

Faculty of Arts, Commerce, Science, Social Science and Business Management
B.A/B.Com/B.Sc/BBA I-Year CBCS-II Semester Regular Examinations –June, 2023
PAPER: General English

Time: 3 Hours

Max Marks: 80

Section-A

- I. Answer any *four* of the following questions (4x5=20 Marks)
- Identify finite and non-finite words in the following.
 - Sharmila is doing her home work now.
 - It is time to start.
 - She tried to help him.
 - The proposal has been examined today.
 - It is healthy to laugh at problems.
 - Fill in the blanks choosing the correct adjectives from the list below. Every, what, heavy, many, some
 - She aterice.
 -dog has its day.
 - The ship sustaineddamage.
 - She has taught them.....things.
 -time is it?
 - Complete the following words by filling blanks with suitable letters. -ic, -ive, -ity, -al, -ance
 - Mag-
 - Impress-
 - ragmat-
 - reciporc -
 - spiritu-
 - Define palindrome and write three Examples.
 - Identify the figures of speech in the sentences below.
 - She is busy as bee
 - He is cool as a cucumber
 - Suman is strong as a bull.
 - Life is a journey.
 - you are the light of my life
 - Fill the following blanks with portmanteau words.
 - blog :..... +.....
 - email :.....+.....
 - faction :.....+.....
 - brunch :.....+.....

Section-B

- II. Answer the following questions (4x15=60 Marks)
- (a) (i) What is the ironic twist in the story, 'Gift of the Magi'? (8 Marks)
 (ii) Read the passage and answer the questions. (7 Marks)

The Pochampad project also known as Sriram Sagar project is one of the most prestigious and the major irrigation projects of Telangana. It is located at Pochampally village in Balakonda Mandal in the district of Nizamabad. It is an irrigation project constructed across the Godavari. The project irrigates around 4,00,000 acres of land in Nizamabad, Karimnagar, Warangal and Adilabad districts. It also provides drinking water to the city of Warangal. The Gupta and Ali Sagar Lift irrigation schemes in Nizamabad are fed by the backwaters of this project. The project also includes 2 canals Lakshmi canal and kakatiya canal. The former irrigates Nizamabad and the latter the Karimnagar and Warangal districts. The hydro electric plant working at the dam site has 4 turbines each with 9 MW capacity generating 36 MW. Sriram Sagar reservoir's capacity is 75 billion cubic feet, and it has 42 flood gates. Most of the catchment area upstream is located in Maharashtra.

- Name the major irrigation project that flows into Telanagana from Maharastra.
- What is the local name for Sriram Sagar project?
- What are the districts that benefit from the irrigation project?
- Which district is irrigated From Lakshmi canal?

5. In which mandal is Sriram Sagar project located?
6. Write an antonym for locate.
7. What part of speech is the word capacity?

(OR)

(8 Marks)

- (b) (i) Annotate the following

Della wriggled off the table and went for him.

- (ii) Read the following passage and answer the questions.

(7 Marks)

Education plays a great transitory role in life, particularly so in this rapidly changing and globalising world. Universities are the custodians of the intellectual capital and promoters of culture and specialised knowledge. Culture is an activity of thought and receptiveness to beauty and human feelings. A merely well informed man is only a bore on God's earth. What we should aim at is producing men who pose both culture and expert knowledge. Their expert knowledge will give them a firm ground to start from and their culture will lead them as deep as philosophy and as high as art. Together it will impact meaning to human existence.

1. What are the promoters of culture?
2. How can we achieve a modern society?
3. What should men or women possess to achieving progress?
4. Write synonym for change?
5. Write antonym for beauty?
6. What does the passage speak about?
7. What part of speech is the word receptive?

8. (a) (i) What is Kalam's plan to create rural Prosperity?

(8 Marks)

- (ii) Read the passage and answer the questions that follow

(7 Marks)

Ankapur is a small but self sufficient and agriculturally rich village in Nizamabad district. It is a model for all villages in Telangana. Located in Armoor mandal on National Highway 63, it is around 20 kilometres away from the district headquarters. The village has many urban facilities and therefore it is called "mini USA". Formers belonging to this region are known for having adopted modern farming methods in cultivating commercial crops like turmeric, maize and vegetables on larger scale.

1. Where is Ankapur located?
2. Why is Ankapur called as Mini USA?
3. What are the commercial crops grown in the village?
4. Write antonym for self sufficient?
5. Write synonym for adopt?
6. Ankapur is a small village so it is rich. (True or false)
7. What part of speech is the word 'urban'?

(OR)

- (b) (i) Annotate the following

(8 Marks)

After Independence, India looked forward to development through Five Year Plans.

- (ii) Read the following passage and answer the question given below. (7 Marks)

Cultural heritage of people refer to the social and religious attitudes, beliefs, principles and conventions of behaviours inherited from the tradition stretching back to remote antiquity. It also includes in its connotations, intellectual and artistic manifestations in the form of language and literature, visual and plastic art and music developed by the society from generation to generation.

1. What does cultural heritage refer to according to the above passage?
2. What does it refer to in the passage?
3. What does antiquity mean?
4. What is developed by the society?
5. Write synonym for heritage?
6. Write antonym for 'inherit'.
7. What part of speech is the word 'stretch'?

9. (a) (i) What is the Central theme of the poem "Success is counted as sweetest"?

(8 Marks)

(ii) Read the passage and answer the following questions

(7 Marks)

Hyderabad is a heaven for food-lovers. Its cuisine means popular all over the world. It is also known as Deccani cuisine and is the legacy of Qutub Shahi rule of the region. It beautifully combines the tastes of Mughlai, Turkish, Arabic, Telugu and Marathwada cuisines. The modern Hyderabad cuisine evolved during the reign of the Nizams.

The most famous of all Hyderabad dishes is of course the delicious Hyderabad Biryani.

1. What is another name used to describe Hyderabad cuisine?
2. Write antonym for heaven?
3. Write synonym for delicious?
4. What is meant by cuisine?
5. Which cuisine evolved during the reign of the Nizams?
6. What does the passage speak about?
7. What part of speech is the word, 'reign'?

(OR)

(b) (i) Annotate the following

(8 Marks)

Not one of all the purple host
Who took the flag today.

(ii) Read the following passage and answer the questions given below. (7 Marks)

Government agencies are financed by taxes and levies imposed on citizens. They are therefore, answerable and accountable to the public for their acts of omission and Commission. The public servants all supposed to act in a way that serves the maximum public interest at the minimum cost to the public exchequer.

1. Who will fund the government agencies?
2. Who are answerable to the public?
3. How does the public servants are supposed to act?
4. Write antonym for public?
5. Write synonym for Answer?
6. What does the passage speak about?
7. What part of speech is the word, 'omission'?

10. (a) (i) What is note making and note taking ?

(8 Marks)

(ii) Fill in the blanks in the sentences below with a, an or the.

(7 Marks)

1. Kalam ishonest man.
2. We are members ofUnion.
3. He issinger
4.owl hooted.
5. Vimala wants to joinuniversity.
6. He is European
7. She is M.A.

(OR)

(b) (i) Write a dialogue between three friends to organize a meeting about planning college day celebrations.

(8 Marks)

(ii) 'Fortune favours the bold.' Write a brief story/anecdote that explains this proverb.

(7 Marks)

R-19

Code:2005/19/REG

Faculty of Arts, Commerce, Science, Social Science and Business Management
B.A/B.Com/B.Sc/BBA I-Year, CBCS-II Semester Regular Examinations -June, 2023
PAPER: Second Language Telugu

Time: 3 Hours

Max Marks: 80

విభాగం - ఎ

- I. ఈ క్రింది ఏవైనా నాలుగు ప్రశ్నలకు సమాధానాలు వ్రాయండి. (4x5=20 Marks)
1. "రావే ఈశ్వర, కావవే వరద, సంరక్షింపు భద్రాత్మకా" - సందర్భసహిత వ్యాఖ్య వ్రాయండి.
 2. "నిశాంతము నందున పాటపాడెదన్" - సందర్భసహిత వ్యాఖ్య వ్రాయండి.
 3. డాక్టర్ సి.నారాయణరెడ్డి - పరిచయం
 4. "అల్విదా" కవిత - పరిచయం
 5. మామిడి పండును గురించి పాఠ్యాంశంలోని విశేషాలు
 6. "అల వైకుంఠపురంబులో నగరిలో నా మూల సాధంబుదావల" - ఈ పద్యపాదాన్ని గణ విభజన చేసి ఛందస్సును గుర్తించండి.

విభాగం - బి

- II. ఈ క్రింది ప్రశ్నలకు సమాధానాలు వ్రాయండి. (4x15=60 Marks)
7. (a) "విద్య నిగూఢ గుప్తమగు విత్తము, రూపము పూరుషాళికిన్
విద్య యశస్సు భోగకరి విద్యగురుండు విదేశ బంధుడున్
విద్య విశిష్ట దైవతము విద్యకు సాటి ధనంబులే దిలన్
విద్య నృపాల పూ జితము, విద్యనె టుంగని వాడు మర్కట్యుడే".
(పద్యానికి సందర్భం, పరిచయం, ప్రతిపదార్థం, వ్యాకరణ అంశాలు వ్రాయండి)
- (Or)
- (b) "ఆపదలందు దైర్య గుణమంచిత సంపదలందు దాల్మియున్
భూప సభాంత రాళమున బుప్పుల వాక్చతురత్వ మాజిబా
హా పటు శక్తియున్ యశము నందను రక్తియు విద్యయుండు వాం
ధా పరివృద్ధియున్ ప్రకృతి సిద్ధ గుణంబులు సజ్జనాళికిన్"
(పద్యానికి సందర్భం, పరిచయం, ప్రతిపదార్థం, వ్యాకరణ అంశాలు వ్రాయండి)
8. (a) హనుమత్ సందేశాన్ని వివరించండి. (Or)
- (b) "అంతర్నాదం" కవితలో కవి ఆలోచనల్ని తెలియజేయండి.
9. (a) "యుగాంతం" కథను పరిచయం చేయండి. (Or)
- (b) "మా ఊరు పోయింది" పాఠ్యాంశంలోని విశేషాలను వివరించండి.
10. (a) ఉత్పలమాల, చంపకమాల, శార్దూలం - పద్యాల లక్షణాలను తెలియజేయండి. (Or)
- (b) ఆటవెలది, తేటగీతి, కందం - పద్యాల లక్షణాలను వ్రాయండి.

Section -'A'

1. निम्नलिखित प्रश्नों में से किन्हीं चार प्रश्नों के उत्तर दीजिए। (4X5=20 Marks)
1. डल झील सजीव है, रंगीन चित्र मात्र नहीं। ऐसा लेखक क्यों कहते हैं?
 2. ताई पाठ में रामेश्वरी को अपनी संतानहीनता का बड़ा दुःख क्यों है।
 3. प्रदूषण का अर्थ क्या है?
 4. 'हँसू या रोऊँ' कहानी में किस बिमारी से लोगों की मौत हुई थी और हर दिन कितने लोग मरते थे?
 5. सेवा कहानी में नरोत्तम सहाय की पत्नी कैसे बिमार पड़ी थी और उसके सेवा किसने की?
I) उच्चारण II) वागीश III) महर्षि IV) सद्गति
 6. निम्न लिखित शब्दों का संधि विच्छेद कीजिए।
I) स्वागत II) सद्भावना III) देवेश IV) दावानल।

Section -'B'

- II. निम्नलिखित प्रश्नों के उत्तर विस्तार से लिखिए। (4X15=60 Marks)
7. (अ) कश्मीर की प्रमुख झीलों के नाम बताते हुए नगीन झील के बारे में लिखिए।
अथवा
(ब) ताई पाठ में रामेश्वरी का व्यवहार अपने परिवार के साथ किस तरह रहा स्पष्ट कीजिए।
 8. (अ) राजनीति का बँटवारा पाठ में परसाई ने किस प्रकार का व्यंग्य किया था विस्तार से लिखिए।
अथवा
(ब) स्वामी विवेकानंद पाठ का सारांश लिखिए।
 9. (अ) डिप्टी कलकटरी कहानी का सारांश अपने शब्दों में लिखिए।
अथवा
(ब) किन्हीं दो पात्रों का चरित्र-चित्रण कीजिए।
I) गजाधर बाबू II) नरोत्तम सहाय III) सिलिया IV) गदल
 10. (अ) निम्न लिखित शब्दों के विलोम शब्द लिखिए।
I) बढ़िया II) पाना III) मान IV) कनिष्ठ V) कृतज्ञ VI) गुप्त VII) असीम
VIII) निर्बल IX) अपराध X) स्वार्थ XI) कसूर XII) राग XIII) अमीर XIV) धनी
XV) समीप
अथवा
(ब) पत्र-लेखन के प्रकार क्या हैं, बताते हुए नौकरी के लिए जिलाधीश के नाम एक आवेदन पत्र लिखिए।

Faculty of Arts, Commerce, Science, Social Science and Business Management
B.A/B.Com/B.Sc/BBA I-Year, CBCS-II Semester Regular Examinations –June, 2023
Paper: Second Language Sanskrit

Time: 3 Hours

Max Marks: 80

Section –A

I. चत्वारः प्रश्नाः समाधेयाः । सर्वे प्रश्नाः समानाङ्काः

(4x5=20 Marks)

1. अनुवादं कुरुत ।
प्रीतात्मा स तु तं वाक्यमिदाह द्विजर्षभम्।
वाग्मी तदा द्विजश्रेष्ठो धर्मः पुरुषविग्रहः॥
2. ससन्दर्भं व्याख्यानं लिखत ।
केवलं यानहं तव दर्शयिष्यामि त एव भक्षणीयाः।
3. श्लोकं पूरयत ।
अहिंसा.....हीरचापलम्।
4. ससन्दर्भं व्याख्यानं लिखत ।
कुडवं कुडवं सर्वे व्यभजन्त तपस्विनः।
5. आचार्यं पुल्लेलश्रीरामचन्द्रस्य परिचयं लिखत।
6. अधोधत्त समस्तपदानां विग्रहवाक्य सहित समास नाम लिखत।
a) अधिहरि b) सिंहभयम् c) कृष्णसर्पः d) पञ्चवटी

e) रामकृष्णौ

Section –B

II. सर्वे प्रश्नाः समाधेयाः । सर्वे प्रश्नाः समानाङ्काः।

(4x15=60 Marks)

7. द्वयोः श्लोकयोः प्रतिपदार्थं तात्पर्यं च लिखत ।
a. पुरं तु तत्स्वर्गमिव प्रहृष्टं शुद्धाधिवासाः समवेक्ष्य देवाः।
जीर्णं नरं निर्ममिरे प्रयातुं संचोदनार्थं क्षितिपात्मजस्य॥
b. पीतं ह्यनेनापि पयः शिशुत्वे कालेन भूयः परिसृप्तमुर्व्याम्।
क्रमेण भूत्वा च युवा वपुष्मान् क्रमेण तेनैव जरामुपेतः
c. निःश्वस्य दीर्घं स्वशिरः प्रकम्प्य तस्मिंश्च जीर्णं विनिवेश्य चक्षुः।
तां चैव दृष्ट्वा जनतां सहर्षां वाक्यं स संविग्न इदं जगाद॥
d. इत्यूचिवान् राजसुतः स भूयस्तं सानुकम्पो नरमीक्षमाणः।
अस्यैव जातः पृथगेष दोषः सामान्यतो रोगभयं प्रजानाम्॥
8. (a) वराहमिहिरेण बृहत्संहितायां वर्णितान् अंशान् विवृणुत।
(अथवा)
(b) गङ्गदत्तप्रियदर्शनयोः सम्भाषणं विवृणुत ।
9. अधोधत्त धातु लकारयोः त्रयोः रूपाणि लिखत।
a) भू - लट् b) लिख - लङ् c) इष् - लृट् d) चूर् - विधिलिङ् e) लभ - लट् f) भाष्- लङ्
10. अधो निर्दिष्टेषु पञ्चसमासानां नाम निर्देशपूर्वकं विग्रहवाक्यानि लिखत।
a. यथाशक्ति b. तमालवृक्षः d. विद्यानिपुणः e. गोरक्षितम् f. अनश्वः
g. कार्यकुशलः h. षाण्मातुरः i. भीमार्जुनौ j. भुक्तोदनः

Faculty of Arts, Commerce, Science, Social Science and Business Management
B.A/B.Com/B.Sc/BBA I-Year, CBCS-II Semester Regular Examinations -June,2023
PAPER: CLASSICAL PROSE, MODERN PROSE, GRAMMAR & HISTORY OF ARABIC
LITERATURE

Time: 3 Hours

Max Marks: 80

Section-AI. Answer any *four* of the following questions (4x5=20 Marks)

Q.1. Translate the following verses with reference to the context:

ترجم الآيات التالية مع الإشارة إلى نصها:
 إذا زلزلت الأرض زلزالها * وأخرجت الأرض أثقالها * وقال الإنسان
 مالها * .

Q.2. Answer the following question:

متى ولد مير عثمان علي خان؟ ومتى توفي؟

Q.3. Who was entitled with شاعر الرسول ﷺ?

من لقب بشاعر الرسول ﷺ؟

Q.4. Write possessive phrase with examples.

اكتب عن المركب الإضافي مع الأمثلة.

Q.5. Translate the following:

ترجم ... الآتية:
 أيها الأولاد ينبغي لنا أن نعرف شيئاً عن نشأة هذا المعرض قبل دخوله
 حتى نعرف مقاصده ونتمتع بمناظره الجميلة.

Q.6. Convert any five of the following singular words into plurals:

أت بخمسة جموع للكلمات الآتية:

أم - عصر - مدينة - معهد - سيارة - حرفة - عبد - مبني

II. Answer the following questions

(4x15=60 Marks)

Q.7. (A) Describe the summary of "Suratul Zilzal"

اكتب تفسير سورة "الزلزال"

(OR)

(B) Write the summary of Suratul Qad'r:

بين تفسير سورة القدر:

Q.8. (A) Write the summary of "The Industria Exhibition":

اكتب خلاصة "المعرض الصناعي":

(OR)

(B) Write the summary of the "Nawab Mir Osman Ali Khan: the seventh Nizam":

اكتب خلاصة "النظام السابع: مير عثمان علي خان":

Q.9. (A) Write about the Sentence and its kinds:

اكتب عن الجملة وأقسامها:

(OR)

(B) Define "the Adjectival phrase" with examples:

عرّف المركب الوصفي بالأمثلة:

Q.10. (A): Write a note on "Poetry in Islamic Period":

اكتب عن "الشعر في العصر الإسلامي":

(OR)

(B) Write in detail about the "Compilation of Holy Qur'an":

اذكر عن تدوين القرآن المجيد مفصلاً:

Section-A (حصہ - الف)

- حسب ذیل سوالات کے مختصر جوابات دیجیے (کوئی چار)
(4x5=20)
1. غالب کی حلقہ جو ابھی کی چوہہ مثالیں لکھیں۔
 2. خردوم کا تعارف پیش کریں۔
 3. حقیقہ جاوید کوری کی مدنیوں و نظموں کے نام تحریر کریں۔
 4. نظم کی تعریف بیان کیجیے۔
 5. حالی کے حالات زندگی پر نوٹ لکھیں۔
 6. مشتاق احمد یوسفی کا تعارف پیش کریں۔

Section-B (حصہ - ب)

- درجہ ذیل میں سے کوئی چار کے تفصیلی جوابات مطلوب ہے۔
(4x15=60)
- 7.(a) مشتاق احمد یوسفی نے پڑھے گئے بیماریوں میں عبادت کمرہ واروں پر کد کد کیا ہے؟
 - (b) نظم "سہریں کا گیت" کا خلاصہ تحریر کریں۔
 - 8.(a) بیٹی حسین نے اپنے شاخے میں سلیمان اریب کی کن قصوہ ریاات کو اجاگر کیا ہے۔
 - (b) امی نے اپنے استاد مرزا غالب کے اخلاق و اعمادات کو کد کد کیا ہے۔ بیان کرو۔
 9. نظم "اب کے برس" میں "پا" 21 شریف اشعار کا خلاصہ تحریر کریں۔
 10. ذیل میں سے کوئی دو اشعار کی بحوالہ متن تشریح کیجیے۔

- (a) یہی ہے آفران تو ستا ناکس کو کیت ہیں
عرو کے بیوںے جب تم تو میہرا امتاں کیوں بیوںے؟
- (b) دیکھنا میر طرف نہ مجلس میں
رخنے کلید گے سیکڑوں اس میں
- (c) جانور، آدمی، فرشتہ، خدا
آدمی کی ہیں سیکڑوں قسمیں
- (d) آپ کی یاد آتی رہی رات بھر
چشم نم مسکرائی رہی رات بھر

Faculty of Science

B.Sc(Mathematics)I-Year, CBCS-II Semester Regular Examinations –June, 2023

PAPER: Differential Equations

Time: 3 Hours

Max Marks: 80

Section-A

I. Answer any *eight* of the following questions.

(8x4=32 Marks)

1. Solve $x^2 y dx - (x^3 + y^3) dy = 0$

2. Solve $(x + y)^2 \frac{dy}{dx} = a^2$

3. Solve $(e^y + 1) \cos x dx + e^y \sin x dy = 0$

4. Solve $P = \log(Px - y)$

5. Solve $P^2 - 7P + 12 = 0$

6. Solve $x^2 + Px = yP$

7. Solve the equation $y''' - y'' - 4y' + 4y = 0$

8. Solve $\frac{d^2 y}{dx^2} - 2a \frac{dy}{dx} + a^2 y = 0$

9. Solve $\frac{d^5 y}{dx^5} - 10 \frac{d^3 y}{dx^3} + 9 \frac{dy}{dx} = 0$

10. Use method of variation of parameter to solve $y'' + y = \operatorname{cosec} x$

11. Solve the Cauchy Euler equation $x^2 \frac{d^2 y}{dx^2} - 2x \frac{dy}{dx} + 2y = 4x^3$

12. By eliminating the arbitrary function F , obtain the partial differential equation from $F(x^2 + y^2, z - xy) = 0$

Section - B

II. Answer the following questions.

(4x12=48 Marks)

13.(a) Solve $x \frac{dy}{dx} + y = xy^3$

(OR)

(b) Solve the differential equation

$$(x^3 y^3 + x^2 y^2 + xy + 1) y dx + (x^3 y^3 - x^2 y^2 - xy + 1) x dy = 0$$

14.(a) Solve $x(1 + P^2) = 1$

(OR)

(b) Solve $xy^2(P^2 + 2) = 2Py^3 + x^3$

15.(a) Solve $(D^2 - 4D + 4)y = x^2 + e^x + \sin 2x$

(OR)

(b) Solve $y'' + 2y' + y = xe^{-x} + \sin x$ using method of undetermined coefficients.

16.(a) Solve $x^2 y'' - 4xy' + 6y = 0$ given that $y_1 = x^2$ is a solution.

(OR)

(b) Solve the equation $x^2 \frac{d^2 y}{dx^2} - x \frac{dy}{dx} + 2y = x \log x$.

Faculty of Science

B.Sc(Mathematics)I-Year, CBCS-II Semester Regular Examinations –June, 2023
PAPER: Differential Equations

Time: 3 Hours

Max Marks: 80

విభాగం - ఎ

I. ఈ క్రింది ఏవైనా ఎనమిది ప్రశ్నలకు సమాధానములు వ్రాయుము.

(8x4=32 Marks)

1. $x^2ydx - (x^3 + y^3)dy = 0$ ను సాధించండి.
2. $(x + y)^2 \frac{dy}{dx} = a^2$ ను సాధించండి.
3. $(e^y + 1)\cos x dx + e^y \sin x dy = 0$ ను సాధించండి.
4. $P = \log(Px - y)$ ను సాధించండి.
5. $P^2 - 7P + 12 = 0$ ను సాధించండి.
6. $x^2 + Px = yP$ ను సాధించండి.
7. $y''' - y'' - 4y' + 4y = 0$ ను సాధించండి.
8. $\frac{d^2y}{dx^2} - 2a \frac{dy}{dx} + a^2y = 0$ ను సాధించండి.
9. $\frac{d^2y}{dx^2} - 10 \frac{d^2y}{dx^3} + 9 \frac{dy}{dx} = 0$ ను సాధించండి.
10. $y'' + y = \operatorname{cosec} x$ ను పరామితీయ మార్పు పద్ధతిని ఉపయోగించి సాధించండి.
11. $x^2 \frac{d^2y}{dx^2} - 2x \frac{dy}{dx} + 2y = 4x^3$ Cauchy Euler సమీకరణాన్ని సాధించండి.
12. $F(x^2 + y^2, z - xy) = 0$ అనే సమీకరణం నుండి యాదృశ్చిక ప్రమేయం F ని తొలగించి పాక్షిక అవకలన సమీకరణాన్ని కనుగొనండి.

విభాగం - బి

II. ఈ క్రింది ప్రశ్నలకు సమాధానములు వ్రాయుము.

(4x12=48 Marks)

13.(a) $x \frac{dy}{dx} + y = xy^3$ ను సాధించండి.

(లేద)

(b) $(x^3y^3 + x^2y^2 + xy + 1)ydx + (x^3y^3 - x^2y^2 - xy + 1)xdy = 0$ ను సాధించండి.14.(a) $x(1 + P^2) = 1$ ను సాధించండి.

(లేద)

(b) $xy^2(P^2 + 2) = 2Py^3 + x^3$ ను సాధించండి.15.(a) $(D^2 - 4D + 4)y = x^2 + e^x + \sin 2x$ ను సాధించండి.

(లేద)

(b) $y'' + 2y' + y = xe^{-x} + \sin x$ ను అనిర్ధారిత గుణకాల పద్ధతిలో సాధించండి.16.(a) $y_1 = x^2$ అనేది ఒక సాధన అయితే $x^2y'' - 4xy' + 6y = 0$ ను సాధించండి.

(లేద)

(b) $x^2 \frac{d^2y}{dx^2} - x \frac{dy}{dx} + 2y = x \log x$ ను సాధించండి.

Faculty of Science

B.Sc (Physics) I-Year, CBCS –II Semester Regular Examinations -June, 2023

PAPER: Thermal Physics

Time: 3 Hours

Max Marks: 80

Section-A

I. Answer any *eight* of the following questions (8x4=32 Marks)

1. What is mean free path? Derive an expression for it.
2. State and explain second law of thermodynamics.
3. Calculate the change in entropy when 10gm of ice at 0°C changes into steam at 100°C [Latent heat of ice=80calgm⁻¹, Specific heat of water=1calgm⁻¹ °C⁻¹ Latent heat of steam =540 calgm⁻¹].
4. What are thermodynamic potentials? Write expressions.
5. Explain the Porus- Plug experiment.
6. Calculate the temperature of inversion of Helium gas. Given $a=3.44 \times 10^{-3}$ N-m⁴/mol² and $b=0.237 \times 10^{-3}$ m³/mol and $R=8.31$ J/mol-K.
7. Deduce Stefan's law from Planck's law of radiation.
8. Describe the working of Optical Pyrometer.
9. Find the wavelength at which maximum energy is radiated by a black body of having a temperature 327°C. Wien's constant= 2.897×10^{-3} mK.
10. Differentiate between classical and quantum statistical mechanics.
11. Write a note on white dwarf star.
12. For a distribution of 2 identical particles in 4 equally probable energy states. Calculate the number of possible arrangements according to B-E statistics.

Section-B

II. Answer the following questions (4x12=48Marks)

- 13.(a) Give the postulates of kinetic theory of gases. Derive an expression for the viscosity of a gas on the basis of kinetic theory.
(OR)
- (b) What is T-S diagram? Find the expression for efficiency of a reversible Carnot's engine with the help of T-S diagram.
- 14.(a) Explain the Joule-Kelvin effect. Derive expression for Joule-Kelvin co-efficient for an ideal gas and for a Vander wall's gas.
(OR)
- (b) Define refrigeration? Explain the principle of working of a vapour compression machine.
- 15.(a) What is Planck's hypothesis? Derive Planck's formula for the distribution of energy in blackbody radiation.
(OR)
- (b) Define solar constant. Obtain an expression for calculating the temperature of sun with the help of solar constant.
- 16.(a) Deduce Maxwell-Boltzmann velocity distribution for classical particles.
(OR)
- (b) State the conditions for the F-D statistics. Derive an expression for the F-D distribution.

Faculty of Science

B.Sc (Physics) I-Year, CBCS –II Semester Regular Examinations -June, 2023

PAPER: Thermal Physics

Time: 3 Hours

Max Marks: 80

విభాగం -ఎ

- I. ఈ క్రింది ఏవైనా ఎనమిది ప్రశ్నలకు సమాధానములు వ్రాయండి. (8x4=32 Marks)
- ఒక వాయువులోని అణువు స్వేచ్ఛాపడ మాధ్యమం అనగానేమి? దానికి సమీకరణాన్ని ఉత్పాదించండి.
 - ఉష్ణగతిక శాస్త్ర రెండవ నియమాన్ని నిర్వచించి, వివరించండి.
 - 0°C వద్ద గల 10 గ్రాముల మంచు 10°C వద్ద నీటి ఆవిరిగా మారినప్పుడు ఎంట్రోపీలో కలిగే మార్పును లెక్కించండి. (మంచు గుప్తోష్ణం 80cal gm^{-1}), నీటి విశిష్టాష్ణం = $1\text{cal gm}^{-1}0_c^{-1}$, నీటి ఆవిరి బాష్పీభావన గుప్తోష్ణం = 540cal gm^{-1})
 - ఉష్ణగతిక శక్తుల ఏవి? సమీకరణాలను వ్రాయండి.
 - పోరన్ - ఫ్రీ ప్రయోగం వివరించండి.
 - He వాయువు యొక్క విలోమన ఉష్ణోగ్రతను లెక్కించండి. ($a = 3.44 \times 10^{-3} \text{ N - m}^4/\text{mol}^2$ and $b = 0.237 \times 10^{-3} \text{ m}^3/\text{mol}$ and $R = 8.31 \text{ J/mol - k}$)
 - ప్లాంక్ వికిరణ సిద్ధాంతం నుండి స్టిఫాన్ నియమాన్ని ఉత్పాదించండి.
 - దృశ్య పైరోమీటర్ పనిచేయు విధానాన్ని తెలపండి.
 - 327°C ఉష్ణోగ్రత వద్ద ఉన్న కృష్ణ వస్తువు ఏ తరంగదైర్ఘ్యం వద్ద గరిష్ట శక్తిని ఉద్ఘాటం చేస్తుంది. వీన్ స్థిరాంకం $2,897 \times 10^3 \text{mk}$.
 - సాంప్రదాయిక, క్వాంటమ్ గణాంక శాస్త్రాల భేదాలను తెలపండి.
 - శ్వేత వాచన తారలపై లఘుటీక వ్రాయండి.
 - బోస్ - ఐన్ స్టీన్ గణాంక శాస్త్రాన్ని ఉపయోగించి, 4 సమాన సంభావ్యత గల శక్తి స్థాయిలలో ఒకేరకమైన రెండు కణాలను వితరణ చెందించడానికి సాధ్యమయ్యే అమరికలను లెక్కించండి.

విభాగం -బి

- II. ఈ క్రింది ఏవైనా నాలుగు ప్రశ్నలకు సమాధానములు వ్రాయండి. (4x12=48 Marks)
- (a) అణుచలన సిద్ధాంతం ప్రాథమిక ఉపాసలను పేర్కొనండి. అణుచలన సిద్ధాంతం ఆధారంగా, ఒక వాయువు స్పిగ్గతా గుణకానికి సమీకరణాన్ని రాబట్టండి. (లేదా) (b) T-S రేఖాచిత్రం అనగానేమి? దాని నుండి కార్నోయంత్రం దక్షత సమీకరణం రాబట్టండి.
 - (a) జౌల్-కెల్విన్ ప్రభావాన్ని వివరించండి. ఒక ఆదర్శ వాయువుకు మరియు వాండర్ వాల్ వాయువుకు జౌల్-కెల్విన్ గుణకానికి సమీకరణం రాబట్టండి. (లేదా) (b) రెప్రిజిరేషన్ అంటే ఏమిటి? భాష్య సంపీదన యంత్రం పనిచేసే విధానాన్ని తెలపండి.
 - (a) ప్లాంక్ ప్రతిపాదనను తెలపండి. కృష్ణ వస్తువు వికిరణంలో శక్తి వితరణకు ప్లాంక్ సూత్రాన్ని ఉత్పాదించండి. (లేదా) (b) సౌర స్థిరాంకాన్ని నిర్వచించండి. సౌరస్థిరాంకాన్ని ఉపయోగించి, సౌర ఉష్ణోగ్రతను లెక్కించుటకు సమీకరణాన్ని ఉత్పాదించండి.
 - (a) మాక్స్ వెల్ - బోల్ట్జ్ మన్ వేగ వితరణ నియమాన్ని ఉత్పాదించండి. (లేదా) (b) F-D గణాంక శాస్త్ర నిబంధనలు పేర్కొని, F-D వితరణ నియమాన్ని తెలపండి.

Faculty of Science

B.Sc (Statistics) I-Year, CBCS –II Semester Regular Examinations -June, 2023

PAPER: Probability Distributions

Time: 3 Hours

Max Marks: 80

Section-A

- I. Answer any *eight* of the following questions (8x4=32 Marks)
1. Define Poisson distribution and derive its mean and variance.
 2. Derive the moment generation function of Binomial distribution and derive the mean from it.
 3. Define Bernoulli distribution and extract mean various.
 4. Define Negative Binomial distribution and obtain mean.
 5. Fit the Geometric distribution to the following data

x	0	1	2	3	4	5
f	201	70	41	20	7	1
 6. Define Hyper geometric distribution and derive its mean.
 7. State the chief characteristics of Normal distribution.
 8. State and prove additive property of Normal distribution in case of two independent random variables.
 9. Define the Normal distribution and Standard normal distribution.
 10. Define Gamma distribution and state its additive property.
 11. Define Beta distribution of second kind.
 12. Derive moment generation function of Exponential distribution.

Section-B

- II. Answer the following questions (4x12=48 Marks)
- 13.(a) Fit a Binomial distribution to the following data by Recurrence relation method.

X	0	1	2	3	4	5	6
f	7	64	140	210	132	75	12

(OR)

- (b) Derive the Recurrence relation for moments of Poisson distribution and obtain the moments from it.
- 14.(a) Define Geometric distribution. Find the characteristics function of Geometric distribution and generate first two moments using c.f.
- (OR)
- (b) The number of failures preceding the r^{th} success in an experiment is recorded as follows. Fit Negative Binomial distribution.

X	0	1	2	3	4	5
f	214	125	41	16	3	1

- 15.(a) Show that the ratio between standard deviation, mean deviation and quartile deviations is 15:12:10 for Normal distribution

(OR)

- (b) A normal distribution has mean 30 and standard deviation 5.
Find the probability that
- i) $26 \leq X \leq 40$
 - ii) $X \geq 45$
- 16.(a) State and prove Lack of memory property of exponential distribution.
- (OR)
- (b) show that " Gamma distribution tends to normal distribution as $\lambda \rightarrow \infty$ "

Faculty of Science

B.Sc (Electronics) I-Year, CBCS –II Semester Regular Examinations –June, 2023

PAPER: Electronic Devices

Time: 3 Hours

Max Marks: 80

Section-A

I. Answer any *eight* of the following questions

(8x4=32 Marks)

1. Explain the tunneling phenomenon.
2. Write about varactor diode.
3. The reverse bias saturation current for a p-n junction diode is $1\mu\text{A}$ at 300K. Calculate its ac resistance at 150m V forward bias.
4. Draw the circuit of self-bias and explain.
5. Define h parameters and write a short note on them.
6. For a transistor $\alpha=0.98$ and emitter current $I_E=2.5\text{ m A}$. Calculate collector current and base current.
7. Write the differences between FET and MOSFET.
8. Write the applications of UJT.
9. When V_{GS} of a FET changes from -3.1V to -3V the drain current changes from 1m A to 1.3m A . What is the value of transconductance.
10. Explain how an SCR operates as a switch.
11. Write a short note on Solar cell.
12. In an SCR full wave rectifier, supply voltage is 200V and load resistance $1\text{k}\Omega$. Calculate the power delivered to the load for firing angle 120° .

Section-B

II. Answer the following questions

(4x12=48 Marks)

- 13.(a) Explain the construction, working and characteristics of a p-n junction diode.
(OR)
(b) Discuss how a Zener diode acts as a voltage regulator to maintain constant output voltage.
- 14.(a) Explain the working of n-p-n and p-n-p transistors.
(OR)
(b) Draw the CE circuit of a transistor, sketch its output characteristics. Indicate the active, saturation and cutoff regions.
- 15.(a) Discuss the basic structure of an n-channel JFET. Explain its operation in detail.
(OR)
(b) Explain the operation and construction of UJT. Draw its characteristics curve with the help of experimental setup.
- 16.(a) Explain the construction and working of an SCR. Draw its V-I characteristics and explain.
(OR)
(b) Explain the construction and working of LDR. Draw its characteristics.

Faculty of Science
B.Sc (Computer Science) I-Year, CBCS –II Semester
Regular Examinations - June, 2023
PAPER: Programming in C++

Time: 3 Hours

Max Marks: 80

Section-A

- I. Answer any EIGHT of the following questions (8x4=32 Marks)
1. List and briefly explain the OOP concepts.
 2. Differentiate passing data by value and by reference
 3. Write a C++ program to search for a given element in a 1D array.
 4. Define a class. Write about public and private access specifiers.
 5. What is the use of friend function? Write a simple program to illustrate the same.
 6. Explain about static variables and members.
 7. What do you mean by virtual function?
 8. Define method overriding.
 9. Write about C++ streams.
 10. Define exception and explain the need for exception handling mechanism.
 11. What is a template? Mention the advantages of templates.
 12. Write a program to swap two numbers using function templates.

Section-B

- II. Answer the following questions (4x12=48 Marks)
- 13.(a) Write about the various control structures in C++.
(OR)
(b) What is function overloading? Write a program to demonstrate functions overloading.
- 14.(a) Define constructor and write about the types of constructors.
(OR)
(b) Discuss about Operator Overloading mechanism. Write a program to overload Unary minus operator.
- 15.(a) Explain about different types of Inheritance with an example program.
(OR)
(b) Explain Unformatted I/O Operations in C++.
- 16.(a) Explain exception handling mechanism in C++ with suitable program.
(OR)
(b) Write about different types of Templates. Write a program to illustrate the use of class templates.

B.Sc(Data Science)I-Year, CBCS-II Semester Regular Examinations –June, 2023**PAPER: Problem Solving and Data Science**

Time: 3 Hours

Max Marks: 80

Section-A

- I. Answer any *eight* of the following questions (8x4=32 Marks)
1. Explain, How to Identify Computational Problems?
 2. Explain building blocks of an Algorithm.
 3. Write about Python Interpreter and Instructions.
 4. Write about Return statement and void function.
 5. Explain agrs and kwargs.
 6. Explain Formatting of strings.
 7. Explain List mutability and aliasing.
 8. Discuss the usage of Tuple as return value.
 9. Write a Python program to find word count.
 10. Explain the Constructor Method.
 11. Explain Classes and Objects of Python.
 12. Explain Python List Comprehensions.

Section-B

- II. Answer the following questions (4x12=48 Marks)
- 13.(a) i. Explain operators of Python.
ii. What is Type Conversion? Explain type() function.
(OR)
(b) Explain Iterative statements of Python with Break and Continue statements.
 - 14.(a) i. Explain user defined functions of Python.
ii. Explain Command Line Arguments.
(OR)
(b) i. Explain basic String operations.
ii. Explain String Slicing and Joining.
 - 15.(a) What is a Dictionary? Explain operations and methods of Dictionary.
(OR)
(b) What is Exception? Explain Exception Handling of Python.
 - 16.(a) Explain how Python implements Object Oriented Programming concepts.
(OR)
(b) Explain Generators and Iterators in Python.
