K.L.E. Society's

Raja Lakhamagouda Science Institute

(Autonomous)

BELAGAVI.

SUBJECT

B.Sc - I Semester

Nov - 2018

QUESTION PAPER BOOKLET

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

KLE Society's

Raja Lakhamagouda Science Institute (Autonomous), Belagavi.

First Semester B. Sc Degree Examination NOV- 2018

A01: BASIC ENGLISH

Duration: **3 Hrs** Max Marks: **70**

I. Answer the following questions in a word, a phrase or a sentence each: **10x1=10**

1. Which phrase is often repeated by the speaker's neighbor in the poem 'Mending Wall'?
2. Which was the happiest half hour of the day for the grand mother?
3. Who is the speaker of the poem 'The Bangle Sellers'?
4. What appeal does Lincoln make to his son's teacher about the act of being gentle?
5. What is the object of education according to Socrates?
6. Who is the antagonist of the story 'The Open Window'?
7. What opinion the villagers have about the school master?
8. Who discovered the pool?
9. Who is referred as the 'Maker' in the poem 'On His Blindness'?
10. What was one major quality that hindered the progress of Indians?

II. Explain the Reference to the context of the following:
(One each from prose and poetry to be answered) **2x5=10**

a) i) 'We'll call it Rusty's pool and remember, it's a secret pool, no one else must know about it'.

ii) 'To her music had lewd associations. It was the monopoly of harlots and beggars'.

b) i) 'And post o'er land and ocean without rest:
They also serve who only stand and wait.'

ii) 'While words of learned length and thundering sound
Amazed the gazing rustics rang'd around'

III. **1x10=10**

a) What sort of tragedy had happened in Mrs. Sappaleton's life, as narrated by the niece? Explain.

OR

b) Discuss the excitement of Gopal on seeing snowflakes and embarrassment on being watched by a guard?

IV. **1x10=10**

a) Discuss the use of colour imagery in the poem 'The Bangle Sellers'.

OR

b) Identify the values that Lincoln expects the teacher to teach his son in the poem 'Letter to His Son's Teacher'.

V. A) Fill in the blanks with appropriate articles **5x1=5**

a) My mother is ___ honest woman.
b) An apple a day keeps ___ doctor away.
c) Mary is training to be ____ engineer.
d) We need a building to set ___ office for our company.
e) Johnson is ___ European.

B) Fill in the blanks with appropriate prepositions **5x1=5**

a) He is careless _____ his health.
b) The whole nation is _____ its army.
c) He divided his property equally _____ his two sons.
d) This is a surprise gift _____ you.
e) He saved the child ____ kidnappers.

VI. Give one word substitute for the following. **10x1=10**

a) One who does not believe in the existence of god.
b) Persons living at the same time.
c) One who does not express himself freely.
d) A person who is lover of mankind.
e) A book written by an unknown author.
f) A government by the nobles.
g) A group of judges.
h) A person who is above hundred years.
i) One who has no money.
j) One who compiles dictionaries.

VII. Read the following passage and answer the questions given below: **5x2=10**

India is a land of festivals. Each state has its own festivals apart from the common festivals, celebrated all over the county. Many of our festivals are harvest or spring festivals. The Basant Panchami celebrates the advent of the spring season. It is a joyous festival dedicated to Saraswathi, the goddess of learning, literature and arts. This festival comes on the 5th day of the month of May according to the Indian calendar. According to the Vedas, it is believed that the Goddess purifies our hearts and gives us knowledge. The Goddess blesses us with the capacity to appreciate beauty and truth and inspires us to write poetry, create art or anything of aesthetic value.

Ancient people worshipped all elements of nature, such as the sun, moon, rain, wind, rivers, trees, animals etc. The composers of the Vedas lived on the banks of a river, which came to be called Saraswathi. They worshipped the Goddess, who was the presiding deity of the river. Even today, on Basnt Panchami day, the Goddess is worshipped with great devotion. People worship the deity by offering flowers.

1. What does Basant Panchami celebrate and to whom is it dedicated?
2. Who is Goddess Saraswathi and what does she purify?
3. Mention the two blessings of Goddess Sasarwathi?
4. Which are the seven elements worshipped by ancient people?
5. According to the Indian calendar the festival comes on the ___day of the month of ____.

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KLE Society's

Raja Lakhamagouda Science Institute (Autonomous),

Belagavi.

First Semester B.Sc. Degree Examination Nov - 2018

A02: KANNADA

Duration: 3 Hrs | Max Marks: 70

ಭಾಷೆ ಮತ್ತು ಬರಹದ ಶುದ್ಧಿಗೆ ಗಮನ ಕೊಡಲಾಗುವುದು.

ಪ್ರ. 1. ನಿಜ ಭಕ್ತನ ಭಕ್ತಿ ಮತ್ತು ನಿಲುವುಗಳನ್ನು ಅಲ್ಲಮ ಪ್ರಭುಗಳು ತಮ್ಮ ವಚನಗಳಲ್ಲಿ ಹೇಗೆ ವ್ಯಕ್ತಪಡಿಸಿದ್ದಾರೆ?

ಅಥವಾ

ಕೃಷ್ಣನ ರಾಜನೀತಿಗೆ ಕರ್ಣನ ಪ್ರತಿಕ್ರಿಯೆ ಹೇಗಿತ್ತು? ಪಠ್ಯವನ್ನಾಧರಿಸಿ ವಿವರಿಸಿ. **10 ಅಂಕಗಳು**

ಪ್ರ. 2. ನರೇಂದ್ರನು ಪ್ರಥಮ ಬಾರಿ ರಾಮಕೃಷ್ಣ ಪರಮ ಹಂಸರನ್ನು ಕಂಡ ಸನ್ನಿವೇಶದ ಸ್ವಾರಸ್ಯವನ್ನು ವಿವರಿಸಿ ಬರೆಯಿರಿ.

ಅಥವಾ

ಚಿಕ್ಕಾಗೋ ಸರ್ವಧರ್ಮ ಸಮ್ಮೇಳನದಲ್ಲಿ ವಿವೇಕಾನಂದರು ಮಾಡಿದ ಭಾಷಣದ ಪ್ರಭಾವ ಜಗತ್ತಿನಾದ್ಯಂತ ಹೇಗಿತ್ತು? **10 ಅಂಕಗಳು**

ಪ್ರ. 3. **ಬೇಕಾದ ನಾಲ್ಕಕ್ಕೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.** **4x5=20 ಅಂಕಗಳು**

1) ಹಲಸಂಗಿ ಗೆಳೆಯರು
2) ಅದ್ದೂರಿ ಶವ ಸಂಸ್ಕಾರ
3) ನಾವು ಹುಡಗಿಯರೇ ಹೀಗೆ
4) ನರೇಂದ್ರನ ಬಾಲ್ಯ
5) ಶಾರದಾದೇವಿ
6) ಮತ್ತೆ ಪಶ್ಚಿಮಕ್ಕೆ

ಪ್ರ. 4. **ಬೇಕಾದ ಮೂರಕ್ಕೆ ಸಂದರ್ಭದೊಡನೆ ಸ್ಪಷ್ಟೀಕರಿಸಿರಿ.** **3x5=15 ಅಂಕಗಳು**

1) ಬಡತನ ನನಗಿರಲಿ ಭಾಲ ಮಕ್ಕಳಿಗಿರಲಿ.
2) ಗಂಡನಿಗೆ ಮಾತ್ರ ಅದರ ಸುಳಿವು ಸಿಗದಂತೆ ನಟಿಸುತ್ತೇವೆ.
3) ಪ್ರೀತಿ ಇಲ್ಲದ ಮೇಲೆ ಹೂವು ಅರಳೀತು ಹೇಗೆ?
4) "ನಿನ್ನ ಮನೆಯ ಕಷ್ಟಗಳನ್ನು ಪರಿಹರಿಸುವಂತೆ ತಾಯಿಯನ್ನು ಕೇಳಿದೆಯಾ"?
5) ನನಗೆ ನೀನು ಏನು ತಾನೆ ಕೊಟ್ಟಿದ್ದಿಯಾ?

Important Note: 1. On completing answers, compulsorily draw diagonal lines on the remaining blank pages.
2. Any revealing of identification, appeal to valuator and / or equations written will be treated as malpractice.

(ಮು.ತಿ.ಸೋ)

ಪ್ರ. 5. ಒಂದೇ ವಾಕ್ಯದಲ್ಲಿ ಉತ್ತರಿಸಿರಿ. 15x1=15 ಅಂಕಗಳು

1) 'ಮಧುರ ಚೆನ್ನ' ಇದು ಯಾರ ಕಾವ್ಯನಾಮ?
2) ಅಮೃತಸಾಗರದಲ್ಲಿದ್ದು ಯಾವುದರ ಚಿಂತೆ ಮಾಡಬಾರದು?
3) ಭೇದ ಹಿಕ್ಕಿರಿದವರು ಯಾರು?
4) ಕುಮಾರವ್ಯಾಸ ಆರಾಧ್ಯ ದೈವ ಯಾವುದು?
5) 'ಸೌಂದರ್ಯ ಸಮೀಕ್ಷೆ' ಯಾರ ಕೃತಿ?
6) ಬರಿ ಪದಕ್ಕೆ ಪದ ಜತೆಗಿದ್ದ ಮಾತ್ರಕ್ಕೆ ಏನಾಗುವುದಿಲ್ಲ?
7) ಹೊಸ ಸೊಸೆಯ ಜಡೆ ಹಿಡಿದು ಎಳೆದು ತದುಕಿದವಳಾರು?
8) ಮುದೆನೂರು ಸಂಗಣ್ಣ ಹುಟ್ಟಿದ್ದೆಲ್ಲಿ?
9) 'ನಾವು ಹುಡುಗಿಯರೇ ಹೀಗೆ' ಕವಿತೆ ಬರೆದವರಾರು?
10) ತರಕಾರಿ ಕೊಳ್ಳುವಾಗ ಸಿಕ್ಕವರಾರು?
11) ನರೇಂದ್ರನ ತಾಯಿ ಯಾರು?
12) ವಿಶ್ವನಾಥ ದತ್ತರ ವೃತ್ತಿ ಯಾವುದು?
13) ಚಿಕ್ಕಾಗೋ ಧರ್ಮ ಸಮ್ಮೇಳನದಲ್ಲಿ ವಿವೇಕಾನಂದರು ಮೊದಲು ಮಾತನಾಡಿದ ದಿನ ಯಾವುದು?
14) ರಾಮಕೃಷ್ಣ ಪರಮಹಂಸರ ಆರಾಧ್ಯ ದೈವ ಯಾವುದು?
15) ನಿಮ್ಮ ಪತ್ಯಕ್ಕಿರುವ 'ಸ್ವಾಮಿ ವಿವೇಕಾನಂದ' ಪುಸ್ತಕ ಬರೆದವರಾರು?

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KLE Society's

Raja Lakhamagouda Science Institute (Autonomous),

Belagavi.

First Semester B.Sc. Degree Examination Nov- 2018

A03: HINDI

Duration : 3 Hrs **Max Marks : 70**

पाठ्य–क्रम

"सदा गद्य–गरिमा

अनुवाद

सूचना:– सभी प्रश्नों के उत्तर देवनागरी लिपि में लिखिए:

प्र.I. सही उत्तर लिखिए (कोई दस) **10X1=10**

1. हलकू अपने कुत्ते को किस नाम से पुकारता था?
   अ) हीरा ब) जबरा क) मोती
2. बीजों का थाललिये महाराज के साथ कौन थी ?
   अ) मंत्रि ब) सैनीक क) मधुलिका
3. सोना हिरन को किस ने पाला था ।
   अ) महादेवी वर्मा ब) माली क) नौंकर
4. सम्राट चन्द्रगुप्त के महा मंत्रिका नाम क्या है?
   अ) वसुगुप्त ब) चाणक्य क) पुष्पदन्तं
5. 'समय पर मिलनेवाले' पाठ का लेखक कौन हैं?
   अ) प्रेमचन्द ब) प्रसाद क) हरिशंकर प्रसाई
6. 'दारा' का भाई का नाम क्या है?
   अ) औरंगजेब ब) अकबर क) तुगलक
7. 'जगदीशचंद्र बसु कलकत्ता में कौन से कॉलेज में प्रोफेसर थे?
   अ) विल्लसन् कॉलेज ब) प्रेसीडेंसी कॉलेज क) सेंट जेवियर्स कॉलेज
8. 'लिंगराज का मृत्यु पत्र कौन से म्युजियम में हैं ।
   अ) जपान ब) चीन क) लंडन
9. मॉरिशस की राजधानी का नाम क्या है ।
   अ) पोर्टलुईस ब) मोका क) वाकोस
10. लिंगराज की मृत्यु किस बिमारी से हुई?
    अ) प्लेग ब) तपेदिक (T.B.) क) मलेरिया
11. 'धरती का स्वर्ग तथा छोटा भारत मारिशस' किस प्रकारकी रचना हैं ।
    अ) कहनी ब) आदर्श चरित्र क) यात्रावर्णन
12. 'सदा गद्यगरिम' में कितने पाठ हैं ?
    अ) ९ ब) १० क) ११

Important Note: 1. On completing answers, compulsorily draw diagonal lines on the remaining blank pages.
2. Any revealing of identification, appeal to valuator and / or equations written will be treated as malpractice.

प्र. II. किन्हीं दो की सप्रसंग व्याख्या कीजिए: **2X5=10**

1. "ला दे दे, गला तो छूटे । कम्मल के लिए कोई दूसरा उपाय सोचूँगा ।
2. "किन्तु राजनर्त्तकी महासती सीता नहीं बन सकती जो भूमी में विलीन हो जावे"।
3. "हां–हां, कभी भी आ जाओ । तुम्हारा तो घर है । और मैं तो हमेशा घर पर ही रहता हूँ ।"

प्र. III. किन्हीं दो प्रश्नों के सही उत्तर लिखिए: **2X10=20**

1. हल्कू का चरित्र चित्रण कीजिए ।
2. 'पुरस्कार' कहानी का सारांश लिखिए ।
3. मौलाना मुहम्मद अली किस तरह महान होगये।
4. 'त्यागवीर लिंगराज' पर एक लेख लिखिए ।

प्र.IV. किन्हीं तीन पर टिप्पणी लिखिए: **3X5=15**

1. कौमुदी महोत्सव
2. जगदीश चन्द्र बसु
3. मॉरिशस में हिन्दी
4. सोना

प्र. V. हिन्दी में अनुवाद कीजिए: **15 Marks**

Mobile is one of the miracles of Technology. It is an important communication instrument of recent times. Now it has become the part and parcel of the human life. It has created revolution in the filed of communication technology.

ಮೊಬೈಲ್ ಆಧುನಿಕ ತಂತ್ರಜ್ಞಾನದ ಪವಾಡಗಳಲ್ಲಿ ಒಂದಾಗಿದೆ. ಇದು ಇತ್ತೀಚಿನ ಕಾಲದ ಒಂದು ಮುಖ್ಯ ಸಂವಹನ ಉಪಕರಣವಾಗಿದೆ. ಈಗ ಇದು ಮಾನವನ ಜೀವನದಲ್ಲಿ ಅವಿಭಾಜ್ಯ ಅಂಗವಾಗಿದೆ. ಇದು ಸಂವಹನ ತಂತ್ರಜ್ಞಾನದ ಕ್ಷೇತ್ರದಲ್ಲಿ ಒಂದು ಹೊಸ ಕ್ರಾಂತಿಯನ್ನೇ ಮಾಡಿದೆ.

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

KLE Society's

Raja Lakhamagouda Science Institute (Autonomous),

Belagavi.

First Semester B.Sc. Degree Examination Nov- 2018

A04: ADDITIONAL ENGLISH

Duration: **3 Hrs** Max Marks: **70**

Important Note: 1. On completing answers, compulsorily draw diagonal lines on the remaining blank pages.
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I. Answer the following questions in a word, a phrase or a sentence each: 10x1=10

1. Which is the wonder of the ancient world?
2. What is the literary form of 'How He Lied to Her Husband'?
3. Who call their country Nippon?
4. What is the occupation of the narrator's father in 'The Homecoming'?
5. Who is Aurora Bompas?
6. What did Mathilde suddenly discover after she returned home?
7. Who is the author of the short story 'The Bet'?
8. Who is Monsieur Loisel?
9. What gifts does the couple give each other?
10. According to the narrator who was the Magi?

II. Explain any two reference to context of the following. 2x5=10

1. 'I tried: but Lohingrin was sold out for tonight'.
2. No matter, comrades, you shall not, be forgotten, nor your death go unarranged'.
3. You need not look for it. It is sold, I tell you sold and gone, too.'
4. Could you lend me this, just this alone?'

III. 10x1=10

a) Sketch the character of Henry Apjohn.

OR

b) How did Madame Loisel's craze for jewels bring misery to the Loisels? Explain.

IV. 10x1=10

a) Discuss the observations made by the Chinaman in the story 'The Coffee House of Sutra'?

OR

b) How does Anton Chekhov point out that wealth alone does not constitute true happiness in the story 'The Bet'?

V. Use the appropriate linkers in the bracket and frame a meaningful sentence. (and, also, due to, because, but, however, too, although) **5X1=5**

1) Terrible weather. We have cancelled the picnic.
2) I like sea food. I like spicy food.
3) I couldn't see. It was too dark.
4) It was raining. I went for a walk.
5) She writes novels. She writes poetry.

VI. Use the Following Phrases and Idioms in your own words: **5X1=5**

1) Bad blood
2) Costs an arm and leg
3) A bed of roses
4) Zip your lip
5) Go with the flow

VII. Write a Welcome Speech on the eve of annual day. **10 Marks**

VIII. Prepare an agenda for Cultural Program organized in your college. **10 Marks**

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KLE Society's
Raja Lakhamagouda Science Institute (Autonomous)
Belgaum
First Semester B.Sc. Degree Examination Nov- 2018
A05 : URDU

Max Marks: 70 **Duration: 3 hrs**

نصابی کتاب: کاروان ادب (حصۂ نثر و نظم)

ہدایات : تمام سولات لازمی ہیں۔ ہر سوال کے نشانات بائیں جانب درج ہیں

سوال نمبر ۱: کوئی پانچ سوالات کے جوابات دو یا تین جملوں میں لکھئے۔ **5×2 = 10**

۱) بہادر شاہ اپنی بیٹی کو قریب بلا کر کیا کہتے ہیں؟

۲) میر فیضی علی نے کلثوم کے قافلے کے ساتھ کیا برتاؤ کرتا ہے؟

۳) نور محل خواب میں کیا دیکھتی ہے؟

۴) غالبؔ اپنے خط میں میر مہدی کو میرن صاحب سے کیا کہتے ہیں؟

۵) ٹھاکر کی بارات کے تعلق سے گھیسو کیا کہتا ہے؟

۶) مادھو پور کا پتل بھکاری کو دے کر کیا کہتا ہے؟

۷) مجتبیٰ حسین اپنی ملاقات بعد فیض کے تعلق سے کیا کہتے ہیں؟

سوال نمبر ۲: مندرجہ ذیل سے کسی ایک پر تبصرہ کیجئے۔ **1×10 = 10**

۱) کفن

۲) سویرے جو کل میری آنکھ کھلی

سوال نمبر ۳: بحوالۂ متن کسی چار کی وضاحت کیجئے۔ **3×4 = 12**

۱) ''یہ موئے فرنگی بادشاہوں کی قدر کیا خاک جانیں خود اپنے بادشاہ کا سر کاٹ کر سولہ آنے کو بیچتے ہیں''

۲) ''ہم نے خرچ کا انتظام کروا دیا ہے۔ اب تم حج کا ارداہ کرلو''

۳) ''برسوں کے بعد میں جیل خانہ میں سے بھاگا۔ تین برس بلاد شرقیہ میں پھرتا رہا''

۴) ''بڑے آدمیوں کے پاس پکڑ لائے اور پھر مجلیس میں بٹھا دیا۔''

۵) ایسی بے دلی کا کلام سناتے تھے جیسے کسی دشمن کا کلام سنا رہے ہوں۔''

سوال نمبر ۳: کسی چار اشعار کی تشریح کیجئے۔ 4×4 = 16

۱) نہیں عشق جس وہ بڑا کوڑ ہے — کدھیں اس سے مل بسیا جائے نا

۲) بار بار اس کے در پہ جاتا ہوں — حالت اب اضطراب کی سی ہے

۳) حال دل یار کو لکھوں کیوں کر — ہاتھ دل سے جدا نہیں ہوتا

۴) ہو عمر خضر بھی تو معلوم وقت مرگ — ہم کیا رہے یہاں ابھی آئے ابھی چلے

۵) بڑھاؤ نہ آپس میں ملت زیادہ — مبادہ کہ ہو جائے نفرت زیادہ

۶) زمانے کیا کیا ستم دیکھتے ہیں — ہمیں جانتے ہیں جو ہم دیکھتے ہیں

سوال نمبر ۵: کسی ایک کا خلاصہ لکھئے۔ 1×10 = 10

۱) حمد

۲) قید خانے کی رات

سوال نمبر ۶: کسی دو پر نوٹ لکھئے۔ 2×6 = 12

۱) مرزا غالبؔ

۲) پریم چند

۳) الطاف حسین حالیؔ

۴) علامہ اقبالؔ

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

KLE Society's

Raja Lakhamagouda Science Institute (Autonomous),

Belagavi.

First Semester B.Sc./BCA Degree Examination Nov - 2018

A10: INDIAN CONSTITUTION

Duration: **1 ½ Hrs** Max Marks: **70**

Instructions to candidates:

1. *Instruction: Answer any 70 of the following questions in the OMR sheet provided.*

1) Who was the Chairman of Drafting Committee?
a) Dr. B. R. Ambedkar b) Mount Batten c) C Rajagopal Achari d) Dr. Rajendra Prasad

2) The Indian Constitution was enforced on
a) 15th Aug, 1947 b) 26th Nov, 1949 c) 26th Jan, 1950 d) 30th Jan, 1950

3) The Constitution of India was adopted by the
a) Parliament of India b) Constituent Assembly c) Governor General d) British Parliament

4) Who was the first elected chairman of the Constituent Assembly?
a) B.R.Ambedkar b) B.N.Rao c) Dr.Rajendra Prasad d) Jawaharlal Nehru

5) The objective resolution was moved in the Constituent Assembly on
a) December 13, 1946 b) January 26, 1950 c) November 26, 1946 d) November 26,1950

6) What was the total number of members in the Drafting Committee of Constitution?
a) Five b) Six c) Seven d) Eight

7) Who was Constitutional Advisor to the Constituent Assembly?
a) B.L. Mitter b) K.M. Munshi c) B.N. Rau d) A.K.IYER

8) How long did the Constituent Assembly take to finally pass the Constitution?
a) 5years 11 months 19 Days b) 2years 11 months 18 Days
c) 7years 11 months 19 Days d) 3years 11 months 19 Days

9) Who boycotted the Indian Constituent Assembly?
a) Unionist Muslim b) Muslim League c) Unionist Scheduled Caste d) Krishak Poja

10) India is a
a) Hindu state b) Secular state c) Bilingual state d) None of these

11) India is 'Republic' because
a) Its head of the State is elected by its people. b) There is a parliamentary rule
c) It is completely free d) It prescribes democratic government

12) The Indian Constitution is a
a) Brief constitution b) medium size constitution
c) Bulkiest constitution d) very brief constitution

13) The Government has declared which day as Constitution Day/National Law Day
a) 26th January b) 26th November c) 26th December d) 15th August

14) There is popular sovereignty in India because the Preamble to the Constitution begins with the words
a) Democratic India b) People's Democracy c) Sovereignty of People d) We the people of India

15) At the time of enactment of the Constitution which one of the following ideals was not included in the Preamble?
a) Equality b) Justice c) Socialist d) Liberty

16) The correct nomenclature of India according to the Preamble is
a) Sovereign, Secular, Democratic Republic b) Sovereign, Democratic Republic
c) Sovereign, Socialist, Secular, Democratic Republic d) Sovereign, Secular, Socialist

17) Constitution of India was adopted by constituent assembly on?
a) 25 October, 1948 b) 25 October, 1949 c) 26 November, 1948 d) 26 November, 1949

18) The Preamble to our Constitution includes all except
a) Adult franchise b) Equality of status c) Fraternity d) Justice

19) Which of the following is not a feature of the Constitution of India?
a) It is democratic b) it is republic c) it is federal d) it is Presidential

20) Which of the following is not a condition for becoming a citizen of India?
a) Birth b) Acquiring property c) Descent d) Naturalization

21) Under the Indian Constitution, what does `Adult Suffrage' signify
a) Children b) Persons
c) Any Indian citizen who is of the age of 18 years and above d) None of these

22) Which type of Citizenship, the Constitution has established for the whole of India?
a) Single citizenship b) Double citizenship
c) Three citizenship d) There is nothing like that in our Constitution

23) The word 'secularism' was added to the Preamble of the Constitution of India by which amendment
a) 40th b) 42nd c) 44th d) 46th

24) Which of the following countries enjoys a federal form of government?
a) China b) USA c) Cuba d) Belgium

25) Which Article of the Constitution defines "State"
a) Articles 12 b) Article 15 c) Article 11 d) Article 20

26) In India Right to Property is a
a) Moral Right b) Legal Right c) Fundamental Right d) Personal Right

27) Which Articles Confer Right to Equality
a) Articles 15-18 b) Article 14-18 c) Article 19-25 d) Article 25-30

28) The authority to issue Writs for enforcement of Fundamental Rights lies with
a) All the Courts in India b) Supreme Court & High Courts. c) The Parliament d) Cabinet

29) Under Article 15 state can make special provisions for
a) Persons of Indian Origin b) Only Citizens c) Women & Children d) None of the above

30) Directive Principles of State Policy is
a) Justiciable b) non-justiciable c) mandatory d) None of these

31) Article 17 abolishes
a) Right to property b) Untouchablity c) Both a & b d) Only "a"

32) Part IV A of the Indian Constitution deal with
a) Fundamental Duties b) Fundamental Rights
c) Directive Principles of state Policy d) Citizenship

33) Right to privacy is contained in
a) Article 22 b) Article 19 c) Article 21 d) Article 22

34) Article 19 of the Constitution of India contains
a) 9 Fundamental Freedoms b) 8 Fundamental Freedoms
c) 7 Fundamental Freedoms d) 6 Fundamental Freedoms

35) Article 32 stands suspended during an emergency under Article
a) 352 b) 356 c) 360 d) 362

36) Which fundamental right prohibits trafficking in human beings?
a) Right to equality b) Right against exploitation c) Right to freedom d) Right to property

37) The principle "No person shall be prosecuted and punished for the same offence more than once is
a) Double Jeopardy b) Doctrine of eclipse c) Doctrine of severability d) None

38) The unlawful detention of a person is questioned by the writ of
a) Habeas Corpus b) Certiorari c) Quo Warranto d) Mandamus

39) The procedure for amending the Constitution is in
a) Article 368 b) Article 360 c) Article 367 d) Article 371

40) A person arrested has to be produced before the
a) Supreme Court b) High Court c) Magistrate d) Governor

41) The aim of Directive Principles of state Policy is to establish
a) Welfare State b) Communist State c) Democratic State d) Capitalist State

42) Directive Principles of State Policy is borrowed from the Constitution of
a) Switzerland b) Ireland c) U.S.A d) Canada

43) Minimum age required to contest for Presidentship is
a) 23 years b) 21 years c) 35 years d) 30 years

44) The President of India is
a) Real head of the State b) Nominal head of the State
c) Real Chief Executive d) Dictator in the State

45) Vice President of India is elected by
a) Members of Parliament b) Members of State Legislative Assemblies
c) Rajya Sabha d) Lok Sabha

46) Prime Minister of India is appointed by the
a) Chief Justice b) Speaker c) President d) Vice President

47) Which of the following cannot be introduced in Rajya Sabha
a) Budget b) Amendment Bill c) Money Bill d) Finance Bill

48) Who will preside over the joint session of both the Houses of the Parliament?
a) Prime Minister b) President c) Speaker d) Vice President

49) The first hour of every sitting in both the Houses of the Parliament is devoted to
a) Question Hour b) Zero Hour c) Short Hour d) Half an Hour

50) Who is the final interpreter of the Indian Constitution?
a) President b) Supreme Court c) Parliament d) Law Minister

51) Who is the Chief Legal Adviser to Government of India?
a) Comptroller and Auditor General of India b) Attorney General of India
c) Union Law Minister d) All of them

52) Bi-cameral Legislature means
a) Legislature consists of one house b) Legislature consists nominated member
c) Legislature consists of two houses d) All above

53) Constitution of India recognizes Minorities on the basis of
a) Caste and Language b) Race and Language c) Religion and Language d) None of these

54) Under which article of the Constitution the Supreme Court of India has been established
a) Article - 24 b) Article - 124 c) Article - 224 d) Article - 231

55) In case a President dies while in office, the Vice President can act as President for a maximum period of
a) 1 years b) 3 months c) 6 months d) 2 years

56) Judge of the Supreme Court can be removed from offices by
a) Executive order b) Impeachment c) Judicial order d) Bureaucracy

57) Who administers the oath of office to the President of India before he enters upon the office?
a) Chief Justice of India b) Speaker c) Vice President d) Prime Minister

58) Who can initiate impeachment proceedings against the President of India?
a) Either House of Parliament b) Any Vidhan Sabha c) Only Lok Sabha d) Rajya Sabha

59) How many times the President of India can seek re-election to his post?
a) Once b) 3 times c) 2 times d) Any number of times

60) Which is the list that contains subjects in which both the centre and the states can legislate?
a) Union list b) State list c) Residuary list d) Concurrent list

61) The President can proclaim emergency on the written advice of the
a) Speaker of Lok Sabha b) Prime Minister c) Chief Justice of India d) Union Cabinet

62) The President's rule in a state means that the state is ruled by
a) The president b) a caretaker government
c) The C.M nominated by the president d) the governor of the state

63) Who is the ex- officio Chairman of the Council of States?
a) Vice- President b) Leader of the opposition c) President d) Speaker

64) The minimum age required for becoming the Prime Minister of India is
a) 30 years b) 35 years c) 40 years d) 25 years

65) How many types of Emergency have been visualized in the Constitution of India?
a) Four b) Three c) One d) Two

66) The election Commission does not conduct the elections to the
a) Lok Sabha b) President's election c) Rajya Sabha d) Local Bodies

67) The only-Union Territory which has a High Court of its own
a) Daman and Diu b) Delhi c) Lakshadweep d) Chandigarh

68) Salaries of the Judges of the Supreme Court are drawn from the
a) Grants-in-aid b) Public Accounts c) Contingency Fund d) Consolidated Fund

69) Which is the highest court of appeal in India?
a) Supreme Court b) President c) High Court d) Privy Council

70) Judge of the Supreme Court of India is to hold office until he attains the age of
a) 58 years b) 62 years c) 60 years d) 65 years

71) Balvant Rai Mehta Committee was appointed to review
a) National Extension Service b) Panchayati Raj
c) Electoral system d) Community Development Programme

72) In India, political parties are given recognition by
a) Election Commission b) Speaker of Lok Sabha c) President d) Law Commission

73) Local self Government means
a) Urban Governments b) Panchayat raj c) Rural Development d) None of the above

74) The Sarkaria commission was appointed to review
a) The Union State Relations b) Powers of President
c) The Governors roll d) None of the above

75) Special status is given to Jammu and Kashmir under Article
a) 380 b) 370 c) 360 d) 350

76) Who was the first Prime Minister of India?
a) Jawaharlal Nehru b) Mrs. Indira Gandhi c) Dr. Rajendra Prasad d) Mahatma Gandhi

77) Who was the first speaker of the Lok Sabha?
a) P. Upendra b) Hukam Singh c) Anantha Sayanam Ayyanagar d) Malvankar

78) The design of the National Flag was adopted by the Constituent Assembly of India in
a) 22 July, 1947 b) 25August, 1947 c) 15July, 1948 d) 21July, 1950

79) Which of the following was adopted from the Maurya dynasty in the emblem of Government of India?
a) Horse b) Words Satyameva Jayate c) Four lions d) Chariot Wheel

80) 'AADHAR' is a programme :
a) to help senior citizens b) to provide nutritional support to adolescent woman
c) to train people for social defence d) to provide identity to Indian residents

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KLE Society's

Raja Lakhamagouda Science Institute (Autonomous),

Belagavi

First Semester B.Sc. Degree Examination Nov - 2018

A11: STATISTICS

Duration: 3 Hrs **Max Marks: 70**

Instructions to candidates:

1) Mathematical and Statistical tables will be supplied on request.
2) Use of calculators is permitted.

Important Note: 1. On completing answers, compulsorily draw diagonal lines on the remaining blank pages.
2. Any revealing of identification, appeal to valuator and / or equations written will be treated as malpractice.

I. Answer any FIVE of the following **5X2=10**

1. Define discrete variable and continuous variable.
2. What is the scope of statistics?
3. State any two properties of Arithmetic mean.
4. Distinguish between absolute and relative measures of dispersion.
5. Show that $P(\Phi)=0$.
6. Define index number with example.
7. What are the uses of index number?

II. Answer any SIX of the following **6X5=30**

8. Mention different methods of collecting primary data and explain any one.
9. Define median and discuss merits and demerits.
10. Explain Skewness. State the methods of obtaining coefficient of skewness.
11. Show $AM \leq GM \leq HM$ for any two positive integers a and b.
12. Define r^{th} moment about origin and mean.
13. A bag contains two red, three blue and five black marbles, three marbles are drawn at random, what is the probability that the marbles are different colors.
14. State and prove addition theorem of probability, if events are not mutually exclusive and mutually exclusive.
15. Define price and quantity index number and show that, Fisher's index number satisfies TRT and FRT.

III. Answer any THREE of the following **3X10=30**

16. What is sampling? Explain

i) Simple Random sampling

ii) Stratified random sampling

iii) Systematic random sampling.

17. A variate takes the values a,ar, ar^2.....ar^{n-1}. Find AM, GM and HM. Show that G^2=AH.

18. Define dispersion. Explain different measures of dispersion with merits and demerits.

19. **a)** State axiomatic definition of probability of an event.

b) If $B \subset A$, then prove that

i) $P(A\bar{B}) = P(A) - P(B)$.

ii) $P(B) \leq PA)$.

20. **a)** Explain the different steps involved in the construction of index number.

b) Define cost of living index number with example.

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KLE Society's

Raja Lakhamagouda Science Institute (Autonomous), Belagavi.

First Semester B.Sc. Degree Examination Nov - 2018

A13: PHYSICS

Duration : **3 Hrs** Max Marks : **70**

Instructions to candidates:

1) Attempt all Questions.
2) Simple calculators are allowed for calculations.

Important Note: 1. On completing answers, compulsorily draw diagonal lines on the remaining blank pages.
2. Any revealing of identification, appeal to valuator and / or equations written will be treated as malpractice.

I. Answer any FIVE of the following: 5X2=10

1. Define Coriolis force.
2. What is fictitious force?
3. What is the effect of damping on frequency?
4. What is Lissajous figure?
5. State Hook's law.
6. Calculate Young's modulus of the material if rigidity modulus is $4.2X10^{10}Nm^{-2}$ and bulk modulus is $1.4X10^{10}Nm^{-2}$.
7. Calculate the height to which water rises in a capillary tube of diameter 1.5mm. Surface tension of water=$0.07Nm^{-1}$ and $g=9.8ms^{-2}$.

II. Answer any SIX of the following : 6X5=30

8. Describe center of mass as frame of reference.
9. What are damped vibrations? Obtain an differential equation for it.
10. Derive an expression for the excess of pressure inside the soap bubble.
11. Obtain an expression for moment of inertia of an annular ring about an axis passing through its centre and perpendicular to its length.
12. Obtain the condition for a satellite to be placed in orbit.
13. A copper wire 5m long and 2mm in diameter is fixed at one end and loaded with a weight of 31.4kg at the other end. If change in length is 1cm. Calculate Young's modulus of copper.
14. The acceleration of the particle executing simple harmonic motion is $\pi^2/3$ cm/s^2, when its displacement is 3cm. Calculate its time period of motion.
15. A fly wheel of moment of inertia $2X10^4$gmcm^2 about its axis. What will be its Kinetic energy when it rotates with angular velocity of 2.5rad s^{-1}?

III. Answer any THREE of the following: **3X10=30**

16. What are Galilean transformation equations? Derive Galilean transformation equation for inertial frame.

17. What is resonance? Explain experimental determination of unknown frequency by Helmholtz resonator.

18. Discuss about construction, launching and returning of satellite.

19. Obtain the expression for couple per unit twist of the wire fixed at one end and twisted by a couple at the free end.

20. Describe an experiment to determine co-efficient of viscosity of viscous liquid by the Stoke's method.

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13(I)
13(II)

Phy E 131
E 132

Comp. E 191
E 192

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KLE Society's

Raja Lakhamagouda Science Institute (Autonomous), Belagavi.

First Semester B.Sc. Degree Examination Nov - 2018

A14: CHEMISTRY

Duration: 3 Hrs **Max Marks: 70**

Instruction to Candidates:

1. ***Attempt all questions.***
2. ***Draw neat labelled diagrams and give equations wherever necessary***

I. Answer any FIVE of the Following. **5X2=10**

1. Write the values of l and m for n=2.
2. What do you mean by diagonal relationship?
3. Write the structural formulae for **i)** 2-methyl propane **ii)** 1-bromo butane.
4. Explain Chirality with an example.
5. State Henry's Law.
6. Define collision number.
7. State Nernst Distribution Law.

II. Answer any SIX of the Following. **6X5=30**

8. Explain Bohr's model of an atom and write its two limitations.
9. Discuss the classification of elements into s, p, d and f blocks.
10. Write any four requirements of primary standard substances and expand EDTA.
11. Explain sp^3 hybridization taking methane as an example.
12. Describe geometrical isomerism with example and write its conditions.
13. Explain the terms enantiomers and distereomers with examples
14. Calculate the pH of 0.5M solution of NH_4Cl [$K_b=1.8\times10^{-5}$]
15. Describe a method to determine the critical temperature and critical pressure.

Important Note: 1. On completing answers, compulsorily draw diagonal lines on the remaining blank pages.
2. Any revealing of identification, appeal to valuator and / or equations written will be treated as malpractice.

III. Answer any THREE of the Following. **3X10=30**

16. a) i. Calculate the percentage of Na and Cl in common salt [Na^{23} and $Cl^{35.5}$]

ii. State and explain Pauli's exclusion principle. **[2+3]**

b) Explain Ostwald's theory of acid-base indicator taking phenopthalien as an example.

17. a) Briefly explain types of Organic reactions with examples.

b)What are conformations? Explain conformational analysis of ethane.

18. a) Derive the expressions for Critical constants Vc, Pc and Tc from vanderwaals equation.

b) Mention any two limitations of Nernst Distribution law. **[8+2]**

19. a) Derive the relation between Kh, Kw, Ka and (degree of hydrolysis) x when salt of Weak acid and strong base undergoes hydrolysis.

b) Discuss the phenol-water system with neat diagram.

20. a) i) Discuss Hund's rule of maximum multiplicity with an example.

ii) Write the electronic configuration of Y (At.no=39)

b) Explain homolytic and heterolytic cleavage of a bond.

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KLE Society's

Raja Lakhamagouda Science Institute (Autonomous), Belagavi.

First Semester B.Sc. Degree Examination Nov- 2018

A15: BOTANY

Duration: 3 Hrs **Max Marks: 70**

Instructions to candidates:

1) Attempt all questions.
2) Draw labelled diagrams wherever necessary.

I. Answer any FIVE of the following: 5X2=10

1. Haematoxylin
2. Intercalary meristem
3. Casparian strips
4. Tapetum
5. PEN
6. Filiform apparatus
7. Suspensor

II. Answer any SIX of the following : 6X5=30

8. What is electron microscope? Explain the applications of electron microscope
9. Explain Histogen theory of apical meristem.
10. Explain the structural features and functions of Simple permanent, dead mechanical tissue.
11. Explain Dermal tissue system.
12. Explain the Extrastelar secondary growth in Dicot stem.
13. Explain the male gametogenesis in angiosperms.
14. With a neat labeled diagram explain Orthotropous ovule.
15. Give an account of pollen-pistil interaction.

III. Answer any THREE of the following: 3X10=30

16. Describe the secretary tissue system.
17. With a neat labeled diagram explain the anomalous secondary growth in Boerhaavia stem.
18. Describe the internal structure of dithecous anther.
19. Explain the structure of pollen grain and applications of Palynology.
20. Explain the types and functions of endosperm.

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KLE Society's

Raja Lakhamagouda Science Institute (Autonomous), Belagavi.

First Semester B. Sc Degree Examination Nov - 2018

A16: ZOOLOGY

Duration: **3 Hrs** Max Marks: **70**

Instruction to Candidates

1) Attempt all questions.
2) Draw neat labelled diagrams wherever necessary

I. Answer any Five of the following. **5x2=10**

1. What are diploblastic animals? Write an example.
2. Define syncytial epidermis.
3. Name any two beneficial insects.
4. Name any two Larval stages of Echinodermata.
5. Assign the following structures to their respective phyla
   a) pseudopodia **b)** parapodia
6. Write any two minor phyla.
7. What is the scientific names of Liverfluke and Blood fluke.

II. Answer any Six of the following. **6x5=30**

8. Sketch and label digestive system of starfish.
9. Write a note on Sponge Gemmule.
10. Give an account on types of Nutrition in protozoa.
11. Sketch and label pleurobrachia.
12. Explain the parasitic adaptations in Ascaris lumbricoides.
13. Write a note on clinical Importance of Leech.
14. Name the classes of phylum – mollusca with suitable examples.
15. Sketch and label externals of palaemon.

III. Answer any Three of the following. **3x10=30**

16. Explain the life history of Taenia solium.
17. With a help of neat labeled diagram explain reproductive system of Leech.
18. Write an account on Harmful insects.
19. Write the general characters of phylum porifera and classify up to classes with suitable examples.
20. What is polymorphism? Explain it with reference to coelenterates.

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KLE Society's

Raja Lakhamagouda Science Institute (Autonomous), Belagavi.

First Semester B.Sc. Degree Examination Nov – 2018

A17: ELECTRONICS

Duration: **3 Hrs** Max Marks: **70**

Instructions to candidates:

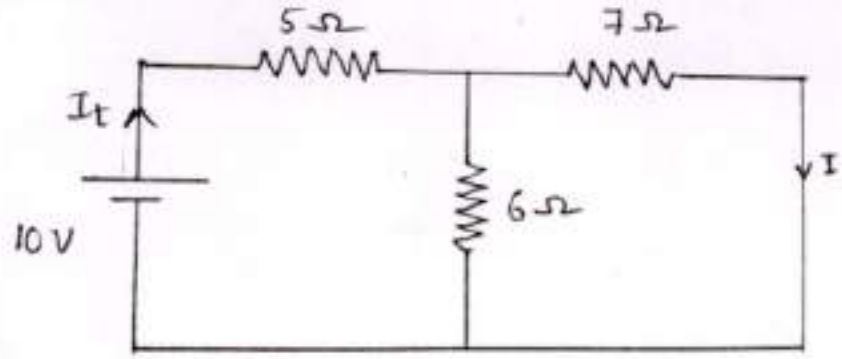
1) Attempt all Questions.
2) Draw diagrams, wherever necessary.

I. Answer any FIVE of the following **5x2=10**

1. State Kirchoff's laws.
2. Define PIV. Mention its value for FWR.
3. Prove that $\gamma = 1/1-\alpha$
4. Define line regulation.
5. What are optoelectronic devices? Give an example.
6. Find the value of β, if $\alpha = 0.98$
7. Draw the block diagram of IC – 7805 positive voltage regulator.

II. Answer any SIX of the following. **6x5=30**

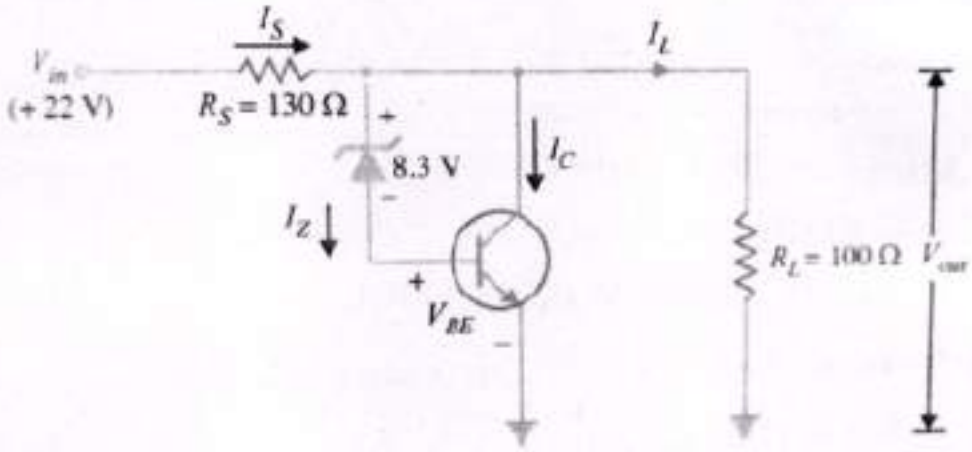
8. State and prove voltage divider theorem.
9. Differentiate between HWR and FWR.
10. Explain the procedure to draw d.c.load line.
11. With neat block diagram, explain regulated power supply.
12. Explain photomultiplier tube.
13. Verify the reciprocity theorem for the network shown below.



14. Determine the operating point of a silicon transistor biased by collector feed back resistor method for the following data.

Given: $R_B = 100K\Omega$, $R_C = 1K\Omega$, $\beta = 100$, $V_{CC} = 20V$ & $V_{BE} = 0.7V$

15. Determine **(i)** regulated voltage **(ii)** various currents for the shunt regulator shown in below figure.



Given $V_{BE} = 0.7V$

III. Answer any THREE of the following. **3x10=30**

16. State and prove Thevenin's theorem.

17. With neat circuit diagram, explain working of HWR and hence derive an expression for I_{dc}, I_{rms} & efficiency η

18. Explain voltage divider bias method and hence derive an expression for stability factor.

19. With neat circuit diagram, explain zener diode as a voltage regulator.

20.a) What is solar cell? Explain its construction & working.

b) Mention the applications of optoelectronic devices.

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KLE Society's

Raja Lakhamagouda Science Institute (Autonomous), Belagavi.

First Semester B. Sc Degree Examination Nov – 2018

A18: BIOTECHNOLOGY

Duration: **3 Hrs** Max Marks: **70**

Instruction to candidates
1) Attempt all questions.
2) Draw neat labeled diagrams wherever necessary

I Answer any FIVE of the following. **5X2=10**

1. What is telomere?
2. What is passive transport across cell membrane?
3. Write any two significance of mitosis.
4. What is aneuplody?
5. Define radioisotopes?
6. What is Maldi-tof?
7. Expand GCMS and GLC.

II Answer any SIX of the following. **6X5=30**

8. Write difference between mitosis and meiosis.
9. Explain cell cycle.
10. Explain process of cell signaling.
11. Give a note on ion exchange chromatography.
12. Explain process of apoptosis.
13. Write the causes for cancer.
14. Write principle and applications of mass spectroscopy.
15. Explain isoelectric focusing.

III Answer any THREE of the following. **3X10=30**

16. Define centrifugation and Explain types of centrifuges.
17. Write detailed account on electron microscope.
18. Explain SDS PAGE and Agarose gel electrophoresis.
19. Write a note on giant chromosome.
20. Give detailed account on branches of Biotechnology.

Important Note: 1. On completing answers, compulsorily draw diagonal lines on the remaining blank pages.
2. Any revealing of identification, appeal to valuator and / or equations written will be treated as malpractice.

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KLE Society's

Raja Lakhamagouda Science Institute (Autonomous), Belagavi.

First Semester B.Sc. Degree Examination Nov - 2018

A19: COMPUTER SCIENCE

Duration : **3 Hrs** Max Marks : **70**

Instructions to candidates:

1) Attempt all Questions.
2) Simple calculators are allowed for calculations.

I. Answer any FIVE of the following: **5X2=10**

1. Write the features of OOPS.
2. What is meant by Data Hiding?
3. Define typecasting.
4. Define class. Give an example.
5. What is function in C++? Mention its types.
6. Define destructor.
7. What are virtual functions?

II. Answer any SIX of the following : **6X5=30**

8. Give a basic structure of C++program.
9. What is variable? Mention the rules for naming a variable.
10. Explain the types of constants in C++ with suitable example.
11. Define friend function. Write a C++ program to swapping of two numbers.
12. Write a c++ program to arrange a list of numbers in ascending order.
13. Define inline function. Write a program to demonstrate inline function
14. What is inheritance? What are its types explain briefly.
15. List out the rules used for virtual functions.

III. Answer any THREE of the following: **3X10=30**

16. Explain the concepts of OOPS in detail
17. What is an operator overloading? Write a c++ program to demonstrate the operator overloading by + and – operator. .
18. Define constructor. Explain types of constructor in detail.
19. What is template? Explain with example of class template.
20. **a)** Write a note on arrays and its types
    b) What is exception handling in C++? Explain in detail.

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

KLE Society's

Raja Lakhamagouda Science Institute (Autonomous),

Belagavi.

First Semester B.Sc. Degree Examination Nov-2018

A20: MATHEMATICS: PAPER – I

Duration: 3 Hrs **Max Marks: 70**

Instructions to candidates:

1) Question paper has 3 sections. Answer all questions.
2) Simple Calculators are allowed.
3) Write all the intermediate steps and draw diagrams whenever necessary.

I Answer any FIVE of the following: **5X2=10**

1. State law of trichotomy and distribution law of real numbers.
2. Define rank of matrix.
3. Discuss the continuity of $f(x) = \begin{cases} \frac{x^2-4}{x-2} & for\ x \neq 2 \\ 4 & for\ x = 2 \end{cases}$ at x=2.
4. State Taylor's theorem.
5. Define Equivalent matrices with an example.
6. State Rolle's theorem.
7. Evaluate $\lim_{x\to 0} \log_x \tan x$

II Answer any SIX of the following: **6X5=30**

8. If $x, y, z \in R$ then show that $x^2 + y^2 + z^2 \geq xy + yz + zx$.
9. Find inverse of matrix A by elementary operation where $A = \begin{bmatrix} 1 & 1 & 3 \\ 1 & 3 & -3 \\ -2 & -4 & -4 \end{bmatrix}$.
10. State and prove Intermediate value theorem.
11. If $\lim_{x\to a} f(x) = \ell$ and $\lim_{x\to a} g(x) = m$, then show that $\lim_{x\to a} [f(x).g(x)] = \ell.m$.
12. Prove that $x > \log(1+x) > \frac{x}{1+x} \quad \forall x > 0$.
13. State and prove Taylor's theorem with schlomilch Rouches form of remainder.
14. Expand the function log(1+x) upto the term containing x^4 by maclaurin's expansion.
15. Evaluate $\lim_{x\to 0} (\cos x)^{1/x^2}$

Important Note: 1. On completing answers, compulsorily draw diagonal lines on the remaining blank pages.
2. Any revealing of identification, appeal to valuator and / or equations written will be treated as malpractice.

III Answer any THREE of the following: **3X10= 30**

16.a) State and prove Archimedean property of real numbers.

b) If $\lim_{x\to a} f(x) = \ell$ and $\lim_{x\to a} g(x) = m$, then prove that $\lim_{x\to a} [f(x) - g(x)] = \ell - m$.

17.a) Find a and b so that f is continuous everywhere $f(x) = 2x+1,\ x\leq 1$

$= ax^2+b,\ 1<x<3$

$=5x+2a,\ x\geq 3.$

b) Evaluate $\lim_{x\to a}\left(2-\frac{x}{a}\right)^{\tan\frac{\pi x}{2a}}$.

18.a) State and prove Lagrange's Mean value theorem.

b) Verify the cauchy's mean value theorem for the functions.

$f(x) = logx\ and\ g(x) = \frac{1}{x}\ in\ [1, e]$.

19.a) Reduce the matrix $A = \begin{bmatrix} 1 & 1 & 1 & 6 \\ 1 & -1 & 2 & 5 \\ 3 & 1 & 1 & 8 \\ 2 & -2 & 3 & 7 \end{bmatrix}$ to its normal form and find its rank

b) Prove that every continuous function in [a,b] is bounded.

20.a) Prove that $\log_e(\sec x) = \frac{x^2}{2} + \frac{x^4}{12} + \frac{x^6}{45} + ---$ using Maclaurin's series.

b) Prove that interchanging any two rows of a matrix do not alter the rank of matrix.

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Belagavi.

First Semester B.Sc. Degree Examination Nov-2018

A21: MATHEMATICS: PAPER – II

Duration: 3 Hrs **Max Marks: 70**

Instructions to candidates:

1) Question paper has 3 sections. Answer all questions.
2) Simple Calculators are allowed.
3) Write all the intermediate steps and draw diagrams whenever necessary.

I Answer any FIVE of the following: **5X2=10**

1. Define finite set and denumerable set.
2. State Remainder theorem.
3. Using factor theorem verify that x + 4 is a factor of $5x^4 + 16x^3 - 15x^2 + 8x + 16$.
4. Find the nth derivative of sin(ax+b)
5. Show that $\int_0^{\pi} \frac{\sqrt{1-\cos\theta}}{1+\cos\theta}.\sin^2\theta.d\theta = \frac{8\sqrt{2}}{3}$
6. If $r = ae^{\theta.cot\alpha}$ then show that $\varphi = \alpha$
7. Show that φ is constant for the curve $\log(x^2 + y^2) = k.\,tan^{-1}\left(y/_x\right)$

II Answer any SIX of the following: **6X5=30**

8. Prove that the unit interval I = [0,1] is non-denumerable.
9. Prove that the set N×N is countable.
10. Find all the rational zeros of $p(x) = x^3 - 9x + 9 + 2x^4 - 19x^2$.
11. Find the nth derivative of $sin^2x.cos^3x$
12. If $y = a.\cos(logx) + b.\sin(logx)$ then prove that $x^2y_{n+2} + (2n+1)xy_{n+1} + (n^2+1)y_n = 0$
13. Deduce the reduction formula for $I_n = \int \sin^n x dx$.
14. Show that the curves $r = a(1 + cos\theta) and\ r = b(1 - cos\theta)$ cut orthogonally
15. Show that tangents to the cardiod $r = a(1 + cos\theta)$ at the points with vertical angle $\pi/_3\ and\ 2\pi/_3$ are respectively parallel and perpendicular to initial line.

Important Note: 1. On completing answers, compulsorily draw diagonal lines on the remaining blank pages.
2. Any revealing of identification, appeal to valuator and / or equations written will be treated as malpractice.

III Answer any THREE of the following: **3X10 = 30**

16.a) If $\{A_\alpha : \alpha \epsilon \lambda\}$ be indexed family of sets, then prove that

(i) $\left(\bigcup_{\alpha\epsilon\lambda} A_\alpha\right)' = \bigcap_{\alpha\epsilon\lambda} A_\alpha'$ **(ii)** $\left(\bigcap_{\alpha\epsilon\lambda} A_\alpha\right)' = \bigcup_{\alpha\epsilon\lambda} A_\alpha'$

b) Prove that every subset of a countable set is countable.

17.a) State and prove Rational Root theorem.

b) Solve by Cardans method $x^3 - 6x - 9 = 0$.

18.a) State and prove Leibniz theorem.

b) If $x = sint\ and\ y = cospt$ then prove that
$(1 - x^2)y_{n+2} - (2n + 1)xy_{n+1} - (n^2 - p^2)y_n = 0$.

19.a) Find the reduction formula for $\int cos^n x dx$ and hence evaluate $\int_0^{\pi/2} \cos^n x dx$.

b) Evaluate $\int_0^{\pi/4} \tan^n x dx$.

20.a) Find the slope of the curve $r = asin2\theta$ at $\theta = \pi/4$.

b) Show that pedal equation of cartesian curve $x^2 + y^2 = 2ax$ is $r^2 = 2ap$.

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