30 a.m. to 12:00 p.m.**

- Instructions :**
- 1) All questions are compulsory.
 - 2) Figures to right indicate full marks.

Q1) Choose the most correct alternative.**[8]**

- 1) Periodic change in values of time series is _____.
 A) seasonal variation B) cyclical variations
 C) Both A) and B) D) irregular variations
- 2) If $NRR > 1$ then there is _____ in population.
 A) Decrease B) Increase
 C) No decrease or increase D) Double
- 3) Index number are called as
 A) economic thermometer B) economic barometer
 C) social barometer D) social thermometer
- 4) The best average for constructing an index number is
 A) Arithmetic Mean B) Harmonic Mean
 C) Geometric Mean D) None of these
- 5) In vital statistics the rates of vital events are measured in
 A) per million B) per thousand
 C) percentage D) fraction

- 6) Fisher's Index number is _____ of Laspeyre's and Paasche's Index number.
- A) A.M. B) GM
- C) HM D) None of these
- 7) Trend in a time series means _____.
- A) long term regular movement B) short term regular movement
- C) at successive points of time D) All of these
- 8) Time Reversal Test is Satisfied by _____.
- A) Laspeyre's IN B) Paasche's IN
- C) Fisher IN D) None of these

Q2) Attempt any Two of the following.

[16]

- 1) Define Index Number and Discuss the Problems involved in construction of Index Numbers.
- 2) What is Time series? Explain the component of Time series.
- 3) Define following terms.
 - i) C.B.R.
 - ii) S.D.R.
 - iii) G.F.R.
 - iv) T.F.R.

Q3) Attempt any Four of the following.

[16]

- 1) Explain seasonal variation in time series.
- 2) Describe Moving Average method.
- 3) Define
 - i) Cost of Living index Number.
 - ii) Purchasing Price of Money
- 4) Write Short note on Life tables.
- 5) Define G.R.R. and N.R.R. Give their interpretations.
- 6) Discuss any two methods of construction of Index Numbers.

Seat No. **MAR-APR 2025 SUMMER EXAMINATION****2354 Bachelor of Science****Sub. Name: Chemistry Paper I & II****Sub. Code: 88180****Day and Date: JUNE ,05-06-2025****Total Marks: 40****Time: 02.30 PM To 04:00 PM**

- Instructions:**
- 1. All questions are compulsory**
 - 2. Draw neat labelled diagrams wherever necessary**
 - 3. Figures to the right indicate full marks**

Q1) Choose the correct alternative for each of the following and rewrite the sentence. **[8]**

- i. Positively charged trivalent carbon species is
 - A. carbon free radical
 - B. carbanion
 - C. carbocation
 - D. All of these
- ii. An electrophile is
 - A. electron donating species
 - B. electron accepting species
 - C. electron sharing species
 - D. electrically neutral species
- iii. What is the hybridization of carbon atoms in benzene?
 - A. sp^2
 - B. sp^3
 - C. sp
 - D. dsp^2
- iv. What is the mechanism of nitration of benzene?
 - A. Electrophilic addition
 - B. Electrophilic substitution
 - C. Nucleophilic addition
 - D. Nucleophilic substitution
- v. Which of the following compounds is an example of a benzenoid compound?
 - A. Benzene

- B. Naphthalene
C. Anthracene
D. All of the above
- vi. The pair of molecules that are non-superimposable mirror images of each other?
A. Enantiomers
B. Diastereomers
C. Epimers
D. Anomers
- vii. Which of the following five-membered heterocyclic compounds contains a sulphur atom?
A. Furan
B. Thiophene
C. Pyrrole
D. Imidazole
- viii. What is the mechanism of the Chichibabin reaction?
A. Electrophilic substitution
B. Nucleophilic substitution
C. Electrophilic addition
D. Concerted mechanism

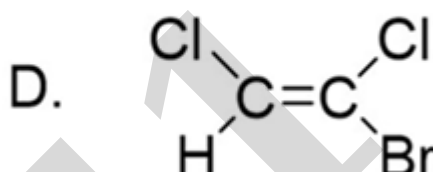
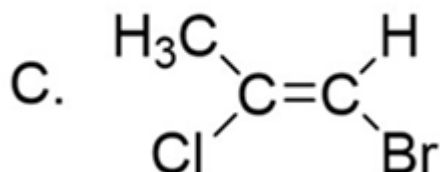
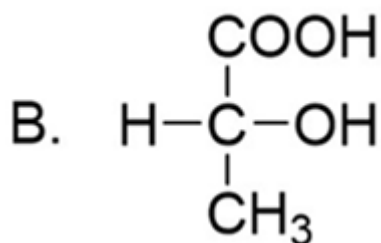
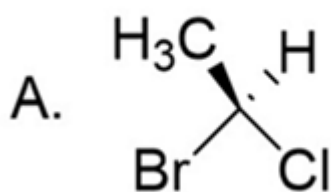
Q2) Attempt any TWO of the following: [16]

- a. What is carbocation? Explain the structure and stability of carbocation. [8]
- b. Explain Friedel-Crafts alkylation and acylation reaction of benzene with mechanism. [8]
- c. Explain optical isomerism in tartaric acid. [8]

Q3) Attempt any FOUR of the following: [16]

- a. Explain the term homolytic bond fission with a suitable example. [4]
- b. Discuss the geometrical isomerism in alicyclic compounds. [4]
- c. Explain applications of Huckel Rule to the following compounds - [4]
i) Naphthalene ii) Pyrrole
- d. Discuss the electrophilic substitution reactions of furan. [4]
- e. Explain Chichibabin reaction with mechanism. [4]

f. Assign R/S and E/Z configuration to the following compounds



End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (2354) B.Sc. CBCS (NEP 2020) (88180) Chemistry Paper I & II Part 1 SEM 1

Seat No.

MAR-APR 2025 SUMMER EXAMINATION**2354 Bachelor of Science****Sub. Name: Chemistry Paper III & IV****Sub. Code: 59683/90225/90225/72844****Day and Date: JUNE ,05-06-2025****Total Marks: 40****Time: 10:30 AM To 12:00 PM**

- Instructions:**
1. All questions are compulsory
 2. Draw neat labelled diagrams wherever necessary
 3. Figures to the right indicate full marks
 4. Use of Scientific calculator is allowed

Q1) Choose the correct alternative and rewrite the sentence again.**[8]**

- i. Inorganic material mixed to increase soap detergency is called -----.
A. builder
B. rosin
C. antioxidant
D. fixative
- ii. Sodium alkyl sulphonates belong to the detergent type of -----.
A. neutral
B. ionogenic
C. cationic
D. anionic
- iii. Eriochrome Black T is also known as -----.
A. Solochrome Black
B. Molochrome black
C. acid-base indicator
D. Monochrome black T
- iv. MSDS stands for -----.
A. Material storage data sheet
B. Material safety data sheet
C. Metal safety data sheet
D. Material derivative sample
- v. A solution of known concentration is known as -----.
A. standard
B. normal
C. molar
D. molal
- vi. The R_f value is the ratio of -----.

- A. two concentrations
- B. two pressures
- C. two temperatures
- D. two distances

vii. Paper chromatography is a ----- type of chromatography.

- A. adsorption
- B. ion exchange
- C. partition
- D. affinity

viii. Standard deviation is often used as a measure of -----.

- A. precision
- B. mean
- C. accuracy
- D. absolute error

Q2) Attempt any TWO of the following

[16]

- a. Discuss the principle and methodology of TLC. **[8]**
- b. Explain in detail the titration curve between a weak acid and a strong base. **[8]**
- c. Discuss in detail types of errors in chemical analysis. **[8]**

Q3) Answer any FOUR of the following

[16]

- a. Intellectual Property Right.
- b. Accuracy and precision.
- c. Cleaning action of soaps.
- d. Classification of chromatography.
- e. Ostwald's quinonoid theory of indicators.
- f. Eriochrome Black T indicator.

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (2354) B.Sc. CBCS (NEP 2020) (90225) Chemistry Paper III & IV Part 1 SEM 2

2] (286) B.Sc.(Sem.) (59683) Chemistry Paper III & IV Part 1 SEM 2

527275

Seat No. **MAR-APR 2025 SUMMER EXAMINATION****11670 Bachelor of Science****Sub. Name: Computer Science Paper I & II****Sub. Code: 106777****Day and Date: MAY ,07-05-2025****Total Marks: 40****Time: 02.30 PM To 04:00 PM**

- Instructions:**
- 1. All questions are compulsory**
 - 2. Draw neat labelled diagrams wherever necessary**
 - 3. Figures to the right indicate full marks**

Q1) Solve following MCQ.**[8]**

- i. The _____ operator decrements the operand by 1.
- A. ++
 - B. --
 - C. -
 - D. +
- ii. Developer of 'C' language is _____.
- A. Dennis Richie
 - B. Bill Gates
 - C. Ken Thompson
 - D. Peter Norton
- iii. _____ is an entity that does not change during execution of program.
- A. variable
 - B. void
 - C. constant
 - D. auto
- iv. _____ symbol is used to terminate a C language statement.
- A. colon (:)
 - B. exclamation mark (!)
 - C. semicolon (;)
 - D. comma (,)
- v. _____ format specifier is used to print the values of integer type variable.
- A. %c
 - B. %d
 - C. %e
 - D. %f

- vi. _____ is not a valid data type in C language.
- A. float
 - B. real
 - C. int
 - D. void
- vii. _____ is a graphical representation of an algorithm
- A. App
 - B. Software
 - C. Flowchart
 - D. Pseudocode
- viii. Array index in C language always start at _____.
- A. 1
 - B. -1
 - C. as per programmer
 - D. 0

Q2) Attempt any **TWO** of the following: **[16]**

- a) Explain a typical structure of C program with an example.
- b) What is an algorithm? Explain with suitable example
- c) Explain data types are used in C with example

Q3) Attempt any **FOUR** of the following: **[16]**

- a) Define array. How one-dimensional array can be declared & initialized.
- b) Define variable. Write rules for naming a valid variable name.
- c) Explain switch case statement with example.
- d) Write a program to calculate factorial of a given number.
- e) Explain printf and scanf function with suitable example.
- f) Explain any four string functions.

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (11670) Bachelor of Science (B.Sc.) NEP 2.0 (106777) Computer Science Paper I & II Part 1 SEM 1

Seat No. **MAR-APR 2025 SUMMER EXAMINATION****11670 Bachelor of Science****Sub. Name: Computer Science Paper III & IV****Sub. Code: 110363****Day and Date: MAY ,07-05-2025****Total Marks: 40****Time: 10:30 AM To 12:00 PM**

- Instructions:**
- 1. All questions are compulsory**
 - 2. Draw neat labelled diagrams wherever necessary**
 - 3. Figures to the right indicate full marks**

Q1) Solve following MCQ.**[8]**

- i. _____ is the correct way to declare a pointer in C.
- A. `int *ptr;`
 - B. `ptr int;`
 - C. `*int ptr;`
 - D. `int ptr*;`
- ii. _____ will the following code output.
- ```
int a = 7;
int *ptr = &a;
printf("%d", *ptr);
```
- A. 0
  - B. 7
  - C. Error
  - D. Memory address of a
- iii. \_\_\_\_\_ is the purpose of the & (address-of) operator in C.
- A. To access the value of a pointer
  - B. To get the address of a variable
  - C. To dereference a pointer
  - D. To declare a pointer variable
- iv. \_\_\_\_\_ is true for a recursive function.
- A. It calls itself
  - B. It requires a loop to work
  - C. It can only call other functions
  - D. It terminates without any conditions
- v. \_\_\_\_\_ is the return type of the `main()` function in C.
- A. void
  - B. int
  - C. float

D. double

- vi. \_\_\_\_\_ you access the members of a structure in C.
- Using the & operator
  - Using the . operator for normal structures and -> for pointers
  - Using the \* operator
  - Using the [] operator
- vii. \_\_\_\_\_ function is used to open a file in C.
- open()
  - fopen()
  - fileopen()
  - file()
- viii. \_\_\_\_\_ function is used to close a file in C.
- close ( )
  - fclose( )
  - fileclose( )
  - closefile ( )

**Q2)** Answer any two of the following. **[16]**

- What is a pointer in C, and how does it work? **[8]**
- Explain the concept function in C programming using program. **[8]**
- What is file handling in C and their different modes? **[8]**

**Q3)** Answer any four of the following. **[16]**

- How do you open and close file in C. **[4]**
- How do you declare and initialize a pointer in C? **[4]**
- How do pointer to arrays work in C? **[4]**
- What is structure in C? **[4]**
- What is dynamic memory allocation and why is it needed in C? **[4]**
- What is the difference between fprintf and fscanf? **[4]**

## End Of Question Paper

**Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**  
This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (11670) Bachelor of Science (B.Sc.) NEP 2.0 (110363) Computer Science Paper III & IV Part 1 SEM 2

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**B.Sc. (Part - I) (Semester -II) (NEP 2.0)****Examination, April-2025****STATISTICS (Paper - IV)****Discrete Probability Distributions****Sub. Code : 110358 - P4****Day and Date : Tuesday, 22/04/2025****Total Marks : 40****Time : 10:30 a.m. to 12:00 p.m.**

- Instructions :**
- 1) All questions are compulsory.
  - 2) Figures to right indicate full marks.
  - 3) Draw neat diagrams and give equations wherever necessary.
  - 4) Use of scientific calculator and logarithmic table is allowed.

**Q1) Choose the most correct alternative.****[8]**

- 1) If  $X \sim b(n, p)$ , what does  $p$  represent?
  - A) The number of trials
  - B) The probability of success in a single trial
  - C) The number of failures in the experiment
  - D) The number of successes in the experiment
- 2) In case of hypergeometric distribution there are \_\_\_\_\_ parameters.
  - A) one
  - B) two
  - C) three
  - D) four
- 3) Which of the following statements is true for Poisson distribution with parameter  $\lambda$ ?
  - A) mean  $>$  variance
  - B) mean  $<$  variance
  - C) mean = variance
  - D) None of these

- 4) The limiting distributions, if  $N \rightarrow \infty$  and  $\frac{M}{N} \rightarrow p$  for hypergeometric distribution,  $H(n, M, N)$  reduces to \_\_\_\_\_.  
A) binomial  
B) Bernoulli  
C) geometric  
D) Poisson
- 5) The Negative Binomial Distribution  $(k, p)$  reduces to the Geometric Distribution when:  
A)  $k=1$   
B)  $k=0$   
C)  $p=0.5$   
D)  $p=1$
- 6) Which of the following discrete distributions has lack of memory property?  
A) Poisson  
B) Hypergeometric  
C) Negative binomial  
D) Geometric
- 7) If  $X \sim P(\lambda=1.5)$ , what is the mean of  $X$ ?  
A) 1.5  
B) 2.25  
C)  $\sqrt{1.5}$   
D) 0.025
- 8) Sum of independent and identically distributed Bernoulli's variable is \_\_\_\_\_ distribution.  
A) Bernoulli  
B) Binomial  
C) Poisson  
D) Hypergeometric

**Q2) Attempt any TWO of the following.**

[16]

- 1) Define Geometric distribution. Obtain its mean, variance and p.g.f.
- 2) Define Discrete Uniform distribution. Find its mean and variance.
- 3) Define Poisson distribution. Obtain its mean, variance and p.g.f.

**Q3) Attempt any FOUR of the following.**

**[16]**

- 1) Define Bernoulli distribution. Obtain its mean, variance and p.g.f.
  - 2) Obtain recurrence relation for probabilities of Poisson distribution.
  - 3) Obtain mean of hypergeometric distribution.
  - 4) If  $X$  and  $Y$  are two independent binomial random variables such that  $X \sim b(n, p)$  and  $Y \sim b(m, p)$ , prove that  $X + Y \sim b(n + m, p)$ .
  - 5) Define negative binomial distribution. Obtain its mean.
  - 6) Write a note on one point probability distribution.
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Seat No. **MAR-APR 2025 SUMMER EXAMINATION****2354 Bachelor of Science****Sub. Name: English Paper II****Sub. Code: 59680/90219/72840****Day and Date: JUNE ,06-06-2025****Total Marks: 40****Time: 10:30 AM To 12:00 PM****Instructions: 1. All questions are compulsory  
2. Figures to the right indicate full marks**

**Q1) A.** Rewrite the following sentences choosing the correct answer from those given [4]  
with each.

- i. Johannes V. Jensen is a ..... writer.
  - A. Danish
  - B. British
  - C. Canadian
  - D. Chinese
- ii. The Slave had ..... from the slave girl.
  - A. six sons
  - B. four sons and two daughters
  - C. two sons and four daughters
  - D. six daughters
- iii. Robert Frost is an ..... poet.
  - A. American poet
  - B. African dramatist
  - C. English poet
  - D. Indian novelist
- iv. The author served as ..... at the University of Buffalo.
  - A. programme officer
  - B. computer programmer
  - C. patron
  - D. provost

- B.** Answer the following questions in one word/phrase/sentence each. [4]
1. What is a Zettabyte equivalent to?
  2. What is used for designing new material?
  3. Where does 'one good man' lie?
  4. Why did Midas want more gold?

- Q2) A.** Answer any three of the following questions in three to four sentences each. [6]
1. Describe the beauty of winter evening in the woods.

2. Who is Pravin Bhagwat?
3. Who were the enemies of one good man?
4. What was the wish of Midas?
5. Why could the poet not find God?

**B.** Write short notes on any two of the following in about seven to eight sentences each. **[6]**

1. The title "Lost Forest".
2. What is the speaker's relationship with IIT Kanpur?
3. Explain 'God is within us'.

**Q3)** Answer the following questions. **[12]**

- a. You and your friend are going to Goa. Write a telephonic conversation between you and your friend about your plans. **[6]**
- b. Draft an advertisement of a pressure cooker and describe its features using various adjectives. **[6]**

**Q4)** Answer the following questions. **[8]**

- a. Write a set of instructions given to you in the laboratory. **[4]**
- b. Write a detailed report of an experiment you conducted. **[4]**

## **End Of Question Paper**

**Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

- 1] (2354) B.Sc. CBCS (NEP 2020) (90219) English Paper II Part 1 SEM 2
- 2] (286) B.Sc.(Sem.) (59680) English Paper II Part 1 SEM 2
- 3] (2324) B.Sc. (CBCS) (72840) English Paper -II Part 1 SEM 2

**B. Sc. (Part-I) (Sem. II) (NEP-2020)**  
**Examination, April, 2025**  
**Mathematics (Paper-III)**  
**Differential Equations**  
**Subject Code : 110357**

**Day and Date : Friday, 02-05-2025**

**Total Marks : 40**

**Time : 10.30 a.m. to 12.00 p.m.**

**Instructions :** 1. All questions are compulsory.  
2. Figures to the right indicate full marks.

**1. Select the correct alternative for each of the following :**

**[8]**

i) In the differential equation  $Mdx + Ndy = 0$ , if  $M = yf_1(x, y)$  and  $N = xf_2(x, y)$  then

I. F. = -----.

a)  $\frac{1}{Mx + Ny}$ , provided  $Mx + Ny \neq 0$

b)  $e^{\int f(x)dx}$

c)  $e^{\int f(y)dy}$

d)  $\frac{1}{Mx - Ny}$ , provided  $Mx - Ny \neq 0$

ii)  $\frac{1}{D^2} e^{2x} =$  -----.

a)  $\frac{e^{2x}}{4}$

b)  $\frac{e^{2x}}{2}$

c)  $e^{2x}$

d)  $4e^{2x}$

iii) For getting differential equation of orthogonal trajectories to the Cartesian family of curves  $f(x, y, c) = 0$ , we replace  $\frac{dy}{dx}$  by -----.

a)  $\frac{dx}{dy}$

b)  $-\frac{dx}{dy}$

c)  $\frac{1}{x} \frac{dx}{dy}$

d)  $-\frac{1}{x} \frac{dy}{dx}$

iv) The complete solution of differential equation  $(D^2 + D + 1)y = 0$  is -----.

a)  $y = e^{\frac{1}{2}x} (c_1 \cos \frac{\sqrt{3}}{2}x + c_2 \sin \frac{\sqrt{3}}{2}x)$

b)  $y = (c_1 + c_2x)e^x$

c)  $y = e^{\frac{-1}{2}x} (c_1 \cos \frac{\sqrt{3}}{2}x + c_2 \sin \frac{\sqrt{3}}{2}x)$

d)  $y = (c_1 + c_2x)e^{-x}$

v) In the differential equation  $\frac{dy}{dx} + Py = Q$ , where P and Q are functions of only then

I. F. = \_\_\_\_\_.

a)  $e^{\int P dx}$

b)  $e^{\int Q dy}$

c)  $e^{\int Q dx}$

d)  $e^{\int P dy}$

vi) The general solution of the differential equation  $\frac{d^2y}{dx^2} + B\frac{dy}{dx} + C = 0$  is -----,

if its auxiliary equation has two roots  $\alpha + iB$  and  $\alpha - iB$ .

a)  $y = (c_1 \cos \alpha x + c_2 \sin \alpha x)$

b)  $y = (c_1 \cos \beta x + c_2 \sin \beta x)$

c)  $y = (c_1 \cos \alpha x + c_2 \sin \alpha x) e^{\beta x}$

d)  $y = e^{\alpha x} (c_1 \cos \beta x + c_2 \sin \beta x)$

vii) The general solution of exact differential equation  $xy^2 dx + 2xy dy = 0$  is \_\_\_\_\_.

a)  $\frac{x^2}{2} = c$

b)  $x^2 y^2 = c$

c)  $\frac{x^2}{2} y^2 = c$

d)  $xy^2 = c$

viii)  $\frac{1}{D^2 + 9} \cos 3x =$  \_\_\_\_\_.

a)  $\frac{x}{6} \cos x$

b)  $-\frac{x}{6} \cos x$

c)  $-\frac{x}{6} \sin 3x$

d)  $\frac{x}{6} \sin 3x$

**2. Attempt any two of the following :**

[16]

a) Define Bernoulli's equation. Explain method of solving Bernoulli's equation.

b) State and prove necessary and sufficient condition for the differential equation  $Mdx + Ndy = 0$  to be exact.

c) Prove that  $\frac{1}{D^2 + a^2} \cos ax = \frac{x}{2a} \sin ax$ .

**3. Attempt any four of the following :**

[16]

a) Solve  $(\sin x \cdot \cos y + e^{2x})dx + (\cos x \cdot \sin y + \tan y)dy = 0$ .

b) Solve  $(D^3 + 3D^2 + 3D + 1)y = e^{-x} + e^{2x}$ .

c) Find orthogonal trajectories of  $y^2 = 4ax$ , where 'a' is a parameter.

d) Evaluate  $\frac{1}{D+3} \cos x$ .

e) Solve  $(2x^2y - 3y^2)dx + (2x^3 - 12xy + \log y)dy = 0$ .

f) Solve  $(1 + x^2) \frac{dy}{dx} + 2xy = \cos x$ .

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| Seat |  |
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**SM - 20**

**Total No. of Pages : 2**

**B.Sc. (Part I) (Semester – I) (NEP 2.0)**

**Examination – May 2025**

**MATHEMATICS**

**DSC I : Basic Algebra (Paper I)**

**Sub. Code : 106597-P1**

**Day and Date : Friday, 02/05/2025**

**Total Marks : 40**

**Time : 2.30 pm to 04.00 pm**

**Instructions : 1) All questions are compulsory.**

**2) Figures to the right indicate full marks.**

**Q. 1. Select correct alternative for each of the following.**

**[8]**

- 1) The modulus of a complex number  $z = 3 - 4i$  is .....  
a) 3                      b) 4                      c) 5                      d) 0
- 2) If a complex number  $z = x + iy$  has an exponential form  $z = re^{i\theta}$  then  $\theta = \dots\dots\dots$   
a)  $\tan^{-1} x$               b)  $\tan^{-1} y$               c)  $\tan^{-1} \frac{x}{y}$               d)  $\tan^{-1} \frac{y}{x}$
- 3) Using relation between circular and hyperbolic functions,  $\sinh 2x =$   
a)  $\frac{e^x + e^{-x}}{2}$               b)  $\frac{e^x - e^{-x}}{2}$               c)  $\frac{e^{2x} + e^{-2x}}{2}$               d)  $\frac{e^{2x} - e^{-2x}}{2}$
- 4) The value of  $\left(\cos \frac{\pi}{4} + i \sin \frac{\pi}{4}\right)^4$  is .....  
a) 1                      b) -1                      c) -i                      d) i

- 5) If a matrix  $A$  is Hermitian, then the matrix  $(iA)$  is always ..... matrix.  
a) Hermitian  
b) skew-Hermitian  
c) null  
d) identity
- 6) Rank of matrix  $\begin{bmatrix} 1 & -7 & 9 \\ 2 & 0 & 6 \\ 1 & -7 & 9 \end{bmatrix}$  is .....  
a) 0  
b) 1  
c) 2  
d) 3
- 7) The system of non-homogeneous equations  $AX = B$  is consistent if .....  
a)  $\rho(A) = \rho(A : B)$   
b)  $\rho(A) > \rho(A : B)$   
c)  $\rho(A) < \rho(A : B)$   
d)  $\rho(A) = \rho(B)$
- 8) For any complex numbers  $z_1, z_2$ ,  $\text{Arg}(z_1 \cdot z_2) = \dots\dots\dots$   
a)  $\text{Arg}(z_1) + \text{Arg}(z_2)$   
b)  $\text{Arg}(z_1) - \text{Arg}(z_2)$   
c)  $\text{Arg}(z_1) \cdot \text{Arg}(z_2)$   
d)  $\text{Arg}(z_1) / \text{Arg}(z_2)$

**Q. 2. Attempt any two of the following.**

**[16]**

- 1) State and prove Cayley-Hamilton theorem.
- 2) Show that any square matrix can be uniquely expressed as sum of Hermitian and Skew-Hermitian matrices.
- 3) State and prove De-Moivre's theorem.

**Q. 3. Attempt ANY FOUR out of the following.**

[16]

- 1) Simplify  $\frac{(\cos 5\theta - i \sin 5\theta)^5}{(\cos 6\theta + i \sin 6\theta)^4}$
- 2) For any real number  $x$ , show that  $\sinh^{-1} x = \log (x + \sqrt{1 + x^2})$ .
- 3) Find all the values of  $1^{\frac{1}{3}}$ .
- 4) Show that  $(1 + i)^n + (1 - i)^n = 2^{\frac{n}{2}+1} \cos \frac{n\pi}{4}$ .
- 5) Find eigen values of a matrix  $A = \begin{bmatrix} 2 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 1 \end{bmatrix}$
- 6) Solve the following system of equations  

$$x - 2y - z = -4, \quad 3x + y - 4z = 0, \quad 2x - y + 3z = 8$$

Seat No. **MAR-APR 2025 SUMMER EXAMINATION****11670 Bachelor of Science****Sub. Name: Botany Paper I & II****Sub. Code: 106674****Day and Date: APRIL ,28-04-2025****Total Marks: 40****Time: 02.30 PM To 04:00 PM**

- Instructions:**
- 1. All questions are compulsory**
  - 2. Draw neat labelled diagrams wherever necessary**
  - 3. Figures to the right indicate full marks**

**Q1)** Rewrite the sentences by selecting correct answer of the following**[8]**

i. **The cell wall of plant cell is composed of -----.**

- A. Glucose**
- B. Fructose**
- C. Cellulose**
- D. Maltose**

ii. **Sucrose is a -----.**

- A. Monosaccharide**
- B. Disaccharide**
- C. Polysaccharide**
- D. Nonsaccharide**

iii. **----- is an example of simple lipid**

- A. Cholesterol**
- B. Wax**
- C. Lecithin**
- D. Glycolipid**

iv. **Phospholipid is a type ----- of lipid.**

- A. Simple**
- B. Compound**
- C. Derived**
- D. Steroid**

v. **Amino acids are the building blocks of -----.**

- A. Carbohydrates**
- B. Lipids**
- C. Proteins**
- D. Steroids**

vi. **Primary structure of t-RNA was proposed by -----.**

- A. Khorana & Khorana
- B. Holley and co-workers
- C. Griffith & Every
- D. Watson & Crick

vii. \_\_\_\_\_ called as duplicative cell division.

- A. Mitosis
- B. Amitosis
- C. Meiosis
- D. None of these

viii. Prokaryotic ribosome is ----- type.

- A. 50S
- B. 60S
- C. 70S
- D. 80S

**Q2) Descriptive Questions ( Attempt any Two) [16]**

- a. Describe the double helix structure of DNA. [8]
- b. Define meiosis. Explain briefly phases of Meiosis-I. [8]
- c. Describe the ultrastructure of chloroplast.. [8]

**Q3) Write short note ( Attempt any Four) [16]**

- a. Fluid Mosaic Model [4]
- b. m-RNA [4]
- c. Mitochondria [4]
- d. Significance of Mitosis [4]
- e. Eukaryotic Ribosome [4]
- f. Significance of Lipids [4]

## End Of Question Paper

**Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (11670) Bachelor of Science (B.Sc.) NEP 2.0 (106674) Botany Paper I & II Part 1 SEM 1

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| Seat No. |
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**MAR-APR 2025 SUMMER EXAMINATION****11670 Bachelor of Science****Sub. Name: Chemistry Paper I & II****Sub. Code: 106595****Day and Date: APRIL ,23-04-2025****Total Marks: 40****Time: 02.30 PM To 04:00 PM****Instructions:** 1. All questions are compulsory  
2. Figures to the right indicate full marks**Q1)** Solve following MCQ.**[8]**

- i. .... is condensed heterocyclic compound.  
A. pyridine  
B. furan  
C. quinoline  
D. None of these
- ii. .... is a non benzenoid compound.  
A. naphthalene  
B. benzene  
C. pyridine  
D. phenol
- iii. .... is not a chiral compound.  
A. 2-chlorobutane  
B. 3-chloropentane  
C. lactic acid  
D. 2- amino propionic acid
- iv. In pyridine, electrophilic substitution reaction occurs at ..... position.  
A. 3  
B. 2  
C. 4  
D. 1
- v. A free radical is represented as .....  
A.  $R^+$   
B.  $R\cdot$   
C.  $R^-$   
D.  $R^-$
- vi. Aldoximes and ketoximes show ..... isomerism.  
A. optical

- B. conformational
- C. geometrical
- D. all of these

vii. Correct structure of benzene was proposed by .....

- A. Dewar
- B. Faraday
- C. Bayer
- D. Kekule

viii. Negatively charged trivalent carbon species is .....

- A. carbanion
- B. free radical
- C. carbene
- D. carbocation

**Q2)** Attempt any TWO of the following **[16]**

- a. Explain optical isomerism in tartaric acid. **[8]**
- b. Define carbanion and give two methods of preparation of carbanion. **[8]**
- c. Define heterocyclic compounds and give two methods of synthesis of pyridine. **[8]**

**Q3)** Attempt any FOUR of the following **[16]**

- a. Write note on Kekule's structure of benzene. **[4]**
- b. Explain geometrical isomerism in maleic acid and fumaric acid. **[4]**
- c. What are electrophiles and nucleophiles ? **[4]**
- d. Explain the term - aromaticity. **[4]**
- e. Explain molecular orbital picture of pyrrole. **[4]**
- f. Nitration of Benzene. **[4]**

## End Of Question Paper

**Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (11670) Bachelor of Science (B.Sc.) NEP 2.0 (106595) Chemistry Paper I & II Part 1 SEM 1

Seat No. **MAR-APR 2025 SUMMER EXAMINATION****11670 Bachelor of Science****Sub. Name: Computer Science Paper II (CS II)****Sub. Code: 106777****Day and Date: MAY ,08-05-2025****Total Marks: 40****Time: 02.30 PM To 04:00 PM****Instructions: 1. All questions are compulsory  
2. Figures to the right indicate full marks****Q1) Solve following MCQ.****[8]**

- i. Architecture of database can be viewed as \_\_\_\_\_  
A. Two level  
B. Four level  
C. Three level  
D. One level
- ii. .... introduced the relational database rules.  
A. Deniss Ritchie  
B. E F Codd  
C. Bjarne Stroustrup  
D. James Gossling
- iii. An entity in A is associated with at most one entity in B, and an entity in B is associated with at most one entity in A. This is called as  
A. One-to-many  
B. Many-to-many  
C. One-to-one  
D. Many-to-one
- iv. The overall description of a database is called \_\_\_\_\_  
A. Data integrity  
B. Data manipulation  
C. Database schema  
D. Data definition
- v. .... is a condition specified on a database schema and restricts the data that can be stored in an instance of a database.  
A. Key constraint  
B. CHECK constraint  
C. Integrity constraint  
D. Foreign key constraint

- vi. A tuple is a-----  
A. row of a table  
B. key of a table  
C. column of a table  
D. two-dimensional table
- vii. A collection of interrelated records is called a-----  
A. Database  
B. Spreadsheet  
C. Management information system  
D. Text file
- viii. \_\_\_\_\_ is used for creating and destroying tables, indexes and other forms of tables.  
  
A. DDL language  
B. DCL language  
C. DML language  
D. TCL language

**Q2) Solve any Two Quations [16]**

- a. Explain in detail DQL -SELECT command [8]
- b. Explain in detail aggregate functions in MySQL [8]
- c. Explain in detail DBMS architecture. [8]

**Q3) Write short note (Any Four) [16]**

- a. CREATE TABLE command in MySQL [4]
- b. SQL clauses [4]
- c. Explain Foreign key in DBMS [4]
- d. Relational operators in MySQL. [4]
- e. Explain Relational data model [4]
- f. Advantages of DBMS [4]

## **End Of Question Paper**

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

- 1] (11670) Bachelor of Science (B.Sc.) NEP 2.0 (106777) Computer Science Paper I & II Part 1 SEM 1

379548

Seat No. **MAR-APR 2025 SUMMER EXAMINATION****3140 B.A. (C.B.C.S) (NEP-2020)****Sub. Name: Democracy Elections & Good Governance-(D.E.G.G.)****Sub. Code: 75245/88965****Day and Date: JUNE ,18-06-2025****Total Marks: 50****Time: 02.30 PM To 04:00 PM****Instructions: 1. All questions are compulsory  
2. Figures to the right indicate full marks****Q1) योग्य पर्याय निवडा . Select the correct option.****[50]****i. योग्य पर्याय निवडा . Select the correct option.**

\_\_\_\_\_ यांनी लोकशाहीचे असे वर्णन केले आहे की, “लोकशाही ही अशी शासनप्रणाली आहे, ज्यामध्ये सामाजिक आणि आर्थिक परिवर्तन शांततामय आणि कायदेशीर मार्गाने घडून येते.”

\_\_\_\_\_ defined democracy as “Democracy is a form of government in which social and economic transformation takes place through peaceful and legal means.”

- A. एम. एन. रॉय (M. N. Roy)
- B. डॉ. बाबासाहेब आंबेडकर (Dr. Babasaheb Ambedkar)
- C. महात्मा गांधी (Mahatma Gandhi)
- D. एच. सी. मुखर्जी (H. C. Mukherjee)

**ii.** “मुक्त आणि सार्वत्रिक निवडणुका” आणि “सार्वत्रिक प्रौढ मताधिकार” ही \_\_\_\_\_ प्रणालीची दोन वैशिष्ट्ये आहेत.

“Free and universal elections” and “Universal Adult Suffrage” are two features of \_\_\_\_\_ system.

- A. लोकशाही (Democracy)
- B. हुकूमशाही (Dictatorship)
- C. सामंतशाही (Feudalism)
- D. राजेशाही (Monarchy)

**iii.** \_\_\_\_\_ देशाने प्रत्यक्ष लोकशाहीचा मार्ग स्वीकारला आहे.

\_\_\_\_\_ country has adopted the path of direct democracy.

- A. स्वित्झर्लंड (Switzerland)
- B. इंग्लंड (England)
- C. फ्रान्स (France)
- D. रशिया (Russia)

**iv.** \_\_\_\_\_ ही संसदीय लोकशाही व्यवस्थेची एक वैशिष्ट्यपूर्ण बाब आहे.

\_\_\_\_\_ is a characteristic feature of Parliamentary Democratic System.

- A. पारदर्शकता (Transparency)
- B. योग्य प्रशासन (Fair administration)
- C. अकार्यक्षमता (Inefficiency)

D. जबाबदार प्रशासन (Accountable administration)

- v. \_\_\_\_\_ देशाच्या लोकशाहीने भारतीय लोकशाहीवर सर्वाधिक प्रभाव टाकला आहे.  
\_\_\_\_\_ country's democracy has influenced Indian democracy the most.
- A. इंग्लंड (England)  
B. चीन (China)  
C. इराण (Iran)  
D. इराक (Iraq)
- vi. भारतीय संविधान निवडणुकीची प्रक्रिया \_\_\_\_\_ या स्वायत्त संस्थेकडे सोपवते.  
The Constitution of India entrusts the process of election to \_\_\_\_\_, an autonomous body.
- A. वित्त आयोग (Finance Commission)  
B. निवडणूक आयोग (Election Commission)  
C. सरकारी आयोग (Government Commission)  
D. नीति आयोग (Niti Aayog)
- vii. पंतप्रधान आणि त्यांचे मंत्रीमंडळ राष्ट्राच्या \_\_\_\_\_ कार्यकारी शक्तीचे मालक असतात.  
The Prime Minister and his cabinet have the \_\_\_\_\_ executive power of the nation.
- A. वास्तविक (Actual)  
B. अनियमित (Irregular)  
C. तात्पुरती (Temporary)  
D. दीर्घकालीन (Long)
- viii. भारतीय संसदेचे पहिले किंवा खालचे सभागृह \_\_\_\_\_ आहे.  
The first or lower house of the Indian Parliament is \_\_\_\_\_.
- A. राज्यसभा (Rajya Sabha)  
B. लोकसभा (Lok Sabha)  
C. विधान परिषद (Vidhan Parishad)  
D. विधान सभा (Vidhan Sabha)
- ix. गावातील १८ वर्षांवरील सर्व मतदारांचे सभासदत्व म्हणजे \_\_\_\_\_.  
Assembly of all voting citizens above 18 years of age in a village means \_\_\_\_\_.
- A. विधान सभा (Vidhan Sabha)  
B. ग्रामसभा (Gram Sabha)  
C. वार्डसभा (Ward Sabha)  
D. मासिक सभा (Monthly Sabha)
- x. \_\_\_\_\_ यांच्या मते, "लोकशाही म्हणजे लोकांचे सरकार, लोकांसाठी आणि लोकांद्वारे चालवलेले सरकार."  
According to \_\_\_\_\_, "Democracy is a government of the people, for the people and by the people."
- A. महात्मा गांधी (Mahatma Gandhi)

- B. लॉर्ड ब्राईस (Lord Brice)
- C. अब्राहम लिंकन (Abraham Lincoln)
- D. प्रोफेसर सीली (Prof. Seeley)

- xi.** \_\_\_\_\_ हे/हेच लोकशाही शासनप्रणालीचे मुख्य मूल्य आहे/आहेत.  
\_\_\_\_\_ is/are the main values of the democratic system of government.
- A. स्वातंत्र्य (Liberty)
  - B. समता (Equality)
  - C. बंधुता (Fraternity)
  - D. वरील सर्व पर्याय (All of the above)
- xii.** भारतात \_\_\_\_\_ शासनप्रणाली अवलंबली आहे.  
\_\_\_\_\_ system of government has been adopted in India.
- A. संसदीय (Parliamentary)
  - B. अध्यक्षीय (Presidential)
  - C. हुकूमशाही (Dictatorship)
  - D. नियंत्रित लोकशाही (Controlled Democracy)
- xiii.** लोकशाहीतील निवडणूक प्रक्रिया लोकांचे \_\_\_\_\_ दर्शवते.  
Electoral process in a democracy provides \_\_\_\_\_ of the people.
- A. वैधता (Validity)
  - B. स्वीकार्यता (Acceptance)
  - C. अवैधता (Invalidity)
  - D. वरीलपैकी कोणतेही नाही (None of these)
- xiv.** भारतीय लोकशाहीमध्ये \_\_\_\_\_ मतदान पद्धत अवलंबली आहे.  
In Indian democracy, \_\_\_\_\_ method of voting is adopted.
- A. गुप्त मतदान (Secret voting)
  - B. प्रौढ मतदान (Adult voting)
  - C. राखीव मतदान (Reserved voting)
  - D. 'a' आणि 'b' दोन्ही पर्याय योग्य आहेत (Both options 'a' and 'b' are correct)
- xv.** \_\_\_\_\_ म्हणजे ठराविक वयानंतर दिला जाणारा मतदानाचा हक्क.  
\_\_\_\_\_ is the Right to Vote given after a certain age.
- A. प्रौढ मताधिकार (Adult suffrage)
  - B. विशिष्ट मतदान (Specific voting)
  - C. निकष मतदान (Criterion voting)
  - D. वरीलपैकी कोणतेही नाही (None of these)
- xvi.** लोकशाहीमध्ये \_\_\_\_\_ द्वारे प्रतिनिधी निवडले जातात.  
In a democracy, by \_\_\_\_\_ the representatives were elected.
- A. निवडणूक (Election)
  - B. निवड (Selection)
  - C. नियुक्ती (Appointment)
  - D. वरीलपैकी कोणतेही नाही (None of these)

- xvii.** भारतात लोकसभा निवडणुका दर \_\_\_\_\_ वर्षांनी घेतल्या जातात.  
Lok Sabha elections in India are held after every \_\_\_\_\_ years.  
A. ४ (4)  
B. ५ (5)  
C. ६ (6)  
D. ७ (7)
- xviii.** \_\_\_\_\_ यांना स्थानिक स्वराज्य व्यवस्थेचे जनक मानले जाते.  
\_\_\_\_\_ is called the father of Local Self-Government.  
A. लॉर्ड मेयो (Lord Mayo)  
B. लॉर्ड डफरिन (Lord Dufferin)  
C. लॉर्ड रिपन (Lord Ripon)  
D. लॉर्ड कॅनिंग (Lord Canning)
- xix.** सुशासनामध्ये \_\_\_\_\_ समाविष्ट आहे.  
Good governance includes \_\_\_\_\_.  
A. जबाबदारी (Accountability)  
B. पारदर्शकता (Transparency)  
C. उत्तरदायित्व (Responsibility)  
D. वरील सर्व पर्याय योग्य आहेत (All of the above)
- xx.** \_\_\_\_\_ रोजी “राष्ट्रीय अन्न सुरक्षा अधिनियम, २०१३” लागू करण्यात आला.  
On \_\_\_\_\_, the “National Food Security Act, 2013” was implemented.  
A. १ फेब्रुवारी २०१३ (1 February 2013)  
B. १ फेब्रुवारी २०१४ (1 February 2014)  
C. ४ फेब्रुवारी २०१४ (4 February 2014)  
D. १ जानेवारी २०१५ (1 January 2015)
- xxi.** भारतात दरवर्षी \_\_\_\_\_ रोजी सुशासन दिन साजरा केला जातो.  
Good Governance Day is observed in India annually on \_\_\_\_\_.  
A. २५ डिसेंबर (25th December)  
B. २१ एप्रिल (21st April)  
C. २६ जानेवारी (26th January)  
D. १५ ऑगस्ट (15th August)
- xxii.** “माहितीचा अधिकार अधिनियम, २००५” भारतात \_\_\_\_\_ रोजी लागू झाला.  
The “Right to Information Act, 2005” came into force in India on \_\_\_\_\_.  
A. १२ ऑक्टोबर २००५ (12 October 2005)  
B. १७ ऑक्टोबर २००७ (17 October 2007)  
C. १२ ऑक्टोबर २००९ (12 October 2009)  
D. २४ जानेवारी २००५ (24 January 2005)
- xxiii.** \_\_\_\_\_ घटनादुरुस्ती नुसार पंचायत राज्याला घटनात्मक दर्जा देण्यात आला.  
According to \_\_\_\_\_ constitutional amendment, the Panchayat State was given constitutional status.  
A. a) ७३ वी (73rd)

- B. b) ७४ वी (74th)
- C. c) ७५ वी (75th)
- D. d) ७६ वी (76th)

**xxiv.** \_\_\_\_\_ घटनादुरुस्तीमुळे मतदानाचे वय २१ वरून १८ वर्षे करण्यात आले.  
\_\_\_\_\_ constitutional amendment decreased the voting age from 21 to 18 years.

- A. ६१ वी (61st)
- B. ७३ वी (73rd)
- C. ७४ वी (74th)
- D. ४२ वी (42nd)

**xxv.** सुशासनाची संकल्पना \_\_\_\_\_ मध्ये उदयास आली.  
The concept of good governance emerged in \_\_\_\_\_.

- A. १९९२ (1992)
- B. १९९५ (1995)
- C. १९९० (1990)
- D. २००२ (2002)

## **End Of Question Paper**

**Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

- |                                        |                                                              |              |
|----------------------------------------|--------------------------------------------------------------|--------------|
| 1] (3140) B.A. (C.B.C.S)<br>(NEP-2020) | (75245) Democracy Elections & Good Governance-<br>(D.E.G.G.) | Part 1 SEM 1 |
| 2] (2354) B.Sc. CBCS (NEP 2020)        | (88965) Democracy, Election & Good Governance                | Part 1 SEM 1 |

Seat No. **MAR-APR 2025 SUMMER EXAMINATION****11670 Bachelor of Science****Sub. Name: Interdisciplinary course in Generic IKS****Sub. Code: 106596****Day and Date: MAY ,27-05-2025****Total Marks: 40****Time: 10:30 AM To 12:30 PM****Instructions: 1. All questions are compulsory****Q1) Select the Correct Answer from each of the following and rewrite the statement****[8]**

- i. IKS primarily consist of-----  
 आयकेएसमध्ये प्रामुख्याने ----- असते.
- A. Modern scientific methods  
 आधुनिक वैज्ञानिक पद्धती
- B. Local knowledge and practices  
 स्थानिक ज्ञान आणि पद्धती
- C. Global technological advancements  
 जागतिक तांत्रिक प्रगती
- D. Imported foreign concepts  
 आयात केलेल्या परदेशी संकल्पना
- ii. An ancient Indian text that primarily discusses Ayurveda is-----  
 आयुर्वेदाची प्रामुख्याने चर्चा करणारा एक प्राचीन भारतीय ग्रंथ म्हणजे-----
- A. Rigveda  
 ऋग्वेद
- B. Charaka Samhita  
 चरक संहिता
- C. Bhagavad Gita  
 भगवद्गीता
- D. Arthashastra  
 अर्थशास्त्र
- iii. -----concept in Ayurveda refers to the digestive fire.  
 -----आयुर्वेदातील संकल्पना पचन अग्नीचा संदर्भ देते.
- A. Prana  
 प्राण
- B. Sattva  
 सत्त्व
- C. Agni  
 अग्नि
- D. Dosha  
 दोष

iv. The amount of water generally recommended for an average adult per day is---

-----

सरासरी प्रौढ व्यक्तीसाठी दररोज पाण्याचे प्रमाण ----- आहे.

- A. 1-2 cups  
१-२ कप
- B. 4-5 cups  
४-५ कप
- C. 8-10 cups (about 2-3 liters)  
८-१० कप (सुमारे २-३ लिटर)
- D. 12-15 cups  
१२-१५ कप

v. Sleep generally recommended for most adults is-----

बहुतेक प्रौढांसाठी झोपेची शिफारस साधारणपणे ----- असते.

- A. 5-6 hours  
५-६ तास
- B. 6-7 hours  
६-७ तास
- C. 7-9 hours  
७-९ तास
- D. 9-10 hours  
९-१० तास

vi. -----of the following health benefits is commonly associated with *Allium sativum* (garlic)

----- खालील आरोग्य फायद्यांपैकी सामान्यतः अॅलियम सॅटिव्हम (लसूण) शी संबंधित आहे

- A. Reduces blood pressure  
रक्तदाब कमी करते
- B. Increases cholesterol levels  
कोलेस्टेरॉलची पातळी वाढवते
- C. Causes digestive issues  
पचनाच्या समस्या निर्माण करते
- D. Enhances hair growth only  
केसांची वाढ वाढवते

vii. A nutraceutical is a-----

न्यूट्रास्युटिकल म्हणजे -----

- A. A type of fast food  
फास्ट फूडचा एक प्रकार
- B. A food product that provides health benefits beyond basic nutrition  
मूलभूत पोषणापेक्षा आरोग्य फायदे देणारे अन्न उत्पादन
- C. A pharmaceutical drug  
औषधी औषध
- D. A dietary restriction  
आहारातील निर्बंध

viii. -----is a common assessment method for determining an individual's dosha.

----- ही एखाद्या व्यक्तीचा दोष निश्चित करण्यासाठी एक सामान्य मूल्यांकन पद्धत आहे.

- A. Observing dietary preferences only  
केवळ आहाराच्या पसंतीचे निरीक्षण करणे
- B. Evaluating physical characteristics, emotional traits, and lifestyle factors  
शारीरिक वैशिष्ट्ये, भावनिक वैशिष्ट्ये आणि जीवनशैली घटकांचे मूल्यांकन करणे
- C. Conducting blood tests exclusively  
केवळ रक्त चाचण्या घेणे
- D. Checking pulse rate  
नाडीचा दर तपासणे

**Q2) Answer the following questions (Any Two)**

**[16]**

- a. Explain in detail the importance of Sleep and Food in Ayurveda  
आयुर्वेदात झोप आणि अन्नाचे महत्त्व सविस्तरपणे स्पष्ट करा
- b. Describe in detail the concept of Doshas and Assessment  
दोष आणि मूल्यांकनाची संकल्पना सविस्तरपणे सांगा
- c. Give a detailed account of IKS in ancient India and Modern India.  
प्राचीन भारतातील आणि आधुनिक भारतातील आय के एस ची सविस्तर माहिती द्या

**Q3) Write a Short Note (Any Four)**

**[16]**

- a. Yoga  
योग
- b. Ecology and Environment  
पर्यावरणशास्त्र आणि पर्यावरण
- c. Nutraceuticals  
न्यूट्रास्युटिकल्स
- d. Ayurvedic Aahar and FSSAI  
आयुर्वेदिकआहारआणि एफ एस एस ए आय
- e. Dincharya  
दिनचर्या
- f. Role of Water in Wellbeing  
आरोग्यामध्ये पाण्याची भूमिका

## **End Of Question Paper**

**Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (11670) Bachelor of Science (B.Sc.) NEP (106596) Interdisciplinary course in Generic IKS Part 1 SEM 1  
2.0

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| Seat |  |
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**SM - 02**

**Total No. of Pages : 3**

**B.Sc.(Part – I) (Semester – I) (NEP 2020) (CBCS)**

**Examination - June 2025**

**MATHEMATICS**

**DSC-A6: Differential Equations (Paper – II)**

**Sub. Code : 88176–P2**

**Day and Date : Thursday, 12/06/2025**

**Total Marks : 40**

**Time : 02.30 pm. to 04.00 pm.**

**Instruction : 1) All questions are compulsory.**

**2) Figures to the right indicate full marks.**

**Q. 1. Select correct alternative for each of the following**

**[08]**

1) The value of  $\frac{1}{f(D)} (e^{ax}V) = \dots\dots\dots$

a)  $e^{ax} \frac{1}{f(D)} V$

b)  $e^{ax} \frac{1}{f(D-a)} V$

c)  $e^{ax} \frac{1}{f(D+a)} V$

d) none of these

2) The degree of the differential equation  $\left(\frac{d^3y}{dx^3}\right)^2 + \frac{d^2y}{dx^2} + \frac{dy}{dx} + 5y = 0$  is  
.....

a) 3

b) 2

c) 5

d) 1

3) The value of  $\frac{1}{D^2+2} \sin x$  is .....

a)  $-\cos x$

b)  $-\sin x$

c)  $\frac{\sin x}{3}$

d)  $\sin x$

- 4) The necessary and sufficient condition for  $Mdx + Ndy = 0$  is to be exact is .....
  - a)  $\frac{\partial M}{\partial x} = \frac{\partial N}{\partial y}$
  - b)  $\frac{\partial^2 M}{\partial x^2} + \frac{\partial^2 N}{\partial y^2}$
  - c)  $\frac{\partial M}{\partial y} = \frac{\partial N}{\partial x}$
  - d)  $\frac{\partial^2 M}{\partial x \partial y}$
- 5) The differential equation of the form  $\frac{dy}{dx} + P(x)y = Q(x)y^n$  is called .....
  - a) Euler's equation
  - b) Linear equation
  - c) Bernoulli's equation
  - d) Clairaut's equation
- 6)  $\frac{1}{D-a}X = \dots\dots\dots$ 
  - a)  $e^{ax} \int X e^{-ax} dx$
  - b)  $e^{-ax} \int X e^{ax} dx$
  - c)  $e^{ax} \int X dx$
  - d)  $e^{-ax} \int X^2 dx$
- 7) If the equation  $Mdx + Ndy = 0$  is not exact and  $\frac{\frac{\partial N}{\partial x} - \frac{\partial M}{\partial y}}{M} = f(y)$  then I.F. is .....
  - a)  $e^{\int f(y) dy}$
  - b)  $e^{\int f(x) dx}$
  - c)  $e^{\int f(x) dy}$
  - d)  $e^{\int f(y) dy}$
- 8) If  $y = px + e^p$  then its solution is .....
  - a)  $y = cx + e^p$
  - b)  $y = cx + e^c$
  - c)  $y = cx + p^c$
  - d)  $y = cx + c^e$

**Q. 2. Attempt any Two of the following.**

[16]

- 1) State and prove necessary and sufficient condition for the differential equation  $Mdx + Ndy = 0$  to be exact.
- 2) Define Clairaut's equation and explain the method of solving it.
- 3) Define Bernoulli's differential equation and explain the method of solving it.

**Q. 3. Attempt any Four of the following.**

**[16]**

- 1) Solve  $p = \log(px - y)$
  - 2) Solve  $\frac{d^2y}{dx^2} - 5 \frac{dy}{dx} + 6y = x$
  - 3) Solve  $(D^2 - 5D + 6)y = e^{4x}$
  - 4) Find the orthogonal trajectories for the curve  $y^2 = 4ax$
  - 5) Solve  $(4x + 3y + 1)dx + (3x + 2y + 1)dy = 0$
  - 6) Solve  $(x^2 - 4y + 2y^2)dx + (y^2 - 4xy - 2x^2)dy = 0$
-

Seat No. **MAR-APR 2025 SUMMER EXAMINATION****11670 Bachelor of Science****Sub. Name: Physics Paper I & II****Sub. Code: 106620****Day and Date: APRIL ,25-04-2025****Total Marks: 40****Time: 02.30 PM To 04:00 PM**

- Instructions:**
- 1. All questions are compulsory**
  - 2. Draw neat labelled diagrams wherever necessary**
  - 3. Figures to the right indicate full marks**

**Q1)** Solve following MCQ.**[8]**

- i. A force which can be expressed as the gradient of a scalar potential is called..... Force
  - A. Conservative
  - B. Non- conservative
  - C. Pseudo
  - D. None of the above
- ii. The gradient of scalar function is .....
  - A. The maximum rate of change of function in space
  - B. The minimum rate of change of function in space
  - C. Constant
  - D. Always Scaler function
- iii. Field lines are always emerge from.....
  - A. positive charge
  - B. negative charge
  - C. can be both charges
  - D. the central point of both charges
- iv. The unit of electric field intensity.....
  - A. N
  - B. N/C
  - C. Ns
  - D. NC
- v. The symmetric molecules in which the charge centre do not coincide are called.....
  - A. Polar molecules
  - B. Nonpolar molecules
  - C. Homogeneous molecules

D. Non- Homogeneous molecules

**vi.** The total electric dipole moment acquired per unit volume of dielectric medium due to external electric field is called .....

- A. displacement vector
- B. net dipole moment
- C. polarisation vector
- D. electric field vector

**vii.** S. I. Unit of intensity of magnetization is.....

- A. A-m
- B. m/A
- C. A/m
- D. Wb/m<sup>2</sup>

**viii.** According to Biot-Savarts law, magnetic field at a point due to a small element of current carrying conductor is .....

- A. directly proportional to the current flowing through it
- B. inversely proportional to the current flowing through it
- C. inversely proportional to the length of conductor
- D. directly proportional to  $r^2$

**Q2)** Attempt Any Two

**[16]**

- a.** State and prove Gauss divergence theorems in vector field **[8]**
- b.** What is an electric dipole? Obtain an expression for electric potential due to electric dipole, at a point at a distance  $r$  from the centre of the dipole **[8]**
- c.** Obtain an expression for magnetic field due to straight conductor of finite length carrying a current  $i$  **[8]**

**Q3)** Attempt Any Four

**[16]**

- a.** Explain Divergence of magnetic field. **[4]**
- b.** Explain dielectric polarization. **[4]**
- c.** Define curl of vector field and explain its significance. **[4]**
- d.** Get an expression for electric field at a point inside the charged sphere. **[4]**
- e.** Explain Electric susceptibility of dielectrics. **[4]**
- f.** A certain dielectric slab of cross sectional area 5 cm<sup>2</sup> and length 6cm is placed in a uniform electric field parallel to the length, when equal and opposite charges of magnitude  $10^{-2}$  C are found to be developed on the cross-sectional **[4]**

faces. Calculate (i) electric dipole moment developed, (ii) the surface density of charges on the faces and (iii) the polarization in slab.

## **End Of Question Paper**

**Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (11670) Bachelor of Science (B.Sc.) NEP 2.0 (106620) Physics Paper I & II Part 1 SEM 1

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**SM - 23**

**Total No. of Pages : 3**

**B.Sc. (Part – I) (Semester - I) (CBCS) (NEP 2020)**

**Examination - June 2025**

**STATISTICS**

**Elementary Probability Theory (Paper – II)**

**Sub. Code : 88183–P2**

**Day and Date : Tuesday, 17/06/2025**

**Total Marks : 40**

**Time : 02.30 pm. to 4.00 pm.**

**Instructions : 1) All questions are compulsory.**

**2) Use of Calculator is allowed.**

**Q. 1. Choose the correct alternatives.**

**[8]**

1) How many 3 letter words can be formed using the letters of the word 'COMPUTER'?

- a) 21                      b) 56                      c) 336                      d) 356

2) Associative law for intersections is .....

a)  $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$

b)  $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

c)  $A \cap (B \cap C) = (A \cap B) \cap C$

d) None of these

3) Probability that snow will fall in Delhi .....

- a) can not be estimated  
b) depends upon weather conditions  
c) is zero  
b) is one

- 4) Which of the following is NOT an axiom of probability?
- $P(\Omega) = 1$
  - $P(A) \geq 0$
  - $P(A \cup B) = P(A) + P(B)$ ; provided  $P(A \cap B) = \phi$
  - $P(\Omega) \leq 1$
- 5) The probability that a leap year will have 53 Sundays is .....
- 52/53
  - 2/53
  - 2/7
  - 1/7
- 6) If  $A \subset B$  then  $P(A | B)$  is.....
- $P(A)$
  - 1
  - 0
  - $P(A) / P(B)$
- 7) An important property of distribution function  $F(x)$ , such as it is.....
- An increasing function
  - A decreasing function
  - A monotonically decreasing function
  - A non-decreasing function
- 8) If  $X$  is a discrete random variable with  $E(X) = 10$ , then  $E(5X+5)$  is.....
- 20
  - 50
  - 55
  - 45

**Q. 2. Attempt any two of the following.**

**[16]**

- 1) For any two events  $A$  and  $B$ , show that  
 $0 \leq P(A \cap B) \leq \min(P(A), P(B)) \leq P(A \cup B) \leq [P(A) + P(B)]$ .
- 2) A discrete random variable  $X$  has the p.m.f. given by

|            |        |   |     |     |     |
|------------|--------|---|-----|-----|-----|
| $X$        | 2      | 4 | 6   | 8   | 10  |
| $P(X = x)$ | 1 / 12 | k | 1/4 | 1/3 | 1/6 |

Find a) k                      b) Mode                      c) Median                      d)  $P(3 < X < 8)$

- 3) A fair die is thrown twice and events are :
- $A$  : Event that odd number appears on the first die
- $B$  : Event that odd number appears on the second die
- $C$  : Event that sum of numbers is odd
- Discuss the independence of  $A$ ,  $B$  and  $C$ .

**Q. 3. Attempt any four of the following.****[16]**

- 1) Write sample space of the following experiments :
  - a) One die is thrown
  - b) Two coins are tossed simultaneously.
  - c) No. of attempts requires to pass the examination.
  - d) Two dice are thrown simultaneously.
- 2) If A and B are any two events defined on  $\Omega$  then show that  
 $P(A \cup B) = P(A) + P(B) - P(A \cap B)$ .
- 3) A bag contains 4 white and 3 black balls. If 4 balls drawn at random, find the probability that two are white and two are black balls.
- 4) let  $\Omega = \{1, 2, 3, 4\}$  and assume that each point has the probability  $1/4$ . Let  $A = \{1, 2\}$ ,  $B = \{2, 3\}$ ,  $C = \{2, 4\}$ . Examine independence of A, B and C.
- 5) In a throw of a six faced single die X denotes the number on uppermost face of a die. Find probability distribution of X.
- 6) If X is a random variable with probability mass function

$$P(X=x) = \begin{cases} \frac{3-x}{10} & ; \quad x = -1, 0, 1, 2. \\ 0 & ; \quad \text{otherwise} \end{cases} \quad \text{Find } E(X).$$


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Seat No. **MAR-APR 2025 SUMMER EXAMINATION****11670 Bachelor of Science****Sub. Name: Zoology Paper I & II****Sub. Code: 106675****Day and Date: APRIL ,30-04-2025****Total Marks: 40****Time: 02.30 PM To 04:00 PM**

- Instructions:**
- 1. All questions are compulsory**
  - 2. Draw neat labelled diagrams wherever necessary**
  - 3. Figures to the right indicate full marks**
  - 4. Use Sketches/Diagrams wherever necessary**

**Q1)** Select the correct answer from each of the following and rewrite the sentence **[8]**

i. ----- chromosomes appear 'V' shaped in anaphase having two nearly equal arms.

- A. Submetacentric
- B. Acrocentric
- C. Metacentric
- D. Telocentric

ii. The ----- are called "The Power House" of cells.

- A. Lysosomes
- B. Ribosomes
- C. Golgi complex
- D. Mitochondria

iii. ----- plays a role in the formation of acrosome during spermiogenesis

- A. Golgi complex
- B. Endoplasmic reticulum
- C. Nucleus
- D. Mitochondria

iv. ----- is also called as suicidal bags.

- A. Mitochondria
- B. Golgi complex
- C. Lysosome
- D. Ribosome

v. Division of Nuclear material is known as -----

- A. Karyokinesis
- B. Cytokinesis
- C. Mitosis
- D. Meiosis are called power

**vi.** Microtubules are formed of the protein \_\_\_\_\_

- A. clathrin
- B. keratin
- C. tubulin
- D. actin

**vii.** \_\_\_\_\_ play important role in protein synthesis.

- A. Ribosomes
- B. Mitochondria
- C. Golgi complex
- D. Nucleus

**viii.** The first compound microscope was built by -----who used the term cell in 1665.

- A. Galileo
- B. Robert Hooke
- C. Loewy
- D. Leeuwenhoek

**Q2) Answer the following questions (any two) [16]**

- a.** Describe the structure of metaphase chromosomes and discuss the solenoid model for the packaging OF DNA. [8]
- b.** Describe the fluid mosaic model of plasma membrane [8]
- c.** Explain in detail the process of mitosis. [8]

**Q3) Write short notes on (any four) [16]**

- a.** Functions of Smooth endoplasmic reticulum [4]
- b.** Functions of lysosomes [4]
- c.** Structure of eukaryotic ribosome [4]
- d.** Concept of cell cycle [4]

e. structure and Functions of Nucleus.

[4]

f. Structure of Mitochondria.

[4]

## **End Of Question Paper**

**Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (11670) Bachelor of Science (B.Sc.) NEP 2.0 (106675) Zoology Paper I & II Part 1 SEM 1

Seat No. **MAR-APR 2025 SUMMER EXAMINATION****2354 Bachelor of Science****Sub. Name: Chemistry Paper I & II****Sub. Code: 88180****Day and Date: JUNE ,04-06-2025****Total Marks: 40****Time: 02.30 PM To 04:00 PM**

- Instructions:**
1. All questions are compulsory
  2. Draw neat labelled diagrams wherever necessary
  3. Figures to the right indicate full marks

**Q1)** Choose the correct alternative for each of the following and rewrite the sentence. **[8]**

- i. Van der Waal's forces arise due to ..... interaction.
  - A. ionic
  - B. dipole-dipole
  - C. hydrogen
  - D. metallic ion
- ii. Among s-block elements the most electropositive element is -----.
  - A. Na
  - B. K
  - C. Ca
  - D. Cs
- iii. Ionic compounds are --- in nature.
  - A. non-polar
  - B. polar
  - C. covalent
  - D. metallic
- iv. .... orbital has spherical shape.
  - A. s
  - B. p
  - C. d
  - D. f
- v. The anions are .... than their parent atoms.
  - A. smaller
  - B. lighter
  - C. larger
  - D. both (a) and (c)
- vi. Bond angle in  $\text{BF}_3$  is.....

- A.  $109^{\circ} 28'$
- B.  $90^{\circ}$
- C.  $104^{\circ} 50'$
- D.  $120^{\circ}$

vii. .... is an example of hard acid.

- A.  $\text{Li}^{+}$
- B.  $\text{Pb}^{2+}$
- C.  $\text{Fe}^{2+}$
- D.  $\text{Cu}^{2+}$

viii. Elements in which last electron enters the .... orbital called p-block elements.

- A. s
- B. p
- C. d
- D. f

Q2) Attempt any TWO of the following.

[16]

- a. Discuss quantum numbers and their significance.
- b. Discuss allotropes of carbon and phosphorus.
- c. Define hybridization. How will you account,
  - i.  $\text{BF}_3$  is a trigonal planar,
  - ii.  $\text{BeCl}_2$  is a linear.

Q3) Attempt any FOUR of the following.

[16]

- a. Write a note on Arrhenius theory.
- b. Write a note on structure and shape of  $\text{PCl}_5$  using VBT.
- c. Explain wave particle duality.
- d. Mention types of chemical bond. Explain any one with suitable example.
- e. Application of Fajan's rules.
- f. State and explain Heisenberg's uncertainty principle.

## End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (2354) B.Sc. CBCS (NEP 2020) (88180) Chemistry Paper I & II Part 1 SEM 1

599951

Seat No. **MAR-APR 2025 SUMMER EXAMINATION****2354 Bachelor of Science****Sub. Name: Botany Paper III & IV****Sub. Code: 72845/90226/90226/59684****Day and Date: JUNE ,14-06-2025****Total Marks: 40****Time: 10:30 AM To 12:00 PM**

- Instructions:**
- 1. All questions are compulsory**
  - 2. Draw neat labelled diagrams wherever necessary**
  - 3. Figures to the right indicate full marks**

**Q1)** Rewrite the following sentences by selecting correct answer from given alternatives. **[8]**

- i. Bryophytes and Pteridophytes depend upon the Presence of .....for fertilization
  - A. Air
  - B. Water
  - C. Wind
  - D. Soil
- ii. The class Hepaticopsida is also known as.....
  - A. Liverworts
  - B. Hornworts
  - C. Moss
  - D. Mould
- iii. Sexual reproduction in *Anthoceros* is of the.....type
  - A. Isogamous
  - B. Anisogamous
  - C. Oogamous.
  - D. Homogamous
- iv. ....are known as vascular cryptogams.
  - A. Algae
  - B. Pteridophytes
  - C. Bryophytes
  - D. Gymnosperms
- v. Megasporangium of *Selaginella* Contains.....megaspores.
  - A. Two
  - B. Four
  - C. Three
  - D. Nine

- vi. .... Pteridophytes is known as ' Spike moss'.
- A. *Marsilea*
  - B. *Pteris*
  - C. *Equisetum*
  - D. *Selaginella*
- vii. Sporne (1965) divided Gymnosperms in to .....classes.
- A. Four
  - B. Nine
  - C. Three
  - D. Two
- viii. In *Gnetum* Endosperm is .....
- A. Diploid
  - B. Triploid
  - C. Haploid
  - D. Tetraploids

**Q2) Attempt any TWO of the following.****[16]**

- a. What are Bryophytes? Describe general characters of Bryophytes. **[8]**
- b. Describe External morphology of *Selaginella*. **[8]**
- c. Give Economic Importance of Gymnosperms. **[8]**

**Q3) Attempt any FOUR of the following.****[16]**

- a. Archegoniate **[4]**
- b. Sporophyte of *Anthoceros* **[4]**
- c. Economic importance of Bryophytes **[4]**
- d. T.S. of *Selaginella* Stem **[4]**
- e. Male cone of *Gnetum* **[4]**
- f. General characters of Gymnosperms. **[4]**

## **End Of Question Paper**

**Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

2] (2324) B.Sc. (CBCS) (72845) Botany Paper III&IV Part 1 SEM 2

3] (2354) B.Sc. CBCS (NEP 2020) (90226) Botany Paper III & IV Part 1 SEM 2

852759

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| Seat No. |
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**MAR-APR 2025 SUMMER EXAMINATION****11670 Bachelor of Science****Sub. Name: Botany Paper III & IV****Sub. Code: 110360****Day and Date: APRIL ,28-04-2025****Total Marks: 40****Time: 10:30 AM To 12:00 PM**

- Instructions:**
- 1. All questions are compulsory**
  - 2. Draw neat labelled diagrams wherever necessary**
  - 3. Figures to the right indicate full marks**

**Q1)** Select appropriate answer from each of the following and rewrite the sentences. **[8]**

- In bryophytes, ----- produces sperm cells.
  - Archegonium
  - Capsule
  - Sporangium
  - Antheridium
- Funaria* is an example of -----.
  - Hepaticopsida
  - Bryopsida
  - Anthocerotopsida
  - Lycopsida
- Anthocerotopsida includes ----- group of bryophytes.
  - Mosses
  - Liverworts
  - Hornworts
  - Ferns
- Vascular tissues in pteridophytes include -----.
  - Xylem and phloem
  - Only xylem
  - Only phloem
  - Tracheids only
- The common name of *Pteris* is -----.
  - Whisk fern
  - Club moss
  - Brake fern
  - Horsetail
- Gymnosperms are characterized by -----.

- A. Enclosed seeds
- B. Naked seeds
- C. Fruits
- D. Flowers

vii. According to Sporne (1965), gymnosperms are classified into -----classes.

- A. 2
- B. 5
- C. 4
- D. 3

viii. The seed dispersal in *Cycas* is -----.

- A. ornithochorous
- B. anemochorous
- C. hydrochorous
- D. autochorous

Q2) Attempt any two of the following.

[16]

- a. Describe sporophyte of *Funaria*.
- b. Describe sex organs of *Pteris* and add note on fertilization.
- c. Describe morphological characters of *Cycas*.

Q3) Write short note (Any four)

[16]

- a. Capsule of *Funaria*
- b. Classification of bryophytes as per G. M. Smith (1965) up to classes
- c. Pteridophytes as a plant indicator
- d. General characters of Pteridophytes
- e. Female cone of *Cycas*
- f. General characters of Gymnosperms

## End Of Question Paper

**Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (11670) Bachelor of Science (B.Sc.) NEP 2.0 (110360) Botany Paper III & IV Part 1 SEM 2

|          |
|----------|
| Seat No. |
|----------|

**MAR-APR 2025 SUMMER EXAMINATION****11670 Bachelor of Science****Sub. Name: Chemistry Paper III & IV****Sub. Code: 110356****Day and Date: APRIL ,23-04-2025****Total Marks: 40****Time: 10:30 AM To 12:00 PM**

- Instructions:**
1. All questions are compulsory
  2. Draw neat labelled diagrams wherever necessary
  3. Figures to the right indicate full marks
  4. Use of Scientific calculator is allowed

**Q1) Solve following MCQ.****[8]**

- ..... provides identification and information about the elements and compound in a sample.
  - A. Qualitative Analysis
  - B. Quantitative Analysis
  - C. Sampling
  - D. All of the above
- ..... Raw material which effectively used as a solvent, coolant, separation and purification processes.
  - A. Air
  - B. Water
  - C. Crude oil
  - D. Metals
- Which of the following is used as a spraying reagent in paper chromatography?
  - A. HCl
  - B. Copper sulphate solution
  - C. Ninhydrin solution
  - D. NaCl solution
- Phenolphthalein is ..... in nature.
  - A. weak base
  - B. weak acid
  - C. strong organic acid
  - D. weak organic acid
- Endpoint of the Mohr's titration with potassium chromate is .....
  - A. yellow to green
  - B. yellow to brick red

- C. red to blue
- D. colorless to pink

- vi.  $R_f$  value depends on .....
- A. nature of stationary phase
  - B. nature of mobile phase
  - C. nature of solute
  - D. all of the above
- vii. A molal solution is one that contains one mole of a solute is dissolved in .....
- A. one liter
  - B. 1000gm of solvent
  - C. one dm<sup>3</sup> of solvent
  - D. All of the above
- viii. In given number 0.917 and  $1.3 \times 10^{-3}$  there are significant figures respectively ..... and .....
- A. 3 & 2
  - B. 2 & 3
  - C. 4 & 4
  - D. 4 & 3

**Q2) Attempt any two of the following questions:** [16]

- a. What is error? Explain types of determent error. [8]
- b. Explain in brief the principle and technique of the paper chromatography. [8]
- c. Explain the theory of the indicators w.r.t. Ostwald's ionization theory including color change interval. [8]

**Q3) Attempt any four of the following questions.** [16]

- a. What is an Intellectual Property Right (IPR)? Explain its common types. [4]
- b. What is a metallochromic indicator? Explain the role of EBT as an indicator in EDTA titration. [4]
- c. Give the applications of TLC. [4]
- d. Define- Normality, Molarity, Molality, ppm. [4]
- e. The strength of acid experiment gives burette readings in cm<sup>3</sup> as 24.1, 24.6, 24.3, 24.9 and 24.5. Calculate mean and median for the given set of readings. [4]
- f. When 4gm of NaOH is dissolved in 100 cm<sup>3</sup> of water calculate the molarity of a solution. [4]

## **End Of Question Paper**

**Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

- 1] (11670) Bachelor of Science (B.Sc.) NEP 2.0 (110356) Chemistry Paper III & IV Part 1 SEM 2

Seat No. **MAR-APR 2025 SUMMER EXAMINATION****11670 Bachelor of Science****Sub. Name: Computer Science Paper III & IV****Sub. Code: 110363****Day and Date: MAY ,08-05-2025****Total Marks: 40****Time: 10:30 AM To 12:00 PM****Instructions: 1. All questions are compulsory  
2. Figures to the right indicate full marks****Q1) Solve following MCQ.****[8]**

i. The facility that allows nesting one select statement into another is

- A. nesting
- B. binding
- C. subquerying
- D. encapsulating

ii. What is MySQL?

- A. An operating system
- B. A relational database management system (RDBMS)
- C. A programming language
- D. A web server

iii. Which of the following best describes the purpose of MySQL?

- A. To store and retrieve data
- B. To create user interfaces
- C. To build websites
- D. To manage file systems

iv. The join where all possible row combinations are produced is called

- A. INNER JOIN
- B. OUTER
- C. NATURAL
- D. CARTESIAN

v. How many values can be returned from a given stored function?

- A. 0
- B. 1
- C. 2
- D. 3

- vi. The storage in bytes required for VARCHAR(4) type 'abcd' is \_\_\_\_\_  
A. 1  
B. 3  
C. 5  
D. 8
- vii. How many type of cursor is present in SQL Server?  
A. 3  
B. 4  
C. 5  
D. 6
- viii. Which statement is used to create a trigger?  
A. CREATE TRIGGER  
B. CREATE TRIGGERS  
C. PRODUCE TRIGGER  
D. PRODUCE TRIGGERS

**Q2) Attempt any two (out of three sub questions) [16]**

- a. Explain aggregate function in detail? [8]
- b. What is join and explain types of joins? [8]
- c. Explain block structure of MySql? [8]

**Q3) Write short note any four out of six [16]**

- a. Subqueries [4]
- b. Cursors [4]
- c. Triggers [4]
- d. Math function [4]
- e. Group by and having [4]
- f. Views [4]

## **End Of Question Paper**

**Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

344733

Seat No. **MAR-APR 2025 SUMMER EXAMINATION****3140 B.A. (C.B.C.S) (NEP-2020)****Sub. Name: Constitution of India and Local self Government****Sub. Code: 89349/89890/89136/89072/90238****Day and Date: JUNE ,18-06-2025****Total Marks: 50****Time: 10:30 AM To 12:00 PM****Instructions: 1. All questions are compulsory  
2. Figures to the right indicate full marks****Q1)** खालीलपैकी योग्य पर्याय निवडा आणि वाक्य पूर्ण करा. Choose the correct option from the [50]  
following and complete the sentence.

- i. 1942 साली \_\_\_\_\_ यांच्या नेतृत्वाखाली संपूर्ण देशभर चलेजावची चळवळ सुरू झाली होती.  
In 1942, the Quit India Movement was launched across the country under the leadership of \_\_\_\_\_.  
A. अ) सुभाषचंद्र बोस a) Subhas Chandra Bose  
B. ब) महात्मा गांधी b) Mahatma Gandhi  
C. क) पंडित नेहरू c) Pandit Nehru  
D. ड) यापैकी नाही d) None of these
- ii. भारतीय राज्यघटनेचा  $\frac{2}{3}$  भाग \_\_\_\_\_ च्या कायद्याच्या आधारे तयार करण्यात आलेला आहे.  
 $\frac{2}{3}$  of the Indian Constitution is based on the laws of \_\_\_\_\_.  
A. अ) 1909 a) 1909  
B. ब) 1919 b) 1919  
C. क) 1935 c) 1935  
D. ड) 1947 d) 1947
- iii. \_\_\_\_\_ साली भारतीय राष्ट्रीय संभेची स्थापना झाली.  
The Indian National Congress was founded in the year \_\_\_\_\_.  
A. अ) 1885 a) 1885  
B. ब) 1887 b) 1887  
C. क) 1889 c) 1889  
D. ड) 1930 d) 1930
- iv. भारतीय घटना मसुदा समितीचे अध्यक्षपद \_\_\_\_\_ यांना दिले होते.  
The chairmanship of the Indian Constitution Drafting Committee was given to \_\_\_\_\_.  
A. अ) बॅ. जिना a) B.R. Jinnah  
B. ब) पंडित नेहरू b) Pandit Nehru  
C. क) डॉ. बाबासाहेब आंबेडकर c) Dr. B.R. Ambedkar  
D. ड) डॉ. राजेंद्र प्रसाद d) Dr. Rajendra Prasad
- v. भारतीय घटना समितीचे कार्य \_\_\_\_\_ वर्ष \_\_\_\_\_ महिने \_\_\_\_\_ दिवस चालले.

The work of the Indian Constituent Assembly lasted for \_\_\_\_\_ years, \_\_\_\_\_ months, and \_\_\_\_\_ days.

- A. अ) 2 वर्ष 11 महिने 18 दिवस a) 2 years 11 months 18 days  
 B. ब) 2 वर्ष 10 महिने 18 दिवस b) 2 years 10 months 18 days  
 C. क) 2 वर्ष 5 महिने 20 दिवस c) 2 years 5 months 20 days  
 D. ड) यापैकी एकही नाही d) None of these

vi. मूळ भारतीय संविधानात \_\_\_\_\_ कलमे आहेत.

The original Indian Constitution has \_\_\_\_\_ articles.

- A. अ) 360 a) 360)  
 B. ब) 395 b) 395)  
 C. क) 410 c) 410)  
 D. ड) 500 d) 500)

vii. जरी भारताचे राज्य संघात्मक दिसत असले तरी प्रत्यक्षात ते \_\_\_\_\_ स्वरूपाचे आहे.

Although India is the state appears to be federal, in reality, it is \_\_\_\_\_ in nature.

- A. अ) एकात्मक a) Unitary  
 B. ब) द्विदल b) Biparty  
 C. क) त्रिदल c) Tripartite  
 D. ड) यापैकी एकही नाही d) None of these

viii. 1989 साली 61 वी घटना दुरुस्ती होऊन भारतीय मतदाराची वयाची अट \_\_\_\_\_ वर्ष करण्यात आलेली आहे.

In 1989, through the 61st Constitutional Amendment, the minimum voting age for Indian voters was reduced to \_\_\_\_\_ years.

- A. अ) १८ a) 18  
 B. ब) २० b) 20  
 C. क) २१ c) 21  
 D. ड) २५ d) 25

ix. भारताची राज्यघटना \_\_\_\_\_ स्वरूपाची आहे.

The Constitution of India is \_\_\_\_\_ in nature.

- A. अ) अंशतः परीदृढ व अंशतः परिवर्तनीय a) Partially rigid and partially flexible  
 B. ब) परिवर्तनी b) Flexible  
 C. क) परिसूढ c) Rigid  
 D. ड) यापैकी एकही नाही d) None of these

x. भारतीय राज्यघटनेच्या \_\_\_\_\_ या कलमात पंतप्रधान व मंत्रिमंडळ याविषयी तरतूद आढळते.

\_\_\_\_\_ article of the Indian Constitution provides for the Prime Minister and the Council of Ministers.

- A. अ) 74 व 75 a) Articles 74 and 75  
 B. ब) 14 व 15 b) Articles 14 and 15  
 C. क) 66 व 62 c) Articles 66 and 62  
 D. ड) 36 व 51 d) Articles 36 and 51

- xi.** पंतप्रधान आपल्या सर्व मंत्र्यांसह संयुक्तरित्या नेहमी \_\_\_\_\_ ला जबाबदार असतो.  
The Prime Minister, along with all the ministers, is collectively always responsible to \_\_\_\_\_.

- A. अ) राज्यसभेला a) Rajya Sabha  
B. ब) लोकसभेला b) Lok Sabha  
C. क) विधानसभेला c) Legislative Assembly  
D. ड) विधान परिषदेला d) Legislative Council

- xii.** भारतीय राज्यघटनेत केंद्र यादीत \_\_\_\_\_ विषय आहेत.  
In the Indian Constitution, there are \_\_\_\_\_ subjects in the Union List.

- A. अ) 61 a) 61  
B. ब) 99 b) 99  
C. क) 52 c) 52  
D. ड) 50 d) 50

- xiii.** संसदेच्या लोकसभा यागृहाची मुदत \_\_\_\_\_ वर्ष असते.  
The term of the Lok Sabha in Parliament is \_\_\_\_\_ years.

- A. अ) 5 a) 5 years  
B. ब) 6 b) 6 years  
C. क) 4 c) 4 years  
D. ड) 7 d) 7 years

- xiv.** भारत हे \_\_\_\_\_ राज्य आहे.  
India is a \_\_\_\_\_ state.

- A. अ) प्रजासत्ताक गणराज्य a) Republic  
B. ब) सर्वांकस सत्ता b) Absolute power  
C. क) भांडवलवादी c) Capitalist  
D. ड) यापैकी की नाही d) None of these

- xv.** राज्यघटनेची उद्दिष्टे, ध्येय सारास रूपाने सांगणाऱ्या उद्देशपत्रिकेला \_\_\_\_\_ या नावाने संबोधण्यात येते.

The preamble, which concisely states the objectives and goals of the Constitution, is referred to as \_\_\_\_\_.

- A. अ) जाहीरनामा a) Declaration  
B. ब) सरनामा b) Preamble  
C. क) हुकूमनामा c) Ordinance  
D. ड) लोकनामा d) Public Notice

- xvi.** नागरिकांच्या मूलभूत अधिकारांच्या संरक्षणासाठी भारतीय राज्यघटनेच्या \_\_\_\_\_ व्या कलमात तरतूद केलेली आहे.

For the protection of citizens' fundamental rights, a provision has been made in Article \_\_\_\_\_ of the Indian Constitution.

- A. अ) 17 a) Article 17
- B. ब) 19 b) Article 19
- C. क) 32 c) Article 32
- D. ड) 37 d) Article 37

**xvii.** 1978 साली 44 व्या घटना दुरुस्तीने मूलभूत अधिकाऱ्यांच्या यादीतील \_\_\_\_\_ अधिकार रद्द करण्यात आलेला आहे.

In 1978, the 44th Constitutional Amendment abolished the \_\_\_\_\_ right from the list of fundamental rights.

- A. अ) स्वातंत्र्याचा a) Right to Freedom
- B. ब) मालमत्तेचा b) Right to Property
- C. क) धार्मिक c) Religious Right
- D. ड) राजकीय d) Political Right

**xviii.** सध्या भारतीय राज्यघटनेतील मूलभूत अधिकारांची संख्या \_\_\_\_\_ आहे.

Currently, the number of fundamental rights in the Indian Constitution is \_\_\_\_\_.

- A. अ) 5 a) 5
- B. ब) 6 b) 6
- C. क) 7 c) 7
- D. ड) 10 d) 10

**xix.** स्त्री व पुरुष या दोघांना समान वेतन मिळावे हे मार्गदर्शक तत्त्व \_\_\_\_\_ स्वरूपाचे आहे.

The directive principle that both men and women should receive equal pay is \_\_\_\_\_ in nature.

- A. अ) आर्थिक a) Economic
- B. ब) राजकीय b) Political
- C. क) सामाजिक c) Social
- D. ड) न्यायालय d) Judicial

**xx.** \_\_\_\_\_ साली 42 व्या घटना दुरुस्तीने भारतीय घटनेत 10 मूलभूत कर्तव्यांचा समावेश केलेला आहे.

In the year \_\_\_\_\_, the 42nd Constitutional Amendment included 10 fundamental duties in the Indian Constitution.

- A. अ) 1976 a) 1976
- B. ब) 1978 b) 1978
- C. क) 1971 c) 1971
- D. ड) 1980 d) 1980

**xxi.** भारतीय लोकशाहीत राष्ट्रीय एकात्मता जोपासण्यासाठी \_\_\_\_\_ राज्याचा पुरस्कार आणि स्वीकार केलेला आहे.

In Indian democracy, \_\_\_\_\_ state has been advocated and accepted to promote national integration.

- A. अ) धार्मिक a) Religious
- B. ब) धर्मनिरपेक्ष b) Secular
- C. क) निधर्मी c) Atheistic
- D. ड) यापैकी एकही नाही d) None of these

xxii. सरपंच आपल्या पदाचा राजीनामा \_\_\_\_\_ कडे देतो.

The Sarpanch submits their resignation to \_\_\_\_\_.

- A. अ) जिल्हा परिषद अध्यक्ष a) President of Zilla Parishad
- B. ब) पंचायत समितीचा सभापती b) Chairman of Panchayat Samiti
- C. क) कार्यकारी अधिकारी c) Executive Officer
- D. ड) तहसीलदार d) Tahsildar

xxiii. जिल्हा परिषदेत महिलांसाठी \_\_\_\_\_ टक्के जागा राखीव ठेवल्या जातात.

In the Zilla Parishad, \_\_\_\_\_ percent of seats are reserved for women.

- A. अ)  $\frac{1}{2}$  a)  $\frac{1}{2}$
- B. ब)  $\frac{1}{3}$  b)  $\frac{1}{3}$
- C. क)  $\frac{1}{4}$  c)  $\frac{1}{4}$
- D. ड)  $\frac{1}{6}$  d)  $\frac{1}{6}$

xxiv. 74 व्या घटना दुरुस्तीमुळे राज्यघटनेच्या \_\_\_\_\_ कलमात बदल करण्यात आला.

Due to the 74th Constitutional Amendment, Article \_\_\_\_\_ of the Constitution was amended.

- A. अ) २४१ a) 241
- B. ब) २४२ b) 242
- C. क) २४३ c) 243
- D. ड) २४४ d) 244

xxv. \_\_\_\_\_ साली 73 वी आणि 74 वी घटनादुरुस्ती मंजूर होऊन स्थानिक स्वराज्य संस्थांना घटनात्मक आणि वैधानिक दर्जा प्राप्त झाला.

In the year \_\_\_\_\_, the 73rd and 74th Constitutional Amendments were passed, granting constitutional and statutory status to local self-government institutions.

- A. अ) 1993 a) 1993
- B. ब) 1994 b) 1994
- C. क) 1991 c) 1991
- D. ड) 1990 d) 1990

## End Of Question Paper

**Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

- 1] (2354) B.Sc. CBCS (NEP 2020) (90238) Constitution of India and Local Self Government Part 1 SEM 2
- 2] (3140) B.A. (C.B.C.S) (NEP-2020) (89349) Constitution of India and Local self Government Part 1 SEM 2
- 3] (2359) B.Sc. Computer Science Entire (NEP 2020) (89890) Constitution of India and Local Self Government Part 1 SEM 2
- 4] (2361) B.Sc. Information Technology Entire (NEP 2020) (89136) Constitution of India and Local Self Government Part 1 SEM 2
- 5] (2363) B.Sc. Animation Entire (NEP 2020) (89072) Consti. of India & Local Self Govt. Part 1 SEM 2

4422384

Seat No. **MAR\_APR 2025 SUMMER EXAMINATION****12149 Bachelor of Business Administration NEP 2.0****Sub. Name: Indian Constitution****Sub. Code: 111311****Day and Date: JUNE ,17-06-2025****Total Marks: 30****Time: 10:30 AM To 12:00 PM****Instructions:** 1. All questions are compulsory  
2. Figures to the right indicate full marks

- Q1)** Q1) Elaborate provision of constitution litigated freedoms. **[10]**  
OR  
Q1) Define lifting of restriction on dealing in Crypto currencies.
- Q2)** **Q2) Write Short Answer (Any Two)** **[10]**  
A. Write validity of the bit coin ban imposed by the RBI  
B. Discuss occupation trade profession  
C. Define commerce and intercourse within the territory of India  
D. Discuss India's financial landscape
- Q3)** **Q3) Write Short Notes (Any Two)** **[10]**  
A. Economic justice  
B. Article 280 constitution  
C. Rights of citizens  
D. Banning of diesel engine cars

**End Of Question Paper****Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (12149) Bachelor of Business Administration NEP 2.0 (111311) Indian Constitution Part 1 SEM 2

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| Seat<br>No. |
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Total No. of Pages : 4

March-April 2025 Examination

B.C.A. (Part-I) (Semester II) (CBCS) (NEP-2020)

Mathematical Foundations For Computer Applications

Sub code : 80872/88353

**Instructions :**

- 1) Question No. 1 and Question No. 8 is compulsory and attempt any three Questions from Question No. 2 to Question No. 7.
- 2) Figures to the right indicate full marks.

**Day and Date : Thursday, 15-05-2025****Total Marks : 80****Time : 02:30 pm to 05:30 pm****Q.1 Select the correct alternative and rewrite the statement:****[12]**

- 1) If A and B are two sets then the difference  $A - B = \text{-----}$ .  
 A)  $\{x/x \in A \text{ and } x \notin B\}$                       B)  $\{x/x \notin A \text{ and } x \in B\}$   
 C)  $\{x/x \notin A \text{ and } x \notin B\}$                       D)  $\{x/x \in A \text{ and } x \in B\}$
- 2) If p and q are two statements then the compound statement “ p if and only if q ” is called a -----.  
 A) conjunctive statement                      B) disjunctive statement  
 C) conditional statement                      D) biconditional statement
- 3) If  $A = \begin{bmatrix} 1 & 2 \\ 3 & -1 \end{bmatrix}$ ,  $B = \begin{bmatrix} 1 & 0 \\ 2 & 1 \end{bmatrix}$  and  $C = \begin{bmatrix} 2 & 1 \\ -1 & 1 \end{bmatrix}$ , then  $AB + AC = \text{-----}$ .  
 A)  $\begin{bmatrix} 5 & 5 \\ 8 & 1 \end{bmatrix}$       B)  $\begin{bmatrix} -5 & 5 \\ 8 & 1 \end{bmatrix}$       C)  $\begin{bmatrix} 5 & 5 \\ 8 & -1 \end{bmatrix}$       D)  $\begin{bmatrix} 5 & -5 \\ -8 & 1 \end{bmatrix}$
- 4) The maximum degree of any vertex in a simple graph with n vertices is -----.  
 A)  $n - 1$                       B)  $n + 1$                       C)  $2n - 1$                       D) n
- 5) If  $A = \{x, y\}$ ,  $B = \{a, b\}$  then  $A \times B = \text{-----}$ .  
 A)  $\{(a, x), (a, y), (b, x), (b, y)\}$                       B)  $\{(x, a), (y, a), (x, b), (y, b)\}$   
 C)  $\{(a, b), (x, y)\}$                       D)  $\{(b, a), (y, x)\}$
- 6) If p is a true statement and q is a false statement then statements  $p \vee q$  and  $\sim p \vee \sim q$  are -----.  
 A)  $p \vee q$  is false and  $\sim p \vee \sim q$  is true statement                      B) both false statements  
 C) both true statements                      D) none of these

- 7) A diagonal matrix having all of its elements are equal is called as ----- matrix.  
 A) unit                      B) null                      C) scalar                      D) singular
- 8) A walk in which no repetition of any vertex and edge is called \_\_\_\_\_.  
 A) path                      B) trail                      C) closed walk                      D) none of these
- 9) The set which contains no any element is called----- .  
 A) an universal set                      B) a subset                      C) a null set                      D) none of these
- 10) The converse of “if p then q” is -----.  
 A) “If q then p”                      B) “If  $\neg p$  then  $\neg q$ ”  
 C) “If  $\neg q$  then  $\neg p$ ”                      D)  $\sim p \vee q$
- 11) If  $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$ , then  $A^2 =$  -----.  
 A)  $\begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$                       B)  $\begin{bmatrix} 2 & 2 & 2 \\ 2 & 2 & 2 \\ 2 & 2 & 2 \end{bmatrix}$                       C)  $\begin{bmatrix} 3 & 3 & 3 \\ 3 & 3 & 3 \\ 3 & 3 & 3 \end{bmatrix}$                       D)  $\begin{bmatrix} 3 & 2 & 2 \\ 2 & 3 & 2 \\ 2 & 2 & 3 \end{bmatrix}$
- 12) The complete graph with four vertices has k edges where k is -----.  
 A) 3                      B) 4                      C) 5                      D) 6

**Q. 2 (a)** Define: (i) Union of two sets, (ii) Complement of a set , (iii) Difference of two sets.

If  $U = \{ 1, 2, 3, 4, 5, 6, 7, 8, 9 \}$  is the universal set and suppose that  $A = \{ 1, 2, 3, 4, 5 \}$ ,  $B = \{ 4, 5, 6, 7 \}$ ,  $C = \{ 5, 6, 7, 8, 9 \}$  and  $D = \{ 1, 3, 5, 7, 9 \}$  then find the following subsets of U:

(i)  $A \cup B$  , (ii)  $A^c$  , (iii)  $C - D$  , (iv)  $(C \cup D)^c$ . [8]

(b) Define adjacency matrix and incidence matrix of a graph G. Draw the undirected graph represented by adjacency matrix

$$A(G) = \begin{matrix} & \begin{matrix} a & b & c \end{matrix} \\ \begin{matrix} a \\ b \\ c \end{matrix} & \begin{bmatrix} 0 & 2 & 0 \\ 2 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} \end{matrix}. \quad [8]$$

**Q.3** (a) Define Logical equivalence of statements. Prove that statement forms  $(p \vee q) \rightarrow r$  and  $(p \rightarrow r) \wedge (q \rightarrow r)$  are logically equivalent. [8]

(b) Define : (i) Row Matrix, (ii) Column Matrix. If  $A = \begin{bmatrix} 1 & 3 & 2 \\ 1 & 0 & 2 \end{bmatrix}$ ,  $B = \begin{bmatrix} 1 \\ 6 \\ 2 \end{bmatrix}$  and  $C = \begin{bmatrix} 2 & 1 \end{bmatrix}$ , then prove that  $A(BC) = (AB)C$ . [8]

**Q.4** (a) Define: (i) Bipartite graph, (ii) Complete bipartite graph, (iii) Undirected complete graph. Draw undirected complete graphs  $K_4$  and  $K_6$ . [8]

(b) Define Determinant of second and third order. Prove that  $\begin{vmatrix} x-y & y-z & z-x \\ y-z & z-x & x-y \\ z-x & x-y & y-z \end{vmatrix} = 0$ . [8]

**Q.5** (a) Define: Converse,, Inverse, and Contrapositive of conditional statement. Write converse , inverse and contrapositive of the statement "If Suresh can swim across the lake, then Suresh can swim to the island. ". [8]

(b) Define Venn diagram. Draw the Venn diagram for the sets (i)  $A \cup B$ , (ii)  $A \cap B$ , (iii)  $A^c$ . [8]

**Q.6** (a) Define Inverse of a square matrix A. If  $A = \begin{bmatrix} 1 & 2 & 3 \\ 0 & -1 & 1 \\ 1 & 1 & 2 \end{bmatrix}$  then find inverse of a square matrix A. [8]

(b) Write the following sets in tabular form :

(i)  $A = \{ x : x \text{ is a +ve integer and a perfect square } \}$ .

(ii)  $B = \{ x : x \text{ is a divisor of 24 } \}$ .

(iii)  $C = \{ x : x \text{ is a multiple of 3 and 5 } \}$ .

(iv)  $E = \{ x : x \text{ is a letter in the alphabet } \}$ . [8]

**Q.7** (a) Define Cartesian product of two sets. If  $P = \{ 1, 2, 3 \}$  and  $Q = \{ 4, 5, 6 \}$  then determine cartesian product  $P \times Q$  and  $Q \times P$ . [8]

(b) Construct the truth table for  $p \vee (q \wedge r) \leftrightarrow (p \vee q) \wedge (p \vee r)$ . [8]

**Q.8** Write note on any four of the following :

- (a) Venn diagram
- (b) Valid and Invalid arguments.
- (c) Relations and Functions.
- (d) Logical Operations.
- (e) Square matrix, Diagonal matrix and Scalar matrix.
- (f) Matrix representation of a graph.

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SM - 145

Total No. of Pages : 2

**B. Sc. (Part-I) Semester-II**  
**CBCS (NEP 2020) Examination, 2025**  
**Basic Algebra (Paper - IV)**  
**Subject Code: 90222**

Day and Date : Thursday, 12-06-2025

Total Marks : 80

Time : 10.30 a.m. to 12.00 p.m.

- Instructions :** 1. All Questions are compulsory.  
2. Figures to the left indicate full marks.  
3) Use of calculator and statistical table is allowed.

**Q.1 Choose the correct alternative and rewrite the sentences with answer. (08)**

1. If  $z = \bar{z}$  if and only if  $z$  is .....number.

(A) integer

(B) imaginary

(C) natural

(D) real

2. The value of  $(\cos \theta - i \sin \theta)^{4/9}$  is.....

(A)  $\cos n\theta + i \sin n\theta$ (B)  $\cos \frac{4}{9}\theta + i \sin \frac{4}{9}\theta$ (C)  $\cos \frac{4}{9}\theta - i \sin \frac{4}{9}\theta$ (D)  $\cos \frac{4}{3}\theta - i \sin \frac{4}{3}\theta$ 

3. The integers  $a$  &  $b$  are said to be relatively prime if  $\gcd(a,b) = \dots\dots$

(A) 1

(B) 0

(C) -1

(D) 2

4. The value of  $\sin ix = \dots\dots$

(A)  $i \sin hx$ (B)  $-\sin hx$ (C)  $i \sin x$ (D)  $\sin hx$ 

5. 25 and 256 are congruent modulo.....

(A) 5

(B) 6

(C) 7

(D) 8

6. If  $a$  &  $b$  are two integers then  $\gcd(a,b) \cdot \text{lcm}(a,b) = \dots\dots\dots$

(A)  $a + b$  (B)  $a - b$

(C)  $a / b$  (D)  $a \cdot b$

7. With respect to the fixed integer  $n$ , the two integers  $a$  &  $b$  are said to be congruent modulo  $n$  if .....

(A)  $n$  divides  $b+a$  (B)  $n$  divides  $b - a$

(C)  $a-b$  divides  $n$  (D)  $b-a$  divides  $n$

8.  $\sin x$  is periodic function with period .....

(A)  $\pi$  (B)  $3\pi$

(C)  $2\pi$  (D)  $4\pi$

**Q. 2 Attempt any TWO of the following**

**(16)**

1. If  $f: \mathbb{Z} \rightarrow \mathbb{Z}$  defined as  $f(m) = m + 2$ , show that  $f$  is bijective.

2. For any real value of  $x$  prove that, 1)  $\cosh^{-1}x = \log(x + \sqrt{x^2 - 1})$ ,  $x \geq 1$

2)  $\sinh^{-1}x = \log(x + \sqrt{x^2 + 1})$ ,  $x \in \mathbb{R}$

3. If  $n$  is any rational number, then the value or one of values of

$(\cos \theta + i \sin \theta)^n$  is  $\cos n\theta + i \sin n\theta$ .

**Q. 3: Attempt any FOUR of the following**

**(16)**

1. Let  $f: \mathbb{R} \rightarrow \mathbb{R}$  be a function defined by  $f(x) = 2x + 1$ ,  $x \in \mathbb{R}$ . Show that  $f$  is onto.

2. For any positive integer  $n$ , show that  $1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$ .

3. Find value of  $\sqrt{i}$ .

4. For all values of  $z$  real or complex prove that  $e^{iz} = \cos z + i \sin z$ .

5. Prove that  $\frac{d}{dx}(\cosh x) = \sinh x$ .

6. Find the remainder when  $2^{50}$  is divided by 7.

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**SM - 03**

**Total No. of Pages : 3**

**B.Sc. (Part – I) (Semester – II) (NEP)**  
**Examination – June 2025**  
**MATHEMATICS**  
**(DSC-B5) (Multivariable Calculus) (Paper – III)**  
**Sub. Code : 90222-P3**

**Day and Date : Wednesday, 11/06/2025**

**Total Marks : 40**

**Time : 10.30. am. to 12.00 pm.**

**Instruction : 1) All questions are compulsory**  
**2) Figures to right indicate full marks.**

**Q. 1      Select the correct alternatives for each of the following** **[8]**

- a)  $\frac{\partial^2 u}{\partial x \partial y} = \frac{\partial^2 u}{\partial y \partial x}$  if .....
- a) x, y depends on each other  
b) x, y are independent of each other  
c) u is homogeneous in x and y  
d) None of these
- b) If u is homogeneous in x and y of degree n, then .....
- a)  $\frac{\partial u}{\partial x} = -\frac{\partial u}{\partial y}$  b)  $\frac{\partial u}{\partial x} = \frac{\partial u}{\partial y}$   
c)  $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = nu$  d) None of these

c)  $J = \frac{\partial(u,v)}{\partial(x,y)} = \dots\dots\dots$

a)  $\frac{\partial u}{\partial x} - \frac{\partial u}{\partial y}$

$$\text{b) } \frac{\partial u}{\partial x} \frac{\partial u}{\partial y}$$

$$\text{c) } \begin{vmatrix} \frac{\partial u}{\partial x} & \frac{\partial v}{\partial y} \\ \frac{\partial u}{\partial y} & \frac{\partial v}{\partial x} \end{vmatrix}$$

$$\text{d)} \quad \begin{vmatrix} \frac{\partial u}{\partial x} & \frac{\partial v}{\partial x} \\ \frac{\partial u}{\partial y} & \frac{\partial v}{\partial y} \end{vmatrix}$$

d) If  $u = \sin x \cos y$  then  $\frac{\partial^2 u}{\partial x^2} = \dots\dots\dots$

a)  $\cos y$

b) u

c)  $-u$

d) None of these

e)  $u = \sqrt{x^2 + y^2}$  then  $\left(\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y}\right) \sqrt{x^2 + y^2}$  is .....

a)  $\sqrt{x^2 + y^2}$

b) a

c)  $x^2 + y^2$

d)  $x + y$

f) If  $u = f(x)$ ,  $v = g(y)$  then  $\frac{\partial(u,v)}{\partial(x,y)} = \dots\dots\dots$

a) 1

b) 0

c)  $f'(x)g''(y)$

d) None of these

g) If  $u = r^n$ ,  $r = \sqrt{x^2 + y^2}$  by Euler's theorem  $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = \dots\dots\dots$

a)  $n^2 r^{n-2}$

b)  $nr^n$

c)  $nr^{n-1}$

d) None of these

h) If  $u = e^x, \cos y$  then  $\frac{\partial^2 u}{\partial x^2} = \dots\dots\dots$

$$\text{a) } \frac{\partial u}{\partial y}$$

$$\text{b) } -\frac{\partial^2 u}{\partial y^2}$$

c)  $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y}$

d) None of these

**Q. 2. Attempt any two of the following**

[16]

- Find the Jacobian  $J = \frac{\partial(u,v)}{\partial(x,y)}$  if  $u = e^{-x} \cos y$ ,  $v = e^x \sin y$ .
- Verify Euler's theorem for  $u = (x^2 + y^2)^{\frac{1}{3}}$ .
- Prove that  $x^2 \frac{\partial^2 u}{\partial x^2} + 2xy \frac{\partial^2 u}{\partial x \partial y} + y^2 \frac{\partial^2 u}{\partial y^2} = n(n-1)u$  where  $u$  is homogeneous function of  $x$  and  $y$ .

**Q. 3. Attempt any four of the following.**

[16]

- If  $u = x + y$ ,  $v = 2x - 3y$  find  $\frac{\partial(u,v)}{\partial(x,y)}$ .
  - If  $u = x \cos y$ ,  $v = y \sin x$  find the expression for  $\frac{\partial u}{\partial x} \times \frac{\partial v}{\partial y}$  in terms of  $x$  and  $y$ .
  - If  $x = 2u + 5v$ ,  $y = e^{u+v}$  using the result  $JJ' = 1$  find  $\frac{\partial(u,v)}{\partial(x,y)}$ .
  - If  $r = \sqrt{x^2 + y^2}$  find  $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2}$ .
  - If  $v = x^3 - 3x^2y + 5y$  find the values of  $x, y$  where  $\frac{\partial v}{\partial x} = 0$  and  $\frac{\partial v}{\partial y} = 0$ .
  - $\phi = \frac{1}{r}$ ,  $r = \sqrt{x^2 + y^2}$  find the values of  $\frac{\partial^2 \phi}{\partial x^2} + \frac{\partial^2 \phi}{\partial y^2}$ .
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**MAR-APR 2025 SUMMER EXAMINATION****11670 Bachelor of Science****Sub. Name: Physics Paper III & IV****Sub. Code: 110359****Day and Date: APRIL ,25-04-2025****Total Marks: 40****Time: 10:30 AM To 12:00 PM**

**Instructions:** 1. All questions are compulsory  
 2. Draw neat labelled diagrams wherever necessary  
 3. Use of log table and calculator is allowed

**Q1)** Select the correct alternative from the following.**[8]**

- i. The current in parallel resonant circuit is.....
  - A. minimum
  - B. zero
  - C. maximum
  - D. infinite
- ii. The operator  $j$  on multiplication turns a vector through.....
  - A.  $180^\circ$
  - B.  $90^\circ$
  - C.  $45^\circ$
  - D.  $0^\circ$
- iii. Lenz's law gives .....of induced emf.
  - A. magnitude
  - B. direction
  - C. both magnitude and direction
  - D. unit
- iv. Energy stored per unit volume in magnetic field is.....
  - A.  $1/2\mu_0 B^2$
  - B.  $B^2/2\mu_0$
  - C.  $2\mu_0/B^2$
  - D.  $2/\mu_0 B^2$
- v. What types of damping's are observed in B.G.
  - A. air damping
  - B. electromagnetic damping
  - C. instrumental damping
  - D. both air damping and electromagnetic damping

- vi. The deflecting couple acting on coil of ballistic galvanometer due to current  $I$  flowing through it is.....
- A.  $\tau = nBAI$
  - B.  $\tau = nBI/A$
  - C.  $\tau = nBA/I$
  - D.  $\tau = nB/IA$
- vii. For ferromagnetic materials.....
- A.  $\mu > \mu_0$
  - B.  $\mu < \mu_0$
  - C.  $\mu \gg \mu_0$
  - D.  $\mu \ll \mu_0$
- viii. Which of the following is antiferromagnetic material?
- A. iron
  - B. cobalt
  - C. manganese oxide
  - D. copper

**Q2)** Attempt any TWO of the following.

**[16]**

- a. What is series resonant circuit ? Obtain an expression for resonant frequency of a resonance LCR circuit.
- b. Explain Faraday's laws of electromagnetic induction. Define self inductance and obtain an expression for self inductance of a solenoid.
- c. Explain construction and working of Ballistic Galvanometer

**Q3)** Attempt any FOUR of the following.

**[16]**

- a. Define hysteresis, hysteresis curve, retentivity & coercivity.
- b. Give a comparison between paramagnetic & ferromagnetic materials.
- c. Define complex impedance, reactance, admittance and susceptance of an a.c. circuit.
- d. Obtain an expression for mutual inductance of transformer coils.
- e. Define figure of merit, current sensitivity, voltage sensitivity and charge sensitivity. State their units.
- f. Define magnetic intensity (M), magnetic induction (B), permeability ( $\mu$ ) and susceptibility ( $\chi$ ).

## **End Of Question Paper**

**Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**

This Question Paper may be distributed for following Subjects as common code.

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1] (11670) Bachelor of Science (B.Sc.) NEP 2.0 (110359) Physics Paper III & IV Part 1 SEM 2

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**SM - 25**

**Total No. of Pages : 2**

**B.Sc. (Part – I) (Semester – II) (NEP)**  
**Examination - June 2025**  
**STATISTICS**  
**Discrete Probability Distributions (Paper – IV)**  
**Sub. Code : 90228–P4**

**Day and Date : Tuesday, 17/06/2025**

**Total Marks : 40**

**Time : 10.30 am. to 12.00 pm.**

**Instructions :** 1) All Questions are Compulsory.  
2) Use of calculator is allowed.

**Q. 1. Choose the most corrective alternative:**

**[8]**

- 1) If X and Y are independent discrete random variables then,  
 $P(X = x / Y = y) = \dots\dots\dots$ 
  - a)  $P(X = x)$
  - b)  $P(Y = y)$
  - c)  $P(X = x) / P(Y = y)$
  - d)  $P(X = x) * P(Y = y)$
- 2) If  $\text{Cov}(X, Y) = 10$ , then  $\text{Cov}(-X, -Y) = \dots\dots\dots$ 
  - a) -100
  - b) -10
  - c) 10
  - d) 100
- 3) If  $P_x(s)$  is pgf of rv X the mean =
  - a)  $p_x''(0)$
  - b)  $p_x'(0)$
  - c)  $p_x''(1)$
  - d)  $p_x'(1)$
- 4) If X is discrete random variable then  $P(a \leq X \leq b)$  is .....
  - a)  $F(b) - F(a)$
  - b)  $F(b) - F(a) + p(a)$
  - c)  $1 - F(a) - F(b)$
  - d)  $F(a) - F(b)$

- 5) Which of the following distributions has lack of memory property?
  - a) Poisson
  - b) Binomial
  - c) Geometric
  - d) Negative Binomial
- 6) If  $E(XY) = E(X)E(Y)$  then identify relation between  $X$  and  $Y$ .
  - a) Independent
  - b) Correlated
  - b) Uncorrelated
  - iv) Dependent
- 7) Which of the following distributions has same mean and variance?
  - a) Poisson
  - b) Binomial
  - c) Geometric
  - d) Negative Binomial
- 8) If  $(X, Y)$  is bivariate discrete random variable then  $E(Y/X = x)$  is
  - a) function of  $x$
  - b) function of  $y$
  - c) function of  $(x, y)$
  - d) None of these

**Q. 2. Attempt any two of the following.**

[16]

- 1) Define Binomial distribution, obtain its p.g.f and find mean and variance.
- 2) For a bivariate discrete r.v.  $(X, Y)$  show that  $E(X + Y) = E(X) + E(Y)$ .
- 3) Define Hypergeometric distribution and derive the recurrence relation for the probabilities.

**Q. 3. Attempt any four of the following.**

[16]

- 1) Define Geometric distribution with parameter  $p$  and find its distribution function.
- 2) Obtain pgf of negative binomial distribution with parameters  $(k, p)$ .
- 3) State and prove additive property of two independent Poisson random variables.
- 4) Let the joint p.m.f of  $(X, Y)$  is,

$$P(X = x, Y = y) = \begin{cases} \frac{x+y}{2!}; & x = 1, 2, 3, y = 1, 2 \\ 0 & \text{otherwise} \end{cases}$$

Find marginal p.m.f. of  $X$ .

- e) Define discrete uniform distribution and find its mean.
- f) If  $a$  and  $b$  are constants then show that,  $cov(aX + bY) = ab cov(X, Y)$ .

Seat No. **MAR-APR 2025 SUMMER EXAMINATION****11670 Bachelor of Science****Sub. Name: Zoology Paper III & IV****Sub. Code: 110361****Day and Date: APRIL ,30-04-2025****Total Marks: 40****Time: 10:30 AM To 12:00 PM**

- Instructions:**
- 1. All questions are compulsory**
  - 2. Draw neat labelled diagrams wherever necessary**
  - 3. Figures to the right indicate full marks**

**Q1)** Solve following MCQ.**[8]**

- i. The natural place of an organism or community is known as.....
  - A. Territory
  - B. Biome
  - C. Habitat
  - D. Habit
- ii. Study of fossils is called .....
  - A. Paleontology
  - B. Herpetology
  - C. Entomology
  - D. Physiology
- iii. .... is primary producer in grassland ecosystem.
  - A. Grass
  - B. Rabbit
  - C. Tiger
  - D. Eagle
- iv. .... is very good example of camouflage
  - A. Monarch butterfly
  - B. Stick insect
  - C. honey bee
  - D. Chameleon
- v. .... is sterile female of honey bee colony.
  - A. Worker
  - B. Queen
  - C. Drone
  - D. King
- vi. Fossilized foot prints are the type of.....

- A. Mould
- B. Petrification
- C. Casts
- D. Trace fossil

**vii.** Members of class insecta have .....pairs of legs.

- A. Two
- B. Three
- C. Four
- D. Five

**viii.** Piercing and sucking type mouth parts are present in.....

- A. Butterfly
- B. Mosquitoes
- C. Honey bee
- D. Wasp

**Q2) Attempt any TWO of the following.**

**[16]**

- a) What is Ecosystem? Describe in detail Grassland Ecosystem.
- b) Explain concept of Mimicry. Describe mimicry of monarch butterfly and stick insect.
- c) What is Entomology? Describe wonders of any three insects.

**Q3) Write short notes on any four of the following.**

**[16]**

- a)Pyramid of Number.
- b)Courtship behaviour in Weaver birds.
- c) Social behaviour of honey bee.
- d) Types of fossil.
- e) Food chain.
- d)Economic importance of insects.

## **End Of Question Paper**

**Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**

This Question Paper may be distributed for following Subjects as common code.

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1] (11670) Bachelor of Science (B.Sc.) NEP 2.0 (110361) Zoology Paper III & IV Part 1 SEM 2

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**MAR-APR 2025 SUMMER EXAMINATION****11670 Bachelor of Science****Sub. Name: Computer Science Paper I & II****Sub. Code: 106777****Day and Date: MAY ,08-05-2025****Total Marks: 40****Time: 02.30 PM To 04:00 PM**

**Instructions:** 1. All questions are compulsory  
2. Draw neat labelled diagrams wherever necessary

**Q1)** Solve following MCQ.**[8]**

i. Which of the following MySQL functions is used to find the number of rows in a table?

- A. SUM
- B. AVG
- C. MAX
- D. COUNT

ii. What is the function of the MID function in MySQL?

- A. It returns a part of a string.
- B. It converts the string to lowercase.
- C. It returns the length of a string.
- D. It trims spaces from a string

iii. In a subquery, which of the following operators is used with the EXISTS keyword to check for the presence of data?

- A. =
- B. IN
- C. NOT IN
- D. EXISTS

iv. Which type of join returns only the rows that have matching values in both tables?

- A. Left Join
- B. Right Join
- C. Inner Join
- D. Outer Join

v. Which MySQL control statement is used to perform conditional operations?

- A. IF
- B. LOOP
- C. CASE
- D. All of the above

**vi. Which of the following is used to create a stored procedure in MySQL?**

- A. CREATE FUNCTION
- B. CREATE PROCEDURE
- C. CREATE TRIGGER
- D. CREATE VIEW

**vii. What is the purpose of a cursor in MySQL?**

- A. It fetches data from a table into a variable.
- B. It allows for row-by-row processing.
- C. It creates a temporary table.
- D. It deletes rows from a table.

**viii. What is the purpose of a trigger in MySQL?**

- A. To automatically perform an operation when certain events occur in a database.
- B. To calculate aggregate values.
- C. To fetch data based on specific conditions.
- D. To create stored procedures.

**Q2) Attempt any two**

**[16]**

- a. Define joins in MySQL writetypes of joins.
- b. Discuss the following aggregate functions.
- c. What are triggers in MySQL? Explain how to create, show, and drop triggers. Discuss the different types of triggers in MySQL.

**Q3) Attempt Any Four**

**[16]**

- a. describe the if control statement inMySQL. **[4]**
- b. What are views in MySQL? **[4]**

- c. What are subqueries in MySQL? [4]
- d. What are cursors in MySQL [4]
- e. Describe the commonly used string functions in MySQL.1.CONCAT() [4]  
2.LENGTH()
- f. Discuss stored procedures in MySQL. [4]

## **End Of Question Paper**

**Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**

This Question Paper may be distributed for following Subjects as common code.

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1] (11670) Bachelor of Science (B.Sc.) NEP 2.0 (106777) Computer Science Paper I & II Part 1 SEM 1