

Faculty of Science

B.Sc. (Data Science) II-Year CBCS III-Semester Backlog Examinations June – 2024

Paper: Data Engineering with Python

Time: 3 Hours

Max. Marks: 70

SECTION – A

I. Answer any SIX questions. All questions carry equal Marks (6 x 5 = 30 Marks)

1. What is Data Acquisition Pipeline? What is its purpose?
2. Define JSON in Python. Write the Syntax of it. Explain with example.
3. Write about Named Groups in Python Regular Expressions?
4. What are the Special Characters used in Regular Expression operations?
5. Write short note on Mango DB Data Store.
6. Write the Basic Arithmetic Operations on NumPy Arrays.
7. What is a DataFrame? Write the procedure for creating DataFrame from Dictionary.
8. Explain the process of Taming Pandas File I/O.
9. What are Pickle Modules? What is the use of it?
10. Specify various Operations performed on DataFrame with examples

SECTION B

II. Answer any ALL questions. All questions carry equal Marks (4 x 10 = 40 Marks)

- 11.(a) Explain write and read operations on a file with suitable example programs in Python.

OR

- (b) Describe about Python os and os.path Modules.

- 12.(a) Explain the processing of HTML Files using Python.

OR

- (b) How to write Regular Expression with glob Module? Explain in detail.

13. (a) Explain the Slicing and Indexing Operations in NumPy with suitable examples.

OR

- (b) Describe the process of Setting Up of a MySQL Database.

- 14.(a) Describe Pandas Data Structures in detail.

OR

- (b) Explain indexing and Re-indexing in Pandas.

Faculty of Commerce, Sciences, Business Management**B.Com/B.Sc/BBA II-Year, CBCS–III Semester Backlog Examinations June- 2024****Subject: GENERAL ENGLISH****Time: 3 hours****Max Marks: 70****Section-A****I. Answer any Five from the following.****(5x4=20 Marks)**

- Write phonetic transcription of the following words
a) oven b)chocolate c)onion d)kangaroo
- Complete the following sentences by using conjunctions.
 - I would like to thank youthe lovely gift.
 - Do not leave the stationI reach.
 - You will need paper, a pair of scissors.....some glue.
 - The movie wasfunnyinteresting.
- Use full stops and capital letters appropriately to correct the following sentences.
 - i hope the holidays come soon.
 - my name is das
 - i hate bananas
 - our principal is mrssingh.
- Match the idioms in column A with their meanings in column B

A	B
a) feeling blue	i)to die
b) kick the bucket	ii)to feel sad
c) take it easy	iii)to help someone out
d) lend a hand	iv)to relax
- Write a short essay on zoos should be banned.
- Fill in the missing letters to complete the consonant clusters
a)pl_ _ _ b)bl_ _ _ c)pr_ _ _ d)sp_ _ _
- Identify whether the sentences below are in active or passive voice
 - Rohan feeds his dog
 - The problem was solved by the teacher.
 - The fireman risked his life.
 - The elephants have learned many tricks.
- Expand the proverb 'Better late than never'.

Section-B**II. Answer all questions (Internal choice)****(5x10=50 Marks)**

Each question carry (10) marks.

(5x10=50 Marks)

9. (a) i) Annotate the following (5M)

She looked up at him.' You look worried.What is wrong ?'

- ii)Describe the political background and significance of the poem? (5M)

(OR)

- (b)i) Read the following passage and answer the questions that follow (5M)

Telangana is home to many architectural marvels of national importance. It owes a lot to the Chalukyas and the Kakatiyas for the development of art and architecture in the region. It has monuments such as the Thousand pillars temple, Alampur Temples, Ramappa Temple and many others. Hyderabad, the capital of Telangana, has many monuments that reflect the cultural and historical background of the city. They include Charminar, Falaknuma palace, Golkonda fort, Qutb shahi Tombs, and the Buddha statue on the Hussain Sagar Lake.

1) Name two dynasties that helped develop art and architecture in the Telangana region.

2) Name few of the architectural monuments situated in Hyderabad?

3) What is meant by architecture?

4) Write synonym for Marvel?

5)Write antonym for develop?

- ii)How did the astrologer convince Guru Nayak about his future? (5M)

- 10.(a) i) Annotate the following (5M)

What do you sell O ye merchants?

Richly your wares are displayed.

- ii) Fill in the blanks in the following sentences with suitable prepositions. (5M)

a) The bag isthe top rackthe cupboard.

b) Did you see the articlethe applicationsbiotechnology?

c) Rini was angrySimon and spoke harshlyhim.

d) Shiksha spent a dayher aunt12, Gandhi Nagar
.....Nizamabad.

e)He isthe committee.

(OR)

- (b) i) Annotate the following (5M)

Watch forest which is very huge.

- ii) Read the following passage and answer the questions that follow (5M)

Food is the basic component of every culture. The traditional food of Telangana is rooted in its culture. Being a semi – arid state, the staple food in Telangana is not rice but millet (jonnalu and sajjalu) as a result, the population consumes various kinds of millets. They are used to make wholesome and rustic flat breads such as jonnarotte and sajjarotte, which are usually accompanied by spicy curries.

a) Why is rice not the staple food item in Telangana?

b) What is meant by staple?

c) Write synonym for consume?

d) What part of the speech is the word usually?

e)What is the antonym for rust?

11.(a) i) Why does the author called the forest nature made? (5M)

ii) Punctuate the following sentences using commas appropriately. (5M)

- a) In the heat of summer afternoon our ceiling stopped.
- b) As he entered the classroom he realized that he was late again.
- c) Because the game was so one-sided we left early.
- d) Before I leave I will give you my address and telephone number.
- e) I went home early for some rest not for more work.

(OR)

(b) i) Write an essay narrating an eventful cricket match. An exciting finish, a high score of runs, a hat trick, the behavior of the spectators –all these can make a match interesting, use these ideas in your essay. (5M)

ii) Combine the following sentences using suitable conjunctions. (5M)

- a) The girl can read. the girl can write.
- b) The boy is clever. the boy is careless.
- c) He cannot write. He cannot edit.
- d) I must sleep. I'm tired.
- e) I could not find the book in the library. I must buy a copy.

12. (a) i) Have you had an embarrassing experience where you were misunderstood by a classmate or a friend? write more than ten exchanges, and write about the lessons you have learnt from such experiences. (5M)

ii) Identify and write the plural forms and past tense ending for the following words ending I /s/, /z/, /iz/, /d/, /id/, /t/,

(5M)

- a) ridges / / (plural form)
- b) nooks / / (plural form)
- c) proofs/ / (plural form)
- d) booked/ / (past tense ending)
- e) Knocked / / (past tense ending)

(OR)

(b) i) What is problem solving? How many steps are involved in it? (5M)

ii) Fill in the blanks with the past tense forms of the verbs given in the box. (5M)

{ take, say, go, pay, see }

- a) I to the exhibition with my son last Sunday.
- b) He Rajan to see the doctor because he had been ill for so long.
- c) I that Rama would come and see me.
- d) I Rahim going by and called out to him.
- e) It was too expensive. We a thousand rupees for it.

13.(a) i) What steps can be used for taking a good decision and write few steps to overcome decision making barriers. (5M)

ii) Expand the proverb 'Hope for the best but prepare for the Worst'. (5M)

(OR)

(b) i) Have you ever regretted for not acting in time to achieve something? Write a note on the experience and on the lessons, you learnt? (5M)

ii) Write Synonyms for the following words.

- a) Shrewd
- b) bluff
- c) amber
- d) piqued
- e) dally

Faculty of Commerce, Sciences, Business Management
B.Com/B.Sc/BBA II-Year, CBCS–III Semester Backlog Examinations June- 2024
Subject: Professional Skills (SEC)

Time: 2 Hours

Max. Marks: 40

Section – A

I. Answer any TWO from the following four questions:

(2x4=8 Marks)

- 1. Write Objectives of Team skills?**
- 2. How do you write Technical writing skills?**
- 3. What are the Professional writing skills?**
- 4. Difference between Verbal and Non-Verbal communication?**

Section – B

II. Answer any TWO from the following four questions:

(2x16=32 Marks)

- 5. Elaborate in detail about Career skills?**
- 6. Explain about Interview skills and Top Interview Techniques?**
- 7. Expand in detail about Group Discussion skills?**
- 8. What are the Presentation skills?**

Faculty of Sciences
B.Sc II-Year, CBCS-III Semester Backlog Examinations June- 2024
Subject: Theory of Equations (SEC)

Time: 2 Hours

Max Marks: 40

Section-A

I. Answer any two of the following questions

(2x5=10 Marks)

1. Find the maximum or minimum value of the polynomial $ax^2 + bx + c = 0$ ($a, b, c \in \mathbb{R}, a \neq 0$).
- ~~2~~ What is Descarte's rule of sign for negative roots?
- ~~3~~ If α, β, γ be roots of $x^3 + qx + r = 0$ from the equation whose roots are $\beta + \gamma, \gamma + \alpha, \alpha + \beta$.
4. Find the condition that the equation $x^3 - px^2 + qx - r = 0$ should have roots in G.P

Section-B

II. Answer the following questions

(2x15=30 Marks)

- ~~1~~ (a) Discuss the nature of roots of the equation $x^3 + x^2 - 2x - 1 = 0$ using Descarte's rule of sign.

(OR)

- ~~2~~ Show that the equation of $x^6 - x^5 - 10x + 7 = 0$ has two positive and four imaginary roots.

- ~~3~~ (a) If α, β are roots of $x^3 + Ax^2 + Bx + C = 0$ find the value of $(\beta + \gamma - \alpha)^3 + (\gamma + \alpha - \beta)^3 + (\alpha + \beta - \gamma)^3$

(OR)

- ~~4~~ Find for the cubic equation $ax^3 + 3bx^2 + 3cx + d = 0$, the value in terms of coefficients of the Symmetric function $(2\alpha - \beta - \gamma)(2\beta - \gamma - \alpha)(2\gamma - \alpha - \beta)$ of the roots α, β, γ .

Faculty of Science

B.Sc II-Year, CBCS-III Semester Backlog Examinations June-2024

PAPER: Python

Time: 2 Hours

Max Marks:40

Section-A

I. Answer any two of the following questions (2x5=10Marks)

1. Structure of Python program.
2. Operators in Python
3. Define Function. Write a program to demonstrate the use of functions
4. File input and output.

Section-B

II. Answer the following questions (2x15=30Marks)

5. (a) Explain the decision-making structures with a program for each.

(OR)

- (b) List and explain the repetition structures in detail.

6. (a) Write about the different types of functions in Python.

(OR)

- (b) Discuss about Exception Handling in Python.

Faculty of Commerce, Sciences, Business Management
B.Com/B.Sc/BBA II-Year, CBCS-III Semester Examinations JUNE-2024
Subject: Second Language Telugu

Time: 3 hours

Max Marks: 70

అభాగము(సంగ్రహసమాధానములు)

I. ఈ క్రింది వానిలో ఏదేని నాలుగు ప్రశ్నలకు సమాధానాలు రాయండి.

4×5=20

- 1) "వలవదధికదీర్ఘవైరవృత్తి" సందర్భ సహిత వ్యాఖ్య వ్రాయండి.
- 2) "కీర్తినియట్టియాగగదీక్షితుడులేడు" సందర్భ సహిత వ్యాఖ్య రాయండి.
- 3) " ఇది మన ధర్మంలోని రహస్యం " సందర్భ సహిత వ్యాఖ్య వ్రాయండి.
- 4) "గురుదక్షిణయ యదియా పదివేలు సుమీ " సందర్భ సహిత వ్యాఖ్య వ్రాయండి.
- 5) ఏమి సేయుడు? ఎక్కడి కేకు వాడ?
ధనము విప్పచ్చరంబు విద్యయుహులక్కి
పెట్టసాగేడు నా చేయి బిక్షసేయ
నెట్టు నేరుచు? దైవంబ యెరుగునింక' వ్యాఖ్యానించండి.
- 6) 'బోయి భీమన్న' ను పరిచయం చేయండి.

అభాగము(వ్యాసరూపసమాధానములు)

II. ఈ క్రింది వానిలో అన్ని ప్రశ్నలకు సమాధానములు రాయండి

5×10=50

7) ఈ క్రింది పద్యాలకు ప్రతిపదార్థతాత్పర్యవ్యాకరణవిశేషాంశంలనునువివరించండి.

- a) అరుణగభస్తిబింబ ముదయాద్రిపయిం బొడతేర గిన్నెలోఁ
బెరుగును వంటకంబు వడపిందియలుం గుడువంగబెట్టు ని
ర్భర కరుణాధురీణయగు ప్రాణము ప్రాణము తల్లియున్నదే?
హరహర! యెవ్వరింక గడు పారగబెట్టుదురీప్సితాన్నముల్
లేదా

- b) అక్కట! లాతులైన బగరైనను జంపగకోర నేల? యిం
దొక్క తెరంగు లేదే? యదియొప్పుదే? బంధుసుహృజ్ఞనంబు లా
దిక్కున నున్నవారు: గణుతింపక సంపదకై వధించి దూ
రెక్కుట దోషమందుటను నీ దురవస్థల కోర్వవచ్చునే?

8) a) విభీషణునికి శ్రీరాముడు శరణమును ఇచ్చిన వృత్తాంతమును తెలియజేయండి.

లేదా

b) ధర్మజుని వాక్పాతుర్యమును వివరించండి?

9) a) సాగరయ్య నాయకత్వ లక్షణాలను తెలపండి

లేదా

b) గురుదక్షిణ పాఠ్యాంశాన్ని పరిచయం చేయండి

10) ఈ క్రింది వానిలో రెండింటికీ లక్ష్యలక్షణసమన్వయముచేయండి.

- a) ఉత్తేజ అలంకారం
- b) రూపక అలంకారం
- c) ఆమె ముఖము చంద్రబింబము వలె అందముగా ఉన్నది
- d) రాజు కువలయానందకరుడు

11) ఈ క్రింది వానిలో రెండింటికీ లక్ష్య లక్షణసమన్వయమును చేయండి.

- a) వృత్తానుప్రసాద అలంకారం
- b) యమకము
- c) శ్రీనాథునివర్ణించు జిహ్వా జిహ్వా
- d) నీలమేఘచ్ఛాయబోలుదేహమువాడు
ధవలాబ్జపత్రనేత్రములవాడు
కంబుసన్నిభమైనకంఠంబుగలవాడు
బాగైనయట్టిగుల్ఫములవాడు

Faculty of Science

B.Sc. (Statistics) II-Year CBCS III-Semester Backlog Examinations June- 2024

Paper: Statistical Methods and Theory of Estimation

Time: 3 Hours

Max. Marks: 70

SECTION – A

I. Answer any SIX questions. All questions carry equal Marks

(6 x 5 = 30 Marks)

1. Define Scattered diagram?
2. Define positive correlation? Give with real life example?
3. Define attribute and give with example?
4. Define Dichotomy classification?
5. Define point and interval estimation?
6. Properties of Chi-Square distribution?
7. Explain confidence interval ?
8. Define Fisher- Neyman Factorization theorem?
9. Define Sufficient estimator?
10. Define Likelihood estimation?

SECTION B

II. Answer any ALL questions. All questions carry equal Marks

(4 x 10 = 40 Marks)

11. (a) Define Karl Pearson's coefficient of correlation and its Assumptions. Explain it's properties?

OR

- (b) Derive equation of the regression of Y on X ?

12. (a) Explain the principle of least square? How do you fit a straight line to the given data ?

OR

- (b) Define consistency of data ? Give the conditions for consistency of data with two and three attributes?

13. (a) Explain various criteria of a good estimator?

OR

- (b) Define Chi-Square distribution ? State it's properties and applications?

14. (a) Find the MLE'S for the parameters μ and σ^2 of normal distribution on the basis of a sample size n ?

OR

- (b) Obtain 95% confidence interval for μ in the normal population, where σ is known ?

B.Sc. (Physics) II-Year CBCS III-Semester Regular Examinations June-2024**Paper: Electromagnetic Theory**

Time: 3Hours

Max. Marks: 70

SECTION – A**I. Answer any SIX questions. All questions carry equal marks.****(6X5=30Marks)**

1. Discuss the conservative nature of Electrostatic Field ($\vec{E}$).
2. Obtain an expression for potential due to a point charge.
3. Define Magnetic Induction ($\vec{B}$) and give the properties of Magnetic Field ($\vec{B}$).
4. Apply Ampere's law to calculate the field due to a solenoid current.
5. Define 'Equation of Continuity' and obtain an expression for it.
6. Define "Uniform plane wave" and derive its equation.
7. Write short note on "Alternating Current".
8. Explain: "Maximum Power Transfer theorem".
9. A coil has 600 turns. Its self-inductance is 100 mH. Find the self-inductance of another same type of coil having 500 turns.
10. An infinitely long conductor carries a current of 10 mA. Find the magnetic field and intensity at a point 10 cm away from it.

SECTION – B**II. Answer ALL questions. All questions carry equal marks.****(4X10=40Marks)**

11. a) State Gauss's theorem in electrostatics. Derive ($\vec{E}$) due to uniformly charged sphere. (3+7)
(OR)
b) Define 'Electrostatic Potential energy'. Derive energy expression for two point charges separated by a distance and generalize the result for a system of three point charges. Explain and Energy density in electrostatic field. (2+4+4)
12. a) State and explain Biot-Savart law. Calculate ($\vec{B}$) due to a long straight wire by using it. (5+5)
(OR)
b) Using Ampere's law find the magnetic field due to an infinitely long straight wire (conductor) carrying a current. Obtain an expression for 'Energy stored in magnetic field'. (5+5)
13. a) Derive Maxwell's equation in dielectric medium. Show that i): Wave Velocity is $v = \frac{1}{\sqrt{\mu \epsilon}}$ and ii): Refractive Index is $n = \sqrt{k}$, (where: ϵ is Permittivity and μ is Permeability of the medium.) (6+4)
(OR)
b) Define 'Poynting Vector'? Obtain an expression for Poynting Vector, by Poynting Theorem. (3+7)
14. a) Analyse the rise and decay of current in C-R circuit. (10)
(OR)
b) Explain and derive the equation for T to π Network transformation. (10)

B.Sc. (Mathematics) II-Year CBCS III-Semester Backlog Examinations June- 2024

Paper: REAL ANALYSIS

Time: 3 Hours

Max. Marks: 70

SECTION – A

I. Answer any SIX questions. All questions carry equal Marks

(6 x 5 = 30 Marks)

1. Define Sub-Sequence and prove that every bounded sequence has a Convergent subsequence.
2. State that the series $\sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{n}$ is conditionally convergent.
3. Define Continuity and Uniform Continuity.
4. If 'f' is continuous on [a,b] then prove that 'f' is uniformly continuous on [a,b].
5. State and prove Lagranges Theorem.
6. Use mean value theorem to prove that $|\cos x - \cos y| \leq |x - y| \forall x, y \in \mathbb{R}$.
7. If $f(x)=x$ on $[0,1]$ with partition $P=\{0,1/4,2/4,3/4,1\}$ then find $L(P,f)$ and $U(P,f)$.
8. If 'f' is R-integrable on [a,b] then |f| is R-integrable on [a,b]
9. Evaluate (a) $\lim_{x \rightarrow \infty} \frac{x^3}{e^{2x}}$ (b) $\lim_{x \rightarrow 0} \frac{\sqrt{1+x} + \sqrt{1-x}}{x}$ by using L-Hospital's Rule.
10. Prove that every Monotonic function is R-integrable on [a b].

SECTION B

II. Answer ALL questions. All questions carry equal Marks

(4 x 10 = 40 Marks)

- 11.(a) Prove that a sequence $\{S_n\}$ is a Cauchy Sequence iff it is Convergent.

OR

- (b) State and prove Leibnitz Test for alternating series.

- 12.(a) Let $f:S \rightarrow R$ be a function and $x_0 \in S$, $\lim_{x \rightarrow x_0} f(x) = f(x_0)$ iff if for every sequence $\langle x_n \rangle$ Converges to x_0 then the sequence $\langle f(x_n) \rangle$ Converges to $f(x_0)$.

OR

- (b) State and prove Intermediate Value Theorem.

- 13.(a) State and prove Rolle's Theorem.

OR

- (b) Evaluate (i) $\lim_{x \rightarrow 0^+} \left(\frac{1}{x} - \frac{1}{\tan^{-1}x} \right)$ (ii) $\lim_{x \rightarrow 0} (1 + \sin x)^{\cot x}$.

- 14.(a) Prove that the bounded function on [a,b] is R- integrable iff for each $\epsilon > 0 \exists$ a position 'P' of [a,b] such that $U(P f) - L(P f) < \epsilon$.

OR

- (b) State and prove Second fundamental theorem of Integral Calculus.

Time: 3 Hours

Max. Marks: 70

SECTION – A

I. Answer any SIX questions. All questions carry equal Marks

(6 x 5 = 30 Marks)

1. Define Data Structure. Specify the Types of Data Structures.
2. How to process Function Calls using Stack?
3. Write about Linked List Abstract Data Type.
4. Define a Queue. Write the Applications of Queues.
5. What are Binary Trees? Write the nomenclature of Trees.
6. Compare different Sorting Methods.
7. Write a short note on Extendible Hashing.
8. What are Spanning Tress? How to represent them?
9. Write a C++ program to reverse a string using Stack.
10. Write a short note about Deque.

SECTION B

II. Answer any ALL questions. All questions carry equal Marks

(4 x 10 = 40 Marks)

11. (a) Define Algorithm. Write the Characteristics of Algorithm. Describe Algorithm Analysis.
OR
(b) Define a Stack. Write the Applications of Stack. How to represent stacks using Sequential Organization?
12. (a) What are Queues? Write the Concept of Queues. Describe the Operations of Queues using sample code.
OR
(b) Write a C++ Program to represent a Stack using Linked Lists.
13. (a) Write a C++ program for Binary Search. Analyze different Searching Techniques.
OR
(b) Write a C++ Program for Merge Sort.
14. (a) What is Hashing? Discuss the Collision Resolution Strategies in Hashing.
OR
(b) Describe Graph Traversal Techniques.
