ATKT Exam - Sem - I

FYBSC. - Comp Science

March - 2024

FYCS

ATKT Exam

Sem - I

March - 2024

D.B.J. College, Chiplun
AIKT Exam March 2024
Sem I FYB.Sc. (Comp. Sci.)
Sub: Soft Skills Development

FYCS
13/3/24

Time:2½ hrs **Full marks: 75**

N.B **1) All questions shall be compulsory with internal choice within the questions.**
2) Figures to the right indicate marks.
3) Illustrations, in-depth answers and diagrams will be appreciated.
4) Mixing of sub-questions is not allowed

Q1 **Attempt the following.(Any Four)** **20**

a) Write a note on video conferencing etiquette.
b) Explain Maslow's theory of needs.
c) Briefly Describe the components of Emotional Intelligence.
d) Write a note on Johari's Window.
e) What are the issues faced by an organization in absence of ethics? Explain with an example.
f) Distinguish between Emotional Intelligence Quotient and Intelligence Quotient.

Q2 **Attempt the following.(Any Four)** **20**

a) Elaborate on the communication process.
b) Write an unsolicited letter of application to LMN company. Applying for the post of Junior Data Analyst.
c) State and explain the advantages and disadvantages of debates.
d) State the difference between oral and written communication.
e) Discuss various types of interviews.
f) Prepare a model resume for a person from the IT field with an assumption that the person is a fresher.

Q3 **Attempt the following. (Any Four)** **20**

a) Define leadership and state the characteristics of a good leader.
b) Elaborate on "Six Thinking Hats method".
c) Enlist the different types of decisions.
d) Write a short note on stress management
e) What are the advantages of team building?
f) Define presentation skills and elaborate on the importance of presentation skills.

Q4 **Attempt the following.(Any Five)** **15**

a) Elaborate on the job recruitment process.
b) Explain the following concepts in brief with examples:
i. Phonetics ii. Intonation iii. Accent
c) What are the guidelines for the interviewer?
d) What are Soft Skills? Discuss its importance in professional life.
e) Enlist the different types of decisions.
f) Write a short note on stress management.

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D.B.J. College, Chiplun
ATKT Exam, March 2024
Sem. I
FYBSc. (Comp. Sci.)
Sub: Descriptive Statistics

FYBSc-CS
12/3/24

[2 ½ hours] [Marks: 75]

N.B. **1) All questions are compulsory.**
2) Figures to the right indicate full marks.
3) Illustrations, in-depth answers and diagrams will be appreciated.
4) Mixing of sub-questions is not allowed.
5) Use of a calculator is allowed.

Q1. Attempt any four **(20)**

1. State and explain the types of scales.
2. Draw 'less than' ogive curve for the following:

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90
No. of Candidates	2	3	6	11	12	15	10	7	4

3. The following distribution gives the patterns of overtime work done by 100 employees of a company. Calculate average overtime work done per employee by step deviation method.

Overtime hours	10-15	15-20	20-25	25-30	30-35	35-40
No. of Employees	11	20	35	20	8	6

4. The frequency distribution of weight in grams of mangoes of a given variety is given below. Calculate the arithmetic mean and the median.

Wt. in gms	410-420	420-430	430-440	440-450	450-460	460-470	470-480
No. of mangoes	14	20	42	54	45	18	7

5. Calculate the mode from the following data:

Marks	0-9	10-19	20-29	30-39	40-49	50-59
No. Of Students	3	4	8	7	6	3

6. Find the median, Q1 and Q3 from the following data:

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. Of Students	15	20	25	24	10	33	71	51

Q2. Attempt any four **(20)**

1. Compute the percentile deviation and coefficient of percentile deviation for the following data.

Weekly wages	0-100	100-200	200-300	300-400	400-500	500-600	600-700	700-800
No. of workers	12	18	35	42	50	45	20	8

2. Find the variance and coefficient of variance for the following data.

Class intervals	0-10	10-20	20-30	30-40	40-50
frequency	14	23	27	21	15

3. Calculate Bowley's coefficient of skewness from the following data by using quartiles.

Marks	0-15	15-30	30-45	45-60	60-75	75-90
No. Of students	20	30	30	35	45	15

4. The first four raw moments are 2, 20, 40 and 50. From the given data obtain the first four central moments and co-efficient of kurtosis.

[P.T.O]

5. Calculate Kelly's coefficient of skewness using deciles for the following:

Class Interval	10-12	12-14	14-16	16-18	18-20
Frequency	3	12	15	24	2

6. Define skewness. Explain its types.

Q3. Attempt any four **(20)**

1. Draw a scatter diagram from the following data and indicate whether the correlation is positive or negative.

X	10	20	30	40	50	60	70	80
Y	32	20	24	36	40	28	38	44

2. Marks obtained from a group of students in two papers X & Y are given below. Calculate the Karl Pearson's co-efficient of correlation.

X	21	22	23	24	25	26	27
Y	16	15	17	18	19	20	21

3. Calculate Spearman's Rank Correlation coefficient between advertisement cost and sales from the following data:

Advertisement cost (in thousands)	39	65	62	90	82	75	25	98	36	78
Sales(in lakhs)	47	53	58	86	62	68	60	91	51	84

4. Consider the following information regarding a distribution:
$N=5$, $\sum\bar{X}=10$, $\sum\bar{Y}=20$, $\sum(X-4)^2=100$, $\sum(Y-10)^2=160$, $\sum(X-4)(Y-10)=80$.
Find the two regression coefficients and the correlation coefficient.
5. The lines of regression on a bivariate population are $8x-10y+66=0$ and $40x-18y=214$. Find the mean of x and y and correlation coefficient.
6. What is correlation? With a suitable example explain types of correlation.

Q4. Attempt any five **(15)**

1. Write a short note on univariate and bivariate data.
2. Define the following terms.
   a. Quartile b. Percentile c. Decile
3. The first three moments about the origin of a distribution are 1, 16 and -40. Find β_1(coefficient of skewness) of the distribution.
4. Calculate the range and coefficient of range of Arun's monthly earnings for a year.

Months	1	2	3	4	5	6	7	8	9	10	11	12
Earnings(in thousands)	139	150	151	151	157	158	160	161	162	162	173	175

5. Write the merits and demerits of median.
6. Given that the regression equations Y on X and X on Y are respectively $Y=X$ and $4X-Y=3$. Find the correlation coefficient between X and Y.

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D.B.J. College, Chiplun
ATKT Exam March 2024
FYBSc (Comp Sc.)
Sub. Disc. maths

FYBSc CS
Sem I 13/24

(2 ½ Hours) [Total Marks: 75]

N.B.
1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q 1 **Attempt any Four.** **(20)**

A Consider the functions f1:A-> B, f2:B->C.
A={a, b, c} B={1, 2, 3, 4} C={r, s, t, u}
f1={(a,4),(b,1),(c,2)} f2={(1,r)(2,t)(3,u)(4,s)}
Determine f1 and f2 are 'one to one' or not.

B Define the terms.
1. Domain
2. Onto function
3. Asymmetric relation
4. Transitive relation
5. codomain

C Consider the following relations on set A={1,2,3,4}
R={(1,1),(1,2),(2,2),(2,3),(3,3),(3,4),(4,3),(4,4)}
S={(1,2),(1,1),(2,1),(2,2),(2,3),(3,2),(3,4),(4,3),(4,4)}
T={(1,2),(2,1),(1,1),(2,3),(1,3)}
Determine whether or not each of the above relations on A is
1. Symmetric
2. Transitive

D Draw the Hasse diagram representing the partial order relation defined on
A = { 1,3,9,18} ,
R = {(1,1),(1,3),(1,9),(1,18),(3,3),(3,9)(3,18),(9,9),(9,18),(18,18)}

E Solve the recurrence relation
$a_n - 10\ a_{n-1} + 9\ a_{n-2} = 0$ with initial conditions $a_0 = 3, a_1 = 19$.

F Solve the recurrence relation using substitution method.
$t_n = t_{n-1} + 3$ subject to initial condition $t_1 = 2$.

Q2 **Attempt any Four.** **(20)**

A Find the number of distinct permutations that can be formed from the letters of each word:
(a) SUCCESS
(b) DEADEND

B Suppose repetitions are not permitted. How many three digit number can be formed from the six digits 2,3,5,6,7,9?
1. How many of these numbers are less than 400?
2. How many are even?

C Among 100 students, 55 students got distinction in first year, 30 got distinction in second year,15 got distinction in both years.Then how many students got distinction in at least one year?

D Construct a deterministic finite-state automaton that recognizes the set of all bit strings that contain consecutive ab's.

E State and explain types of Grammar.

PTO

F Define the terms:
a)Finite State Automata
b)Godel Numbers
c)Turing Machines.

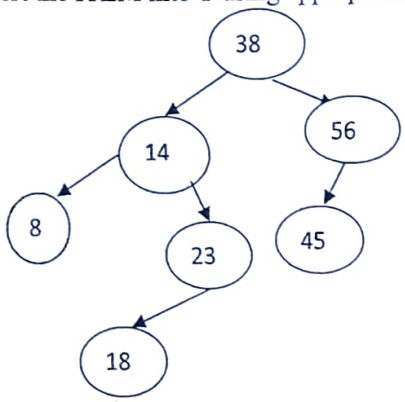
Q3 **Attempt any Four.** (20)

a Define the terms.
1. Isomorphic Graph
2. Homeomorphic Graph
3. Diameter
4. Path
5. Distance

B Draw the graph G corresponding to each of the following adjacency matrix.

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

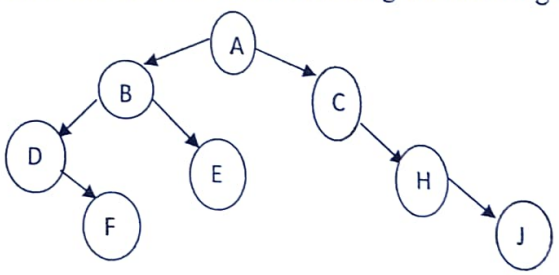
C Consider the following binary search tree T. Suppose ITEM=20 is given. Find or insert the ITEM into T using appropriate algorithm.



D Draw binary tree to represent the following expression.
(i)(x + xy) + (x/y) (ii)x + ((xy + x)/y)

E Define the following terms with the help of example.
a) Binary tree
b) Extended binary tree
c) Complete binary tree.

F Explain post-order and In-order tree traversal algorithms using following example.



PTO

Q4 **Attempt any five.** 15

A Find the number of ways in which 6 players out of 9 can be selected to form a team.

B Define following set recursively.

1. L = {a, aaa, aaaaa, aaaaaaa, ……..}

C Find the number of ways in which 6 players out of 10 can be selected to form a team.

D Explain linked representation of graph with the help of suitable example.

E Find the Warshall's matrix for the following matrix.

$$M_{R1}=\begin{bmatrix}0 & 1 & 1 & 1\\ 1 & 1 & 0 & 0\\ 1 & 0 & 0 & 1\\ 1 & 0 & 1 & 0\end{bmatrix}$$

F Define the terms

(a) Reflexive relation

(b) Poset

(c) Asymmetric relation

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D.B.J. College, Chiplun
ATKT exam march 2024
Sem I

FYBSc CS
6/3/24

FYBSc (Comp. Sci.)
Sub: Open Source Tech.

Time: 2 ½ Hrs. Total Marks:75

Notes
1) All questions are compulsory.
2) Figures to right indicate full marks.
3) Assume necessary data as required.

Que 1 Solve any four of the following. 20
- A Write a note on Open Source Initiatives.
- B What are open standards principles? Explain.
- C What is an Open Source License? Explain with examples
- D Explain Ethics of open source.
- E Differentiate between open source and closed source.
- F Explain Open source software development model

Que 2 Solve any four of the following. 20
- A Write a note on GCC.
- B Describe Open Source Teachings Methods and Tools.
- C Write a note on Mozilla Firefox.
- D Write a note on Wikipedia open source
- E Write a note on Android open source.
- F Explain open source testing tools.

Que 3 Solve any four of the following. 20
- A Explain open source feature life-cycle.
- B Write note on Free BSD.
- C Explain Open source database technologies.
- D Write note on Docker.
- E Write a note on LAMP.
- F What is Containerization? state its advantages and disadvantages

Que 4 Solve any five of the following. 15
- A Explain features of Apache web server.
- B Explain GNU project.
- C What is Linux Operating system? Enlist Linux distributions.
- D State open source Freedoms.
- E Enlist open source projects on Web.
- F Define "free software" with examples.

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D.B.J. College Chiplun
ATKT Exam March, 2024
Sem I
FYBSc. (Comp. Sci.)
Sub: Linux Ope. Sys.

FYBSC CS
5/3/24

Time: - 2 hr. 30 min. **Marks: -75**

N.B. **1) All questions shall be compulsory with internal choice within the questions.**
2) Figures to the right indicate marks.
3) Illustrations, in-depth answers and diagrams will be appreciated.
4) Mixing of sub-questions is not allowed.

Q.1 **Attempt any four.** **20**

a) What is Linux distribution? Explain any four of them.
b) What is Link? Differentiate between Soft link and Hard link.
c) With a neat diagram explain Linux architecture.
d) What is File? List and explain any three file types in Linux.
e) Describe Linux documentation commands – man and help
f) What is environment variable? How to create it? Explain.

Q.2 **Attempt any four.** **20**

a) How to decode file permission in Linux? Explain.
b) What is IP Address? Explain FTP and Telnet protocol.
c) Explain the following command in Linux: i) sudo ii) passwd
d) What are the uses of root user in Linux system? Explain.
e) Briefly, explain TCP/IP Model?
f) Explain awk command with its options.

Q.3 **Attempt any four.** **20**

a) Write a shell script to accept radius of circle from user, calculate and display area of circle.
b) Explain the following structured command in Linux: i) test ii) while iii) until
c) Write a note on handling signals in Linux.
d) Write a shell script to print factorial of input number.
e) Explain the following command: i) nice ii) kill iii) at
f) Write a shell script to accept number form user and display message the number is even or odd.

Q.4 **Attempt any five.** **15**

a) What is /etc/passwd and /etc/shadow file? Explain.
b) List and explain features of Linux operating system.
c) What are modes of vi editor in Linux?
d) What is the use of sed command? Explain.
e) State and explain ps command with its option.
f) Explain the case structured command in Linux.

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D.B.J. College Chiplun
ATKT Exam March 2024
Sem I

FYBSC - CS
4/5/24

FYBSC. (Comp. Sci.)

Sub: Intro. to Prog. with Python

Time: $2^{1/2}$ Hours

Total Marks: 75

Notes:

1. Figures to right indicate full marks.
2. All questions are compulsory. Use internal options to the questions.
3. Illustrations, in-depth answers and diagrams will be appreciated.
4. Mixing of sub-questions is not allowed.

Q. 1 Attempt any four of the following. (20M)

a) How to use iterative for loop in python? Explain.
b) Write a program to check whether number is Armstrong or not.
c) Write a program to print factorial of a number? Take input from user.
d) What is variable? What are the rules and conventions for declaring a variable?
e) Write a program to print the number divisible by 3 from 1 to 30.
f) What is the role of indention in python? Explain with example.

Q. 2 Attempt any four of the following. (20M)

a) What is the use of math module? Write any 4 functions of it.
b) How to create own functions in python with and without parameter? Explain with example.
c) What is array? Explain with example.
d) Discuss the difference between local and global variables.
e) Write a program to sort the following array:
A=[200,55,280,630,40,32]
f) What is the difference between user defined function and anonymous function?

Q. 3 Attempt any four of the following. (20M)

a) Write a program for addition of two list.
b) Describe any five methods of dictionary with example.
c) Write a program for following:
    1) Define the String "Welcome to Department" and assign to the variable 'a'.
    2) Display First 4 characters from String.
    3) Concatenation of 'a' with "of Computer Science".
    4) Count the number 'e' in String 'a'
    5) Delete 'a'.
d) Differentiate between list and tuples.
e) Define a=[10,20,30,40,50]
Write a program to multiply 5 with all elements present in list a.
f) What is List? How to create it? Explain any three operations.

Q. 4 Attempt any five of the following. (15M)

a) How to define 3-D array by using numpy. Explain.
b) What is list comprehension? Give example.
c) Write a short note on comment.

P.T.O.

d) What is the use of following arithmetic operators?

1) //
2) %
3) **

e) Write a program in python to create a function using lambda to find cube of a number.

f) Write a program to calculate area of rectangle and circle. Take input from user.

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D.B.J. College chiplun FYBSc C.S
ATKT Exam March, 2024 2/3/24
Sem I
FYBSc (Comp. Sc.)
Sub: Digital Systems & Architecture

Time: 2½ hrs **Full marks: 75**

Notes:

1. Figures to right indicate full marks.
2. All questions are compulsory. Use internal options to the questions.
3. Illustrations, in-depth answers and diagrams will be appreciated.
4. Mixing of sub-questions is not allowed.

Q1 **Attempt any four of the following.** **20**

a) Differentiate between computer organization and computer architecture.
b) Briefly explain DMA transfer modes.
c) Write a short note on Logic gates.
d) What is I/O module? Explain.
e) Simplify the following Boolean expression and draw its logic diagram:
F=A'.B.C+A+A'.B.C'
f) Compare multiplexer and Demultiplexer.

Q2 **Attempt any four of the following.** **20**

a) Explain memory hierarchy.
b) What are the different RAID levels? Explain.
c) Discuss in brief different replacement algorithms.
d) Write a short note on addressing modes.
e) List and explain the different types of RAM.
f) Differentiate between RISC and CISC processors.

Q3 **Attempt any four of the following.** **20**

a) Compare i3, i5 and i7 Processor.
b) Write a note on levels of parallel processing.
c) Explain applications of microprogramming.
d) What is cluster computing? Explain.
e) Differentiate between static network and dynamic network.
f) Explain Shared-Address Space platform.

Q4 **Attempt any five of the following.** **15**

a) Explain the different allocation policies.
b) What are universal gates? Explain.
c) With an example explain auxiliary memory.
d) Minimize the following boolean expression using k-map:
F(A,B,C)=AB'C+ABC'+A'BC'+A'BC'
e) Explain the concept of Nano-programming.
f) List and explain the principles of locality.

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