B030010/B070010

Reg. No. | | | | | | | | |

II Semester B.Sc. Degree (NEP) Examination, September/October - 2022

KANNADA

ತೆರೆದ ಮನ

Paper : Ability Enhancement Compulsory Course-II

(Regular)

Time : 2 Hours **Maximum Marks : 60**

Instructions to Candidates:

ಭಾಷೆ ಮತ್ತು ಬರಹದ ಶುದ್ಧಿಯನ್ನು ಗಮನಿಸಲಾಗುವುದು.

I. ಆದರ್ಶ ಇಲ್ಲದಿದ್ದರೆ ಜೀವನವಿಲ್ಲ – ಪಾಠದ ಆಶಯಗಳನ್ನು ನಿರೂಪಿಸಿರಿ. **(10)**

(ಅಥವಾ)

'ಚೈತನ್ಯದ ಪೂಜೆ' ಕಾವ್ಯದ ಸ್ವಾರಸ್ಯ ವಿವರಿಸಿರಿ.

II. 'ಕಲ್ಕಿ' ಕವನದ ಭೀಕರ ಕ್ರೌರ್ಯ ಮತ್ತು ರೌದ್ರತೆಯನ್ನು ಚರ್ಚಿಸಿರಿ. **(10)**

(ಅಥವಾ)

ಧನಿಯರ ಸತ್ಯನಾರಾಯಣ – ಕಥೆಯ ಆಶಯಗಳನ್ನು ವಿವರಿಸಿರಿ.

III. 'ಧಾರವಾಡದಲ್ಲಿ ಮಳೆಗಾಲ' ಕವಿತೆಯ ವೈಶಿಷ್ಟ್ಯತೆಗಳನ್ನು ವಿವರಿಸಿರಿ. **(10)**

(ಅಥವಾ)

'ಬರ' ಕಥೆಯಲ್ಲಿರುವ ಭೌಗೋಳಿಕ ಬರ, ಆಂತರಿಕ ಬರ ಇವೆರಡರ ಮುಖಾಮುಖಿಯನ್ನು ಚರ್ಚಿಸಿರಿ.

IV. ಮಹಿಳೆ ಮತ್ತು ವಿಜ್ಞಾನದ ಸಂಬಂಧವನ್ನು ಕುರಿತು ನೇಮಿಚಂದ್ರನ ಅಭಿಪ್ರಾಯಗಳನ್ನು ವಿವರಿಸಿರಿ. **(10)**

(ಅಥವಾ)

ನ್ಯಾನೋ ತಂತ್ರಜ್ಞಾನದ ಕುರಿತಾಗಿ ಬರೆಯಿರಿ.

V. ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ ಬೇಕಾದ **ಎರಡಕ್ಕೆ** . **(2×5=10)**

1) ಜೀವನ ಕಲೆ

2) ನಾನೊಂದು ಕನಸು ಕಂಡೆ

3) ಮಳೆ ನಿಂತ ಮೇಲೆ

4) ವಿಗ್ರಹಗಳೋ ಗ್ರಹಗಳೋ

[P.T.O.

VI. **ಒಂದೇ** ವಾಕ್ಯದಲ್ಲಿ ಉತ್ತರಿಸಿರಿ. **(10×1=10)**

1) 'ತೆರೆದ ಮನ' ಇದು ಯಾರ ಆತ್ಮಕಥನ ?

2) ಡಿ.ವ್ಹಿ.ಜಿ.ಯವರ ಅಂಕಿತನಾಮವೇನು ?

3) ಸಾಫ್ಟವೇರ್ ಕಂಪನಿಯಲ್ಲಿ ಕೂಲಿ ಮಾಡುತ್ತಿದ್ದಾಕೆ ಏನಾದಳು ?

4) ಕಲ್ಕಿ ಕವನವನ್ನು ಯಾವ ಸಂಕಲನದಿಂದ ಆಯ್ದುಕೊಳ್ಳಲಾಗಿದೆ ?

5) ತಮ್ಮ ಇಷ್ಟದ ಪುಸ್ತಕಗಳ ಪಟ್ಟಿ ಮಾಡಿದವರು ಯಾರು ?

6) ಜನಪದ ಹಾಡಿನ ವಸ್ತು ಯಾವುದು ?

7) ಕಣವಿಯವರು ಜನಿಸಿದ್ದು ಎಲ್ಲಿ ?

8) ಪುಟ್ಟಿ ಜೊತೆ ಮಳೆ ನೋಡಿದವರು ಯಾರು ?

9) ಸುಧೀಂದ್ರ ಹಾಲ್ದೊಡ್ಡೇರಿ ಅವರು ಬರೆದ ಲೇಖನ ಯಾವುದು ?

10) ನೇಮಿಚಂದ್ರ ಯಾರು ?

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II Semester B.C.A/B.B.A/B.Sc. (Computer Science) Degree (NEP) Examination, September/October - 2022

KANNADA (Basic)

ಕರ್ಪೂರದ ಗಿರಿ

(Regular)

Time : 2 Hours **Maximum Marks : 60**

Instructions to Candidates:

ಭಾಷೆ ಮತ್ತು ಬರಹದ ಶುದ್ಧಿಗೆ ಹೆಚ್ಚಿನ ಗಮನ ಕೊಡಲಾಗುವುದು.

1. ಕುರುಡು ಕಾಂಚಣಕ್ಕೆ ಬಲಿಯಾದ ಪ್ರೊಫೆಸರ್ ಅವರ ಮನೋಭಾವ ಹೇಗಿದೆ ? ವಿವರಿಸಿರಿ. **(10)**

(ಅಥವಾ)

ನಗರೀಕರಣ ಉಂಟುಮಾಡಿರುವ ತಲ್ಲಣಗಳು 'ದಿಕ್ಕು' ಕವಿತೆಯಲ್ಲಿ ಹೇಗೆ ಚಿತ್ರಿತವಾಗಿದೆ ? ವಿವರಿಸಿರಿ.

2. ಮೊಬೈಲ್ ಗೀಳು ಮನುಷ್ಯ ಸಮಾಜವನ್ನು ಹೇಗೆ ಕಂಗೆಡಿಸಿದೆ ? ವಿವರಿಸಿರಿ. **(10)**

(ಅಥವಾ)

'ಅಂತರ್ಜಾಲದ ಮಹತ್ವ' ಕುರಿತು ವೀರೇಶ ಬಡಿಗೇರ ಅವರ ವಿಚಾರಗಳನ್ನು ಸಂಗ್ರಹಿಸಿರಿ.

3. ಜಾನಪದ ಬದುಕಿನ ಔನತ್ಯವನ್ನು 'ಗರತಿಯ ಹಾಡು' ಪ್ರಬಂಧ ಹೇಗೆ ಸಾರುತ್ತದೆ ? ವಿವರಿಸಿರಿ. **(10)**

(ಅಥವಾ)

ಬಾಲ್ತಿದಾರನ ವ್ಯಕ್ತಿತ್ವ 'ಬಣ್ಣ' ಕಥೆಯಲ್ಲಿ ಹೇಗೆ ಮೂಡಿ ಬಂದಿದೆ ? ವಿವರಿಸಿರಿ.

4. ಹಮೀದಾ ಬಾನುವಿನ ಶೋಷಣೆ 'ತಿರುಗಿ ಹೋದಳು' ಕಥೆಯಲ್ಲಿ ಹೇಗೆ ಚಿತ್ರಿತವಾಗಿದೆ ? ವಿವರಿಸಿರಿ. **(10)**

(ಅಥವಾ)

ಅಕ್ಕಮಹಾದೇವಿಯ ವಚನಗಳಲ್ಲಿ ಮೂಡಿಬಂದ ಜೀವನ ಮೌಲ್ಯಗಳನ್ನು ವಿಶ್ಲೇಷಿಸಿರಿ.

5. ಬೇಕಾದ **ಎರಡಕ್ಕೆ** ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ. **(2×5=10)**

a) ಶಿಶುನಾಳ ಶರೀಫ

b) ತಂತ್ರಜ್ಞಾನದ ಪ್ರಾಚೀನತೆ

c) ಕೋಟಿನ ಮಹತ್ವ

d) ದ.ರಾ. ಬೇಂದ್ರೆ

[P.T.O.

6. **ಒಂದೇ** ವಾಕ್ಯದಲ್ಲಿ ಉತ್ತರಿಸಿರಿ. **(10×1=10)**

a) ಶಿಶುನಾಳ ಶರೀಫರು ಹಾಡುವ ಅನುಭಾವ ಪದಗಳನ್ನು ಯಾರು ಬರೆದಿಟ್ಟುಕೊಳ್ಳುತ್ತಿದ್ದರು ?

b) 'ಬರಹ' ಕನ್ನಡ ಸಾಫ್ಟವೇರ್ ತಯಾರಿಸಿದವರು ಯಾರು ?

c) ಡಾ. ಜಿ. ರಾಮಕೃಷ್ಣ ಅವರ ಪೂರ್ಣ ಹೆಸರೇನು ?

d) ತಂದೀಯ ನೆನೆದರ ಏನು ಬಿಸಿಯಾಗುತ್ತದೆ ಎಂದು ಗರತಿ ಹೇಳುತ್ತಾಳೆ ?

e) ಬೇಂದ್ರೆ ಅವರ ಯಾವ ಕೃತಿಗೆ ಜ್ಞಾನಪೀಠ ಪ್ರಶಸ್ತಿ ದೊರೆತಿದೆ ?

f) ಎಂ.ಎಸ್. ಸುಂಕಾಪುರ ಅವರ ಪೂರ್ಣ ಹೆಸರನ್ನು ಬರೆಯಿರಿ.

g) ನಾ. ಡಿಸೋಜಾ ಅವರ ಜನ್ಮಸ್ಥಳ ಯಾವುದು?

h) ಯಾರ ಸಂಗವು ಕರ್ಪೂರದ ಗಿರಿಯನ್ನು ಉರಿಯು ಕೊಂಡಂತಾಗುತ್ತದೆ ?

i) ಅಕ್ಕಮಹಾದೇವಿಯ ವಚನಾಂಕಿತವೇನು ?

j) ನಿರಂಜನರ ಪತ್ನಿಯ ಹೆಸರೇನು ?

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B Sc II Sem

B030020/B040020/B070020

Reg. No. | | | | | | | | |

II Semester B.Sc. Degree (NEP) Examination, September/October - 2022

ENGLISH

GENERIC ENGLISH - II

(Regular)

Time : 2 Hours **Maximum Marks : 60**

I. Answer the following in a word, a phrase or a sentence each. **(10×1=10)**

1. Who is called the father of 'Zero budget Natural farming'?
2. State any one principle of ZBNF?
3. Name the coaches of Milkha singh.
4. Where had Milkha singh his rigerous practice daily?
5. Who is the writer of "on saying please"?
6. Where does the poet's daughter sleep?
7. What kind of life did Helen choose to live?
8. Who is Maya Angelou?
9. What do you mean by the word 'I' in the poem "Still I Rise"?
10. Who wrote the poem "How did you die"?

II. 1) Write a note on Zero budget natural farming. **(1×10=10)**

(OR)

2) Comment on the essay "on saying please".

III. 1) Critically appreciate the poem "Still I Rise". **(1×10=10)**

(OR)

2) What does W.B. Yeats pray for his daughter? Explain.

IV. A) Rewrite as directed. **(5×2=10)**

1. Give the synonyms of the following.
   i. Fear
   ii. Happy.
2. Use the following homophones in your own sentence (any one) :
   i. Tail - tale

   (OR)

   ii. Sun - son.
3. Fill in the blanks with appropriate prefix or suffix for the given words in the brackets.
   i. Shashi looked _____ at the puppy (happy).
   ii. Geeta wants to be a _____ when she grows up (mathematics).

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4. Match the words in column 'A' with its collective words in Column 'B'.

A		B
1. Freedom	-	Fighter/writer/swimmer.
2. Railway	-	Station/run/stop/chair.

5. Bring out the difference in meaning of the following pair of words by using them in your own sentences.
   Affect - Effect

(OR)

B) 1. Read the following passage carefully and identify the technical terms related to the field of the topic and write in the answer script. **(5)**

In the year 1962, Indian national committee for space research was formed which paved the way for our achievements in the field of space research. India entered into the space research field on november 21, 1963. when India launched her first rocket from Thumba. The progress of India in this field was rapid and in 1975 April 19, we launched our first artificial satellite 'Aryabhatta' which followed the launching of a number of artificial satellites including the 'Insat' for tele communication. Now India is one among the advanced countries in the field of space research.

2. A) What is listening? Mention the types of listening. **(1×5=5)**

(OR)

B) What are the barriers for effective listening? Discuss the techniques to improve listening skills.

V. Answer any **Two** of the following. **(2×5=10)**

1. Change into indirect speech.
   a) He says, "Tea is ready".
   b) Priya asked Ravi. "Do you know me?"
   c) Vijay said to Vani, "I Know you and your brother".
   d) Suresh said to sharan, "I was watching TV yesterday".
   e) "When I reached the station, the train had left" said shreya to Trupti.
2. Write an imaginary dialogue between you and your friend about the preparation of annual exam.
3. Give an example each to verbal and non - verbal communication, with the definition.
4. Summarise the following passage in your own words and give a suitable title.

The Triveni Sangam is located on the banks of the Ganges and Yamuna, in Allahabad. Sangam in Hindi language means confluence. the Triveni sangam in Allahabad is a confluence of three rivers : the Ganga, Yamuna and Saraswati of these, the river Saraswati is invisible and said to be flowing beneath the earth. It meets the other two rivers from the base.

VI. Answer any **Two** of the following. **(2×5=10)**

1. Draft a copy of speech on "Importance of water"/
2. Write an essay on "Waste Management".
3. Write a short paragraph on "Mahatma Gandhi".
4. Translate the following paragraph into kannada or Hindi or Marathi or Urdu.

"The Mayan civilization was a group of people who lived in Central America they lived for a very long time and some of the Maya people live there even today. They lived 4000years ago. The Mayans were the only people in America to have a written language before columbus came to America in 1492 AD. They were good at art, building and Mathematics. They knew about stars and planets, which helped them make calendars.

B030050/B0050

Reg. No. | | | | | | | | |

II Semester B.Sc. (NEP) Degree Examination, September/October - 2022

HINDI (Basic)

1) काव्य कुसुम 2) अनुवाद

Paper - 01 MIL

(Regular)

Time : 2 Hours **Maximum Marks : 60**

I. किन्ही दस प्रश्नों के उत्तर लिखिए : **(10×1=10)**

1) कर्मवीर कविता के कवि ---------

a) हरिऔध b) निराला c) पंत

2) रामधारिसिह दिनकर जी का जन्म -------

a) 1909 b) 1908 c) 1907

3) वैधनाथ मिश्र नागार्जुन की रचना

a) हिमालय b) हिरोशिमा c) कालिदास

4) सुमित्रानन्दन पंत का जन्म स्थान

a) कौसानी b) कानपुर c) रायबरेली

5) अटल बिहारी वाजपेयी ने अपनी कविता व्दारा कौन सा संदेश देना चाहते है।

a) कदम मिलाकर चलना होगा b) हाथ मिलाकर चलना होगा c) खुश होकर चलना होगा

6) औरत अलसर किस की भीड में गुम होती है

a) दुनिया b) समाज c) जनता

7) आठवी मंजिल पर इस कविता में कितनी खिडकियाँ बाहर की ओर खुलती है।

a) चार b) दो c) तीन

8) दातुन बनाने के लिए किस पेड की टहानियाँ थी

a) बबूल b) निम c) बरगद

9) ओ अच्छी लडकियों इस कविता में बेलगाम नाचने को किसे कहा है

a) इच्छाओंको b) ख्वाहिंशो को c) मनको

10) प्रिय प्रवास ----- की प्रसिद्ध रचना है

a) हरिऔध b) अज्ञेय c) कुवर नारायण

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11) हिमालय यह कविता किस रचना से ली है

a) रसवन्ती b) रेणुका c) उर्वशी

12) भवानी प्रसाद मिश्र का निधन ------

a) 1983 b) 1982 c) 1981

II. किन्ही तीन का संदर्भ के साथ स्पष्टीकरण दे। **(3×5=15)**

1) मानव का रचा हुआ सूरज
मानव का भाप बनाकर सोख गया।

2) कालिदास सच सच बतलाना
रति रोयी या तुम रोये थे?

3) मै उतारना नही चाहता जाहिल अपने बाने
धोती कुरता बहुत जोर से लिपटाए हुँ याने।

4) कल वे जाएगे शहर
सोमवार हाट में।

5) सुनो, उतार दो अपने सर से अच्छे होने का बोझ लहराओ न आसमान तक अपना आँचल

III. किसी दो प्रश्नों के उतर लिखिए। **(2×10=20)**

1) देश कागज पर बना नकशा नहीं होता इस कविता के माध्यम से कविने मनुष्य को सचेत कैसे किया है?

2) आ धरती कितना देती है। इस कविता का सारांश लिखिए।

3) दातून बेचने वाले बच्चों के प्रति कवि का मन क्यों भावक हो गया।

4) प्रतिभा कटियार ने लडकियोंको क्या कहा है?

IV. हिन्दी में अनुवाद कीजिए। **(1×15=15)**

Many of our graduates face up the unemployment problem. It is true that all are not able to get the higher education. some selfish people coin the money only and forget the country. But let us tell them. The country is not for us, we are for the country.

ನಮ್ಮ ಬಹಳಷ್ಟು ಪದವೀಧರರು ನಿರುದ್ಯೋಗ ಸಮಸ್ಯೆಯನ್ನು ಎದುರಿಸುತ್ತಾರೆ. ಎಲ್ಲರೂ ಉನ್ನತ ಶಿಕ್ಷಣವನ್ನು ಪಡೆಯಲು ಅಸಮರ್ಥರಾಗಿದ್ದಾರೆನ್ನುವುದು ಕೂಡಾ ಸತ್ಯವಾಗಿದೆ. ಕೆಲವು ಸ್ವಾರ್ಥಿ ಜನರು ಕೇವಲ ಹಣ ಸಂಗ್ರಹಿಸುತ್ತಾರೆ ಮತ್ತು ದೇಶವನ್ನು ಮರೆಯುತ್ತಾರೆ ಆದರೆ " ದೇಶವು ನಮಗಾಗಿ ಅಲ್ಲ ನಾವು ದೇಶಕ್ಕಾಗಿ" ಎಂದು ನಾವು ಅವರಿಗೆ ಹೇಳಬೇಕು.

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Reg. No. | | | | | | | | |

II Semester B.Sc.3/B.Sc.4 Degree Examination, September/October - 2022

MATHEMATICS (OPTIONAL)

Differential and Integral Calculus

Paper - I

(Repeater)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates : *Answer all parts.*

PART - A

1. Answer any **TEN** of the following : (2 marks each). **(10×2=20)**

a. Find ϕ for the curve $r = ae^{\theta \cot \alpha}$.

b. Find P-r equation for the curve $r = a(1-\cos\theta)$.

c. Find the lengths of polar subtangent and subnormal for the curve $r = ae^{-\theta}$.

d. For the curve $x^{2/3} + y^{2/3} = a^{2/3}$. Find $\frac{ds}{dx}$.

e. Define
   i. Evolute
   ii. Involute.

f. Discuss the continuity of $f(x,y) = \begin{cases} \frac{xy}{\sqrt{x^2+y^2}}, (x,y) \neq (0,0) \\ 0, \textit{otherwise} \end{cases}$

g. If $u = \frac{xy}{x+y}$ then find $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y}$.

h. If $u = x^3 + y^3$, $x = at^2$, y = 2at. Find $\frac{du}{dt}$.

i. Show that $y = e^x$ is concave upwards everywhere.

j. Find the envelope of the family of lines $y = \alpha x + \frac{a}{\alpha}$, where '$\alpha$' is the parameter.

k. Evaluate $\int_0^{\pi/2} \cos^6 x dx$.

l. Evaluate $\int x^2 \log x dx$.

P.T.O.

PART - B

Answer any **FOUR** of the following : (5 marks each). **(4×5=20)**

2. Prove that

   i. $p = r\sin\phi$.

   ii. $\frac{1}{p^2} = \frac{1}{r^2} + \frac{1}{r^4}\left(\frac{dr}{d\theta}\right)^2$.

3. Find the equation of circle of curvature for the curve $2xy + x + y = 1$ at (1,1).

4. Find the evolute for the curve $x = a\cos^3\theta$, y. $= a\sin^3\theta$.

5. If $u = \frac{1}{\sqrt{x^2+y^2+z^2}}$ then show that $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} + \frac{\partial^2 u}{\partial z^2} = 0$.

6. Find the envelope of the family of straight line $\frac{x}{a} + \frac{y}{b} = 1$ when $ab = 1$.

7. Find the reducton formula for $\int \sec^4 x dx$, n > 0.

PART - C

Answer any **Four** of the following : (10 marks each). **(4×10=40)**

8. a. Usual notations, prove that $\tan\phi = r\frac{d\theta}{dr}$.

   b. Show that the curve $r = a(1+\cos\theta)$, and $r = b(1-\cos\theta)$ cut orthognally.

9. a. Derive the formula for radius of curvature in cartesian form.

   b. Find the radius of curvature at any point on the curves $x = a(\theta + \sin\theta)$ and $y = a(1-\cos\theta)$, θ is the parameter.

10. a. State and prove Euler's theorem for homogeneous function of degree n in x,y.

    b. If $V = r^m$ where $r^2 = x^2 + y^2 + z^2$ then show that $\frac{\partial^2 v}{\partial x^2} + \frac{\partial^2 v}{\partial y^2} + \frac{\partial^2 v}{\partial z^2} = m(m+1)r^{m-2}$.

11. a. Find the points of inflexion for the curve $y = 3x^5 - 40x^3 + 3x - 20$.

    b. Find the asymptotes of the curve $x^3 - 2x^2y + xy^2 + x^2 - xy + 2 = 0$.

12. a. Find the reduction formula for $\int \sin^n x dx (n > 0)$ and evaluate $\int \sin^4 x dx$.

    b. If $I_n = \int_0^{\pi/2} \tan^n x dx$ then show that $(n-1)(I_n + I_{n-2}) = 1$.

B030300

Reg. No. | | | | | | | | |

II Semester B.Sc.6. Degree Examination, September/October - 2022

MATHEMATICS (DSC)

Algebra - II and Calculus - II

(Regular)

Time : 2 Hours **Maximum Marks : 60**

Instructions to Candidates :

Answer all questions.

1. Answer any **Six** of the following. **(6×2=12)**

a. Define suprimum and infimum of a set.

b. State Bolzano - Weierstrass theorem.

c. Prove that in a group identity element is unique.

d. If $G=\{1,-1,i,-i\}$ is a group and $H=\{1,-1\}$ is a subgroup of G. Find all right cosets of H in G.

e. If $z^2=xy^2+yz$. Find $\frac{\partial z}{\partial x}$ and $\frac{\partial z}{\partial y}$.

f. If $x=r\cos\theta$ and $y=r\sin\theta$. Find $\frac{\partial(x,y)}{\partial(r,\theta)}$.

g. Evaluate $\int_0^1\int_0^2\left(x^2+y^2\right)dxdy$.

h. $\int_0^1\int_0^2\int_1^2 x^2yzdxdydz$.

2. Answer any **Three** of the following. **(3×4=12)**

a. Prove that R is not compact.

b. A set A in R is closed iff it contains all its limit points.

c. Prove that the interval [0,1] is uncountable.

d. State and prove Archimedean property.

[P.T.O.

3. Answer any **Three** of the following. (3×4=12)

a) Prove that non - empty set H is a subgroup of a group G iff $ab^{-1} \in H$, $\forall a, b \in H$.

b) Let G be a group, $a \in G$ be of order m then prove that

i) $e, a, a^2 \ldots .a^{m-1}$ are all distinct.

ii) a^n is equal to some one of $e, a, a^2 \ldots .a^{m-1}$, $\forall n \in I$.

c) Prove that every subgroup of a cyclic group is cyclic.

d) State and prove Lagrange's theorem on groups.

4. Answer any **Three** of the following. (3×4=12)

a) State the prove Euler's theorem on homogeneous function.

b) If $u = \log\sqrt{x^2 + y^2 + z^2}$. Prove that $\left(x^2+y^2+z^2\right)\left(\frac{\partial^2 u}{\partial x^2}+\frac{\partial^2 u}{\partial y^2}+\frac{\partial^2 u}{\partial z^2}\right)=1$.

c) Expand *cosx cosy* by Maclaurin's series upto 3rd terms.

d) With usual notations prove that $\frac{\partial(u,v)}{\partial(r,\theta)}=\frac{\partial(u,v)}{\partial(x,y)}\times\frac{\partial(x,y)}{\partial(r,\theta)}$.

5. Answer any **Three** of the following. (3×4=12)

a) If f(x,y) is continuous function in domain $D=\{a \le x \le b;\ c \le y \le d\}$ prove that

$\int_c^d\left[\int_a^b f(x,y)dx\right]dy=\int_a^b\left[\int_c^d f(x,y)dy\right]dx$.

b) Find the area of an ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ by double integration.

c) Find the volume of tetrahedron bounded by the plane $\frac{x}{a}+\frac{y}{b}+\frac{z}{c}=1$ and the co-ordinates planes.

d) State and prove Leibnitz's theorem for differentiation under integral sign.

B030230

Reg. No. | | | | | | | | |

II Semester B.Sc.6. Degree (NEP) Examination, September/October - 2022
CHEMISTRY (DSC)
(Regulars)

Time : 2 Hours **Maximum Marks : 60**

Instructions to Candidates : *1. All questions are compulsory.*
2. Draw neat diagrams and give equations wherever necessary.

1. Answer any **Six** questions. **(6×2=12)**

a. State Fajan's rule.

b. What is ionic bond? Give two molecules with ionic bond.

c. Compare the acidic strength of acetic acid and chloroacetic acid and give the reason.

d. Write staggard and eclipsed confirmations of ethane.

e. Define unit cell.

f. Write an expression for the rate constant of second order reaction when concentrations of reactants are unequal and mention the terms.

g. What is surface tension? How it vary with temperature.

h. Write two advantages of organic reagents over inorganic reagents.

2. Answer any **Three** questions. **(3×4=12)**

a. What is lattice energy? Explain the Born - Haber cycle for the formation of sodium chloride.

b. What is covalent bond? Write the general characteristics of covalent compounds.

c. Write the type of hydridisation and geometry of following molecules.

i. SF_6.

ii. BF_3.

iii. $BECl_2$.

iv. PCl_5.

d. Give the molecular orbital energy level diagram of oxygen molecule and write its electronic configuration and magnetic property.

[P.T.O.

3. Answer any **Three** questions. (3×4=12)
   a. What is optical isomerism? Write the conditions for a molecule to show optical isomerism.
   b. Explain the following.
      i. Enantiomers.
      ii. Mesocompounds.
   c. Discuss the rules of assigning E and Z notations for compounds with examples.
   d. Explain :
      i. Anhydride formation method of determination of geometrical isomers.
      ii. Biochemical method of resolution of recimic mixture.

4. Answer any **Three** questions. (3×4=12)
   a. Explain the following of crystal system.
      i. Plane of symmetry.
      ii. Centre of symmetry.
   b. Give the classification and applications of liquid crystals.
   c. Derive integrated rate equation for second order reaction when concentrations of reactants are equal.
   d. Explain the differential equation method of determination of order of reaction.

5. Answer any **Three** questions. (3×4=12)
   a. Define parachor. Explain the elucidation of structure of Benzoquinone by parachor values.
   b. Explain the determination of coefficient of viscosity by ostwald's viscometer.
   c. Refractive index and density of Benzene are found to be 1.497 and 0.873 $gmcm^{-3}$ respectively. Calculate specific refraction and molar refraction of Benzene. (Given - Molecular weight of Benzene = 78).
   d. Give the structure and use of following reagents in inorganic analysis.
      i. Oxine.
      ii. DMG
      iii. Cupron.

B030320

Reg. No. | | | | | | | | |

II Semester B.Sc. 6 (NEP) Degree Examination, September/October - 2022

PHYSICS

Electricity and Magnetism

(Regular)

Time : 2 Hours **Maximum Marks : 60**

Instructions to Candidates : *1. Calculator is allowed to solve the problems.*
2. Write intermediate steps.

Answer any **Six** questions. **(6×2=12)**

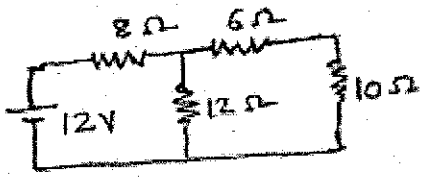
1. a. Define curl of a vector.
b. State Gauss Divergence theorem.
c. What are voltage and current sources?
d. State superposition theorem.
e. State Biot - Savart law.
f. Define peak and r.m.s. values of A.C.
g. What is self inductance.
h. Define electric dipole moment.

2. Answer the questions 'a and b' **OR** 'c and d'.
a. Define divergence of a vector and explain its physical significance. **(8)**
b. Write a note on Maxwell's equations. **(4)**

(OR)

c. Derive General plane wave equation in free space. **(8)**
d. State and explain stoke's theorem. **(4)**

3. Answer the questions 'a and b' **OR** 'c and d'.
a. Derive Maximum power transfer theorem. **(8)**
b. Using Norton's theorem, find the current in 10Ω resistor in the network shown below. **(4)**



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(OR)

c) Give the theory of growth and decay of current in RL circuit. **(8)**

d) A Condenser of capacity 1 μF is first charged then discharged through 1 $M\Omega$ resistor. Find the time in which the charge will fall to 40% of its initial value. **(4)**

4. Answer the questions 'a and b' **OR** 'c and d'.

a) Give construction and theory of Helmholtz Galvenometer. **(8)**

b) A straight conductor is carrying a current of 1.5 A. Find the magnetic field at a distance of 0.05 m from it. **(4)**

(OR)

c) Derive an expression for admittance in parallel LCR circuit using j operator. **(8)**

d) A coil of radius 0.2 m and 100 turns carries current of 0.5 amp. Find the magnetic field at a point 0.4 m away from the centre of Coil. **(4)**

5. Answer the questions 'a and b' **OR** 'c and d'.

a) Give the theory of Ballistic Galvenometer. **(8)**

b) A capacitor of value of 0.3 μF is charged to 4.5 volts It gives a deflection of 10 cm when discharged through a ballistic galvenometer. If the time period of B.G. is 12 sec calculate the current sensitivity. **(4)**

(OR)

c) Derive the relation between D,E and P in dielectrics. **(8)**

d) The first right throw and left throw of B.G. from its mean position are 0.22 m and 0.215 m respectively. Calculate the logarithmic decrement. **(4)**

B019010

Reg. No. | | | | | | | | |

II Semester All UG Courses Degree (NEP) Examination,
September/October - 2022
ENVIRONMENTAL STUDIES
AECC (Ability Enhancement Compulsory Course)
(Regular)

Time : 1½ Hours **Maximum Marks : 30**

SECTION - A
ವಿಭಾಗ - ಅ

Answer any 5 of the following. **(5×2=10)**

ಈ ಕೆಳಗಿನವುಗಳಲ್ಲಿ ಯಾವುದಾದರೂ **5ನ್ನು** ಉತ್ತರಿಸಿರಿ.

1. Food chain
   ಆಹಾರ ಸರಪಳಿ
2. Endangered species
   ಅಳಿವಿನಂಚಿನಲ್ಲಿರುವ ಪ್ರಭೇದಗಳು
3. Global Warming
   ಜಾಗತಿಕ ತಾಪಮಾನ
4. Renewable resources
   ನವೀಕರಿಸಬಹುದಾದ ಸಂಪನ್ಮೂಲಗಳು
5. Biodiversity
   ಜೀವವೈವಿಧ್ಯ
6. Population
   ಜನನಿಬಿಡತೆ
7. Climate
   ಹವಾಮಾನ

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SECTION - B

ವಿಭಾಗ - ಬ

Answer any 4 of the following. (4×5=20)

ಯಾವುದಾದರು 4 ಪ್ರಶ್ನೆಗಳನ್ನು ಉತ್ತರಿಸಿರಿ.

8. What is sustainability ? Describe sustainable development.

ಸುಸ್ಥಿರತೆ ಅಂದರೇನು ? ಸುಸ್ಥಿರ ಅಭಿವೃದ್ಧಿಯನ್ನು ವಿವರಿಸಿ.

9. Define ecosystem. Describe structure and functions of ecosystem.

ಪರಿಸರ ಎಂದರೇನು ? ಪರಿಸರ ವ್ಯವಸ್ಥೆಯ ರಚನೆ ಮತ್ತು ಕಾರ್ಯವನ್ನು ವಿವರಿಸಿ.

10. Mention Biogeographic Zones of India.

ಭಾರತದ ಜೈವಿಕ ಭೌಗೋಳಿಕ ವಲಯಗಳನ್ನು ಹೆಸರಿಸಿ.

11. Write importance of conservation of biodiversity.

ಜೀವವೈವಿಧ್ಯದ ಸಂರಕ್ಷಣೆಯ ಪ್ರಾಮುಖ್ಯತೆಯನ್ನು ಬರೆಯಿರಿ.

12. Name renewable energy resources. Describe any one energy resource.

ನವೀಕರಿಸಬಹುದಾದ ಶಕ್ತಿ ಸಂಪನ್ಮೂಲಗಳನ್ನು ಹೆಸರಿಸಿ ಮತ್ತು ಯಾವುದಾದರೂ ಒಂದು ಶಕ್ತಿ ಸಂಪನ್ಮೂಲವನ್ನು ವಿವರಿಸಿ.

13. Write impacts of climate change on human communities and agriculture.

ಹವಾಮಾನ ಬದಲಾವಣೆಯ ಪರಿಣಾಮಗಳನ್ನು ಬರೆಯಿರಿ.

42224/B240

Reg. No. | | | | | | | | |

II Semester B.Sc.4. Degree Examination, September/October - 2022

CHEMISTRY (OPTIONAL)

(Repeaters)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates :

1. *All questions are compulsory.*
2. *Answer all the questions in the same answer book.*
3. *Draw neat diagrams and give equations wherever necessary.*

SECTION - A

Answer any **Ten** of the following. **(10×2=20)**

1. a) Calculate the bond order of Nitrogen molecule.

b) What is hybridization?

c) Draw the molecular orbital diagram of lithium molecule.

d) Write the structural formula of oxime.

e) State Markownikoff's rule.

f) Mention the electrophiles generated during the chlorination and sulphoration of Benzene.

g) How alcohols are obtained from alkanes.

h) What is inversion temperature?

i) Define coefficient of viscosity.

j) What is molar refraction.

k) What are liquid crystals? Give an example.

l) What are Miller indices?

SECTION - B

Answer any **Four** of the following. **(4×5=20)**

2. Discuss the shape of Ammonia molecule on the basis of VSEPR theory.

3. Draw and explain molecular orbital energy level diagram of oxygen molecule.

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4. Explain the following :
   i) Ozonolysis of 2 - methyl - 2 - butene.
   ii) Hydroboration and oxidation of alkenes.
5. Explain the mechanism of Nitration of Benzene.
6. Derive the Joule - Thomson coefficient.
7. Explain the determination of surface tension of the liquid by drop number method.

SECTION - C

Answer any **Four** of the following. **(4×10=40)**

8. a) What is hydrogen bonding? Explain inter molecular and intramolecular hydrogen bonding.
   b) Give the advantages of organic reagents over the Inorganic reagents.
9. a) What are dienes? Give the classification of dienes with examples.
   b) How is benzene converted into P - nitrobenzoic acid?
10. a) Write a note on Joule - Thomson effect.
    b) Refractive index and density of benzene are found to be 1.497 and 0.873 $gmcm^{-3}$ respectively calculate the specific refraction and molar refraction of benzene.
    (Given. molecular weight of benzene = 78).
11. a) Derive Bragg's equation.
    b) What are emulsions? Explain the types of emulsions.
12. a) Discuss the mechanism of alkylation of benzene.
    b) Derive Kirchoff's equation.