35413/42402/44152/42862/45302/45102

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

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

KANNADA (Basic)

ಸಾಹಿತ್ಯ ಕೌಮುದಿ – 4

(Repeater)

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

Instructions to Candidates:

ಭಾಷೆ ಮತ್ತು ಬರಹದ ಶುದ್ಧಿಗೆ ಆಧ್ಯತೆ ನೀಡಲಾಗುವುದು.

1. ಮೋಹಕ್ಕೆ ತುತ್ತಾದ ಮನುಷ್ಯ ಮಾನ–ಮರ್ಯಾದೆ ಲೆಕ್ಕಿಸಲಾರ–ಎಂಬ ಕವಿ ಜನ್ನನ ಹೇಳಿಕೆಯನ್ನು ನಿರೂಪಿಸಿರಿ. **(15)**

(ಅಥವಾ)

ಹುಬ್ಬಳ್ಳಿಯಾಂವಾ ಕವಿತೆಯನ್ನಾಧರಿಸಿ ಗಂಡು–ಹೆಣ್ಣಿನ ಪ್ರಣಯದ ನಿರ್ಮಲಭಾವ ಕುರಿತು ವಿವರಿಸಿರಿ.

2. ಯುದ್ಧದ ಭೀಕರತೆ ಪರಿಣಾಮಗಳನ್ನು ಕುರಿತು ಸಮಾಲೋಚಿಸಿರಿ. **(15)**

(ಅಥವಾ)

ಕುರುಕ್ಷೇತ್ರ ರಣರಂಗದಲ್ಲಿ ಸಂಜಯ ಕಣ್ ಬೆಳಕಾದ ಪ್ರಸಂಗವನ್ನು ಕುರಿತು ವಿವರಿಸಿರಿ.

3. ಬೇಕಾದ ನಾಲ್ಕಕ್ಕೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ. **(4×5=20)**

I) ಯಶೋಧರರಾಜ.

II) ಮುಪ್ಪಿನ ಷಡಕ್ಷರಿ.

III) ವೈದೇಹಿ.

IV) ಕುಂತಿ.

V) ಕರ್ಣ.

VI) ಭೀಮನ ಅರ್ಭಟ.

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4. ಬೇಕಾದ **ಮೂರಕ್ಕೆ** ಸಂದರ್ಭದೊಡನೆ ಸ್ಪಷ್ಟೀಕರಿಸಿರಿ. (3×5=15)

I) ಬೆಗಡುಗೊಳ್ಳಲೇಕೆ ಮನವೇ ನರರ ಮಾಳ್ಕೆಯಿಂ.

II) ಇದ್ದೀಪು ಶುಂಠಿ ಪೆಪರ ಮೆಂಟೂ, ಕಂಫಿಟ್ಟೂ.

III) ಧರ್ಮವೂ ಅಸಮಾನತೆಯನ್ನು ಬೋಧಿಸುತ್ತದೆಯೇ

IV) ಇದೆ ಎನ್ನ ಧರ್ಮಕ್ಕೆ ಪ್ರತಿಫಲಂ!

V) ಓಹ್! ನಾನಿರುವುದು ಕರ್ನಾಟಕದಲ್ಲೇ.

5. ಒಂದೇ ವಾಕ್ಯದಲ್ಲಿ ಉತ್ತರಿಸಿರಿ. (15×1=15)

I) ಮುಪ್ಪಿನ ಷಡಕ್ಷರಿಯರ ಹುಟ್ಟೂರು ಯಾವುದು?

II) ಬೇಂದ್ರೆಯವರ ಪ್ರಥಮ ಕಾವ್ಯ ಸಂಕಲನ ಯಾವುದು?

III) ವೈದೇಹಿ ಅವರ ಮೊದಲ ಹೆಸರೇನು?

IV) ಯಾವ ವಿಶ್ವವಿದ್ಯಾಲಯದಿಂದ ಡಾ. ಗುರುದೇವಿ ಹುಲ್ಲೆಪ್ಪನವರ ಮಠರವರು ಎಂ.ಎ. ಪದವಿ ಪಡೆದಿರುತ್ತಾರೆ?

V) ಮಹಾತ್ಮಾ ಜ್ಯೋತಿಭಾ ಫುಲೆಯವರು ಎಷ್ಟನೇ ವಯಸ್ಸಿನಲ್ಲಿ ವಿವಾಹವಾದರು?

VI.) ಮಳೆಗಾಲದ ಕವಿಯೆಂದು ಯಾರನ್ನು ಕರೆಯುತ್ತಾರೆ?

VII) ಬದುಕಿನ ಮೂಲ ಯಾವುದು?

VIII) ಚೆನ್ನವೀರ ಕಣವಿಯವರ ತಂದೆ–ತಾಯಿಯ ಹೆಸರೇನು?

IX) ಕಾವ್ಯಾರ್ಥ ಚಿಂತನ ಕೃತಿಗೆ ಸಿಕ್ಕ ಪ್ರಶಸ್ತಿ ಯಾವುದು?

X) ಶ್ರೀ ಬಿ.ಎಸ್. ಪೋಳ್ ಅವರ ಕಾವ್ಯನಾಮ ಯಾವುದು?

XI) ಜ್ಯೋತಿರಾವರ ಮನೆತನದ ಮೂಲ ಉಪನಾಮ ಯಾವುದು?

XII) ಕುರುಕುಲ ಸಾರ್ವಭೌಮನ್ ಯಾರು?

XIII) ಧೃತರಾಷ್ಟ್ರನಿಗೆ ಕಣ್ಣಳಕರಾದವರಾರು?

XIV) ಕುವೆಂಪುರವರ ಆತ್ಮಚರಿತ್ರೆಯ ಹೆಸರೇನು?

XV) ಯುಗ ಯುಗಗಳಲ್ಲಿ ಯಾವ ಯುಗ ಶ್ರೇಷ್ಠ?

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IV Semester B.Sc.(CBCS) Degree Examination, September/October - 2022

ENGLISH (AECC)

ENGLISH LANGUAGE SKILLS-II

(Regular)

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

I i) a) Write a dialogue of enquiry between a customer and a shopkeeper on buying children's story Books' using primary and modal auxiliaries. **(5)**

b) Write a conversation between a station master and a passenger at the railway station about the arrival of 'chennai Express' using primary and modal auxiliaries. **(5)**

ii) a) Write a paragraph on how to get to 'Grand Hotel' from the railway station using a few of the prepositions given in the bracket.

(in the corner, near, next to, between, opposite to, behind beyond, along, past, across, down, up, towards) **(5)**

b) Write instructions to reach post office from bus stand using a few prepositions given in the bracket.(in the corner, near, next to, between, opposite to, behind, beyond, along, past, across, down, up, towards) **(5)**

II. i) a) Write instructions to your friend about the preparation of 'Lemon Juice' at home **(5)**

b) Write instructions to your team mates about the preparations for organizing 'Sports Day' in your college. **(5)**

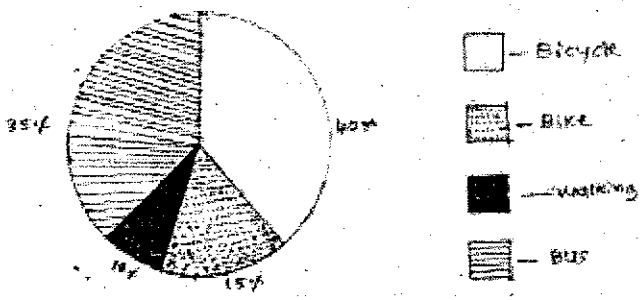
ii) a) Write a formal telephone conversation between a student and a teacher about organizing a special lecture on 'Functional English in your college. **(5)**

b) Write an informal telephone conversation between two friends about visiting mysore zoo during the vacation. **(5)**

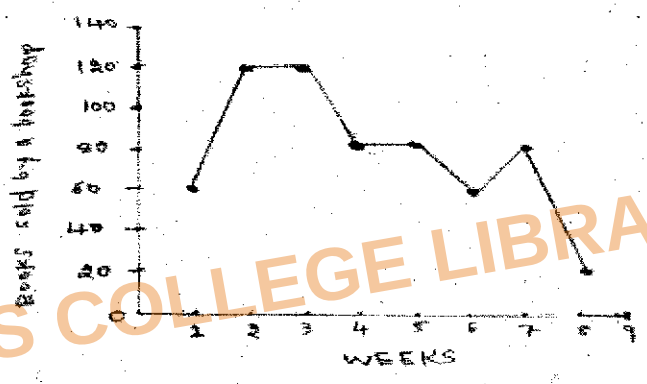
III. i) a) Interpret the given pie chart on the proportion of types of transportation used by students to go to their college. **(5)**

[P.T.O.

Types of Transportation to college



b) Interpret the following a line graph given on the number of books out by a bookshop each week during a certain period in one or two paragraphs. **(5)**



ii) a) Write a conversation for an appointment with a doctor/receptionist of a hospital for your treatment of severe flu. **(5)**

b) Write a conversation for an appointment with a bank manager for your educational loan. **(5)**

IV. i) a) Write a report of a Group Discussion conducted among five students on the topic of 'online learning-pros and cons. **(5)**

b) Write a short speech on 'Depletion of ozone Layer'. **(5)**

ii) a) Describe 'the bank manager of your locality using appropriate adjectives. **(5)**

b) Describe the botanical garden of your college. **(5)**

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IV Semester B.Sc./B.C.A. Degree Examination, September/October - 2022

HINDI (MIL)

1) सपनों की होम डिलिवरी (उपन्यास) 2) पल्लवन 3) अनुवाद

(Regular)

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

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

1) 'सपनों की होम डिलिवरी' किसकी रचना है?

a) मृदुला गर्ग b) ममता कालिया c) कृष्णा सोबती

2) ममता कालिया का जन्म कब हुआ?

a) सन् 1940 b) सन् 1941 c) सन् 1942

3) 'नरक-दर-नरक' किसकी रचना है?

a) कृष्णा सोबती b) ममता कालिया c) उषा प्रियंवदा

4) 'क' चैनल में रुचि का सहायक कौन था?

a) अकबर अली b) वीरेन्द्रसिंह c) कुर्बान अली

5) रुचि के मकान मालिक का नाम है-

a) शमशेर सिंह b) तेजिंदर सिंह c) वीरसिंह

6) रुचि और सर्वेश किस भाषा की फिल्म देखने गये थे?

a) चीनी b) फ्रांसीसी c) जापानी

7) रुचि के बेटे का नाम क्या है?

a) अमन b) गगन c) विराज

8) 'मनजीत' कहाँ रहती है?

a) अमृतसर b) मुंबई c) चेन्नई

9) दिव्यदर्शन पाठक किस संसदीय सीट से कोई चुनाव नहीं हारा था

a) काशी b) गया c) इलाहाबाद

[P.T.O.

10) रुचि शर्मा की लिखी किताबें कितनी भाषाओं में अनुवाद होकर छपती थी?

a) 6 b) 5 c) 4

11) रुचि ने सर्वेश को क्या नाम दिया?

a) पंद्रह अगस्त b) सोलह अगस्त c) सत्रह अगस्त

12) सी.सी.डी. का विस्तारित नाम क्या है?

a) कैफेडे b) कॉफी डे c) कैफे कॉफी डे

13) प्रभाकर शर्मा का पुरतैनी मकान कहाँ था?

a) अष्टम हाउसिंग सोसायटी b) नवम हाउसिंग सोसायटी c) सप्तम हाउसिंग सोसायटी

14) 'ऐसा कैसे हो सकता है। तुम मीडिया में हो वहाँ संवाद के बिना काम कैसे चल सकता है? किसका कथन है?

a) प्रभाकर b) रुचि c) सर्वेश

II. किन्ही दो का संदर्भ सहित अर्थ स्पष्ट कीजिए। **(2×7=14)**

1) 'नो मिस रुचि, हम कोई लफडा नहीं माँगते। आप उसको अपनी बात से कायल करो तभी जमेगा।'

2) 'घर में मैं कुकरी–शो नहीं चलाती, समझी।'

3) 'मजाक की भी हद होती है। इतने छोटे बच्चे को आप नशा करना सिखा रहे हैं।'

4) 'मैं सहजीवन को गलत रिवाज मानती हुँ। हमारे ऊपर समाज की जिम्मेदारी है।'

III. किसी एक प्रश्न का उत्तर लिखिए। **(1×14=14)**

1) 'सपनों की होम डिलिवरी' नए जमाने के करवट बदलते रिश्तों को केन्द्र में रखकर लिखा गया उपन्यास है। स्पष्ट कीजिए।

2) 'सपनों की होम डिलिवरी' उपन्यास का आशय स्पष्ट कीजिए।

IV. किन्हीं दो पात्रों का चरित्र चित्रण कीजिए। **(2×7=14)**

1) रुचि

2) सर्वेश

3) प्रभाकर

4) गगन

V. निम्नलिखित में से किन्हीं दो का भाव-पल्लवन कीजिए। **(2×9=18)**

1) जहाँ चाह वहाँ राह

2) मन के हारे हार है – मन के जीते जीत

3) चिंता चिता समान है

4) बुरी संगत से अकेला भला

VI. हिंन्दी में अनुवाद कीजिए। **(1×10=10)**

Travelling develops our knowledge. We can learn the good methods adopted by other people by seeing Them. All people can not go for travelling. But they can know about unknown places from the books written by travellers.

ಪ್ರವಾಸವು ನಮ್ಮ ಜ್ಞಾನವನ್ನು ಹೆಚ್ಚಿಸುತ್ತದೆ. ಬೇರೆ ಜನರು ಅನುಸರಿಸುವ ಒಳ್ಳೆಯ ವಿಧಾನಗಳನ್ನು ನೋಡಿ ಅವುಗಳನ್ನು ನಾವು ಕಲಿತುಕೊಳ್ಳಬಹುದು. ಎಲ್ಲಾ ಜನರಿಗೂ ಪ್ರವಾಸಕ್ಕೆ ಹೋಗುವುದು ಸಾಧ್ಯವಾಗಲಾರದು. ಆದರೆ ಅವರು ಅಪರಿಚಿತ ಸ್ಥಳಗಳ ಬಗೆಗೆ ಪ್ರವಾಸಿಗರು ಬರೆದ ಪುಸ್ತಕಗಳಿಂದ ತಿಳಿದುಕೊಳ್ಳಬಹುದು.

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

MATHEMATICS(OPTIONAL)

PAPER : II GROUP THEORY FOURIER SERIES AND DIFFERENTIAL EQUATIONS

(Repeaters)

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

Instructions to Candidates :

1) Question paper contains three parts namely A,B,C
2) Answer all parts.

PART - A

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

1. a) Define Normal subgroup.

b) Define Kernal of homomorphism.

c) If $f : g \to g^1$ be a homomorphies then prove that $f(e) = e^1$ where e is identity of g.

d) Find Fourier constant a_0 for $f(x) = x^2$ in $(0, \pi)$.

e) Define periodic function give an example.

f) Find finite cosine transform of $f(x) = 1 + x$ in $(0,3)$

g) Define half - range sine and cosine series.

h) Solve $(D^2 + 5D + 6)y = 0$.

i) Find the particular Integral of $(D^2 + 2D + 1)y = e^{3x}$.

j) Solve $(D^3 - 8)y = 0$.

k) Solve $(x^2D^2 + xD - 9)y = 0$.

l) Prove that $x\frac{d^2y}{dx^2} + 2x\frac{dy}{dx} + 2y = 0$ is exact.

[P.T.O.

PART - B

Answer any **Four** questions, each question carries **Five** marks. **(4×5=20)**

2. If H is a normal subgroup of g, then prove that $xH.yH = xyH \forall x, y \in H$

3. Obtain fourier series of $f(x) = \frac{\pi - x}{2}$ in $0 < x < 2\pi$.

4. Find the half range sine and cosine series for the function $f(x) = 2x - 1$ in $(0,1)$.

5. With usual notation prove that $\frac{1}{f(D)} e^{ax} = \frac{1}{f(a)} e^{ax}$ if $f(a) \neq 0$.

6. Solve $(D^2 - 4D + 4)y = x^2$

7. Solve $x^2 \frac{d^2y}{dx^2} - 4x\frac{dy}{dx} + 6y = \cos(2\log x)$.

PART - C

Answer any **Four** questions, each carries **Ten** marks. **(4×10=40)**

8. a) State and prove Fundamental theorem of Homomorphism.

   b) If $f : g \to g^1$ is homomorphism then prove that kerf is normal subgroup.

9. a) Obtain the fourier series for $f(x) = x^2$ in $(-\pi, \pi)$ and $f(x + 2\pi) = f(x)$ and hence prove that $\frac{\pi^2}{12} = 1 - \frac{1}{4} + \frac{1}{9} - \frac{1}{16} + - - - -$

   b) Find half range cosine series for the function $f(x) = (x-1)^2$ in $(0,1)$.

10. a) Find finite fourier sine transform of $f(x) = x^3$ in $(0, \pi)$.

    b) Find the finite cosine transform of $f(x) = e^{ax}$ in $(0, \pi)$.

11. a) With usual notation prove that $\frac{1}{f(D^2)} \cos ax = \frac{1}{f(-a^2)} \cos ax$ if $f(-a^2) \neq 0$.

    b) Solve $(D^2 - 3D + 2)y = e^x \cos 2x$

12. a) Find the condition for the equation $P_0\frac{d^3y}{dx^3}+P_1\frac{d^2y}{dx^2}+P_2\frac{dy}{dx}+P_3y=0$ to be exact.

b) Solve $\left(1+x^2\right)\frac{d^2y}{dx^2}+3x\frac{dy}{dx}+y=0$

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IV Semester B.Sc. (CBCS) Degree Examination, September/October - 2022

PHYSICS (OPTIONAL)

(Regular)

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

Instruction to Candidates.

1) **Calculators can be used to calculate Problems.**
2) **Write intermediate steps**
3) **Give physical meaning of symbols used.**

PART - I

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

i. Define Enthalpy

ii. What is microcanonical ensemble

iii. What are bosons and fermions?

iv. What is seebeck effect?

v. What is temperature of inversion?

vi. Define Thomson co-effecient

vii. What is meant by division of wavefront

viii. Interference fringes formed on a screen 1m from double shit of width 0.5 mm are measured to be 1.2 mm apart. Find the wavelength of the light used.

ix. State the conditions of interference of light

x. State malus law of polarization

xi. The sodium doublet has wavelength 5890AU and 5896 AU. Calculate the resolving power of grating which can resolve these two lines

xii. Define specific rotation.

[P.T.O.

PART - II

Answer Question number 2 or question number 3.

2. a) Derive maxwell's equations from thermodynamic potentials. **(10)**

   b) What are the limitations of Maxwell Boltzmann Statistics. **(5)**

3. a) Derive expression for Bose-Einstein distribution function. **(10)**

   b) Obtain Tds equations using maxwell's relations. **(5)**

PART - III

Answer Question number 4 or question number 5.

4. a) Derive the relation $\pi = T\frac{dE}{dT}$ *and* $(\sigma_A - \sigma_B) = -T\frac{d^2E}{dT^2}$ **(10)**

   b) The thermoelectric power of cadmium is $3\mu v/c^0$ *at* O^0C and 15 $\mu v/c^0$ *at* 300^0C calculate the values of the constants 'a' and 'b'. **(5)**

5. a) What are thermoelectric diagrams? Find the peltier coefficient and Thomson's coefficient using thermoelectric diagram. **(10)**

   b) The emf of lead - iron thermocouple whose one junction is at O^0C is given by E=1784 t - 2.4 t^2 in μv. when other junction temperature at 100^0C, Find the neutral temperature and peltier coefficient. **(5)**

PART - IV

Answer Question number 6 or question number 7.

6. a) Describe with necessary theory, the newton's ring experiment to determine the wavelength of monochromatic light **(10)**

   b) State and prove stokes law of reflection and transmission at interface. **(5)**

7. a) In case of thin film, derive the condition for maxima and minima due to interference of reflected light . **(10)**

   b) The diameter of the 10^{th} dark ring in newton's ring experiment of light of wavelength 5893 A^0U is 4mm. Calculate the thickness of air film at 10^{th} dark ring and radius of curvature of plano convex lens. **(5)**

PART - V

Answer Question number 8 or question number 9.

8. a) What is zone plate ? Describe the construction working and theory of zone plate. **(10)**

   b) A plane diffraction grating at a normal incidence gives a green line of wave lenth $\lambda_g = 5.4\times10^{-7} m$ in the n^{th} order superimposed with violet line of wavelength $\lambda_v = 4.5\times10^{-7}$ m of $(n+1)^{th}$ order find the grating constant if the angle of diffraction is 30^0. **(5)**

9. a) Give the analytical treatment of production of circular and elliptically polarised light **(10)**

   b) Qwertz has refractive indices 1.553 and 1.544. Calculate the thickness of quarter wave plate for sodium light of wavelength 5890×10^{-10}m **(5)**

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

PHYSICS (OPT)

(Non CBCS 2014-15)

(Old 2015-16 Onwards)

(Repeater)

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

Instructions to Candidates:

1. **Students can use calculators for solving problems**
2. **Write intermediate steps**

PART-A

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

1. a) What is division of wavefront?

   b) Define resolving power of prism.

   c) What is double refraction

   d) Define specific rotation of a solution

   e) State stokes theorem in electromagnetic theory

   f) Define Thomson's coefficient

   g) Define dispersive power of grating

   h) Write two comparisons between zone plate and convex lens

   i) Write expression for velocity of light in vacuum according to electromagnetic theory

   j) The sodium doublet has wavelength 5890 A^0 and 5896 A^0, calculate the resolving power of grating which can resolve these two lines.

   k) In Newton's ring experiment the radius of the second dark ring is 0.07 cm. Find the radius of the 8^{th} dark ring.

   l) For a given thermocouple the temperature of cold junction is 10^0C and the neutral temperature is 300^0c. Calculate the temperature of inversion.

P.T.O.

PART - B

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

2. Derive an expression for the diameter of the bright rings in Newton's ring experiment.

3. Explain the construction of michelson Interferometer.

4. Distinguish between fresnel and fraunhoffer diffraction patterns.

5. The rotation in the plane of polarisation in a certain solution is 20^0/mm. Calculate the difference between the refractive index for right and left circularly polarised light. Given λ=589 nm

6. A series LCR circuit consist of an inductor 100 mH, capacitor 0.22 μF and resistor 1kΩ calculate resonant frequency & quality factor

7. The thermoelectric power of cadmium is 3μv/^{0}C at O^{0}C and 15 μv/^{0}C at 300^{0}C calculate the values of 'a' and 'b' constants.

PART - C

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

8. In case of thin films. Derive the conditions for maxima and minima due to interference of reflected light.

9. Define resolving power of diffraction grating Derive an expression for it

10. What tare thermoelectric diagrams? Find peltier coefficient and thomson's coefficient using thermoelectric diagrams.

11. Derive an expression for admittance in case of LCR parallel circuit. Mention the condition for resonance.

12. Derive expression for velocity of propagation of plane electromagnetic wave in free space.

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IV Semester B.Sc.5 (CBCS) Degree Examination, September/October - 2022

MATHEMATICS

Vector Calculus, Infinite Series & Differential Equations

(Regular)

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

Instructions to Candidates :

1. Question paper contains 3 parts namely A,B,C.
2. Answer all parts.

PART - A

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

a) If $\vec{u}=t^2\hat{i}-t\hat{j}+(2t+1)\hat{k}$ & $\vec{v}=(2t-3)\hat{i}+\hat{j}-t\hat{k}$ find $\frac{d}{dt}(\vec{u}.\vec{v})$.

b) If $\vec{r}=(\cos nt)\hat{i}+(\sin nt)\hat{j}$, where 'n' is a constant & 't' varies show that $\vec{r}\times\frac{d\vec{r}}{dt}=n\hat{k}$.

c) Show that the vector $(x+3y)\hat{i}+(y-3x)\hat{j}+(x-2z)\hat{k}$ is solenoidal.

d) If a series $\sum u_n$ is convergent then $\lim_{n\to\infty} u_n=0$

e) Test the convergence of $\sum\frac{1}{n^{1+\frac{1}{n}}}$

f) Define uniform convergence.

g) State Cauchy's general principle of convergence of series.

h) Test the convergence of $\sum\frac{x^n}{n^n},(x>0)$.

i) Find the complementary function of $\frac{d^2y}{dx^2}+5\frac{dy}{dx}+6y=e^{2x}$.

j) Solve ; $(D^2+36)y=\sin 2x$

P.T.O.

k) Solve; $x^2\frac{d^2y}{dx^2}+x\frac{dy}{dx}-9y=0$

l) Prove that $(1+x^2)\frac{d^2y}{dx^2}+3x\frac{dy}{dx}+y=0$ is exact

PART - B

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

2. If $\vec{a}=(2x^2y-x^4)\hat{i}+(e^{xy}-y\sin x)\hat{j}+x^2\cos y\hat{k}$ verify that $\frac{\partial^2\vec{a}}{\partial y\partial x}=\frac{\partial^2\vec{a}}{\partial x\partial y}$.

3. If $\sum u_n$ & $\sum v_n$ are series of positive terms & $\sum v_n$ is Convergent and there is a positive constant 'K' such that $u_n\le kv_n\forall n>n$ then $\sum u_n$ is also convergent.

4. Discuss the convergence of $\sum\left(\frac{n+1}{n+2}\right)^n x^n$

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

6. With usual notation prove that $\frac{1}{f(D)}xV=x\frac{1}{f(D)}V-\frac{f'(D)}{[f(D)]^2}V$, where 'V' is a function of x.

7. Solve; $x^2\frac{d^2y}{dx^2}-3x\frac{dy}{dx}+5y=\sin(\log x)$.

PART - C

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

8. a) Show that the necessary & Sufficient condition for the vector $\vec{a}(t)$ to have a fixed direction is $\vec{a}\times\frac{d\vec{a}}{dt}=\vec{O}$

b) Prove that *div curl* $\vec{F}=0$.

9. a) State & Prove Raabe's Test.

b) Discuss the convergence of $\frac{1^2.2^2}{1!}+\frac{2^2.3^2}{2!}+\frac{3^2.4^2}{3!}+\frac{4^2.5^2}{4!}+-----$

10. a) State & Prove Leibnitz theorem for convergence of alternating series.

b) Define absolute convergence. Test the absolute convergence of $\sum_{n=1}^{\infty}(-1)^n\frac{n^{100}}{2n!}$

11. a) With usual notations, prove that $\frac{1}{f(D^2)}\sin ax=\frac{1}{f(-a^2)}\sin ax,\ f(-a^2)\neq 0$.

b) Solve ; $\frac{d^2y}{dx^2}-2\frac{dy}{dx}+4y=e^{2x}.\cos x$

12. a) Find the condition that the equation

$P_0\frac{d^3y}{dx^3}+P_1\frac{d^2y}{dx^2}+P_2\frac{dy}{dx}+P_3y=0$ to be exact.

b) Solve; $x^2\frac{d^2y}{dx^2}-x\frac{dy}{dx}-3y=x^2\log x$

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IV Semester B.Sc.5 (CBCS) Degree Examination, September/October - 2022

MATHEMATICS

Vector Calculus, Infinite Series & Differential Equations

(Regular)

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

Instructions to Candidates :

1. Question paper contains 3 parts namely A,B,C.
2. Answer all parts.

PART - A

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

a) If $\vec{u}=t^2\hat{i}-t\hat{j}+(2t+1)\hat{k}$ & $\vec{v}=(2t-3)\hat{i}+\hat{j}-t\hat{k}$ find $\frac{d}{dt}(\vec{u}.\vec{v})$.

b) If $\vec{r}=(\cos nt)\hat{i}+(\sin nt)\hat{j}$, where 'n' is a constant & 't' varies show that $\vec{r}\times\frac{d\vec{r}}{dt}=n\hat{k}$.

c) Show that the vector $(x+3y)\hat{i}+(y-3x)\hat{j}+(x-2z)\hat{k}$ is solenoidal.

d) If a series $\sum u_n$ is convergent then $\lim_{n\to\infty} u_n=0$

e) Test the convergence of $\sum\frac{1}{n^{1+\frac{1}{n}}}$

f) Define uniform convergence.

g) State Cauchy's general principle of convergence of series.

h) Test the convergence of $\sum\frac{x^n}{n^n},(x>0)$.

i) Find the complementary function of $\frac{d^2y}{dx^2}+5\frac{dy}{dx}+6y=e^{2x}$.

j) Solve ; $(D^2+36)y=\sin 2x$

P.T.O.

k) Solve; $x^2\frac{d^2y}{dx^2}+x\frac{dy}{dx}-9y=0$

l) Prove that $\left(1+x^2\right)\frac{d^2y}{dx^2}+3x\frac{dy}{dx}+y=0$ is exact

PART - B

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

2. If $\vec{a}=\left(2x^2y-x^4\right)\hat{i}+\left(e^{xy}-y\sin x\right)\hat{j}+x^2\cos y\hat{k}$ verify that $\frac{\partial^2\vec{a}}{\partial y\partial x}=\frac{\partial^2\vec{a}}{\partial x\partial y}$.

3. If $\sum u_n$ & $\sum v_n$ are series of positive terms & $\sum v_n$ is Convergent and there is a positive constant 'K' such that $u_n\le kv_n\forall n>n$ then $\sum u_n$ is also convergent.

4. Discuss the convergence of $\sum\left(\frac{n+1}{n+2}\right)^n x^n$

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

6. With usual notation prove that $\frac{1}{f(D)}xV=x\frac{1}{f(D)}V-\frac{f'(D)}{\left[f(D)\right]^2}V$, where 'V' is a function of x.

7. Solve ; $x^2\frac{d^2y}{dx^2}-3x\frac{dy}{dx}+5y=\sin\left(\log x\right)$.

PART - C

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

8. a) Show that the necessary & Sufficient condition for the vector $\vec{a}(t)$ to have a fixed direction is $\vec{a}\times\frac{d\vec{a}}{dt}=\vec{O}$

b) Prove that $div\ curl\ \vec{F}=0$.

9. a) State & Prove Raabe's Test.

b) Discuss the convergence of $\frac{1^2.2^2}{1!}+\frac{2^2.3^2}{2!}+\frac{3^2.4^2}{3!}+\frac{4^2.5^2}{4!}+-----$

10. a) State & Prove Leibnitz theorem for convergence of alternating series.

b) Define absolute convergence. Test the absolute convergence of $\sum_{n=1}^{\infty}(-1)^n\frac{n^{100}}{2n!}$

11. a) With usual notations, prove that $\frac{1}{f(D^2)}\sin ax=\frac{1}{f(-a^2)}\sin ax,\ f(-a^2)\neq 0$.

b) Solve ; $\frac{d^2y}{dx^2}-2\frac{dy}{dx}+4y=e^{2x}.\cos x$

12. a) Find the condition that the equation

$P_0\frac{d^3y}{dx^3}+P_1\frac{d^2y}{dx^2}+P_2\frac{dy}{dx}+P_3y=0$ to be exact.

b) Solve; $x^2\frac{d^2y}{dx^2}-x\frac{dy}{dx}-3y=x^2\log x$

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

MATHEMATICS(OPTIONAL)

PAPER - I : VECTOR CALCULUS AND INFINITE SERIES

(Repeaters)

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

Instructions to Candidates :

1) Question paper contains three parts namely A,B,C
2) Answer all Parts.

PART - A

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

1. a) If, $\vec{A}=t^2\hat{i}-t\,\hat{j}+(2t+1)\hat{k}$ find $\left|\frac{d\vec{A}}{dt}\right|$.

b) If $\vec{r}=(\sinh t)\vec{a}+(\cosh t)\vec{b}$, where $\vec{a}$ & $\vec{b}$ are constant vectors, evaluate $\frac{d^2\vec{r}}{dt^2}$.

c) Find grad ϕ, where $\phi=3x^2y-y^3z^2$ at $(1,-2,-1)$.

d) If $\vec{f}=(xyz)\hat{i}+(3x^2y)\hat{j}+(xz^2-y^2z)\hat{k}$ then find $div\vec{f}$ at $(1,-1,1)$

e) Find the constant 'a' so that the vector function $\overline{A}=(x+3y)\hat{i}+(y-2z)\hat{j}+(x-az)\hat{k}$ is solenoidal

f) Define convergent series & Give an example.

g) Test the convergence of $\frac{1}{1.2}+\frac{1}{2.3}+\frac{1}{3.4}+---+\frac{1}{n(n+1)}$

h) Define conditional convergence of series & give an example.

i) State Cauchy's Root Test.

j) Test the convergence of $\frac{2!}{3}+\frac{3!}{3^2}+\frac{4!}{3^3}+----$

[P.T.O.

k) Let $\sum u_n$ & $\sum V_n$ be two series of positive terms such that $\sum V_n$ is convergent & $u_n \le K.v_n \forall n$ then prove that $\sum u_n$ is also convergent.

l) Test the convergence of $\sum \frac{1}{\sqrt{n}} \tan \frac{1}{n}$.

PART - B

Answer any **Four** questions, each question carries **Five** marks. **(4×5=20)**

2. If $\vec{r} = a\cos t\,\hat{i} + a\sin t.\hat{j} + at.\tan\alpha\,\hat{k}$ find $\left|\frac{d\vec{r}}{dt} \times \frac{d^2\vec{r}}{dt^2}\right|$

3. If f & g are two scalar point functions then $\nabla(fg) = f\nabla g + g\nabla f$

4. Let $\sum u_n$ & $\sum v_n$ be two series of positive terms and $\lim_{n\to\infty} \frac{u_n}{v_n}$ be a finite non zero quantity. Then $\sum u_n$ & $\sum v_n$ both converge or diverge together.

5. Test the convergence of $1 + \frac{2!}{2^2} + \frac{3!}{3^2} + \frac{4!}{4^2} + ---$

6. State & Prove Leibnitz theorem for convergence of alternating series.

7. Discuss the convergence of $\sum \left(\frac{nx}{n+1}\right)^n$.

PART - C

Answer any **Four** questions, each carries **Ten** marks. **(4×10=40)**

8. a) If $\vec{A}(t), \vec{B}(t)$ & $\vec{C}(t)$ are differentiable vector functions of a scalar variable 't' then

$$\frac{d}{dt}\left(\vec{A}\times\left(\vec{B}\times\vec{C}\right)\right) = \frac{d\vec{A}}{dt}\times\left(\vec{B}\times\vec{C}\right) + \vec{A}\times\left[\frac{d\vec{B}}{dt}\times\vec{C}\right] + \vec{A}\times\left[\vec{B}\times\frac{d\vec{C}}{dt}\right]$$

b) If $\vec{a} = \left(2x^2y - x^4\right)\hat{i} + \left(e^{xy} - y\sin x\right)\hat{j} + x^2\cos y\hat{k}$ verify that $\frac{\partial^2\vec{a}}{\partial y\partial x} = \frac{\partial^2\vec{a}}{\partial x\partial y}$.

9. a) Define curl of a vector. Prove that curl $\left(\vec{A}+\vec{B}\right) = curl\,\vec{A} + curl\,\vec{B}$

b) If $\vec{f} = xy^2\hat{i} + 2x^2yz\,\hat{j} - 3yz^2\,\hat{k}$ find *div* $\vec{f}$ *and curl* $\vec{f}$

10. a) Prove that the series $\sum_{n=1}^{\infty}\frac{1}{n^p}$ is convergent if $p>1$ and is also divergent if $p\leq 1$.

b) Discuss the convergence of the series $\sum_{n=1}^{\infty}\left[\sqrt{n^2+1}-\sqrt{n^2-1}\right]$.

11. a) State & Prove Raabe's Test

b) Discuss the convergence of $2-\frac{3}{2}+\frac{4}{3}-\frac{5}{4}+----$

12. a) State & Prove cauchys integral test .

b) Test the convergence of

$$\left(\frac{2^2}{1^2}-\frac{2}{1}\right)^{-1}+\left(\frac{3^3}{2^3}-\frac{3}{2}\right)^{-2}+\left(\frac{4^4}{3^4}-\frac{4}{3}\right)^{-3}+----$$

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IV Semester B.Sc.5 Degree Examination, September/October - 2022
MATHEMATICS (SEC)
FOURIER TRANSFORMS
(Regular)

Time : 2 Hours **Maximum Marks : 40**

Instructions to Candidates :

1) Question paper containing two parts A and B.
2) Answer all parts.

PART - A

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

a) Define periodic function and give an example.

b) Find Fourier constant a_0 for $f(x)=x^2$ $in(-\pi,\pi)$.

c) Define half-range sine and cosine series.

d) Write Fourier series of an even function $f(x)$ in $(-l,l)$.

e) Define finite cosine transform.

f) Find the finite Fourier sine transform of the function $f(x)=1$ $in(0,\pi)$.

g) Find finite Fourier cosine transform of $f(x)=1+x$ in $(0,3)$.

PART - B

Answer any Six of the following: **(6×5=30)**

2. Obtain Fourier series for the function $f(x)=e^x$ $in(-\pi,\pi)$.

3. Obtain Fourier series for the function $f(x)=\begin{cases}\pi+x, & if \quad -\pi<x<0\\ \pi-x & if \quad 0<x<\pi\end{cases}$

P.T.O.

4. Find the half range sine and cosine series for the function $f(x)=\pi-x$ in $(0,\pi)$.

5. Find half range cosine series for the function $f(x)=(x-1)^2$ in $(0,1)$. Hence deduce that

$$\frac{\pi^2}{8}=1+\frac{1}{3^2}+\frac{1}{5^2}+.....$$

6. Find Fourier finite cosine transform of $f(x)=2-x$ in $(0,2)$.

7. Find the finite Fourier sine transform of $f(x)=x^3$ in $(0,\pi)$

8. Find the finite Fourier sine and cosine transformations of $f(x)=x$ in $(0,l)$

9. Find the finite Fourier sine transform of sinax in $(0,\pi)$.

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IV Semester B.Sc. (NEP) Degree Examination, October - 2023

BOTANY (DSC)

Ecology and conservation Biology

(Regular)

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

Instructions to Candidates: **Draw a neat and labelled diagrams wherever necessary.**

I. Answer any SIX of the following. **(6×2=12)**

1) Soil humus
2) Pneumatophores.
3) Food chain
4) Natality
5) Shola forest.
6) Acid Rain
7) Sacred grooves
8) Seed bank

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

9) Explain ecological levels of organization.
10) Describe the soil profile.
11) Explain any three factors affecting temperature.
12) Describe the morphological adaptations in hydrophytes.

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

13) Explain the Pond ecosystem.
14) What is Biogeochemical cycle? Explain carbon cycle
15) Write a note on Hydrosere.
16) Describe the methods of sampling plant communities.

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

17) Explain Vavilov's concept.

18) Write a note on vegetation of Western ghats.

19) What is pollution? Explain the causes of water pollution

20) Explain about the solid waste management.

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

21) What is biodiversity ? Explain any two types.

22) Describe species diversity

23) Write a note on Indian forest conservation Act.

24) What is National park? Mention any four national parks in India.

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IV Semester B.Sc. Degree Examination, October - 2023

BOTANY

Plant Physiology and Biochemistry

(Repeater)

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

Instructions to Candidates :

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

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

1) Endosmosis
2) pH
3) Colloids
4) Symplast
5) SAP
6) Diffusion
7) Cooling effect
8) Solutions
9) Grana
10) Imbibition
11) Plasmolysis
12) Buffer

II. a) Explain the relationship between OP, T.P and W.P. **(5)**

b) Define photoperiodism? Explain the role of photoperiod on flowering plants. **(10)**

(OR)

III. a) Write a note on Guttation. **(5)**

b) Explain Transpiration Pull Theory **(10)**

IV. a) With the help of neat labelled diagram explain the structure of stomata. **(5)**

b) Describe C_3 Pathway. **(10)**

[P.T.O.

(OR)

V. a) Describe starch sugar theory of stomatal movements. (5)

b) Explain Munch Hypothesis and add a note on phloem loading and unloading. (10)

VI. a) What are Mineral Nutrients? Describe the role of Nitrogen and Magnesium in plants life. (5)

b) What are phytohormones? Explain physiological applications of auxins. (10)

(OR)

VII. a) Describe Root Pressure theory of Ascent of sap. (5)

b) Explain cyclic and Non-cyclic photophosphorylation. (10)

VIII. a) Write a note on photosynthetic pigments. (5)

b) Describe Krebs cycle. (10)

(OR)

IX. a) Give the classification of Enzymes. (5)

b) Explain Biological method of fixation of Nitrogen. (10)

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VI Semester B.Sc. Degree Examination, September/October - 2023

CHEMISTRY

Paper - II

(Repaters) (Non - CBCS)

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

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

SECTION - A

1. Answer any **Ten** questions. **(10×2=20)**

a. What is R_f value? Mention two factors affecting it.

b. What are micro nutrients? Name micro nutrients of soil.

c. What is thermogravimetry?

d. Mention the types of electronic transitions.

e. What is Barfoed reagent? Write its use.

f. Write two differences between soaps and detergent.

g. What is favorskii rearrangement? Give equation.

h. Write the standard reference of NMR spectra and why it is choosen as standard reference.

i. What is reversible cell? Give an example.

j. What is liquid junction potential?

k. State einstein's law of photochemical equivalence.

l. Define quantum efficiency.

SECTION - B

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

2. Give a brief account of column chromatography.

3. Explain the flame photometric determination of sodium.

4. What are drugs? Write about following with example
   i. Antipyretics.
   ii. Antibiotics.
5. Describe the manufacture of soap by modern process.
6. Derive an expression for EMF of concentration cell without transference.
7. Explain :
   i. Photosensitization.
   ii. Chemiluminescence.

SECTION - C

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

8. a. How Nitrogen present in soil is determined by alkaline permanganate method.
   b. Explain the electronic spectra of $[Ti(H_2O)_6]^{3+}$ complex ion.
9. a. Explain the mechanism of Benzidine rearrangement.
   b. Explain the nuclear shielding and deshielding with example.
10. a. Explain the determination of pH of solution using quinhydrone electrode.
    b. State Beer - Lambert's law and derive its mathematical expression.
11. a. Explain the electrogravimetric determination of copper.
    b. Interpret the PMR spectra of following
       i. Ethanol.
       ii. Acetaldehyde.
12. a. Give the synthesis and use of Novocaine.
    b. Write a note on Potentiometric redox titrations.

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VI Semester B.Sc. Degree Examination, September/October - 2023

CHEMISTRY - I

Paper : I (Optional)

(Non - CBCS Repeaters)

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

Instructions to Candidates :

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

SECTION - A

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

1. a) Mention the factors that affect 10 Dq.

b) Write any two characteristics of chelates.

c) What are strong field and weak field ligands?

d) Write the structural formula of zeise's salt.

e) Write the conformational formula of $\alpha - D(t)$ Glucose.

f) Write the configurational formula of L-alanine.

g) What are terpenes? Give examples.

h) What are epimers and epimerisation.

i) Write any two importance of vitamin B6.

j) What is thermoplastic polymer? Give an example.

k) What is meant by photoelectric effect?

l) Give Einstein photoelectric equation and explain the terms in it.

SECTION - B

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

2. Account for the crystal field splitting of d - orbitals in tetrahedral complexes.

3. Discuss 18-electron rule with respect to ferrocene and $[Mn(CO)_5]^+$.

4. Give the conversion of glucose into fructose.

P.T.O.

5. Explain the synthesis of vitamin - A by Van-dropetal method.
6. Give the classification of polymers.
7. Explain the measurement of dipole moment by temperature variation method.

SECTION - C

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

8. a) Explain the crystal field splitting of d-orbitals in square planar complexes according to crystal field theory.
   b) What are chelates? Explain the factors affecting chelate stability.

9. a) Write a note on color and magnetic properties of co-ordination complexes.
   b) Give the synthesis of citral.

10. a) Explain Bergmann synthesis of dipeptide.
    b) Give Kiliani - Fischer synthesis.

11. a) How do you determine the molar mass of macromolecules by Donnan - Membrane method?
    b) Explain with a suitable potential energy curve the Franck - Condon principle.

12. a) Deduce Einstein's photoelectric equation.
    b) Explain how the dipole moment helps in predicting shapes of molecules.

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IV Semester B.Sc. (NEP) Degree Examination, October - 2023

CHEMISTRY

DSC - (Regular)

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) Write Van Deemter's equation and mention the term.

b) What is solvent extraction? Give an example.

c) What is hybridisation?

d) What is difference between intrinsic and extrinsic semi conductors?

e) Write the stability order among alkyl carbocation and mention the reason.

f) Write the mechanism of sandmeyers reaction

g) Define equivalent conductance and give its uni

h) Write Debye-Huckel onsagar equation and mention the terms.

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

a) Give brief account of Thin layer chromatograph.

b) Explain in brief the solvent extraction of copper

c) Write the mechanism of cation exchange process.

d) What is solvent extraction? Explain the batch extraction method.

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

a) Explain SP^3 hybridisation with an example.

b) Draw and explain molecular orbital energy level diagram of N_2 molecule.

[P.T.O.

c) What are the properties of conductors, Insulation and semi conductors?

d) Explain Band theory of solids.

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

a) Discuss the mechanism of pinacol-pinacolone Rearrangement.

b) Explain the stability of Benzyl cation, write the mechanism of dienone phenol Rearrangement.

c) What are Nitrenes? Give any two reactions involving the formation of nitrenes.

d) How does isotopic labelling studies help to identify reaction mechanism? Explain with example.

5. Answer any THREE questions. **(3 ×4=12)**

a) Calculate the activation energy of a reaction whose reaction rate at 27°c gets doubled for 10°c rise in temperature.

b) Describe the conductometric titration curve for the titration of weak acid with strong base.

c) State kohlrausch's law. Explain how it is useful in determining the equivalent conductance at infinite dilution of weak electrolyte.

d) Explain the determination of transport number by moving boundary method .

44164/D0240

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

IV Semester B.Sc. (CBCS) Degree Examination, September/October - 2023
CHEMISTRY(OPTIONAL)
(Repeater)

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

Instructions to Candidates :

1) All questions are compulsory.
2) Draw neat diagrams and give equations wherever necessary.

I. Answer any Ten questions. **(10×2=20)**

1) What are transition elements give their general electronic configuration?
2) Write the electronic configuration of chromium and copper.
3) What are ambidentate ligands? Give two examples.
4) What are Actinides? Give their two characteristic properties.
5) Mention the source and one adverse effect of water pollution.
6) Define COD.
7) Define the Most probable velocity.
8) Write the vander waal's equation for 'n' moles of a gas.
9) Define specific conductance and give its unit
10) Define space lattice.
11) What is Half life period of a reaction
12) Write two characteristics of second order reaction.

II. Answer any Three questions. **(3×5=15)**

a) Explain catalytic properties of d-block elements with examples.

b) Discuss the hybridisation, geometry and magnetic and magnetic property of complex $K_4[Fe(CN)_6]$ on the basis of valence bond theory.

c) What are chelates? Mention the factors effecting the stability and their significance.

[P.T.O.

d) Write the IUPAC name of following complexes.

i) $K_3[Fe(CN)_6]$

ii) $[Co(NH_3)_3Cl_3]$

iii) $K_3[Cr(C_2O_4)_3]$

iv) $[C_4(NH_3)_4]SO_4$

III. Answer any Three questions. **(3×5=15)**

a) What is lanthanide contraction? Explain the cause and consequences of lanthanide contraction.

b) What are air pollutants? Write the sources and control measures of air pollutants.

c) How BOD is determined experimentally.

d) Explain the treatment of sewage water.

IV. Answer any Three questions. **(3×5=15)**

a) Derive the relation between critical constants and Vander Waal's constants.

b) Explain

i) Collision diameter

ii) Mean free path

iii) Collision number

c) Explain the determination of transport number of ions by Hittorffs method.

d) Explain the conductometric titration curve of strong acid with strong base.

V. Answer any three questions. **(3×5=15)**

a) Explain the laws of crystallography.

b) Derive Bragg's equation.

c) Derive an expression for the rate constant of second order reaction when the concentrations of reactants are equal (a=b)

d) Explain the differential equation method of determination of order of reaction.

10917/D970

No. of Printed Pages : 16

Booklet Serial No. 228499

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

IV Semester All UG Courses Degree Examination, October - 2023
COMPUTER APPLICATION (COMPULSORY)
(Repeaters 2018-19 Onwards)

Time : 1:30 Hours **Maximum Marks : 80**

Instructions to Candidates:

1. The question paper will be given in the form of a **Question Booklet.**
2. Immediately after the commencement of the examination, the candidate should check that the Question Booklet supplied to him contains all the **80 questions** in serial order. The question Booklet does not have unprinted or torn or missing pages and if so he/she should bring it to the notice of the Invigilator and get it replaced by a complete Booklet. This is most important.
3. The **last page** of the Question Booklet may be used for **rough work.**
4. Each question is provided with four choices **A, B, C and D** having one correct answer. Choose the correct answer and **darken the bubble** corresponding to the question number using **HB pencil** or **Ball pen** in the **OMR Answer sheet.**
5. Each correct answer carries **1 mark** and **no negative marks** for unattempted questions or wrong answer.
6. No candidate will be allowed to leave the examination Hall till the end of the session and without handing over his/her OMR Answer sheet to the invigilator. Candidate should ensure that the Invigilator has verified all the entries in the Register Number coding sheet and that the Invigilator has affixed his/her signature in the space provided.
7. Strict compliance of instructions is essential. Any malpractice or attempt to commit any kind of malpractice in the examination will result in the summary disqualification of the candidate.
8. **Damaging / Overwriting using whitener** on the OMR sheets strictly **Prohibited.**
9. Some technical words may be difficult to translate and the meaning will changed in Kannada language.
10. **All 80 questions are compulsory.** There is no internal choice.

[P.T.O.

1. MARK-1 was developed by _____
   A) Charles Babbage B) Joseph Jacquard
   C) Howard Aiken D) Blaise Pascal
   MARK-1 ನಿರ್ಮಿಸಿದವರು ----------
   A) ಚಾರ್ಲ್ಸ್ ಬಾಬ್ಬೇಜ್ B) ಜೋಸೆಫ್ ಜಾಕರ್ಡ್ಸ್
   C) ಹಾವರ್ಡ್ ಅಕಿನ್ D) ಬ್ಲೇಸಿ ಪಾಸ್ಕಲ್
2. The term Computer is derived from _____ word
   A) French B) Greek
   C) Latin D) English
   ಕಂಪ್ಯೂಟರ್ ಶಬ್ದವನ್ನು ಯಾವ ಭಾಷೆಯಿಂದ ಬಳಸಲಾಗಿದೆ ----
   A) ಫ್ರೆಂಚ್ B) ಗ್ರೀಕ್
   C) ಲ್ಯಾಟಿನ್ D) ಇಂಗ್ಲೀಷ್
3. Characteristic of a computer is
   A) Accuracy B) Speed
   C) Diligence D) All above
   ಕಂಪ್ಯೂಟರ್‌ನ ಗುಣಲಕ್ಷಣಗಳು ------
   A) ಖಚಿತತೆ B) ವೇಗ
   C) ಶ್ರಮಶೀಲತೆ D) ಮೇಲಿನ ಎಲ್ಲವೂ
4. UNIVAC is_____
   A) A Scientific Computer B) A Business Computer
   C) A Commercial Calculator D) None of the above
   UNIVAC ವು ------
   A) ವೈಜ್ಞಾನಿಕ ಕಂಪ್ಯೂಟರ್ B) ವ್ಯಾಪಾರಿ ಕಂಪ್ಯೂಟರ್
   C) ವ್ಯಾವಹಾರಿಕ ಕಂಪ್ಯೂಟರ್ D) ಮೇಲಿನ ಯಾವುದು ಅಲ್ಲ
5. Which generation of computers used transistors?
   A) first generation B) second generation
   C) third generation D) fourth generation
   ಯಾವ ಹಂತದ ಕಂಪ್ಯೂಟರ್‌ಗಳಲ್ಲಿ ಟ್ರಾನ್ಸಿಸ್ಟರ್‌ಗಳನ್ನು ಬಳಸಲಾಯಿತು.
   A) ಮೊದಲನೇ ಹಂತ B) ಎರಡನೇ ಹಂತ
   C) ಮೂರನೇ ಹಂತ D) ನಾಲ್ಕನೇ ಹಂತ
6. Expand VLSI
   A) Very Large Scale Integrated Circuits. B) Very Long Scale Integrated Circuits
   C) Very Long Short Integrated Circuits D) Very Large Scale Information Circuits
   VLSI ವಿಸ್ತರಿಸಿ.
   A) Very Large Scale Integrated Circuits. B) Very Long Scale Integrated Circuits
   C) Very Long Short Integrated Circuits D) Very Large Scale Information Circuits

7. Computer accepts _____ types of data.
   A) Text B) Graphics
   C) Video D) All
   ಕಂಪ್ಯೂಟರ್ -------- ತರಹದ ದತ್ತಾಂಶಗಳನ್ನು ಸ್ವೀಕರಿಸುತ್ತದೆ.
   A) ಪಠ್ಯ B) ಚಿತ್ರಗಳು
   C) ವಿಡಿಯೋ D) ಎಲ್ಲವೂ
8. Central Processing Unit consists .....
   A) Arithmetic and Logic Unit B) Control Unit
   C) Memory Unit D) All of these
   ಕೇಂದ್ರ ಪರಿಷ್ಕರಣಾ ಘಟಕ ಇವುಗಳನ್ನು ಒಳಗೊಂಡಿರುತ್ತದೆ.
   A) ಗಣಿತ ಮತ್ತು ತಾತ್ವಿಕ ಘಟಕ B) ನಿಯಂತ್ರಣಾ ಘಟಕ
   C) ಸ್ಮರಣ ಘಟಕ D) ಮೇಲಿನ ಎಲ್ಲವೂ
9. The screen on which by touching we can input data and instruction is called
   A) Mouse B) Keyboard
   C) Touch Screen D) Touchpad
   ಪರದೆಯನ್ನು ಮುಟ್ಟುವುದರ ಮೂಲಕ ದತ್ತಾಂಶಗಳನ್ನು ಹಾಗೂ ಆಜ್ಞೆಯನ್ನು ಪಡೆಯುವುದು -----
   A) ಮೌಸ್ B) ಕೀಲಿಮಣೆ
   C) ಟಚ್ ಸ್ಕ್ರೀನ್ D) ಟಚ್‌ಪ್ಯಾಡ್
10. F4 key is an example for.
   A) Numeric keys B) Function keys
   C) Toggle keys D) Special keys
   F4 ಕೀ ಯು ಇದಕ್ಕೆ ಉದಾಹರಣೆ --------
   A) ಸಂಖ್ಯಾ ಕೀ B) ಕಾರ್ಯ ಸಹಾಯಕ ಕೀ
   C) ಟಾಗಲ್ ಕೀ D) ವಿಶೇಷ ಕೀ
11. Plotter is used in .....
   A) Report Printing B) Label Printing
   C) Graphic Printing D) Line Printing
   ಪ್ಲಾಟರ್‌ನ್ನು ಇದಕ್ಕೆ ಬಳಸಲಾಗುತ್ತದೆ --------
   A) ವರದಿ ಪ್ರಿಂಟಿಂಗ್ B) ಲೇಬಲ್ ಪ್ರಿಂಟಿಂಗ್
   C) ಗ್ರಾಫಿಕ್ಸ್ ಪ್ರಿಂಟಿಂಗ್ D) ಲೈನ್ ಪ್ರಿಂಟಿಂಗ್
12. To record audio _____ was used.
   A) Speaker B) MICR
   C) Memory D) Microphone
   ಧ್ವನಿ ಸಂಗ್ರಹಕ್ಕೆ ಇದನ್ನು ಬಳಸಲಾಗುತ್ತದೆ ---------
   A) ಸ್ಪೀಕರ್ B) ಎಮ್‌ಐಸಿಆರ್
   C) ಸ್ಮೃತಿ D) ಮೈಕ್ರೋಫೋನ್

13. Pick the odd one
A) Scanner B) Joystick
C) Projector D) Trackball
ಗುಂಪಿಗೆ ಸೇರದ್ದನ್ನು ಗುರುತಿಸಿ.
A) ಸ್ಕ್ಯಾನರ್ B) ಜಾಯ್‌ಸ್ಟಿಕ್
C) ಪ್ರೊಜೇಕ್ಟರ್ D) ಟ್ರಾಕ್‌ಬಾಲ್

14. 6144 MB = ...
A) 6 TB B) 6 GB
C) 6 KB D) 6 bytes
6144 ಎಮ್ ಬಿ = -------
A) 6 TB B) 6 GB
C) 6 KB D) 6 bytes

15. CD drive is used for read
A) Compact disk B) Pen Drive
C) Magnetic Tape D) Floppy
ಸಿ.ಡಿ. ಡ್ರೈವ್ ಅನ್ನು ಏನನ್ನು ಓದಲು ಬಳಸಲಾಗುತ್ತದೆ ------
A) ಕಾಂಮ್‌ಪ್ಯಾಕ್ಟ್ ಡಿಸ್ಕ್ B) ಪೆನ್ ಡ್ರೈವ್
C) ಮ್ಯಾಗನೇಟಿಕ್ ಟೇಪ್ D) ಫ್ಲಾಪಿ

16. The speed of the processing is measured in
A) Hours B) Minutes
C) MIPS D) None
ಪ್ರೊಸೆಸರ್‌ನ ಕಾರ್ಯದ ವೇಗವನ್ನು ಇದರಲ್ಲಿ ಹೇಳುತ್ತಾರೆ --------
A) ಗಂಟೆಗಳಲ್ಲಿ B) ನಿಮಿಷಗಳಲ್ಲಿ
C) ಎಮ್‌ಐಪಿಎಸ್ D) ಯಾವುದು ಅಲ್ಲ

17. RAM Stands for _____
A) Read Access Memory B) Real Add Memory
C) Random Auto Memory D) Random Access Memory
RAM ವಿಸ್ತರಣಾ ರೂಪ ------
A) Read Access Memory B) Real Add Memory
C) Random Auto Memory D) Random Access Memory

18. BIPS Stands for
A) Billions Information Per Second B) Billions Inputs Per Second
C) Billions Instruction Per Second D) Billions Instruction Per Storage
BIPS ಎಂದರೆ ---------
A) Billions Information Per Second B) Billions Inputs Per Second
C) Billions Instruction Per Second D) Billions Instruction Per Storage

19. To Delete the cursor front side character or space use _____ key
A) Delete B) Backspace
C) Space Bar D) A and C
ಗುರುತುಪಟ್ಟಿ (ಕರ್ಸರ್) ಮುಂದಿನ ಅಕ್ಷರ ಅಥವಾ ಜಾಗವನ್ನು ಅಳಿಸಲು ಬಳಸುವ ಕೀ ------
A) ಡಿಲೀಟ್ B) ಬ್ಯಾಕ್‌ಸ್ಪೇಸ್
C) ಸ್ಪೇಸ್‌ಬಾರ್ D) A ಮತ್ತು C

20. Number of Ctrl Key on Keyboard ?
A) Four B) Two
C) One D) None
ಕೀಲಿಮಣೆಯಲ್ಲಿ ಎಷ್ಟು Ctrl ಕೀಲಿಗಳಿರುತ್ತವೆ ?
A) ನಾಲ್ಕು B) ಎರಡು
C) ಒಂದು D) ಯಾವುದು ಅಲ್ಲ

21. The Number of Digits in Octal Number system is
A) 0 to 1 B) 0 to 9
C) 0 to 8 D) 0 to F
ಆಕ್ಟಲ್ ಸಂಖ್ಯಾ ಪದ್ಧತಿಯಲ್ಲಿ ಇರುವ ಸಂಖ್ಯೆಗಳು
A) 0 to 1 B) 0 to 9
C) 0 to 8 D) 0 to F

22. Convert $158_{(10)}$ to Binary Number
A) 11111010 B) 10011111
C) 10011110 D) 11001100
$158_{(10)}$ ದಶಮಾನ ಸಂಖ್ಯೆಯನ್ನು ದ್ವಿಮಾನ ಸಂಖ್ಯೆಗೆ ಪರಿವರ್ತಿಸಿ.
A) 11111010 B) 10011111
C) 10011110 D) 11001100

23. The Hexadecimal Number System has base of _____
A) 2 B) 16
C) 8 D) 10
ಹೆಕ್ಸಾಡೆಸಿಮಲ್ ಸಂಖ್ಯೆಯಲ್ಲಿ ಬೇಸ್ ---------- ಆಗಿದೆ.
A) 2 B) 16
C) 8 D) 10

24. 68BAF This number is written in which Number system
A) Binary B) Octal
C) Decimal D) Hexadecimal
68BAF ಸಂಖ್ಯೆಯು ಯಾವ ಸಂಖ್ಯಾ ಪದ್ಧತಿಯಲ್ಲಿ ಬರೆಯಲಾಗಿದೆ.
A) ದ್ವಿಮಾನ B) ಆಕ್ಟಲ್
C) ದಶಮಾನ D) ಹೆಕ್ಸಾಡೆಸಿಮಲ್

25. Digital computers can give the results with more _____ and at a faster rate.
A) accuracy B) flexibility
C) versatility D) signals
ಡಿಜಿಟಲ್ ಕಂಪ್ಯೂಟರ್‌ಗಳು ಹೆಚ್ಚು --------- ಮತ್ತು ವೇಗವಾಗಿ ಫಲಿತಾಂಶವನ್ನು ನೀಡುತ್ತವೆ.
A) ನಿಖರವಾಗಿ B) ನಮ್ಯತೆ
C) ಬಹುಮುಖತೆ D) ಸಂಕೇತಗಳು

26. Which of the following operations is/are performed by the ALU?
A) Data manipulation B) Exponential
C) Square root D) Ail of the above
ಈ ಕೆಳಗಿನ ಯಾವ ಕಾರ್ಯಗಳನ್ನು ಅಂಕಗಣಿತ ಮತ್ತು ತಾರ್ಕಿಕ ಘಟಕ ನಿರ್ವಹಿಸುತ್ತದೆ.
A) ಮಾಹಿತಿಗಳನ್ನು ರವಾನಿಸುವುದು B) ಘಾತಕ
C) ವರ್ಗಮೂಲ D) ಮೇಲಿನ ಎಲ್ಲವೂ

27. The word length of memory of a computer is .....
A) 34 bit B) 64 bit
C) 12 bit D) 1GB
ಇವುಗಳಲ್ಲಿ ಕಂಪ್ಯೂಟರ್ ಸ್ಮೃತಿಯ ಶಬ್ದದ ಅಳತೆಯಾಗಿದೆ --------
A) 34 bit B) 64 bit
C) 12 bit D) 1GB

28. What is computer memory?
A) device used to store information in computer
B) device to print output to screen
C) device to process data
D) None of these
ಕಂಪ್ಯೂಟರ್ ಸ್ಮೃತಿ ಎಂದರೇನು ?
A) ಮಾಹಿತಿಗಳನ್ನು ಸಂಗ್ರಹಿಸುವ ಸಾಧನ
B) ಮಾಹಿತಿಗಳನ್ನು ಪರದೆಯ ಮೇಲೆ ಮುದ್ರಿಸುವ ಸಾಧನ
C) ಮಾಹಿತಿಗಳನ್ನು ಪರಿಷ್ಕರಿಸುವ ಸಾಧನ
D) ಯಾವುದು ಅಲ್ಲ

29. It is not a characteristics of Static RAM.
A) Long life B) Need to Refreshed continuously
C) High Power Consumption D) Large Size
ಕೆಳಗಿನವುಗಳಲ್ಲಿ ಸ್ಥಿರ RAM ದ ಗುಣಲಕ್ಷಣವಲ್ಲ.
A) ದೀರ್ಘ ಸಮಯ B) ನಿರಂತರವಾಗಿ ನವೀಕರಿಸಬೇಕಾಗುತ್ತದೆ
C) ಹೆಚ್ಚಿನ ಪ್ರಮಾಣದಲ್ಲಿ ವಿದ್ಯುತ್ ಸ್ವೀಕರಿಸುತ್ತದೆ D) ಆಕೃತಿಯಲ್ಲಿ ದೊಡ್ಡದು

30. Which of these are considered as primary memory?
A) RAM B) ROM
C) Cache D) Both A and B
ಕೆಳಗಿನವುಗಳಲ್ಲಿ ಯಾವುದು ಪ್ರಾಥಮಿಕ ಸ್ಮೃತಿಯಾಗಿದೆ.
A) ರ್‍ಯಾಮ್ B) ರೋಮ್
C) ಕ್ಯಾಶೆ D) A ಮತ್ತು B ಎರಡು

31. Which of these is not a feature of primary memory?
A) It is fast B) it holds instructions for computer
C) It is volatile D) All of these
ಯಾವುದು ಪ್ರಾಥಮಿಕ ಸ್ಮೃತಿಯ ಲಕ್ಷಣವಲ್ಲ.
A) ಇದು ವೇಗವಾಗಿದೆ B) ಕಂಪ್ಯೂಟರ್‌ನ ಸೂಚನೆಗಳನ್ನು ಹೊಂದಿದೆ
C) ಇದು ಬಾಷ್ಪಶೀಲವಾಗಿದೆ D) ಮೇಲಿನ ಎಲ್ಲವೂ

32. EEPROM stands for?
A) Erasable External Programmable Read Only Memory
B) External Erasable Programmable Read Only Memory
C) Electronically Erasable Programmable Read Only Memory
D) Electronically Erasable Primary Read Only Memory
EEPROM ವಿಸ್ತರಣೆ :
A) Erasable External Programmable Read Only Memory
B) External Erasable Programmable Read Only Memory
C) Electronically Erasable Programmable Read Only Memory
D) Electronically Erasable Primary Read Only Memory

33. BIOS means .....
A) Batch Input Output System B) Basic Input Output System
C) Both input Output System D) Basic Input Output Service
BIOS ಎಂದರೆ ------
A) Batch Input Output System B) Basic Input Output System
C) Both input Output System D) Basic Input Output Service

34. The memory in between Processor and Main Memory is called .....
A) EPROM B) PROM
C) Cache D) RAM
ಸಂಸ್ಕರಣಾ ಮತ್ತು ಪ್ರಾಥಮಿಕ ಸ್ಮೃತಿ ಮಧ್ಯದಲ್ಲಿರುವ ಸ್ಮೃತಿ ------
A) ಇಪಿರೊಮ್ B) ಪಿರೊಮ್
C) ಕ್ಯಾಷ D) ರ್‍ಯಾಮ್

35. Intel manufactures . .....
A) Computers B) Processors
C) Pen Drive D) RAM
ಇಂಟೆಲ್ ಇವುಗಳನ್ನು ತಯಾರಿಸುತ್ತಾರೆ.
A) ಕಂಪ್ಯೂಟರ್ B) ಪ್ರೊಸೆಸರ್
C) ಪೆನ್‌ಡ್ರಾವ್ D) ರ್‍ಯಾಮ್

36. The Software's and Data are stored in .....
A) Primary Memory B) Read Only Memory
C) Random Access Memory D) Secondary Storage Devices
ತಂತ್ರಾಂಶಗಳು ಮತ್ತು ದತ್ತಾಂಶಗಳು --------ಗಳಲ್ಲಿ ಸಂಗ್ರಹಿಸಲ್ಪಡುತ್ತವೆ.
A) ಪ್ರಾಥಮಿಕ ಸ್ಮೃತಿ B) ರೀಡ್ ಓನಲಿ ಮೆಮೊರಿ
C) ರ್ಯಾನಡ್ ಎಕ್ಸ್ಸ್ ಮೆಮೊರಿ D) ದ್ವಿತೀಯ ಸಂಗ್ರಹ ಸಾಧನ

37. ..... is Volatile memory
A) ROM B) Hard Disk
C) RAM D) Floppy
-------- ಇದು ಅಸ್ಥಿರ ಸ್ಮೃತಿ
A) ರೊಮ್ B) ಹಾರ್ಡಡಿಸ್ಕ್
C) ರ್ಯಾಮ್ D) ಫ್ಲಾಪಿ

38. Which secondary storage device is easy to store and carry
A) HDD B) Pen Drive
C) DVD D) Floppy
ಈ ಕೆಳಗಿನ ದ್ವೀತಿಯ ಸಂಗ್ರಹಣಾ ಘಟಕಗಳಲ್ಲಿ ಯಾವುದು ಕಡಿಮೆ ಸಂಗ್ರಹ ಶಕ್ತಿ ಹೊಂದಿದೆ.
A) ಹಾರ್ಡಡಿಸ್ಕ್ B) ಪೆನ್‌ಡ್ರಾವ್
C) ಡಿವ್ಹಿಡಿ D) ಫ್ಲಾಪಿ

39. CMOS stands for
A) Complementary Metal Oxide System
B) Complementary Metal Oxide Semiconductor
C) Common Machine of Survey
D) None of these
CMOS ಎಂದರೆ
A) Complementary Metal Oxide System
B) Complementary Metal Oxide Semiconductor
C) Common Machine of Survey
D) None of these

40. The full form of SMPS is
A) Small Memory Put in Sequence B) Switch Mode Power Supply
C) System Memory Power Service D) Systematic Memory Power Supply
SMPS ಪೂರ್ಣ ರೂಪ.
A) Small Memory Put in Sequence B) Switch Mode Power Supply
C) System Memory Power Service D) Systematic Memory Power Supply

41. The system software are .
A) Operating Software B) Assembler
C) Compiler D) All above
ವ್ಯವಸ್ಥಿತ ತಂತ್ರಾಂಶಗಳು ----------
A) ಕಾರ್ಯನಿರ್ವಹಣ ತಂತ್ರಾಂಶ B) ಅಸೆಂಬ್ಲರ್
C) ಕಂಪೈಲರ್ D) ಮೇಲಿನ ಎಲ್ಲವೂ

42. Which of these are harmful to computer
A) Viruses B) Worms
C) adware D) All of these
ಕೆಳಗಿನವುಗಳಲ್ಲಿ ಯಾವುದು ಕಂಪ್ಯೂಟರ್‌ಗೆ ಹಾನಿಯನ್ನುಂಟು ಮಾಡುತ್ತವೆ ---------
A) ವೈರಸ್ B) ವಾರ್ಮ
C) ಆಡ್‌ವೇರ್ D) ಎಲ್ಲವೂ

43. The end users programs are called .
A) Application Software B) Operating Software
C) System Software D) Debugger
ಬಳಕೆದಾರ ಬಳಸುವ ತಂತ್ರಾಂಶಗಳು --------
A) ಅನ್ವಯಿಕ ತಂತ್ರಾಂಶ B) ಕಾರ್ಯನಿರ್ವಹಣಾ ತಂತ್ರಾಂಶ
C) ವ್ಯವಸ್ಥಿತ ತಂತ್ರಾಂಶ D) ಡೀಬಗ್‌ರ್

44. The computer software that used to create documents are .....
A) Graphics B) Word processor
C) Spread Sheet D) Tally
ಕಂಪ್ಯೂಟರ್‌ದಲ್ಲಿ ಡಾಕ್ಯುಮೆಂಟ್‌ಗಳನ್ನು ತಯಾರಿಸಲು ಮತ್ತು ಮಾರ್ಪಡಿಸಲು ಬಳಸುವ ತಂತ್ರಾಂಶ -----
A) Graphics B) Word processor
C) Spread Sheet D) Tally

45. The MS Access software is used for
A) Creating Documents B) Collecting Database
C) Managing Accounts D) Graphics Designing
ಎಮ್.ಎಸ್.ಎಕ್ಸ್ಸ್ ತಂತ್ರಾಂಶವನ್ನು ಈ ಕಾರ್ಯಕ್ಕೆ ಬಳಸಲಾಗುತ್ತದೆ ----------
A) ದತ್ತಾಂಶಗಳನ್ನು ಸಂಗ್ರಹಿಸಲು B) ಲೆಕ್ಕಪತ್ರಗಳನ್ನು ನಿರ್ವಹಿಸಲು
C) ದಾಖಲೆಗಳನ್ನು ಸೃಷ್ಟಿಸಲು D) ಗ್ರಾಫಿಕ್ ವಿನ್ಯಾಸಕ್ಕೆ

46. The Functions of Operating System
A) Memory Management B) Processor Management
C) A and B D) None
ಕಾರ್ಯನಿರ್ವಹಣಾ ತಂತ್ರಾಂಶದ ಪ್ರಮುಖ ಕಾರ್ಯ --------
A) ಸ್ಮೃತಿ ನಿರ್ವಹಣೆ B) ಸಂಸ್ಕರಣಾ ನಿರ್ವಹಣೆ
C) A ಮತ್ತು B D) ಯಾವುದು ಅಲ್ಲ

47. GUI means .....
A) Graphical User Index B) Graphical User Information
C) Graphical User Interface D) Geographical User Interface
GUI ಎಂದರೆ -------
A) Graphical User Index B) Graphical User Information
C) Graphical User Interface D) Geographical User Interface

48. The connection to share the information between two or more computer is called
A) Sharing B) Networking
C) Surfing D) Manipulating
ಎರಡು ಅಥವಾ ಎರಡಕ್ಕಿಂತ ಹೆಚ್ಚು ಕಂಪ್ಯೂಟರ್‌ಗಳನ್ನು ಮಾಹಿತಿ ಹಂಚಿಕೊಳ್ಳಲು ಬಳಸುವುದೆ -------
A) ಹಂಚಿಕೊಳ್ಳುವುದು B) ಜಾಲತಾಣ
C) ಸರ್ಫಿಂಗ್ D) ಕುಶಲತೆಯಿಂದ ಬಳಸುವುದು

49. The process of connecting to the internet account is
A) Sing in B) Sing out
C) Login D) Logout
ಅಂತರ್‌ಜಾಲ ಖಾತೆಗೆ ಸಂಪರ್ಕಿಸುವ ಪ್ರಕ್ರಿಯೆ -------
A) ಸೈನ್ ಇನ್ B) ಸೈನ್ ಔಟ್
C) ಲಾಗಿನ್ D) ಲಾಗ್‌ಔಟ್

50. What is a HUB?
A) Software B) Computing Device
C) Networking Device D) Protocol
HUB ಎಂದರೇನು ?
A) ತಂತ್ರಾಂಶ B) ಗಣಕ ಸಾಧನ
C) ನೇಟವರ್ಕಿಂಗ್ ಸಾಧನ D) ಪ್ರೋಟೊಕೊಲ್

51. Which one is not a social media
A) Instagram B) Whatsapp
C) Facebook D) e-mail
ಇವುಗಳಲ್ಲಿ ಯಾವುದು ಸಾಮಾಜಿಕ ಮಾಧ್ಯಮ ಅಲ್ಲ -------
A) ಇನ್‌ಸ್ಟಾಗ್ರಾಮ್ B) ವಾಟ್ಸ್‌ಪ್
C) ಫೇಸ್‌ಬುಕ್ D) ಇ-ಮೇಲ್

52. TCP/IP stand for
A) Transmission control protocol/Internet protocol.
B) Transmission control procedure /Internet procedure.
C) Transfer control protocol/Internal protocol.
D) Transmission connectivity protocol/Internal protocol.
TCP/IP ವಿಸ್ತರಣೆ :
A) Transmission control protocol/Internet protocol.
B) Transmission control procedure /Internet procedure.
C) Transfer control protocol/Internal protocol.
D) Transmission connectivity protocol/Internal protocol.

53. In the Website address .org represents
A) Education B) Administration
C) Organisation D) Government
.org ಇದು ಯಾವ ತರಹದ ವೆಬ್‌ಸೈಟನ್ನು ಪ್ರತಿನಿಧಿಸುತ್ತದೆ -------
A) ಶಿಕ್ಷಣ B) ಆಡಳಿತ
C) ಒಕ್ಕೂಟ (ಸಂಸ್ಥೆ) D) ಸರ್ಕಾರ

54. What is the collection of the hyperlinked document on the internet known as?
A) HTML B) Website
C) E-mail D) Internet
ಇಂಟರ್‌ನೇಟ್‌ದಲ್ಲಿ ಹೈಪರ್‌ಲಿಂಕ್ ಮಾಡಿದ ದಸ್ತಾವೇಜುಗಳನ್ನು ಏನೆಂದು ಕರೆಯುತ್ತಾರೆ ?
A) ಎಚ್.ಟಿ.ಎಮ್.ಎಲ್. B) ವೇಬ್‌ಸೈಟ್
C) ಇ-ಮೇಲ್ D) ಇಂಟರ್‌ನೇಟ್

55. What is the location of a resource on the internet given by?
A) Internet Protocol B) Protocol
C) E-mail D) URL
ಇಂಟರ್‌ನೇಟ್‌ದಲ್ಲಿ ಸಂಪನ್ಮೂಲ ಜಾಲತಾಣವನ್ನು ಹೀಗೆ ಹೇಳುತ್ತಾರೆ
A) ಇಂಟರ್‌ನೇಟ್ ಪ್ರೊಟೊಕೊಲ್ B) ಪ್ರೊಟೊಕೊಲ್
C) ಇ-ಮೇಲ್ D) ಯು.ಆರ್.ಎಲ್.

56. The arrangement where all data pass through a central computer is known as
A) BUS Topology B) MESH Topology
C) STAR Topology D) RING Topology
ಜಾಲದಲ್ಲಿರುವ ಪ್ರತಿಯೊಂದು ಕಂಪ್ಯೂಟರ್‌ಗಳಿಗೆ ಮಧ್ಯದಲ್ಲಿರುವ ಕಂಪ್ಯೂಟರ್‌ನಿಂದ ಮಾಹಿತಿ ರವಾನೆಯಾಗುವುದಕ್ಕೆ ಹೀಗೆ ಹೇಳುತ್ತಾರೆ.
A) ಬಸ್ ಟೊಪೊಲಾಜಿ B) ಮೆಶ್ ಟೊಪೊಲಾಜಿ
C) ಸ್ಟಾರ್ ಟೊಪೊಲಾಜಿ D) ರಿಂಗ್ ಟೊಪೊಲಾಜಿ

57. ISP provides service to access
A) Information B) Internet
C) Webpage D) None
ISP ನಮಗೆ ------ ಬಳಸಲು ಅವಕಾಶ ಕಲ್ಪಿಸಿಕೊಡುತ್ತಾರೆ
A) ಮಾಹಿತಿಯನ್ನು B) ಅಂತರ್‌ಜಾಲ್
C) ಜಾಲಪುಟ D) ಯಾವುದು ಅಲ್ಲ

58. What is e-mail?
A) Method of exchanging messages via electronic devices
B) Speed message transfer to location
C) Musical messaging service
D) Online Shopping webpage
ಇ-ಮೇಲ್ ಎಂದರೇನು ?
A) ಇಲೆಕ್ಟ್ರಾನಿಕ್ ಸಾಧನಗಳ ಸಹಾಯದಿಂದ ಸಂದೇಶಗಳನ್ನು ವಿನಿಮಯ ಮಾಡಿಕೊಳ್ಳುವುದು
B) ವೇಗವಾಗಿ ಸಂದೇಶಗಳನ್ನು ಕಳುಹಿಸುವುದು
C) ಸಂಗೀತ ಸಂದೇಶಗಳನ್ನು ಸೇವೆಗಳು
D) ಆನ್‌ಲೈನ್ ಶಾಂಪಿಂಗ್ ಜಾಲಪುಟಗಳು

59. Which of these is correct email address?
A) userName@website@com B) userName.website.com
C) userName.website@com D) userName@website.com
ಸರಿಯಾದ ಇ-ಮೇಲ್ ವಿಳಾಸ ಯಾವುದು ?
A) userName@website@com B) userName.website.com
C) userName.website@com D) userName@website.com

60. To connect internet ..... device use to communicate Telephone line and Computer.
A) CPU B) Modem
C) Switch D) HUB
ಟೆಲಿಫೋನ್ ಹಾಗೂ ಕಂಪ್ಯೂಟರ್ ಮಧ್ಯೆ ಸಂಪರ್ಕ ಕಲ್ಪಿಸಿ ಅಂತರ್‌ಜಾಲದ ಸಂಪರ್ಕಿಸಲು ಬಳಸುವ ಸಾಧನ.
A) ಸಿಪಿಯು B) ಮೊಡಮ್
C) ಸ್ವಿಚ್ D) ಹಬ್

61. Web browser helps us to :
A) a program that can display a web page
B) a program used to view html documents
C) it enables user to access the resources of internet
D) all of the mentioned
ಜಾಲದರ್ಶಕದ ನಮಗೆ ಸಹಾಯಮಾಡುತ್ತದೆ.
A) ಜಾಲಪುಟಗಳನ್ನು ತೆರೆಯಲು ಬಳಸುವ ತಂತ್ರಾಂಶ
B) ಎಚ್‌ಟಿಎಮ್‌ಎಲ್ ಡಾಕಿಮೆಂಟ್‌ಗಳನ್ನು ವಿಕ್ಷಿಸಲು
C) ಜಾಲಪುಟಗಳ ಮೂಲ್‌ಕೋಡ್ ವಿಕ್ಷಿಸಲು ಸಹಕಾರಿ.
D) ಮೇಲಿನ ಎಲ್ಲ ಕಾರ್ಯಗಳು.

62. Putting files to the server from the computer is?
A) Downloading B) Uploading
C) Deleting D) Transferring
ಸ್ಥಳೀಯ ಕಂಪ್ಯೂಟರ್‌ನಿಂದ ಸರ್ವರ್‌ಗೆ ಕಡತವನ್ನು ಹಾಕುವುದು.
A) ಡೌನ್‌ಲೋಡಿಂಗ್ B) ಅಪ್‌ಲೋಡಿಂಗ್
C) ತೆಗೆದುಹಾಕು D) ವರ್ಗಾವಣೆ

63. The World Wide Web (WWW) was invented by .
A) Steve Jobs
B) Tim Berners Lee
C) Ray Tomliners
D) Bill Gates
World Wide Web (WWW) ಸಂಶೋಧಿಸಿದವರು.
A) ಸ್ಟೀವ್ ಜಾಬ್ಸ್
B) ಟಿಮ್ ಬರ್ನ್ಸ್ ಲೀ
C) ರೇ ಟಾಮ್‌ಲಿನರ್ಸ್
D) ಬಿಲ್ ಗೇಟ್ಸ್

64. Following is the e-commerce website
A) Amazon B) Messho
C) Myntra D) All above
ಇ-ವಾಣಿಜ್ಯ ಜಾಲಪುಟ
A) ಅಮೇಜಾನ್ B) ಮೀಶೊ
C) ಮಯಂತ್ರಾ D) ಮೇಲಿನ ಎಲ್ಲವೂ

65. Advantages of E-Mail are
A) E-mail delivered instantly
B) Cheapest Communication Media
C) It can be accessed any time
D) All above
ಇ-ಮೇಲ್‌ದ ಪ್ರಮುಖ ಪ್ರಯೋಜನ
A) ಇ-ಮೇಲ್ ತಕ್ಷಣವೇ ಸಂದೇಶಗಳನ್ನು ರವಾನಿಸುತ್ತದೆ
B) ಅಲ್ಪವೆಚ್ಚದ ಸಂವಹನಾ ಮಾಧ್ಯಮ
C) ಯಾವುದೇ ಸಮಯದಲ್ಲಿ ವಿಕ್ಷಿಸಬಹುದು
D) ಮೇಲಿನ ಎಲ್ಲವೂ

66. It is not a feature of Online Banking
A) We check the balance and take statement.
B) Fund transfer any where any time
C) Withdraw amount at home/office
D) Open New account from anywhere
ಇದು ಅಂತರ್ ಜಾಲ ಬ್ಯಾಂಕಿನ ವೈಶಿಷ್ಟ್ಯವಲ್ಲ
A) ನಾವು ನಮ್ಮ ಖಾತೆಯ ವ್ಯವಹಾರ ಮತ್ತು ಶಿಲ್ಕನ್ನು ವೀಕ್ಷಿಸಬಹುದು
B) ಎಲ್ಲಿಬೇಕಾದಲ್ಲಿಗೆ ಮತ್ತು ಯಾವುದೇ ಸಮಯಕ್ಕೆ ಹಣದ ವರ್ಗಾವಣೆ ಮಾಡಬಹುದು
C) ಮನೆ/ಕಚೇರಿಯಲ್ಲಿ ಹಣವನ್ನು ತೆಗೆಯಬಹುದು
D) ಎಲ್ಲಿಂದಾದರೂ ಹೊಸ ಖಾತೆಯನ್ನು ತೆರೆಯಬಹುದು

67. The types of Networking
A) Wi-fi
B) LAN
C) MAN
D) All above
ಅಂತರ್ ಸಂಪರ್ಕದ ವಿಧ
A) ವಾಯ್-ಫೈ
B) ಲ್ಯಾನ್
C) ಮ್ಯಾನ್
D) ಮೇಲಿನ ಎಲ್ಲವೂ

68. Computer network in a building or small geographical area is called
A) Land Area Networking
B) Local Area Networking
C) Metropolitan Area Networking
D) Wide Area Networking
ಒಂದು ಕಟ್ಟಡ ಅಥವಾ ಒಂದು ಚಿಕ್ಕಪ್ರದೇಶದಲ್ಲಿರುವ ಅಂತರ್ ಸಂಪರ್ಕ
A) ಲ್ಯಾಂಡ್ ಎರಿಯಾ ನೇಟ್‌ವರ್ಕಿಂಗ್
B) ಲೋಕಲ್ ಎರಿಯಾ ನೇಟ್‌ವರ್ಕಿಂಗ್
C) ಮೇಟ್ರೋಪಾಲಿಟನ್ ಎರಿಯಾ ನೇಟ್‌ವರ್ಕಿಂಗ್
D) ವೈಡ್ ಎರಿಯಾ ನೇಟ್‌ವರ್ಕಿಂಗ್

69. Expand BCC :
A) Blank Carbon Copy
B) Binary Coded Copy
C) Blind Carbon Copy
D) Blind Coded Copy
BCC ವಿಸ್ತರಣೆ :
A) Blank Carbon Copy
B) Binary Coded Copy
C) Blind Carbon Copy
D) Blind Coded Copy

70. Services of E-Commerce website
A) Customer Relationship Management B) Supply Chain Management
C) Electronic Fund Transfer D) All above
ಇ-ವಾಣಿಜ್ಯದ ಪ್ರಮುಖ ಸೇವೆಗಳು
A) ಗ್ರಾಹಕ ಸಂಬಂಧಗಳ ನಿರ್ವಹಣೆ B) ಪೂರೈಕೆ ಸರಣಿ ನಿರ್ವಹಣೆ
C) ವಿದ್ಯುನ್ಮಾನ ಹಣ ವರ್ಗಾವಣೆ D) ಈ ಮೇಲಿನ ಎಲ್ಲವೂ

71. A secret data, typically a string of characters, usually used to confirm a user's identity is
A) Password B) Secrecy
C) Authentication D) Digital Sign
ಬಳಕೆದಾರನ ದೃಢೀಕರಿಸಲು ಬಳಸುವ ರಹಸ್ಯ ಡಾಟಾ ಅಥವಾ ಅಕ್ಷರಗಳ ಸಮೂಹವೆ -------
A) ಪಾಸವರ್ಡ್ B) ಗೌಪ್ಯ
C) ಅಥೇಂಟಿಕೇಷನ್ D) ಡಿಜಿಟಲ್ ಸಹಿ

72. Computer networking is used for
A) For Communication
B) sharing software's and Hardware's
C) Sharing Files and Information
D) All above
ಅಂತರ್ ಸಂಪರ್ಕವನ್ನು ಈ ಕಾರ್ಯಗಳಿಗೆ ಬಳಸಲಾಗುತ್ತದೆ.
A) ಸಂವಹನಕ್ಕೆ
B) ತಂತ್ರಾಂಶ ಹಾಗೂ ಯಂತ್ರಾಂಶಗಳನ್ನು ಹಂಚಿಕೊಳ್ಳಲು
C) ಕಡತಗಳನ್ನು ಹಾಗೂ ಮಾಹಿತಿಯನ್ನು ಹಂಚಿಕೊಳ್ಳಲು
D) ಮೇಲಿನ ಎಲ್ಲವೂ

73. A website which search documents for specified keyword on Internet is called
A) Navigator B) Web page
C) Search Engine D) Resource Locator
ಅಂತರ್‌ಜಾಲದಲ್ಲಿ ನಿರ್ದಿಷ್ಟ ಶಬ್ದಗಳ ಆಧಾರದ ಮೇಲೆ ವಿಷಯಗಳನ್ನು ಹುಡಕುವ ಜಾಲತಾಣಕ್ಕೆ -----ಎನ್ನುತ್ತಾರೆ.
A) ನೇವ್ಹಿಗೇಟರ್ B) ಜಾಲಪುಟ
C) ಸರ್ಚ ಇಂಜಿನ್ D) ಸಂಪನ್ಮೂಲ ತಾಣ

74. Data can be transmitted in both directions at the same time on the same channel
A) Simplex Mode B) Full Duplex
C) Half Duplex D) Transmission Mode
ಸಂವಹನಾ ವ್ಯವಸ್ಥೆಯಲ್ಲಿ ಏಕಕಾಲಕ್ಕೆ ದ್ವಿಮಾರ್ಗ ಸಂದೇಶಗಳನ್ನು ರವಾನಿಸುವ ಹಾಗೂ ಸ್ವೀಕರಿಸಿ ಕಾರ್ಯನಿರ್ವಹಿಸುವುದು
A) Simplex Mode B) Full Duplex
C) Half Duplex D) Transmission Mode

75. Online travelling booking website
A) Makemytrip B) Agoda
C) IRCTC D) All above
ಅಂತರ್ ಜಾಲದಲ್ಲಿ ಪ್ರವಾಸ ಕಾಯ್ದಿರಿಸುವ ಜಾಲಪುಟಗಳು
A) ಮೇಕ್‌ಮಾಯ್‌ಟ್ರಿಪ್ B) ಅಗೋಡಾ
C) ಐಆರ್‌ಸಿಟಿಸಿ D) ಮೇಲಿನ ಎಲ್ಲವೂ

76. Domain name means
A) home address B) Client Computer
C) host computer D) Area Name
ಡೊಮಿಯನ್ ಹೆಸರು ಎಂದರೆ
A) ಮನೆ ವಿಳಾಸ B) ಬಳಕೆದಾರನ ಕಂಪ್ಯೂಟರ್
C) ಸಂಪನ್ಮೂಲ ಕಂಪ್ಯೂಟರ್ D) ಸ್ಥಳದ ವಿಳಾಸ

77. The first free email service launched by
A) rediffmail B) hotmail
C) gmail D) yahoomail
ಪ್ರಥಮ ಉಚಿತ ಇ-ಮೇಲ್ ಸೇವೆ ಒದಗಿಸಿದ ಜಾಲತಾಣ
A) ರೆಡಿಫ್‌ಮೇಲ್ B) ಹಾಟ್‌ಮೇಲ್
C) ಜಿಮೇಲ್ D) ಯಾಹೂಮೇಲ್

78. www.karanataka.gov.in website is
A) Organisation Website B) E-mail ID
C) Government Website D) E-Commerce Website
www.karanataka.gov.in ಇದು ---------- ಜಾಲಪುಟ
A) ಸಂಘಟನೆಯ ಜಾಲತಾಣ B) ಇ-ಮೇಲ್ ವಿಳಾಸ
C) ಸರ್ಕಾರದ ಜಾಲತಾಣ D) ಇ-ವ್ಯವಹಾರದ ಜಾಲತಾಣ

79. The secret code to open email ID is
A) Security B) Password
C) email id D) Cryptography
ಇ-ಮೇಲ್ ಪೆಟ್ಟಿಗೆ ತೆರೆಯಲು ಬಳಸುವ ಗುಪ್ತ ಸಂಕೇತ ----------
A) ಕಾವಲು B) ಪಾಸವರ್ಡ್
C) ಇ-ಮೇಲ್ ವಿಳಾಸ D) ಕ್ರೀಪ್ಟೋಗ್ರಾಫಿ

80. OTP Means:
A) Only Take Password B) One Take Picture
C) One Time Password D) Only Time Protect
OTP ಎಂದರೆ :
A) Only Take Password B) One Take Picture
C) One Time Password D) Only Time Protect

47174/D0240

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

IV Semester B.Sc. 6 (NEP) Degree Examination, October - 2023

COMPUTER SCIENCE

Database Management System (DBMS)

Paper : DSC 3

(Regular)

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

Instructions to Candidates: 1) **Answer All sections.**

2) **Draw neat diagrams wherever necessary.**

SECTION - A

Answer any TEN from the following. Each carries 2 marks. **(10×2=20)**

1. Mention any two applications of database.
2. What are types of data languages?
3. Define entity and entityset.
4. Mention types of attributes.
5. What is integrity constraint?
6. What are recommends come under DDL?
7. Expand PL/SQL.
8. What is normalization?
9. What is functional dependency?
10. What is cardinality ratio?
11. What is transaction?
12. Define deadlock in DBMS.

[P.T.O.

SECTION - B

Answer any FOUR from the following. Each carries 5 marks. **(4×5=20)**

13. Explain different data models in DBMS.
14. Explain components of E-R-Diagram in example.
15. Explain basic relational algebra operations.
16. Explain 1NF, 2NF with example
17. Explain concurrency control technique in DBMS.

SECTION - C

Answer any TWO from the following. Each carries 10 marks. **(2×10=20)**

18. a) Explain classification of database.
    b) Explain types of DBMS interfaces.
19. a) What are types of relationship? Explain
    b) Explain E-R- model for Bank database with neat diagram.
20. a) Explain different JOIN operations in DBMS.
    b) Explain single user and multiuser systems.

20903/D9010

No. of Printed Pages : 8

Booklet Serial No. 204623

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IV Semester B.Sc./B.Com. (NEP) Degree Examination, October - 2023
COMPUTER SCIENCE
Artificial Intelligence (SEC)
(Regular)

Time : 1 ½ hours **Maximum Marks : 30**

Instructions to Candidates:

1. ***Answer all questions.***
2. ***All questions are MCQs.***
3. ***Each question carries one mark.***

1. Check for complete printing of **30** questions.
2. The last page of the question paper may be used for rough work.
3. Each question has four multiple choice answer and choose the correct one.
4. Darken the appropriate circle with the ball pen.
5. Damaging/overwriting using whitener on the **OMR** sheets are strictly prohibited.
6. No candidates will be allowed to leave the examination Hall till the end of the session and without handing over his/her answer sheet to the invigilator.
7. Candidates should ensure that the invigilator has verified all the entries and that the invigilator has offixed his/her signature in the space provided on the **OMR**.

[P.T.O.

1. Who is the inventor of Artificial intelligence?
   A. John McCarthy.
   B. Goeffrey Hinton.
   C. Andrew Ng.
   D. Juergen schmidhuber.
2. In a college office daily attendance through biometric machine is an example of which of the following.
   A. Face Detection.
   B. Image classification.
   C. Natural language processing.
   D. All of the above.
3. Azure bot provide a service to
   A. Web chat.
   B. Email.
   C. Messaging.
   D. None of the above.
4. If system is trained by labelling the objects these is called.
   A. Supervised learning.
   B. Unsupervised learning.
   C. Self - learning.
   D. None of the above.
5. In how many categories process of Artificial intelligence is categories.
   A. Categorised into 5 catgories.
   B. Based on input provided.
   C. Categorised into 3 categories.
   D. Process is not categorised.
6. Which of the following is a component of Artificial intelligence?
   A. Learning.
   B. Training.
   C. Designing.
   D. Puzzling.

7. Which of the following is not a service offered by Azure AI?
   A. Azure machine learning.
   B. Azure Bot service.
   C. Azure cognitive search.
   D. Azure Databricks.
8. Which of the following is the branch of Artificial intelligence?
   A. Machine learning.
   B. Cyber forensics.
   C. Full - stack developer.
   D. Network design.
9. AI applications to "see" the world and make sense of it.
   A. Computer vision.
   B. Real time vision.
   C. Machine vision.
   D. None of the above.
10. Which of the following is NOT a feature of the Azure machine learning designer?
   A. Drag - and - drop interface
   B. Auto ML.
   C. Code editor.
   D. Model monitoring.
11. Which of the following is NOT a feature of Azure computer vision service?
   A. Image tagging.
   B. Object detection.
   C. Text extraction.
   D. Face Recognition.
12. Which of the following is a popular natural language processing library.
   A. Spacy.
   B. NLTK.
   C. Stanford CoreNLP.
   D. All of the above.

13. Which of the following is a use case for conversational AI?

A. Customer service.

B. Sales.

C. Marketing.

D. All of the above.

14. Which of the following is NOT a hyper parameter?

A. Learning rate.

B. Number of epochs.

C. Batch size.

D. Data set.

15. What is neural network regression?

A. A type of machine learning algorithm that uses neural networks to predict a continuous value.

B. A type of machine learning algorithm that uses neural networks to predict a categorial value.

C. A type of machine learning algorithm that uses neural networks to classify data.

D. None of the above.

16. Short cut key to create group in power BI.

A. Ctrl + Click.

B. Ctrl + A

C. Ctrl + G.

D. Ctrl + N.

17. Attribute which is uniquely identified called _____

A. Foreign key.

B. Super key.

C. Primary key.

D. Console key.

18. Which of the following is types of storage models in power BI.
    A. Import.
    B. Direct query.
    C. Dual (Composite).
    D. All of the above.
19. What is not the type of relationships that you will find in power BI?
    A. One - to - Many.
    B. Many - to - One.
    C. Many - to - Any.
    D. Many - to - Many.
20. How do you visualize a data?
    A. By bar chart.
    B. By line chart.
    C. By pie chart.
    D. All of the above.
21. Which of the following is NOT a step in the data preparation process?
    A. Cleaning data.
    B. Formatting data.
    C. Analyzing data.
    D. Validating data.
22. Which of the following is NOT a microsoft data analytics tool?
    A. Power BI Desktop.
    B. Excel.
    C. Rstudio.
    D. Python.
23. Which of the following is a type of data model is power BI?
    A. Relational model.
    B. Mesh model.
    C. Hierarchical model.
    D. Been model.

24. Which of the following is NOT a benefit of using visualizations in power BI?
    A. Improved communication.
    B. Increased understanding.
    C. Simplified analysis.
    D. Reduced complexity.
25. Which of the following is NOT a type of data analysis in power BI?
    A. Descriptive analysis.
    B. Diagnostic analysis.
    C. Predictive analysis.
    D. Prescriptive analysis.
26. What is Power BI primarily used for?
    A. Word processing
    B. Data analysis and visualization.
    C. Video editing.
    D. Social media management.
27. What is a power BI dashboard?
    A. A collection of reports, visuals and other elements.
    B. A template for designing data models.
    C. A data storage location within power BI.
    D. A data transformation tool.
28. In Power BI, what is a workspace?
    A. A virtual area to organize and collaborate on center.
    B. The physical location of the Power BI servers.
    C. The folder where Power BI files are saved.
    D. A collection of visualizations in a report.
29. Which role in a Power BI work space allows member to edit, publish and share content?
    A. Viewer.
    B. Contributor.
    C. Admin
    D. Member.

30. Which type of analysis is performed by key influencers visualization in power BI?

A. Regression analysis.

B. Cluster analysis.

C. Trend analysis.

D. Data validation.

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47802/47152/48402

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

IV Semester B.Sc. Degree Examination, September/October - 2023

GENERIC ENGLISH

(Regular)

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

Text Book: Carvalho

I. Answer any FIVE of the following in one or two sentences. **(5×2=10)**

1) Who asked to get some honey from moodigeri?
2) Who were in the Beekeepers co-operative society when narrator visited there?
3) Who is pyara?
4) How much money did the narrator give for a tin of honey?
5) Who is the snake catcher?
6) Who is an expert tree climber?

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

1) Sketch the character of Mandanna.
2) Bee - keeping
3) Narway Ramaih

III. 1) Describe Carvalho in an eco-logical novel. **(1×10=10)**

(OR)

2) Sketch the character of carvalho.

IV. Answer any TWO of the following selecting one from poetry and one from Ted Talk. **(2×5=10)**

1) Explain strength and tenacity expressed in the poem invictus'.
2) How does shashi Tharoes present his ideas in the Ted Talk 'A well educated Mind'?
3) Describe India's environmental Crisis.

[P.T.O.

V. a) How does Pecha kucha presentation sharpen public speaking? (1×5=5)

(OR)

b) What are the skills required for an interview.

VI. a) Write a brief note on your travel experience. (1×5=5)

(OR)

b) Write an article on one of the experiments you carried out in your college lab.

VII. a) Write an email to your office requesting two days leave citing reasons for leave. (1×5=5)

(OR)

b) Write an email of congratulations focussing on the achievements of your colleague in the office.

VIII. a) What is bloy and explain its importance. (1×5=5)

(OR)

b) What is podcast and how do you make a podcast?

47155/D0050

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IV Semester B.Sc.(NEP) Degree Examination, October - 2023

HINDI

1) सपनों की होम डिलिवरी (उपन्यास)

2) पत्रलेखन

3) अनुवाद

PAPER - AECC

(Regular)

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

I. किन्हीं दस प्रश्नों के सही उत्तर लिखिए। **(10×1=10)**

1. 'सपनों की होम डिलिवरी' किसकी रचना है?

   अ) ममता कालिया

   ब) मन्नू भंडारी

   क) उषा प्रियंवदा

2. 'सपनों की होम डिलिवरी' उपन्यास की नायिका कौन है?

   अ) उमा

   ब) रुचि

   क) सीता

3. 'म' चैनल में रुचि का सहायक कौन था?

   अ) वीरेन्द्र सिंह

   ब) के.के. जोशी

   क) जिज्ञासा

4. सर्वेश नारंग किस क्षेत्र में काम करता है?

   अ) शिक्षा

   ब) व्यापारिक

   क) पत्रकार

P.T.O.

5. टी.वी. चैनल पर रुचि के कितने कार्यक्रम आते है?

अ) तीन

ब) दो

क) पाँच

6. सर्वेश नारंग की पत्नी किस शहर में काम करती है?

अ) दिल्ली

ब) बंबई

क) अमृतसर

7. सर्वेश नारंग के बेटे का नाम क्या है?

अ) अमर

ब) राकेश

क) गगन

8. प्रभाकर शर्मा किसका पति है?

अ) रुचि

ब) अमृता

क) दामिनी

9. रुचि शर्मा की लिखि किताबें कितनी भाषाओं में अनुवादित होती थी?

अ) दस

ब) पाँच

इ) दो

10. पंद्रह अगस्त किसे कहा गया है?

अ) सर्वेश

ब) प्रभाकर

क) के. के. जोशी

11. रुचि का अर्थिक शोषण कौन करता था?

अ) गगन

ब) अंश

क) साहिल

12. बिगड़ती युवा–पिढी का चित्रण किस पात्र में दिखाई देता है?

अ) प्रभाकर

ब) सर्वेश

क) गगन

II. किन्हीं तीन का संसदर्भ स्पष्टीकरण कीजिए। **(3×5=15)**

1. "मुझे अतीत से,अतीत जीवियों से चिढ है। मैं आज में जीने वाला इन्सान हूँ"
2. "मैं सहजीवन को गलत रिवाज मानती हूँ। हमारे ऊपर समाज की जिम्मेदारी हैं।
3. "इतना छोटा घर क्यों लिया माँ। मैंने तो सोचा था आप बहूत आलीशान मकान में रहती होगीं।"
4. "तभी तो तुम मेरे पन्द्रह अगस्त हो सर्वेश।"

III. किन्हीं दो प्रश्नों के उत्तर लिखिए। **(2×10=20)**

1. 'सपनो की होम डिलिवरी' उपन्यास का आशय स्पष्ट कीजिए?
2. 'सपनो की होम डिलिवरी' उपन्यास में युवा–पीढी की भटकन किस प्रकार चित्रित की है स्पष्ट कीजिए?
3. रुचि का पात्र चरित्र–चित्रण कीजिए?
4. 'सपनों की होम डिलिवरी' उपन्यास का सारांश लिखकर उद्देश्य स्पष्ट कीजिए?

IV. किन्ही तीन प्रश्नों का उत्तर लिखिए। **(3×5=15)**

1. गृह प्रवेश के लिए नियंत्रण पत्र लिखिए?
2. सहायक लेखाकार पद हेतु आवेदन पत्र लिखिए?
3. चेक बुक खो जाने के संदर्भ में बँक शाखा व्यवस्थापक को पत्र लिखिए?
4. विनायक झेरॉक्स सेंटर लक्ष्मी नगर धारवाड से स्टेट बैंक ऑफ इंडिया,धारवाड में चालु खाता (करंट अकाउंट) आरंभ करने के लिए आवेदन लिखिए?

47151/48401

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

IV Semester B.Sc. (NEP) Degree Examination, September/October - 2023

KANNADA (Basic)

ಕುಲಕುಲವೆಂದು ಹೊಡೆದಾಡದಿರಿ

(Regular)

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

Instructions to Candidates:

ಭಾಷೆ ಮತ್ತು ಬರಹದ ಶುದ್ಧಿಗೆ ಗಮನ ಕೊಡಲಾಗುವುದು.

1. a) 'ನಂ ರೂಪ್ಲಿ' ಕವಿತೆ ಲಂಬಾಣಿ ಜನಗಳ ಬದುಕಿನ ಅನಾವರಣವಾಗಿದೆ ವಿವರಿಸಿರಿ. **(10)**

(ಅಥವಾ)

b) 'ಪೆಟ್ರೋಮ್ಯಾಕ್ಸ್ ಹೊತ್ತವರು' ಕವಿತೆ ಶ್ರಮಜೀವಿಗಳ ಧ್ವನಿಯಾಗಿದೆ. ವಿಶ್ಲೇಷಿಸಿರಿ.

2. a) ಕುಲದ ನೆಲೆಯ ಕುರಿತು ಕನಕದಾಸರ ವಿಚಾರಗಳನ್ನು ವಿವರಿಸಿರಿ. **(10)**

(ಅಥವಾ)

b) ಎರಡು ಸಂಸ್ಕೃತಿಗಳ ನಡುವಿನ ಸಂಬಂಧಗಳ ಬಿಕ್ಕಟ್ಟುಗಳನ್ನು 'ನಿಮ್ಮೊಡನಿದ್ದು ನಿಮ್ಮಂತಾಗದೆ' ಕವಿತೆ ಹೇಗೆ ಧ್ವನಿಸುತ್ತದೆ ವಿವರಿಸಿರಿ.

3. a) ದೇವರು–ಧರ್ಮಗಳ ಕುರಿತಾದ ಮಾನವೀಯ ಚಿಂತನೆಯನ್ನು 'ಎಲುಬಿನ ಹಂದರದೊಳಗೆ' ಕವಿತೆ ಹೇಗೆ ನಿವೇದಿಸುತ್ತದೆ ವಿಶ್ಲೇಷಿಸಿರಿ. **(10)**

(ಅಥವಾ)

b) ಚೀಂಕ್ರ ಮೇಸ್ತ್ರಿಯ ಅಸಾಧಾರಣ ಅನುಭವವನ್ನು ತೇಜಸ್ವಿಯವರು ಹೇಗೆ ನಿರೂಪಿಸಿದ್ದಾರೆ ಚರ್ಚಿಸಿರಿ.

4. a) ಒಳ್ಳೆಯ ಕವನದ ಕುರಿತು ಚಂಪಾ ಅವರ ವಿಚಾರಗಳನ್ನು ವಿವರಿಸಿರಿ. **(10)**

(ಅಥವಾ)

b) ಮಹಿಳಾ ವಿಮೋಚನೆಯ ಕುರಿತು ಗಾಯತ್ರಿ ನಾವಡ ಅವರ ವಿಚಾರಗಳನ್ನು ಚರ್ಚಿಸಿರಿ.

[P.T.O.

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

a) ದೇವನೂರು ಮಹಾದೇವ.

b) ಉತ್ತರಾದೇವಿ.

c) ಜಿ.ಎಸ್.ಶಿವರುದ್ರಪ್ಪ.

d) ಪ್ರಾಂಜಲ ಮನಸ್ಕ ಸಂಶೋಧಕ.

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

a) ದೇವನೂರು ಮಹಾದೇವರ ತಂದೆ-ತಾಯಿಯ ಹೆಸರೇನು?

b) ಬಿ.ಟಿ. ಲಲಿತಾ ನಾಯಕರು ಸ್ಪರ್ಧಿಸಿದ್ದ ವಿಧಾನಸಭಾ ಕ್ಷೇತ್ರ ಯಾವುದು?

c) ಕವಿರಾಜಮಾರ್ಗ ಕೃತಿಯ ಆಕರ ಗ್ರಂಥ ಯಾವುದು?

d) ಜಿ.ಎಸ್.ಎಸ್.ಅವರ ಪೂರ್ಣ ಹೆಸರೇನು?

e) ನಿಸಾರ್ ಅಹಮ್ಮದ್ ಅವರು ಯಾವ ವಿಷಯದ ಪ್ರಾಧ್ಯಾಪಕರಾಗಿದ್ದರು?

f) ಮೂಡ್ನಾಕೂಡು ಚಿನ್ನಸ್ವಾಮಿಯವರ ಯಾವ ಕೃತಿಗೆ ಕೇಂದ್ರ ಸಾಹಿತ್ಯ ಅಕಾಡೆಮಿ ಪ್ರಶಸ್ತಿ ಲಭಿಸಿದೆ.

g) ತೇಜಸ್ವಿಯವರು ರಚಿಸಿದ ನಾಟಕ ಕೃತಿ ಯಾವುದು?

h) ಚಂಪಾ ಅವರ ಹುಟ್ಟೂರು ಯಾವುದು?

i) ಫ.ಗು. ಹಳಕಟ್ಟಿಯವರು ಏನೆಂದು ಖ್ಯಾತರಾಗಿದ್ದಾರೆ?

j) ಎಲ್. ಹನುಮಂತಯ್ಯನವರ ಪಿಎಚ್.ಡಿ. ಪ್ರಬಂಧ ಯಾವುದು?

47180/D0300

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

IV Semester B.Sc. 6 (NEP) Degree Examination, October - 2023

MATHEMATICS

Partial Differential Equations and Integral Transforms (DSC)

(Regular w.e.f. 2022-23)

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

Instruction to Candidates:

1. **Answer any Six questions from question number 1.**
2. **Answer any Three questions from question number 2,3,4 and 5**

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

a) Form the partial differential equation by eliminating arbitrary constants a and b from $Z = (x - a)^2 + (y - b)^2$.

b) Find the complete integral of $pq = xy$,

c) Solve $(D^2 - 4DD' + 4DD'^2)z = 0$

d) Solve $r = 6x$

e) Define Laplace transform of a function. and find L (e^{3+}).

f) Evaluate $L^{-1}\left(\frac{s+1}{S^2+2s-3}\right)$

g) Find half range sine series of f(x) = x defined on $[0, \pi]$

h) Define finite Fourier sine Transforms.

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

a) Derive the partial differential equation of the form $P_p + Qq = R$ by eliminating ϕ from ϕ (u,v) =0 . where u,v are functions of x, y, z.

[P.T.O.

b) Solve $(y+z)p+(z+x)q=x+y$.

c) Solve $z^2(p^2z^2+q^2)=1$.

d) Solve $yp=2yx+\log q$.

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

a) Solve $(2D^2-5DD'+2D'^2)z=5\sin(2x+y)$.

b) Solve $\frac{\partial^2 z}{\partial x^2}+3\frac{\partial^2 z}{\partial x\partial y}+2\frac{\partial^2 z}{\partial y^2}=12xy$.

c) Find the nature of partial differntial equation

i) $\frac{\partial^2 z}{\partial x^2}+3\frac{\partial^2 z}{\partial x\partial y}+\frac{\partial^2 z}{\partial y^2}=0$

ii) $\frac{\partial^2 z}{\partial x^2}+y\frac{\partial^2 z}{\partial x\partial y}+x\frac{\partial^2 z}{\partial y^2}=0$

d) Reduce the equation $r+2S+t=0$ to canonical form.

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

a) If L[f(t)] = F (s) then prove that $L\left(\frac{f(t)}{t}\right)=\int_s^\infty F(s).ds.$ *if* $\lim_{t\to\infty}\frac{f(t)}{t}$ *exists.*

b) Find $L^{-1}\left(\frac{s}{(s^2-4)(s^2+1)}\right)$

c) State and prove convolution theorem.

d) Solve differential equation $\frac{d^2y}{dt^2}-9y=-8e^t$ by Laplace transfor on given that $y(0)=0$, $y'(0)=0$

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

a) Obtain Fourier series of $f(x) = x\text{-}x^2$ in (-1,1).

b) Obtain Fourier series For the function $f(x) = \begin{cases} \pi + x \text{ if } -\pi < x < 0. \\ \pi - x \text{ if } 0 < x < \pi \end{cases}$

c) Find half - range sine and cosine series of $f(x) = (x\text{-}1)^2$ in the internal (0,1)

d) Find finite cosine transform of $f(x) = (1+x)$ *in* (0,3)

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IV Semester B.Sc.4. Degree Examination, October - 2023

MATHEMATICS

Vector Calculus and Infinite Series

Paper - I

(Repaters)

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

Instructions to Candidates :
1. *Question paper containing 3 - parts namely A,B,C.*
2. *Answer all questions.*

PART - A

1. Answer any **ten** of the following questions. **(10×2=20)**

a. If $\vec{u} = t^2\hat{i} - t\,\hat{j} + (2t+1)\hat{k}$ and $\vec{v} = (2t-3)\hat{i} + \hat{j} - t\hat{k}$ find $\frac{d}{dt}(\vec{u}, \vec{v})$.

b. If $\vec{r} = e^{nt}\vec{a} + e^{-nt}\vec{b}$ then prove that $\frac{d^2\vec{r}}{dt^2} - n^2\vec{r} = 0$.

c. Find grad(ϕ) where $\phi = 3x^2y - y^3z^2$ at (1,-2,-1).

d. If $\vec{f} = (xyz)\hat{i} + (3x^2y)\hat{j} + (xz^2 - y^2z)\hat{k}$, then find *div* $\vec{f}$ at (1,-1,1).

e. Define solenoidal and irrotational vectors.

f. Define covergent series and give an example.

g. If the series $\sum_{n=1}^{\infty} u_n$ is convergent. Show that $\lim_{n\to\infty} u_n = 0$.

h. Test the convergence of $\sum \frac{1}{n^{1+1/n}}$.

i. Test the convergence of $\frac{1}{1.2} + \frac{1}{2.3} + \frac{1}{3.4} + \ldots + \frac{1}{n(n+1)}$.

j. State Cauchy's general principles of convergence of series.

k. Define conditional and absolute convergence of series.

l. Define alternating series and give an example.

PART - B

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

2. If $\vec{A}$ and $\vec{B}$ are differentiate vector functions of a scalar variable t, prove that $\frac{d}{dt}\left(\vec{A}.\vec{B}\right)=\frac{d\vec{A}}{dt}.\vec{B}+\vec{A}.\frac{d\vec{B}}{dt}$.

3. If $\vec{f}=(2x^2y-x^4)\hat{i}+(e^{xy}-y\sin x)\hat{j}+(x^2\cos y)\hat{k}$ then verify $\frac{\partial^2\vec{f}}{\partial x\partial y}=\frac{\partial^2\vec{f}}{\partial y\partial x}$.

4. If $\sum u_n$ and $\sum v_n$ be positive term series such that $u_n \le v_n \ \forall \cap \in N$, then

   i. $\sum v_n$ is convergent $\Rightarrow \sum u_n$ is also convergent.

   ii. $\sum u_n$ is divergent $\Rightarrow \sum v_n$ is also divergent.

5. State and prove D'Alembert's ratio test for a series of positive terms.

6. Test the convergence of $\sum\frac{\sqrt{n}}{\sqrt{n^2+1}}x^n$, x>0.

7. Discuss the convergence of the series $\sum(-1)^{n-1}\frac{n}{2n-1}$.

PART - C

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

8. a. State and prove necessary and sufficient condition for a vector function f(t) to have a constant magnitude is $\vec{f}.\frac{d\vec{f}}{dt}=0$.

   b. If $\vec{a}=x^2yz\hat{i}-2xz^3\hat{j}+xz^2\hat{k}$ and $\vec{b}=2z\hat{i}+y\hat{j}-x^2\hat{k}$, then find $\frac{\partial^2}{\partial x\partial y}(\vec{a}\times\vec{b})$ at (1,0,-2).

9. a. Prove that $div(curl\,\vec{F}) = 0$.

   b. If $\vec{f} = x^2 y\hat{i} - 2xz\hat{j} + 2yz\hat{k}$ find $curl(curl\,\vec{f})$.

10. a. Discuss the convergence of the series $\sum \frac{1}{n^p}$.

    b. Test the convergence of the series $\sum_{n=1}^{\infty}\left(\sqrt{n^2+1} - n\right)$.

11. a. State and prove Cauchy's root test for the convergence.

    b. Test the convergence of the series $\left(\frac{2^2}{1^2} - \frac{2}{1}\right)^{-1} + \left(\frac{3^3}{2^3} - \frac{3}{2}\right)^{-1} + \left(\frac{4^4}{3^4} - \frac{4}{3}\right)^{-1} + \ldots\ldots$

12. a. State and prove Leibnitz's theorem for convergence of alternating series.

    b. Examine the convergence of $\sum (-1)^n \frac{x^n}{n(n-1)}$, $0 < x < 1$.

44173

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IV Semester B.Sc. 5 Degree Examination, October - 2023

MATHEMATICS

Vector calculus, Infinite Series & Differential Equations

Paper : I

(Repeater)

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

Instructions to Candidates :

1) Question paper contains 3 parts namely A,B,C
2) Answer all parts.

PART - A

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

1. a) If $\vec{A} = t^2\hat{i} - t\hat{j} + (2t+1)\hat{k}$, find $\left|\frac{dA}{dt}\right|$ at $t=0$

b) If $\vec{r} = a\cos t\hat{i} + a\sin t\hat{j} + ct\hat{k}$ where a,c are constants then prove that $\left|\frac{d\vec{r}}{dt}\right|^2 = a^2 + c^2$

c) If $\phi = xy^2z$, then find $grad(\phi)$ at $(1,2,-1)$

d) Test the convergence of the series $\sum \frac{1}{n(n+1)}$

e) If $\sum a_n$ is convergent then $\lim_{n\to\infty} a_n = 0$.

f) Define the following

i) Convergent series

ii) Divergent series

g) Test the convergence of the series $1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \ldots$

h) Define uniform convergence of the series.

i) Solve $(D^2 - 4D + 4)y = 0$.

[P.T.O.

j) Find particular integral of $\frac{d^3y}{dx^3}+2\frac{d^2y}{dx^2}+\frac{dy}{dx}=e^{2x}$

k) Solve $x^2\frac{d^2y}{dx^2}+3x\frac{dy}{dx}+y=0$.

l) Verify the equation $\left(1+x^2\right)\frac{d^2y}{dx^2}+3x\frac{dy}{dx}+y=0$ is exact.

PART - B

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

2. If $a=e^{-t}\hat{i}+\log\left(1+t^2\right)\hat{j}-\tan t\hat{k}$, then find $\left[\frac{d^2\vec{a}}{dt^2}\right]$ at $t=0$.

3. If $\sum a_n$ and $\sum b_n$ are two series of positive terms and $\lim_{x\to\infty}\frac{a_n}{b_n}=l$ (finite and non zero) then show that the series $\sum a_n$ *and* $\sum b_n$ are both convergent or divergent together.

4. Discuss the convergence of the series $\sum_{n=1}^{\infty}\frac{1}{2n+3}$ using Cauchy's Integral test.

5. With usual notation prove that $\frac{1}{f(D)}e^{ax}=\frac{1}{f(a)}e^{ax}$ where $f(a)\neq 0$.

6. Solve $\left(D^2-2D+5\right)y=\sin 3x$.

7. Solve $\left(1+x^2\right)\frac{d^2y}{dx^2}+3x\frac{dy}{dx}+y=\left(1+x^2\right)$.

PART - C

Answer any FOUR of the following (10 marks each) **(4×10=40)**

8. a) If $\vec{A}(t)$ *and* $\vec{B}(t)$ are two differentiable vector functions of a variable t, then prove that $\frac{d}{dt}\left[\vec{A}(t).\vec{B}(t)\right]=\vec{A}(t).\frac{d}{dt}\vec{B}(t)+\vec{B}(t)\frac{d}{dt}\vec{A}(t)$.

b) Prove that $div\left(curl\vec{F}\right)=0$

9. a) Discuss the convergence of a series $\sum\left(\sqrt{n^2+1}-n\right)$

b) State and prove D'Alembert's Ratio Test.

10. a) Test the absolute convergence of ----------

b) State and prove Leibnitz theorem for the convergence of alternating series.

11. a) With usual notations, prove that $\frac{1}{f(D^2)}\cos ax = \frac{1}{f(-a^2)}\cos ax$ provided $f(-a^2) \neq 0$.

b) Solve $(D^2 + D - 6)y = x$

12. a) Solve $(x^2D^2 + xD - 1)y = 2x^2$

b) Find the condition for the equation $P0\frac{d^3y}{dx^3} + P_1\frac{d^2y}{dx^2} + P_2\frac{dy}{dx} + P_3y = 0$ to be exact.

42638/F380

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VI Semester B.Sc.4. Degree Examination, October - 2023

MATHEMATICS

Complex Analysis and Ring Theory

Paper - II

(Repaters w.e.f. 2019-20)

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

Instructions to Candidates : *1. Question paper has 3 parts namely A,B and C.*
2. Answer all parts.

Part - A

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

a. Prove that an analytic function with constant imaginary part is constant.

b. Show that $f(z)=z^2$ is analytic.

c. Show that $\frac{-y}{x^2+y^2}$ is harmonic.

d. Show that $\int_0^{1+i} z^2 dz$.

e. State 'Morera's theorem.

f. Define :

i. Pole.

ii. Essential Singularity.

g. Find the residue of $f(z)=\frac{z}{(z-1)(z-2)}$ at $z=2$.

h. Prove that zeros of an analytic function are isolated.

i. State 'Jordan's lemma'.

j. Define a 'Sub ring' and give an example.

k. Define left and right ideals.

l. In a ring $(R,+,\bullet)$ prove that a.0=0 $\forall a \in R$ and 0 is the identity element w.r.t +.

P.T.O.

Part - B

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

2. With usual notation derive the C-R equations $\frac{\partial u}{\partial x}=\frac{\partial v}{\partial y}$ and $\frac{\partial u}{\partial y}=-\frac{\partial v}{\partial x}$.

3. If $u=e^{-x}(x\sin y-y\cos y)$ find f(z) in terms of z by using Milne - Thomson method.

4. State and prove 'Cauchy's integral formula'.

5. If f(z) has a pole of order m at z = a, then show that

$$\operatorname{Res}\{f(z):a\}=\lim_{z\to a}\left\{\frac{1}{(m-1)!}\frac{d^{m-1}}{dz^{m-1}}\left[(z-a)^m f(z)\right]\right.$$

6. Using contour integration, prove that $\int_0^{\infty}\frac{dx}{(1+x^2)^2}=\frac{\pi}{4}$.

7. Show that the set of all matrices of the form $\begin{bmatrix} a & b \\ 0 & 0 \end{bmatrix}\ \forall a,b\in R$ is a ring w.r.t. matrix addition and matrix multiplication.

Part - C

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

8. a. Prove that an analytic function with constant modulus is constant.

   b. If f(z) is analytic, then prove that

$$\left[\frac{\partial^2}{\partial x^2}+\frac{\partial^2}{\partial y^2}\right]|f(z)|^2=4|f'(z)|^2.$$

9. a. State and prove 'Cauchy's inequality'.

   b. Evaluate $\int_C\frac{dz}{(z-1)(z+3)}$ where $C:|z|=1$, using Cauchy's integral theorem.

10. a. State and prove 'Taylor's theorem'.

b. Expand the function $f(z)=\frac{1}{z^2-3z+2}$ by Laurent's series for

i. $1<|z|<2$.

ii. $|z|>2$.

11. a. State and prove 'Cauchy's residue theorem'.

b. Using contour integration, prove that $\int_0^{2\pi}\frac{d\theta}{3+2\cos\theta}=\frac{2\pi}{\sqrt{5}}$.

12. a. Prove that a non empty subset S of a ring R is a sub ring iff

i. $a,b\in S\Rightarrow a-b\in S$.

ii. $a,b\in S\Rightarrow ab\in S$.

b. Define homomorphism of ring R into R'. If $f:R\to R'$ is a homomorphism, then prove that

i. $f(0)=0'$ where 0 and $0'$ are identity elements of R and R' respectively.

ii. $f(-a)=-f(a)\ \forall a\in R$.

44188/D5080

Reg. No.

IV Semester B.Sc. 5 Degree Examination, September/October - 2023

MATHEMATICS

Fourier Transforms (SEC)

(Repeater)

Time : 2 Hours **Maximum Marks : 40**

Instructions to Candidates :

1) Questions paper containing two parts A and B.
2) Answer all parts.

Part - A

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

   a) Define periodic function and give an example.

   b) State Dirichlets' conditions for Fourier expansion.

   c) Define Fourier series and Fourier co-efficients.

   d) Obtain the half range cosine series for $f(x)=x \; in \; (0, 2)$.

   e) Define finite cosine transform.

   f) Find finite fourier sine transform of the function $f(x)=1 \; in \; (0,\pi)$.

   g) Find finite cosine transform of $f(x)=1+x \; in \; (0,3)$.

Part - B

Answer any **SIX** of the following. **(6×5=30)**

2. Obtain Fourier series for the function $f(x)=x^2 \; in [-\pi.\pi]$.

3. Obtain the Fourier series of $f(x)=x-x^2$ in $-1<x<1$.

4. Find the half-range sine and cosine series for the function $f(x)=\pi-x$ in $(0,\pi)$

5. Find finite Fourier cosine transform of $f(x)=x^3$ in the interval $(0,\pi)$

P.T.O.

6. Find the finite Fourier sine transform of $f(x)=1+x$ in $(0,3)$.

7. Find Fourier finite cosine transform of $f(x)=2-x$ in $(0,2)$.

8. Find the finite Fourier sine and cosine transforms of $f(x)=\left(1-\frac{x}{\pi}\right)^2$ in $(0,\pi)$.

9. Find the Fourier series of $f(x)=\begin{cases} x & if \quad 0\le x<\pi \\ \pi-x & if \quad \pi\le x\le 2\pi \end{cases}$.

47182

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

IV Semester B.Sc. (NEP) Degree Examination, October - 2023

PHYSICS

Thermal Physics and Electronics

(Regular)

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

Instructions to Candidates:

1. **Calculations can be done using calculators**
2. **Write the intermediate steps wherever necessary**
3. **Give the physical meaning of each symbol used.**

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

a) State Kelvin-planck statement of second law of thermodynamics.

b) What is temperature entropy diagram ?

c) Write clausius-clapeyron equation and explain the terms.

d) State Joule-Thomson effect.

e) What is filter? Name the types of filters.

f) Define energy gap of a semiconductor.

g) Give the circuit symbol for OR, AND and NOT gates.

h) Define positive and negative feedback.

2. Answer a and b or c and d of the following.

a) Derive expressions for workdone in isothermal and adiabatic processes. **(8)**

b) Air at N.T.P is compressed adiabatically to half it's volume. Calculate the change in temperature during the process. Give γ for air = 1.4 **(4)**

(OR)

c) With a neat diagram, explain the construction and working of Diesel engine. Derive an expression for efficiency of Diesel engine. **(8)**

P.T.O.

d) Calculate the efficiency of an otto engine when the compression ratio is 4 and $\gamma = \frac{3}{2}$ (4)

3. Answer 'a' & 'b' or 'c'& 'd' of the following.

a) Derive Maxwell's thermodynamic relations. (8)

b) Calculate Gibb's free energy for the process carried out at temperature 20°C. Given that the change in enthalpy is 19.07 kcal and change in entropy is 95 cal./ kelvin. (4)

(OR)

c) Derive Maxwell-Boltzmann law of distribution of velocities of molecules of an ideal gas . (8)

d) Calculate the R.M.S velocity of hydrogen molecules at N.T.P. Given : Density of hydrogen at N.T.P. $\rho = 8.957 \times 10^{-2}$ kg/m^3 Density of mercury = 13600 kg/m^3 g = 9.8m/s^2 (4)

4. Answer 'a' &'b' or 'c'& 'd' of the following.

a) With a neat circuit diagram, explain the working of a n-p-n transistor amplifier in C.E. mode. Draw the frequency response curve of the transistor. (8)

b) The gain of a transistor amplifier is 150. When negative feedback is applied, the gain reduces to 25. Find the feedback fraction. (4)

(OR)

c) With neat circuit diagrams, explain the working of half wave & full wave rectifiers. (8)

d) With a neat circuit diagram , explain how a zener diode is used as voltage regulator. (4)

5. Answer a &b or c& d of the following.

a) State & prove De Morgan's theorems. (8)

b) Convert the following decimal numbers to their binary equivalents.

i) 72.45

ii) 0.4475 (4)

(OR)

c) Explain the application of an op-amp as non inverting amplifier. Derive an expression for its voltage gain. (8)

d) Find the output voltage of op-amp inverting adder for the following sets of input voltages and resistances.

$V_1 = -3V, V_2 = +3V, V_3 = +2V.$

$R_1 = 200k\Omega$, $R_2 = 100k\Omega$, $R_3 = 1M\Omega$. **(4)**

44178/D0380

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

IV Semester B.Sc. (CBCS) Degree Examination, October - 2023

ZOOLOGY

Genetic and Evolutionary Biology

Paper : ZOO DSCT-4.1

(Repeater)

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

Instructions to Candidates:

1. Answer all the questions.
2. Draw diagram wherever necessary.

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

1. What is dihybrid cross?
   ಡೈಹೈಬ್ರಿಡ ಕ್ರಾಸ್ ಎಂದರೇನು ?
2. Define Lemarckism.
   ಲೆಮಾರಕಿಸ್ಮ ಎಂದರೇನು ವ್ಯಾಖ್ಯಾನಿಸಿ.
3. Write any two concepts of species.
   ಯಾವುದಾದರೂ ಎರಡಕ್ಕೆ ಸ್ಪಿಸಿಸ್ ಕಾನಸೆಪ್ಟನ್ನು ಬರೆಯಿರಿ.
4. What is Mutation?
   ಮ್ಯುಟೆಶನ್ ಎಂದರೇನು ?
5. What is Synapsis?
   ಸಿನ್ಯಾಪಸಿಸ್ ಎಂದರೇನು ?
6. Define Sex-linked Inheritance.
   ಸೆಕ್ಸಲಿಂಕ್ಡ ಇನ್‌ಹೆರಿಟನ್ಸ್ ಎಂದರೇನು ವ್ಯಾಖ್ಯಾನಿಸಿ.
7. What is gene mapping?
   ಜೀನ್ ಮ್ಯಾಪಿಂಗ ಎಂದರೇನು ?
8. What is Incomplete Dominence?
   ಇನ್‌ಕಂಪ್ಲಿಟ ಡಾಮಿನೆನ್ಸ್ ಎಂದರೇನು ?
9. Mention the theories of evolution.
   ಎವಲ್ಯೂಶನ ಸಿದ್ಧಾಂತಗಳನ್ನು ಹೆಸರಿಸಿ.

[P.T.O.

10. What is Allopatric Speciation?
ಅಲ್ಲೊಪೆಟ್ರಿಕ ಸ್ಪಿಷಿಯೆಷನ್ ಎಂದರೇನು ?
11. Define Fossil. Give example.
ಉದಾಹರಣೆಯೊಂದಿಗೆ ಫಾಸಿಲ್ ಎಂದರೇನು ವ್ಯಾಖ್ಯಾನಿಸಿ.
12. What is Chaismata ?
ಚಯಾಸ್ಮೆಟಾ ಎಂದರೇನು ?

II. Answer any Three of the following. **(3×5=15)**

13. Explain law of segregation with example.
ಲಾ ಆಫ್ ಸೆಗ್ರಿಗೆಶನ್‌ನ್ನು ಉದಾಹರಣೆಯೊಂದಿಗೆ ವಿವರಿಸಿ.
14. Write a note on Darwin's Finches.
ಡಾರವಿನ್ ಫಿಂಚೆಸ್ ಬಗ್ಗೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.
15. Write a note on Incomplete dominence.
ಇನ್‌ಕಂಪ್ಲಿಟ್ ಡಾಮಿನನ್ಸ್ ಬಗ್ಗೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.
16. Describe Gaint Chromosome.
ಗೇಂಟ್ ವರ್ಣತಂತವನ್ನು ವಿವರಿಸಿ.

III. Answer any Three of the following **(3×5=15)**

17. Give an account of Palentological evidences.
ಪೇಲೆಂಟಾಲಾಜಿಕಲ್ ಎವಿಡನ್ಸ್ ಬಗ್ಗೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.
18. Write a note on Polyploidy.
ಪಾಲಿಪ್ಲಾಯಿಡಿಯ ಬಗ್ಗೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.
19. Explain dosage compensation.
ಡೋಸೆಜ್ ಕಾಂಪೆನ್ಸಿಯೆಶನ ಕುರಿತು ವಿವರಿಸಿ.
20. Write a note on lethal genes.
ಲಿಥಲ ಜೀನ್ಸ ಬಗ್ಗೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.

IV. Answer any Three of the following. **(3×5=15)**

21. Give an account of Biological Species Concept.
ಬಯೋಲೊಜಿಕಲ್ ಸ್ಪಿಷಿಸ್‌ಕಾಂನ್ಸೆಪ್ಟ ಬಗ್ಗೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.
22. Explain modes of evolution.
ಮೋಡ್ಸ ಆಫ್ ಎವ್ಹಲೂಷನ್‌ಗಳ ಕುರಿತು ವಿವರಿಸಿ.

23. Write a note on Mesohippus.
ಮಿಸೋಹಿಪ್ಪಸ್‌ನ ಕುರಿತು ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.
24. Write a note on Natural Selection.
ನ್ಯಾಚುರಲ ಸಿಲೆಕ್ಷನ್ ಬಗ್ಗೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.

V. Answer any Three of the following. **(3×5=15)**

25. Describe Darwinism.
ಡಾರವಿನಿಸ್‌ಂ ಬಗ್ಗೆ ವಿವರಿಸಿರಿ.
26. Write a note on Lemarckism.
ಲೇಮಾರಕಿಸಮ್ ಬಗ್ಗೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.
27. Explain Chromosomal Mutation.
ವರ್ಣತಂತುಗಳ ಮ್ಯುಟೇಶನನ್ನು ವಿವರಿಸಿ.
28. Write a note on Isolating mechanism.
ಐಸೋಲೆಟಿಂಗ್ ಮೆಕ್ಯಾನಿಸಮ್ ಬಗ್ಗೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.

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

IV Semester B.Sc. (NEP) Degree Examination October - 2023
ZOOLOGY
Gene Technology, Immunology and Computational Biology
(Regular)

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

Instructions to Candidates:

1. Attempt all questions.
   ಎಲ್ಲ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ.
2. Draw diagrams wherever necessary.
   ಅವಶ್ಯವಿದ್ದಲ್ಲಿ ಅಂದವಾದ ಚಿತ್ರ ಬಿಡಿಸಿ.

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

ಕೆಳಗಿನ ಯಾವುದಾದರೂ 6 ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ.

1. What is recombinant DNA?
   ಮರುಸಂಯೋಜಿತ ಡಿ.ಎನ್.ಎ. ಎಂದರೇನು ?
2. What are Transgenic animals?
   ಜೀವಾಂತರ ಪ್ರಾಣಿಗಳು ಎಂದರೇನು ?
3. Define Immunity.
   ರೋಗ ನಿರೋಧಕತೆ ಎಂದರೇನು ವ್ಯಾಖ್ಯಾನಿಸಿ.
4. What are Antigens and Antibodies?
   ಪ್ರತಿಜನಕಗಳು ಮತ್ತು ಪ್ರತಿಕಾಯಗಳು ಎಂದರೇನು ?
5. What is Immunization?
   ಪ್ರತಿರಕ್ಷಣೆ ಎಂದರೇನು ?
6. Define Bioinformatics.
   ಜೈವಿಕ ಮಾಹಿತಿ ಎಂದರೇನು ವ್ಯಾಖ್ಯಾನಿಸಿ.
7. Define Arithmetic mean.
   ಅಂಕಗಣಿತದ ಸರಾಸರಿ ಎಂದರೇನು ವ್ಯಾಖ್ಯಾನಿಸಿ.
8. Expand ANOVA.
   ANOVA ವಿಸ್ತೃತ ರೂಪ ಬರೆಯಿರಿ.

[P.T.O.

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

ಯಾವುದಾದರೂ **3** ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿರಿ.

9. Describe steps involved in r-DNA technology.
ಮರುಸಂಯೋಜಕ ಡಿ.ಎನ್.ಎ. ತಂತ್ರಜ್ಞಾನದಲ್ಲಿಯ ಹಂತಗಳನ್ನು ವಿವರಿಸಿ.
10. Write a note on direct method of Gene Transfer Technique.
ಜೀನ್ ವರ್ಗಾವಣೆ ತಂತ್ರದ ನೇರ ವಿಧಾನದ ಕುರಿತು ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.
11. Write a note on Transgenic cow and fish.
ಜೀವಾಂತರ ಹಸು ಮತ್ತು ಮೀನಿನ ಕುರಿತು ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.
12. Write the applications of Biosensors in Gene therapy.
ಜೀನ್ ಚಿಕಿತ್ಸೆಯಲ್ಲಿ ಜೈವಿಕ ಸಂವೇದಕಗಳ ಉಪಯೋಗ ತಿಳಿಸಿರಿ.

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

ಯಾವುದಾದರೂ **3** ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿರಿ.

13. Explain Acquired immunity.
ಸ್ವಾಧೀನಪಡಿಸಿಕೊಂಡ ರೋಗನಿರೋಧಕತೆ ವಿವರಿಸಿ.
14. Write a note on Antigen Presenting Cells [APC's].
ಪ್ರತಿಜನಕ ಪ್ರಸ್ತುತಪಡಿಸುವ ಕೋಶಗಳ ಕುರಿತು ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.
15. Explain the properties of Antigens.
ಪ್ರತಿಜನಕಗಳ ಗುಣಲಕ್ಷಣಗಳನ್ನು ವಿವರಿಸಿ.
16. Write a note on structure of MHC I &II [Major Histocompatibility Complex].
ಪ್ರಮುಖ ಹಿಸ್ಟೋಕಾಂಪಾಟಿಬಿಲಿಟಿ ಸಂಕೀರ್ಣ I ಮತ್ತು II ರ ರಚನೆಯ ಕುರಿತು ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.

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

ಯಾವುದಾದರೂ **3** ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿರಿ.

17. Write about Innate Immunity.
ಸಹಜ ರೋಗನಿರೋಧಕತೆ ಕುರಿತು ಬರೆಯಿರಿ.
18. What is Vaccine? Explain their types.
ಚುಚ್ಚುಮದ್ದು ಎಂದರೇನು ? ಅವುಗಳ ವಿಧಗಳನ್ನು ವಿವರಿಸಿ.
19. What is Database? Explain structural database.
ಡೇಟಾಬೇಸ್ ಎಂದರೇನು ? ರಚನಾತ್ಮಕ ಡೇಟಾಬೇಸ್ ವಿವರಿಸಿ.
20. Write a note on Multiple Sequence Alignment.
ಬಹು ಅನುಕ್ರಮ ಜೋಡಣೆ ಕುರಿತು ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.

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

ಯಾವುದಾದರೂ 3 ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿರಿ.

21. Find the median for given data.

ದತ್ತಾಂಶದ ಮಧ್ಯಾಂಕವನ್ನು ಕಂಡುಹಿಡಿಯಿರಿ.

C-I	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80
f	3	15	2	8	11	4	1	6

22. Write a note on graphical presentations of data.

ದತ್ತಾಂಶದ ನಕ್ಷಾತ್ಮಕ ಪ್ರಸ್ತುತಿ ಕುರಿತು ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.

23. Find the standard deviation for given data.

ದತ್ತಾಂಶದ ಮಾನಕ ವಿಚಲನೆ ಕಂಡು ಹಿಡಿಯಿರಿ.

X	34	36	37	39	41	43
f	1	2	2	2	2	1

24. Write a note on Correlation.

ಪರಸ್ಪರ ಸಂಬಂಧದ ಕುರಿತು ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.