



36102(New)

B.Sc./B.C.A./B.Sc.-Bio-Technology/B.Sc. Fashion Design/B.H.M. I - Semester
(CBCS) Degree Examination, Nov./Dec. - 2018

KANNADA (Basic)

ಆಧುನಿಕ ಕವಿತೆಗಳ ಮಾಲೆ ಹಾಗೂ ಆಯ್ದ ಸಣ್ಣ ಕತೆಗಳ ಸಂಗ್ರಹ

Paper - 01

(New)

Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates:

ಭಾಷೆ ಹಾಗೂ ಬರಹದ ಶುದ್ಧಿಗೆ ಗಮನ ಕೊಡಲಾಗುವುದು.

1. a) 'ಕಾರಿ ಹೆಗ್ಗಡೆಯ ಮಗಳು', 'ಜೋಗಿ', 'ಮರತೇನೆಂದರ ಮರೆಯಲಿ ಹೆಂಗಾ' - ಇವುಗಳಲ್ಲಿ ಎರಡು ಕವಿತೆಗಳ ಸ್ವಾರಸ್ಯವನ್ನು ಬರೆಯಿರಿ. (10)

(ಅಥವಾ)

- b) 'ನಾವು ಹುಡುಗಿಯರೇ ಹೀಗೆ', 'ರೊಟ್ಟಿ ಮತ್ತು ಹುಡುಗಿ', 'ಗೂಡಿನಿಂದ ಹೊರಗೆ' - ಇವುಗಳಲ್ಲಿ ಎರಡು ಕವಿತೆಗಳನ್ನು ವಿಶ್ಲೇಷಿಸಿರಿ.

2. a) 'ಏನಾದರೂ ಮಾಡುತ್ತಿರು ತಮ್ಮ' - ಕವಿತೆಯಲ್ಲಿ ವ್ಯಕ್ತವಾಗಿರುವ ವ್ಯಂಗ್ಯ ಮತ್ತು 'ಹಣೆ ಬರವು ಎಂಬ ನಾಟಕವು' - ಕವಿತೆಯಲ್ಲಿ ಚಿತ್ರಿತವಾಗಿರುವ ತಳಸಮುದಾಯದ ನೋವಿನ ಅಭಿವ್ಯಕ್ತಿಯನ್ನು ವಿವರಿಸಿರಿ. (10)

(ಅಥವಾ)

- b) 'ವರ್ಷ ಭೈರವ' ಕವಿತೆಯಲ್ಲಿ ವರ್ಣಿತವಾಗಿರುವ ನಿಸರ್ಗ ವರ್ಣನೆ ಮತ್ತು 'ಮಗು ಮತ್ತು ಹಣ್ಣುಗಳು' ಕವಿತೆಯಲ್ಲಿನ ಸ್ವಾರಸ್ಯವನ್ನು ವಿವರಿಸಿರಿ.

3. a) ನಿಸರ್ಗದ ಅಚ್ಚರಿ ಮತ್ತು ವಿಜ್ಞಾನದ ಸತ್ಯಗಳು 'ಕುಕ್ಕುಟ ಪಿಶಾಚ' ಕಥೆಯಲ್ಲಿ ಹೇಗೆ ಬೆಸೆದುಕೊಂಡಿವೆ ? ನಿರೂಪಿಸಿರಿ. (10)

(ಅಥವಾ)

- b) 'ಒಂದು ಬಾಗಿಲು' ಕಥೆಯ ಆಶಯವನ್ನು ವಿವರಿಸಿರಿ.

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4. a) 'ಪರಂಪರೆ ಮತ್ತು ವಾಸ್ತವತೆಗಳನ್ನು ವಿಡಂಬನಾತ್ಮಕವಾಗಿ ಚಿತ್ರಿಸುವ ಕಥೆ ರುದ್ರಪ್ಪನ ಖಡ್ಗ' - ವಿವರಿಸಿರಿ. (10)

(ಅಥವಾ)

- b) 'ಬಟ್ಟೆ ಹೊಲೆವ ಸುಲೋಚನಾಳ ಹರಿದ ಬದುಕು' - ಕಥೆಯ ಸ್ವಾರಸ್ಯವನ್ನು ವಿವರಿಸಿರಿ.

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

- a) ಜಡೆ
- b) ದೇವರ ಮಕ್ಕಳು
- c) ದಹನ
- d) ಇರುವೆ ಗೂಡು

6. ಬೇಕಾದ ನಾಲ್ಕಕ್ಕೆ ಉತ್ತರಿಸಿರಿ. (4×5=20)

- a) ಜಿ.ಎಸ್. ಶಿವರುದ್ರಪ್ಪ
- b) ಕೆ.ಎಸ್.ನ.
- c) ಡಾ. ಸಿದ್ದಲಿಂಗಯ್ಯ
- d) ಆರಿಫ್ ರಾಜ
- e) ಕೆ.ಪಿ. ಪೂರ್ಣಚಂದ್ರ ತೇಜಸ್ವಿ
- f) ಪಿ. ಲಂಕೇಶ್
- g) ಅನಸೂಯಾ ಕಾಂಬಳೆ
- h) ಕುಂ. ವೀರಭದ್ರಪ್ಪ



36112(New)

B.Sc./BCA/GMT. I Semester Degree Examination, Nov/Dec. - 2018

(CBCS - 2017-18)

BASIC ENGLISH - I

(New)

Time : 3 Hours

Maximum Marks : 70

SECTION - I
(Short Stories)

1. Annotate any **Two** of the following : (2×3=6)
- a) 'Thank goodness it's a short journey. I can bear to sit in a train for more than two or three hours'.
- b) I made preparations to leave the town in a couple of days, leaving the engine to its fates with all its commitments. However, Nature came to my rescue in an unexpected manner.
- c) 'It's nice to be told I have an interesting face. I am tired of people telling me I have a pretty face'.
2. Answer any **One** of the following : (1×10=10)
- a) Describe the encounter between the blind man and the girl?
- b) Describe how R.K. Narayan's "Engine Trouble" is truly an Indian story of unlucky draw.

SECTION - II
(Essays)

3. Annotate any **Two** of the following : (2×3=6)
- a) Gopal ran about, his ungainly legs pumping furiously, trying to swallow as many snowflakes.

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- b) Most remarkably, in the eyes of Many Westerners, the success of the dabbawala trade has involved no Western modern high technology.
- c) Occasionally, people communicate between home and work by putting messages inside the boxes.

4. Answer any **One** of the following :

(1×10=10)

- a) Explain the secrets behind the success of the dabbawalas trade.
- b) What kind of environment promotes the joy of learning in the Indian and American education systems?

SECTION - III

(Poetry)

5. Annotate any **Two** of the following :

(2×4=8)

- a. A cold wind keeps whipping and slapping a corner of tarpaulin at your elbow.
- b. And Heaven just prove that I and she Ride, side together, for over ride?
- c. Is second childishness and mere oblivion sans teeth, sans eyes, sans taste, sans everything.

6. Answer any **One** of the following :

(1×10=10)

- a. Discuss the Biblical significance of the apple in the poem "A poison tree".
- b. Critically comment on 'The Last Ride Together' dramatic monologue. Why does the lover compare himself to the statesman, soldier, poet, sculptor and musician?

SECTION - IV

(Grammar)

7. Fill in the blanks with appropriate articles :

(5×1=5)

- a. She goes to temple in _____ morning.
- b. It is _____ honour to be here.
- c. Rakesh is _____ best student in the class.



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- d. I am writing _____ book.
- e. Platinum is _____ most precious metal.

8. Fill in the blanks with appropriate prepositions.

(5×1=5)

- a. Kids were dancing _____ in a room.
- b. This lock cannot be opened _____ the key.
- c. He was sitting _____ a table.
- d. The bus is going _____ Mumbai.
- e. Mahesh jumped _____ the swimming pool.

9. Change the sentences according to the instruction given in the bracket.

(5×2=10)

- a. He has bought a camera. (Change into simple present tense).
- b. He works in a factory. (Change into present continuous tense).
- c. Ramya has been helping her mother. (change into present perfect tense).
- d. She is listening to the music. (change into present perfect continuous tense).
- e. They are repairing the bridge. (Change into negative sentence).
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B.A./B.Sc./B.B.M./G.M.T./B.C.A./B.S.W./B.Com. I - Semester

Degree Examination, Nov./Dec. - 2018

BASIC ENGLISH - I (Old syllabus)

(New)

Time : 3 Hours

Maximum Marks : 80

Texts:

Words and Beyond

- I. Annotate any TWO of the following : (2×6=12)**
- Our chairman is the poet laureate, who is not only an artist whose materials are the sounds of English, but a specialist in their pronunciation.
 - There was no sound anywhere - only the crickets' chirp and croaking of frogs from the nearby pond.
 - She was sitting on the swing, leaning sideways against a rope, with her head down, apparently in deep thought. Her bare legs, blotched with mud.
 - Whatever befalls the earth, befalls the sons of the earth.
- II. Answer any ONE of the following : (1×16=16)**
- Describe the unfortunate set of incidents and circumstances in the life of kadambini and how did she estrange herself to the family with whom she was living.
 - O' Henry's short story 'spring time' is primarily based on the theme of 'love'. Discuss.
- III. Annotate any TWO of the following : (2×6=12)**
- ; show me how I used to laugh and smile once upon a time when I was like you.
 - I gotta clean up this but then see about the slick And the cotton to pick.
 - 'I shot him dead because - Because he was my foe.
 - The cracks that begin around her eyes spread beyond her skin.

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(1×16=16)

IV. Answer any ONE of the following :

- a) "Where the mind is without Fear" is Tagore's nationalistic and thoughtful poem. Discuss.
- b) How does the poet Gabriel Okara bring out the difference between the past and the present?

V. Grammar:

(4×2=8)

a) Rewrite the following sentences as directed :

- i) Ramesh is going to USA. (Rewrite into simple past tense).
- ii) He drives a car very carefully. (Rewrite into past perfect tense).
- iii) I have learnt photography. (Rewrite into past perfect continuous tense).
- iv) We have been waiting for him. (Rewrite into past continuous tense).

b) Rewrite the following sentences as directed :

(4×2=8)

- i) Govind rode on his bike. (Rewrite into present continuous tense).
- ii) Students are preparing for their examinations. (Rewrite into present perfect continuous tense).
- iii) He had fallen into a ditch. (Rewrite into simple present tense).
- iv) Naresh has bought a new bike. (Rewrite into present continuous tense).

c) Rewrite the following sentences into passive voice:

(4×2=8)

- i) He gave me a book.
 - ii) People pay tax to the government.
 - iii) The chief minister inaugurated the bridge.
 - iv) Children read stories.
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B.A./B.Sc./B.B.M./G.M.T./B.C.A./B.S.W./B.Com. I - Semester

Degree Examination, Nov./Dec. - 2018

BASIC ENGLISH - I

(CBCS - 2016-17)

(Old)

Time : 3 Hours

Maximum Marks : 70

Texts:

Words and Beyond.

- I** Annotate any **TWO** of the following : (2×4=8)
- The two simplest and commonest words in any language are 'yes' and 'no'. But no two members of the committee pronounce them exactly alike.
 - The four men down the corpse inside the hut and wanted for the pyre wood to be brought.
 - There is no quiet place in the white man's cities. No place to hear the leaves of spring or the rustle of insect wings.
 - They knew how to behave at tea, at a party they were enjoying the dignity of their own performance.
- II** Answer any **ONE** of the following : (1×15=15)
- How does G.B. Shaw argue to prove his point that there is no ideally correct English?
 - How did Walter find Sarah? What is the significance of the dandelion in the story, "Spring Time"?
- III** Annotate any **TWO** of the following : (2×4=8)
- "I shot him dead because - Because he was my foe.
 -, for my laugh in the mirror shows only my teeth like a snake's bare fangs!
 - "What else can an old woman do On hills as wretched as there"?
 - Shine on me, sunshine

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Rain on me, rain
 Fall softly, dewdrops
 And cool my brow again.

(1×15=15)

IV. Answer any **One** of the following :

- a) What is Rabindranath Tagore's message to the pre - Independent Indian masses in his poem "where the Mind is without Fear"?
- b) How does Gabriel Okara bring out the comparison in the attitude of erstwhile and people of modern age?

V. Grammar:

1. Rewrite the following sentences as directed : (4×2=8)
 - a) I am hoping to get a holiday (rewrite into past continuous tense).
 - b) My father works in the income - tax office. (rewrite into past perfect tense).
 - c) I wake up early in the morning. (rewrite into past continuous tense).
 - d) We have heard a strange story. (rewrite into past perfect tense).
2. Rewrite the following sentences as directed : (4×2=8)
 - a) He was seen fighting desperately for his life. (rewrite into present tense).
 - b) The prisoner was hanged. (rewrite into present continuous tense)
 - c) The artist draw a life - size picture of the queen.
(rewrite into present perfect tense)
 - d) He spent the afternoon in playing chess. (rewrite into simple present tense).
3. Rewrite the following sentences into passive voice: (4×2=8)
 - a) The baker sells bread.
 - b) The cow gives us milk.
 - c) She will invite all her friends to tea.
 - d) Children like a book of pictures.

B.Sc./B.C.A. I - Semester (CBCS) Degree Examination, Nov./Dec. - 2018

HINDI (Basic)

Study Of Indian Languages

Paper - I

Time : 3 Hours

Maximum Marks : 70

सूचना : 1) लिखावट शुद्ध और देवनागरी लिपि में हों।

2) पठित पुस्तकें : 1) अभिनव काव्य सौरभ 2) महाभोज

1. किन्हीं दो की संदर्भ सहित व्याख्या कीजिए। (2×7=14)
 - a) मैं दुःखी जब-जब हुआ, संवेदना तुमने दिखाई।
मैं कुतज्ञ हुआ हमेशा, रीति दोनों ने निभाई,
 - b) चाट रहे जूटी पत्तल विकभी सडक पर खडे हुये,
और झपट लेने को उनसे कुत्ते भी अडे हुये।
 - c) एक सुभह पहाड-सी दिखाती हैं बेटियाँ
कलेजा कवि का चट्टान-सा होकर भी
धरता है पत्तियों की तरह।
2. किन्हीं दो प्रश्नों के उत्तर लिखिए। (2×10=20)
 - a) नदी के द्वीप, काव्य का उद्देश्य समझाइए।
 - b) रहस्य, कविता में लेखक क्या कहना चाहता है।
 - c) इतिहास विकृत सत्य, काव्य का महत्व स्पष्ट कीजिए।

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(2×10=20)

3. किन्हीं दो प्रश्नों का उत्तर लिखिए।

- महाभोज एक राजनीतिक उपन्यास है समजाईए।
- महाभोज उपन्यास की कथा अपने वाक्यों में लिखिए।
- महाभोज में आज की समकालीनता दिखाई देती है समजाईए।

(2×5=10)

4. किन्हीं दो पर टिप्पणी लिखिए।

- दा साब
- जोरावर सिंह
- रूक्मा

5. किसी एक विषय पर निबंध लिखिए।

(1×6=6)

- स्वच्छता ही सेवा है।
 - वायु प्रदूषण।
 - सत्यमेव जयते।
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B.Sc. I - Semester (CBCS) Degree Examination, Nov./Dec. - 2018

PHYSICS

(Mechanics and Properties of Matter)

Paper - I

(New)

Maximum Marks : 70

Time : 3 Hours

Instructions to Candidates:

Write answers to section - A questions in the first two pages only.

SECTION - A

(15×1=15)

Answer the following :

1. What is fictitious force?
2. What is non inertial frame of reference?
3. What is head on collision?
4. Define M.I of a rotating body.
5. State Hook's law.
6. Mention the expression for workdone in twisting a wire.
7. What is Geostationary satellite?
8. Which frame of reference is called Galilean frame of reference?
9. State the law of conservation of linear momentum.
10. Give the relation between angular momentum and torque.
11. What is oblique collision?
12. Write the S.I unit of radius of gyration.
13. What is centre of oscillation?
14. What is a cantilever?
15. What is Turbulent flow of a liquid?

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SECTION - B

(5×5=25)

Answer any FIVE of the following :

16. Derive an expression for the velocity of single stage rocket at any instant of time.
17. Write a note on centre of mass as frame of reference.
18. State and prove the perpendicular axis theorem.
19. Derive an expression for couple per unit twist.
20. Derive an expression for the K.E in inelastic collision.
21. State and explain Newton's law of gravitation and Kepler's laws of planetary motion.
22. Deduce Poiseuille's equation for the steady flow of liquid..

SECTION - C

Answer any THREE of the following :

(3×10=30)

23. a) State Stokes law of viscosity and hence derive the expression for terminal velocity.
b) State and prove the law of conservation of angular momentum in case of Ballet dancer. (5+5)
24. a) Obtain an expression for M.I of the solid sphere about an axis passing through its centre.
b) With necessary theory explain compound pendulum and deduce the equation for time period of the pendulum. (5+5)
25. a) Obtain the relation between Y, K and σ of the material.
b) Calculate the work done in stretching a uniform wire of area of cross section 10^{-6} m^2 and length 1.5 m through 4 mm Given $Y = 20 \times 10^{10} \text{ Nm}^{-2}$. (7+3)
26. What is Coriolis force? Derive an expression for it and discuss the effects of Coriolis's force. (2+6+2)
27. a) State and prove the law of conservation of energy for a particle executing SHM.
b) Calculate the K.E of a circular disc of mass 10 kg and radius 0.4 m rolling on a smooth horizontal surface with 20 revolution per sec. (7+3)

B.Sc. I - Semester (CBCS) Degree Examination, Nov./Dec. - 2018

CHEMISTRY

Paper - I

(New)

Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates:

1. Section A is compulsory.
2. Section B contains inorganic chemistry questions.
3. Section C contains organic chemistry questions.
4. Section D contains physical chemistry questions.
5. Answer all the Four sections A,B,C and D.

Section - A

Answer any Ten of the following :

(10×1=10)

1. Define Ionization potential.
2. What are quantum numbers?
3. State Hund's Rule of maximum multiplicity.
4. What are probability distribution curves.
5. What are carbonium ions?
6. Why are racemic compounds optically inactive?
7. Write conformations of ethane.
8. What are elimination reactions?
9. State collision number.
10. What is parachor?

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11. What are specific & molar refractivities?
12. State law of constancy of interfacial angles.

Section - B

Answer any two of the following :

(2×10=20)

13. a) Explain the concept of effective nuclear charge and Slater Rules. (6+4)
- b) What are factors influencing electronegativity. (6+4)
14. a) Discuss the shapes of S, P & d orbitals with neat diagrams. (6+4)
- b) Write a note on Vander Waal's radii. (6+4)
15. a) Outline Born - Haber cycle for the determination of lattice energy of an ionic compound. (6+4)
- b) Explain the characteristics of ionic compounds. (6+4)

Section - C

Answer any Two of the following :

(2×10=20)

16. a) Write a note nucleophilic and electrophilic substitution reactions with are example each. (6+4)
- b) Explain the linear hybridization by taking acetylene as example. (6+4)
17. a) What is optical activity? Explain optical isomerism in tartaric acid. (6+4)
- b) Differentiate between enantiomers and diastereomers with example. (6+4)
18. a) Discuss geometrical isomerism in maleic and fumaric acid. (6+4)
- b) Give the formation and stability of carbanion as a reactive intermediate. (6+4)

Section - D

Answer any Two of the following :

(2×10=20)

19. a) Obtain the relationship between critical constants and vander waal constants. (6+4)
- b) Give a qualitative account of molecular velocities possessed by gas molecules. (6+4)



20. a) How do you determine surface tension of a liquid by using stalagmometer? ₈
b) What is effect of temperature on viscosity and surface tension of a liquid. (6+4)
21. a) What are Miller indices? Write the procedure to determine miller indices by taking crystal planes intercepts at (2a, 3a, 6c) and (a, 2b, 2c)?
b) Derive Bragg's equation. ⁵ (6+4)
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24122 (New)

B.Sc. I - Semester Degree Examination, Nov./Dec.- 2018

CHEMISTRY

PAPER : I

(New)

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates:

1. Section A is Compulsory.
2. Section B contains Inorganic, Section C Organic and Section D Physical Chemistry questions.

SECTION-A

Answer any **TEN** of the following.

(10×2=20)

1. Why size of anion is larger than that of corresponding Cation?
2. State Aufbau principle .
3. Define Co-ordinate bond and give one example.
4. Define Van-der waal's Radius.
5. What is Cis-trans Isomerism?
6. What is Hybridization?
7. What are Carbanions? Give example.
8. What are meso compound?
9. State law of corresponding states & give the equation.
10. Define Coefficient of viscosity?
11. What are amorphous and crystalline solids?
12. What is plane of symmetry?

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**SECTION-B**Answer any **TWO** of the following.

(2×10=20)

13. a) Explain the concept of lattice energy on the basis of Born-Haber cycle (6)
b) Explain Pauli's exclusion principle and its applications. (4)
14. a) Explain the wave mechanical model of an atom. (6)
b) Discuss Mulliken's scale of electro negativity. (4)
15. a) Explain the trends in ionization energy variation in the periodic table. (6)
b) Write a note on effective nuclear charge. (4)

SECTION-CAnswer any **TWO** of the following.

(2×10=20)

16. a) Discuss different types of organic reaction with suitable examples. (6)
b) Explain the role of carbenes as reactive intermediates. (4)
17. a) Describe the optical isomerism of tartaric acid. (6)
b) Explain sp^2 hybridization by taking ethane as example. (4)
18. a) Discuss polar and free radical reaction mechanism. (6)
b) Give an account of E - Z nomenclature. (4)

SECTION-DAnswer any **TWO** of the following.

(2×10=20)

19. a) Explain PV isotherm of carbon dioxide. (6)
b) Give an account of Maxwell-Boltzmann distribution of molecular velocities. (4)
20. a) Explain the determination of viscosity of a liquid by Ostwald's viscometer. (6)
b) Deduce the structure of quinone by using atomic and structural parachor values. (4)
21. a) Derive Bragg's equation $n\lambda = 2d \sin \theta$ (6)
b) Sketch Bravais lattices for cubic crystal. What is its geometrical significance? (4)



30123(New)

B.Sc. I Semester Degree Examination, Nov/Dec - 2018

MATHEMATICS

Algebra - I

Paper - I and 1.1

(New)

Time : 3 Hours

Maximum Marks : 60

Instructions to Candidates:

Answer all sections.

Section - A

Answer any ten of the following :

(10×2=20)

1. Define predicate with an example.
2. Symbolise and negate the statement. "Some teachers are strict and all students cannot pass".
3. Define universal quantifiers with an example.
4. Find the truth set of the open sentence $P(x): x^2 - 13x + 36 = 0$ with $R[P(x)] = z$, the set of all integers.
5. Show that x^2+x-6 is a factor of $f(x) = x^4 + 2x^3 - 7x^2 - 8x + 12$.
6. Transform the equation $3x^4 - 4x^3 + 4x^2 - 2x + 1 = 0$ into another, whose leading co-efficient will be unity.
7. Solve the equation $x^4 + x^3 - 25x^2 + 41x + 66 = 0$ given that $3 + i\sqrt{2}$ is a root of it.
8. Using Descarte's rule of signs discuss the nature of the roots of the equation

$$x^9 - x^5 + x^4 + x^2 + 1 = 0.$$

[P.T.O]

(2)

9. Define eigen value and eigen vector of a square matrix.

10. Find the rank of the matrix A where $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 4 \\ 3 & 4 & 5 \end{bmatrix}$

11. If λ is an eigen value of a square matrix A then prove that λ^2 is eigen value of A^2 .

12. Define consistency and Inconsistency of a system of linear equations.

Section - B

Answer any four of the following :

(4×5=20)

13. If $p(x)$ and $q(x)$ be the open sentences with same replacement set then prove that $T[p(x) \vee q(x)] = T[p(x)] \cup T[q(x)]$.

14. Given $p \rightarrow (q \wedge r)$, $\sim s \rightarrow (\sim q \vee \sim r)$ and p , prove s , by reduction and Absurdum.

15. Solve the equation $4x^4 - 24x^3 + 31x^2 + 6x - 8 = 0$ given that the sum of two roots of the equation is zero.

16. Solve the equation $x^4 + 20x^3 + 143x^2 + 430x + 462 = 0$ by removing the second term.

17. If α, β, γ are the roots of the equation $4x^3 - x^2 + 7x + 1 = 0$ find the equation whose roots are

$$\frac{\alpha}{\beta + \gamma}, \frac{\beta}{\gamma + \alpha}, \frac{\gamma}{\alpha + \beta}$$

18. Solve $x^3 - 3x^2 + 12x + 16 = 0$ by Cardan's method.

Section - C

Answer any Four of the following :

(4×5=20)

19. Reduce the matrix A to its normal form where $A = \begin{bmatrix} 0 & 1 & -3 & -1 \\ 1 & 0 & 1 & 1 \\ 3 & 1 & 0 & 2 \\ 1 & 1 & -2 & 0 \end{bmatrix}$ and hence find the rank of the matrix.

20. Find the inverse of $A = \begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$.

21. Find the real values of λ for which the system

$$x + 2y + 3z = \lambda x$$

$$3x + y + 2z = \lambda y$$

$$2x + 3y + z = \lambda z$$

have non zero solutions.

22. Solve the following equations with the help of matrices.

$$x + 2y + 3z = 14$$

$$3x + y + 2z = 11$$

$$2x + 3y + z = 16$$

23. Find the eigen values and eigen vectors of the matrix $\begin{bmatrix} 5 & 4 \\ 1 & 2 \end{bmatrix}$.

24. Using Caley Hamilton theorem find A^{-1} if

$$A = \begin{bmatrix} 1 & 0 & -1 \\ 1 & 2 & 1 \\ 2 & 2 & 3 \end{bmatrix}$$

B.Sc. I Semester Degree Examination, Nov./Dec. - 2018

MATHEMATICS - II

Calculus - I

Paper - 1.2

(New)

Time : 3 Hours

Maximum Marks : 60

Instructions to Candidates:

Answer all sections.

Section - A

Answer any ten of the following :

(10×2=20)

1. Find the n^{th} derivative of $(ax+b)^n$.
2. Find the n^{th} derivative of $\sin^2 x$.
3. If $y = x^n \log x$, show that $y_{n+1} = \frac{|n|}{x}$.
4. If $u = x^2 y + y^2 z + z^2 x$, show that $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} + \frac{\partial u}{\partial z} = (x+y+z)^2$.
5. If $u = \tan^{-1} \left(\frac{x^3 + y^3}{x+y} \right)$, show that $x \left(\frac{\partial u}{\partial x} \right) + y \left(\frac{\partial u}{\partial y} \right) = \sin 2u$.
6. Using partial differentiation, Find $\left(\frac{dy}{dx} \right)$ if $x^3 + y^3 - 3xy = 0$.
7. Find the angle between radius vector and the tangent for $r^2 = a^2 \cos 2\theta$.

[P.T.O]



8. For the curve $r = a\theta$, show that $P = \frac{r^2}{\sqrt{r^2 + a^2}}$.
9. For the curve $y = a \log \sec(x/a)$ show that $(ds/dy) = \operatorname{cosec}(x/a)$.
10. Find the radius of curvature of the curve $y = 4 \sin x - \sin 2x$ at $x = \pi/2$.
11. Show that $y = e^x$ is every where concave upwards.
12. Find envelope of family of circles $(x - \alpha)^2 + y^2 = \alpha^2$ where ' α ' is a parameter.

Section - B

Answer any four of the following :

(4×5=20)

13. Find the n^{th} derivative of
- a) $\sin x \sin 2x \sin 3x$.
- b) e^{ax+b} .
14. State and prove Leibnitz theorem.
15. Verify that $\frac{\partial^2 f}{\partial x \partial y} = \frac{\partial^2 f}{\partial y \partial x}$ for the function $f(x, y) = x^y + y^x$.
16. If $u = f(x, y)$ be a homogeneous function of degree ' n ' then prove that
- $$x^2 \frac{\partial^2 u}{\partial x^2} + 2xy \frac{\partial^2 u}{\partial x \partial y} + y^2 \frac{\partial^2 u}{\partial y^2} = n(n-1)u.$$
17. If $x = r \sin \theta \cos \phi$, $y = r \cos \theta \cos \phi$, $z = r \cos \theta$ then find $\frac{\partial(x, y, z)}{\partial(r, \theta, \phi)}$.
18. If u and v are functions of s and t , s and t are themselves functions of x and y then show that,

$$\frac{\partial(u, v)}{\partial(x, y)} = \frac{\partial(u, v)}{\partial(s, t)} \times \frac{\partial(s, t)}{\partial(x, y)}$$



(3)

30153 (New)

Section - C

Answer any Four of the following :

(4×5=20)

19. Show that the pair of circles intersect orthogonally $r^n = a^n \cos n\theta, r^n = b^n \sin n\theta$.
 20. Derive Derivative of arcs in cartesian form and parametric form.
 21. Find the pedal equation of the curve astroid $x^{2/3} + y^{2/3} = a^{2/3}$.
 22. Find the radius of curvature at any point on the curve $x = a(\cos \theta + \theta \sin \theta); y = a(\sin \theta - \theta \cos \theta)$.
 23. Find the points of inflection on the curve $x = \log(y/x)$.
 24. Find the evolute of the parabola $y^2 = 4ax$.
-

B.Sc. I Semester Degree Examination, Nov./Dec. - 2018

MATHEMATICS - II

Calculus - I

Paper - 1.2

(Old)

Time : 3 Hours

Maximum Marks : 60

Instructions to Candidates:

Answer all sections.

Section - A

Answer any TEN of the following :

(10×2=20)

1. Discuss the continuity of the function

$$f(x) = \begin{cases} x \sin\left(\frac{1}{x}\right) & \text{If } x \neq 0 \\ 0 & \text{If } x = 0 \end{cases} \text{ at } x = 0.$$

2. Examine the differentiability at $x = 0$, for the function $f(x) = \begin{cases} 1 + 2x & \text{If } x \leq 0 \\ 1 - 3x & \text{If } 0 < x \end{cases}$
3. Find the n^{th} derivative of $\sin(ax+b)$.
4. Find the angle between the radius vector and the tangent of $r = a(1 + \cos \theta)$.
5. Show that the pair of curves intersect orthogonally $r = ae^{\theta}$, $r = \left(\frac{b}{e^{\theta}}\right)$.
6. For the curve $r^2 = a^2 \sec 2\theta$, Find the length of perpendicular from the pole to the tangent.
7. Define Radius of curvature and write the formula in cartesian form.

[P.T.O]



8. Show that $y = e^x$ is everywhere concave upwards.
9. With usual notation show that $\left(\frac{ds}{d\theta}\right) = \left(\frac{r^2}{\rho}\right)$.
10. Find the Asymptotes parallel to the co-ordinate axes for the curve $x^2y^2 = a^2(x^2 + y^2)$.
11. Define multiple point and double point.
12. Write the co-ordinates of centre of curvature.

Section - B

Answer any FOUR of the following :

(4×5=20)

13. Find the n^{th} derivative of $y = \frac{1}{(3x-1)(2x-1)}$.
14. If $y = e^{m \sin^{-1} x}$, show that $(1-x^2)y_{n+2} - (2n+1)xy_{n+1} - (n^2 - m^2)y_n = 0$.
15. For the cardioid $r = a(1 + \cos \theta)$ show that $2ap^2 = r^3$.
16. Find the pedal equation of the $r = ae^{\theta \cos \alpha}$, ' α ' is a parameter.
17. Derive formula for Derivative of arcs for polar curve $r = f(\theta)$.
18. Find $\left(\frac{ds}{d\theta}\right)$ and $\left(\frac{ds}{dr}\right)$ for the curve $r^n = a^n \cos n\theta$.

Section - C

Answer any FOUR of the following :

(4×5=20)

19. Show that Radius of Curvature $\rho = \frac{(1+y_1^2)^{3/2}}{y_2}$.
 20. Find the co-ordinates of centre of curvature at the point $(t^2, 2t)$ on the parabola $y^2=4x$.
 21. Find the envelope of the family of curves $\frac{x^2}{\alpha^2} + \frac{y^2}{k^2 - \alpha^2} = 1$, where ' α ' is a parameter.
 22. Find the points of inflexion on the curve $x = \log(y/x)$.
 23. Find the Asymptotes of the curve $r = \frac{a\theta}{\theta - 1}$.
 24. Trace the curve cardioid $r = a(1 + \cos \theta)$.
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36124 (New)

B.Sc. 1 - Semester (CBCS) Degree Examination, Nov./Dec. - 2018

BOTANY

Virus, Bacteria, Cyanobacteria, Algae, Fungi and Lichens

Paper - 1.1

(New)

Time : 3 Hours

Maximum Marks : 70

I. Answer any Ten of the following questions.

(10×2=20)

1. What is Pilli? Mention its function.
2. What is lytic and lysogenic cycle?
3. Name the reproductive bodies of Chara.
4. What are urediospores and teleutospores?
5. What are chemo - heterotrophic bacteria?
6. What is Rhizomorph? Mention its function.
7. Which alga is commonly called as frog spawn and why?
8. What are Bilaterally symmetrical diatoms? Give an example.
9. What is diatomite and diatomaceous earth?
10. What is false branching system? Give an example.
11. What is a heteroecious fungus? Give an example.
12. What is the causative agent of red rot of sugarcane disease?

[P.T.O]



(2)

36124 (New)

(4×5=20)

II. Answer any **Four** of the following questions.

13. Explain the ultrastructure of T4 - Bacteriophage with neat labeled diagram.
14. Describe the general characters of *Rhodophyceae*.
15. Explain the Asexual reproduction of *Oedogonium* with neat labeled diagram.
16. Explain the sexual reproduction in *Volvox* with neat labeled diagram.
17. Describe the sexual reproduction in *Penicillium* with neat labeled diagram.
18. Write a note on economic importance of lichens.

III. Answer any **Three** of the following questions.

(3×10=30)

19. Explain the life cycle of *Rhizopus* with neat labeled diagram.
 20. Explain the economic importance of fungi.
 21. Describe the life cycle of Puccinia with neat labeled diagram.
 22. Explain the Isomorphic type of life cycle in Ectocarpus with neat labeled diagram?
 23. Mention the causal organism, symptoms, disease cycle and controlling measures of Tikka disease of Ground nut.
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36125

B.Sc. I - Semester (CBCS) Degree Examination, Nov./Dec. - 2018

ZOOLOGY

Biology of Non - Chordates

Paper - Z.1

Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates:

1. Answer All questions.
2. Draw labelled diagrams wherever necessary.

SECTION - A

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

1. What is species? Who is regarded as father of taxonomy?
2. Define perisarc and coenosarc.
3. Name the adhesive organs found in phylum platyhelminthes.
4. What is encystation?
5. Define Apolysis.
6. What is spongocoel? In which phylum do you find?

SECTION - B

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

7. Enumerate the unique features of the phylum Nematelminthes.
8. What is vermicompost? Explain the steps involved in the vermiculture.
9. Explain the second maxillipede of prawn with labelled diagram.

[P.T.O]



10. Sketch and label the male reproductive system of prawn.
11. Write a short notes on Bipinnaria and Echinopluteus larva of Echinoderms.
12. Describe the rules and Advantages of Binomial nomenclature.
13. Write a note on the spicules of sponges.
14. Explain the different theories regarding locomotion in Amoeba.

SECTION - C

Answer any Three of the following :

(3×10=30)

15. Explain the classification of the phylum Mollusca upto classes with examples.
16. Explain the digestive system of pila globosa with a neat labelled diagram.
17. Describe the life cycle of obelia with a neat labelled diagram.
18. Describe the morphology of Tapeworm with a neat labelled diagram.
19. Write the unique features of the phylum Echinodermata and classify upto classes with examples.