PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2022
(First Semester)

Branch – **COMPUTER SCIENCE WITH DATA ANALYTICS**

MATHEMATICAL FOUNDATION FOR DATA SCIENCE

Time: Three Hours   Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks   (5 x 1 = 5)

1. $\frac{sinx}{x}$ =
   i) 1   ii) 0   iii) $\propto$ iv) does not exist

2. $\int_0^1 \sqrt{1-x^2}dx$ =
   i) 0   ii) $\frac{\pi}{4}$ iii) 1   iv) π

3. As soon as a new value for a variable is formed by iteration, it is used in the following equation immediately is called _____method
   i) Jacobi   ii) Gauss Jordan   iii) Gauss – Seidel   iv) bisection

4. $\Delta^n e^x$ =
   i) e^x ii) $e^x/n!$ iii) $x^n.e^x$ iv) $(e^h-1)^n.e^x$

5. Systametic refinement is called _____ method.
   i) Simpson $\frac{1}{3}$ ii) Romberg   iii) Trapezotlal   iv) Newton

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks   (5 x 3 = 15)

6.   a) Where 1) $f(x) = \frac{x^2-x-2}{x-2}$ and 2) $f(x) = \|x\|$ discontinues.

OR

b) If $f(x) = \sqrt{x}\ g(x)$, where $g(4) = 2$, $g'(4) = 3$ find $f'(4)$.

7.   a) Evaluate $\int_0^2 (2x^3 - 6x + \frac{3}{x^2+1})dx$.

OR

b) Evaluate $\int tan6x\ sec4x\ dx$.

8.   a) Solve: 2x+y+4x = 12, 8x-3y+2z = 20 and 4x+11y-z = 33 by Gauss elimination method.

OR

b) State the condition for convergence of Gauss – Jacobi method?

9.   a) If x : 0 1 2 3 4
        Y : 1 2 4 - 16 , find the missing value.

OR

b) Construct Newton's forward interpolation polynomial for the following data:
        x: 4 6 8 10   y: 1 3 8 16

Cont...

10. a) By dividing into equal parts compute $\int_0^\pi sinxdx$ by Simpson's 3/8 rules.

<div align="center">OR</div>

b) Find $\frac{dy}{dx}$ at x=1 from the following data:

x	:	1	2	3	4
y	:	1	8	27	64

<div align="center">

SECTION -C (30 Marks)
Answer ALL questions
ALL questions carry EQUAL Marks   (5 x 6 = 30)
</div>

11. a) If $x^4 + y^4 = 16$ find y''.

<div align="center">OR</div>

b) If $y = \left(x^{\frac{3}{4}}\sqrt{x^2} + 1\right)/(3x + 2)^5$ find y'.

12. a) Evaluate $\int_{-\infty}^{\infty} \frac{1}{1+x^2} dx$

<div align="center">OR</div>

b) Evaluate $\int \frac{x^2+2x-1}{2x^3+3x^2-2x} dx$

13. a) The following Are data from the steam table :

Temp c	140	150	160	170	180
Pressure	3.685	4.854	6.302	8.076	10.225

Using Newton's formula, find the pressure of the steam for a temperature of 142°.

<div align="center">(OR</div>

b) Given $u_0 = -4$ $u_1 = -2$ $u_4 = 220$ $u_5 = 546$ $u_6 = 1148$. Find u_2 and u_3.

14. a) By Gauss elimination method, solve :

$3.15x - 1.96y + 3.85z = 12.95$, $2.13x + 5.12y - 2.89z = -8.61$

And $5.92x + 3.05y + 2.15z = 6.88$

<div align="center">OR</div>

b) Solve by Gauss-Seidel Method : $x = \frac{1}{27}(85-6y+z)$, $y = \frac{1}{15}(72-2z-6x)$ and $z = \frac{1}{27}(110-x-y)$.

15. a) Evaluate $\int \frac{1}{1+x} dx$ by i) Trape zoidal ii) Simpon's 1/3 and 3/8 rules.

<div align="center">OR</div>

b) Find y' and y'' at x = 0.5, if

x	0.4	0.5	0.6	0.7	0.8
y	1.5836	1.7974	2.0442	2.3245	2.6511

<div align="center">Z-Z-Z   END</div>

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2022
(Second Semester)

Branch – **COMPUTER SCIENCE WITH DATA ANALYTICS**

PYTHON PROGRAMMING

Time: Three Hours   Maximum: 50 Marks

SECTION-A (5 Marks)
Answer ALL questions
ALL questions carry EQUAL marks   (5 x 1 = 5)

1   Which one is NOT a legal variable name?
    (i) _myvar   (ii) Myvar
    (iii) my_var   (iv) my-var

2   Which predefined Python function is used to find length of string?
    (i) length()   (ii) len()
    (iii) strlen()   (iv) stringlength()

3   State that the Tuples are _____.
    (i) Mutable   (ii) Immutable
    (iii) Mutable to some extent   (iv) None of the above

4   Which is use to write a string into a file?
    (i) append mode   (ii) read and write mode
    (iii) write mode   (iv) read mode

5   What is Instantiation in terms of OOP terminology?
    (i) Deleting an instance of class   (ii) Modifying an instance of class
    (iii) Copying an instance of class (iv) Creating an instance of class

SECTION - B (15 Marks)
Answer ALL Questions
ALL Questions Carry EQUAL Marks   (5 x 3 = 15)

6   a)   Show the Boolean datatypes with example code.
                    OR
    b)   Narrate the Inbuilt functions in python with example.

7   a)   Classify Global and Local of a variable with suitable code.
                    OR
    b)   Bring out the Recursive function in python.

8   a)   Compare and differentiate List and tuples with example
                    OR
    b)   Explain indexing and Slicing.

9   a)   Summarise set operations in python.
                    OR
    b)   Show the methods of dictionary in python.

10 a)   Explain class and objects of OOPs in python.
                    OR
    b)   Narrate Constructor and Destructor.

Cont...

SECTION -C (30 Marks)
Answer ALL questions
ALL questions carry EQUAL Marks   (5 x 6 = 30)

11 a)   Summarise descision control statements. Give syntax with examples.

OR

b)   Classify loop control statements. Give syntax with examples.

12 a)   Trace Arguments and parameters in function with example.

OR

b)   Discuss various String operations.

13 a)   Summarise creating and accessing list in python. Give examples.

OR

b)   Discuss List operations with example program.

14 a)   Discuss nested dictionaries , how to access elements in it?

OR

b)   Summarise creating, accessing, changing values in dictionaries.

15 a)   Highlight OOPs concept in python with examples.

OR

b)   Point out operator overloading in python with example.

Z-Z-Z   END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2022
(Third Semester)

Branch – **COMPUTER SCIENCE WITH DATA ANALYTICS**

OBJECT ORIENTED PROGRAMMING WITH JAVA

Time: Three Hours   Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks   (5 x 1 = 5)

1. Which of the following is not OOPS concept in Java?
    (i) Inheritance   (ii) Encapsulation
    (iii) Polymorphism   (iv) Compilation

2. Which of this keyword must be used to inherit a class?
    (i) super   (ii) this
    (iii) extent   (iv) extends

3. Which of these method of Thread class is used to find out the priority given to a thread?
    (i) get()   (ii) ThreadPriority()
    (iii) getPriority()   (iv) getThreadPriority()

4. Which of these functions is called to display the output of an applet?
    (i) display()   (ii) paint()
    (iii) displayApplet()   (iv) PrintApplet()

5. Which of these packages contains all the classes and methods required for even handling in Java?
    (i) java.applet   (ii) java.awt
    (iii) java.event   (iv) java.awt.event

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks   (5 x 3 = 15)

6. a) Explain in details about java class libraries.
                    OR
   b) Describe this keyword with example.

7. a) Explain method overloading with example.
                    OR
   b) How will you import package in Java? Explain.

8. a) Explain java thread model.
                    OR
   b) Analyse the thread priorities.

9. a) Describe applet class with an example.
                    OR
   b) Classify the types of applets.

10.a) Develop a simple swing application in Java.
                    OR
   b) Illustrate the use of radio buttons.

SECTION -C (30 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** Marks   (5 x 6 = 30)

11. a) Discuss about the object oriented programming.

    OR

    b) Elucidate garbage collection with example.

12. a) Create a multilevel hierarchy with an example.

    OR

    b) Enumerate exception handling fundamentals.

13. a) Discuss about synchronization with example.

    OR

    b) Illustrate string constructor with an example.

14. a) Summarize the applet skeleton with an example.

    OR

    b) Enumerate applet initialization and termination.

15. a) Discuss about the delegation event model.

    OR

    b) Analyse the use of Jtable with an example.

Z-Z-Z   END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2022
(Third Semester)

Branch – **COMPUTER SCIENCE WITH DATA ANALYTICS**

RELATIONAL DATABASE MANAGEMENT SYSTEMS

Time: Three Hours   Maximum: 50 Marks

SECTION-A (5 Marks)
Answer ALL questions
ALL questions carry EQUAL marks   (5 x 1 = 5)

1. What is the full form of DBMS?
   (i) Data of Binary Management System   (ii) Database Management System
   (iii) Database Management Service   (iv) Data Backup Management System

2. An _____ is a set of entities of the same type that share the same properties, or attributes.
   (i) Entity set   (ii) Attribute set   (iii) Relation set   (iv) Entity model

3. What is the full form of SQL?
   (i) Structured Query List   (ii) Structure Query Language
   (iii) Sample Query Language   (iv) Standard Query Language

4. A _____ is a query that retrieves rows from more than one table or view:
   (i) Start   (ii) End   (iii) Join   (iv) All of the mentioned

5. To produce a stored function, which statement is used?
   (i) PRODUCE FUNCTION   (ii) CREATE FUNCTION
   (iii) PRODUCE PROCEDURE   (iv) CREATE PROCEDURE

SECTION - B (15 Marks)
Answer ALL Questions
ALL Questions Carry EQUAL Marks   (5 x 3 = 15)

6. a) Explain in details about purpose of database system.
                              (or)
   b) Describe data definition language with example.

7. a) Narrate entity-relationship model in detail.
                              (or)
   b) Discuss about first normal form in detail.

8. a) Summarise modifying the structure of the table.
                              (or)
   b) How do you remove the table? Explain.

9. a) Describe inner joins with example.
                              (or)
   b) Classify PL/SQL syntax with suitable example.

10. a) Develop an application using a stored procedure.

(or)

b) How triggers are works? Explain with example.

SECTION -C (30 Marks)
Answer ALL questions
ALL questions carry **EQUAL** Marks   (5 x 6 = 30)

11. a) Discuss about the database design in detail.

(or)

b) Elucidate database architecture with example.

12. a) Examine entity-relationship diagram design issues.

(or)

b) Enumerate oracle data types with example.

13. a) Discuss about dropping table with example.

(or)

b) Discover data constraints with example.

14. a) Summarize views with example.

(or)

b) Enumerate creating reports in SQL * plus.

15. a) Point out the deleting a stored procedure.

(or)

b) Analyse creating triggers with example.

Z-Z-Z   END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2022
(Third Semester)

Branch – **COMPUTER SCIENCE WITH DATA ANALYTICS**

OPERATING SYSTEM

Time: Three Hours   Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks   (5 x 1 = 5)

1   The small piece of code stored in ROM is
   (i) Boot Strap   (ii) Device Drivers
   (iii) Net Sim   (iv) Boot Map

2   Storing the context or state of a process so that it can be reloaded when required and execution can be resumed is known as
   (i) Context switching   (ii) Swapping
   (iii) Thrashing   (iv) Overlays

3   Mutual Exclusion is
   (i) Deadlock Avoidance   (ii) Deadlock Occurrence
   (iii) Deadlock Prevention   (iv) Deadlock Detection

4   The strategy which allocates smallest hole
   (i) Best fit   (ii) First fit
   (iii) Worst fit   (iv) Last fit

5   Page Fault increase as the number of allocated frame increases
   (i) Belady's Anomaly   (ii) Swapping
   (iii) Thrashing   (iv) Coalescing

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks   (5 x 3 = 15)

6   a   Describe User Interface in detail.
                         OR
    b   Show the System Calls are implemented with example.

7   a   Explain in detail the concept of Buffering.
                         OR
    b   Differentiate Preemptive and Non Preemptive Scheduling.

8   a   Classify the various methods for handling deadlock.
                         OR
    b   Sketch the Resource allocation graph algorithm for Deadlock Avoidance.

9 a   State Optimal Page Replacement algorithms in detail.

OR

  b   Analyze briefly the concept of Thrashing.

10 a   Classify various File system Interface.

OR

  b   Explain in brief File System structure.

SECTION -C (30 Marks)
Answer ALL questions
ALL questions carry EQUAL Marks   (5 x 6 = 30)

11 a   Enumerate Linkers and Loaders in detail.

OR

  b   Classify Types of Operating systems.

12 a   Elucidate the concept of process Scheduling Criteria.

OR

  b   Explain Inter process communication in shared memory system.

13 a   Bring out the concept to prevent Deadlock.

OR

  b   Discuss Bankers Algorithm for Deadlock Avoidance.

14 a   Explain in detail Multiple Partition Algorithm.

OR

  b   Outline in detail the concept of Demand Paging.

15 a   Classify various File system Operations in detail.

OR

  b   Explain how to implement Directories in file.

Z-Z-Z   END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2022
(Third Semester)

Branch – **COMPUTER SCIENCE WITH DATA ANALYTICS**

LINEAR ALGEBRA

Time: 3 Hours

Maximum: 50 Marks

SECTION-A (5 Marks)
Answer ALL questions
ALL questions carry EQUAL marks   (5 x 1 = 5)

1. A 1-1 and onto linear transformation is called -------------------.

   (i) Epimorphism   (ii) Monomorphism   (iii) Homomorphism   (iv) Isomorphism

2. The dimension of a vector space C over R is ---------------.

   (i) 2   (ii) 3   (iii) 1   (iv) 5

3. If x and y are orthogonal iff -----------------.

   (i) $<x, y> = 0$ (ii) $<x, y> = 1$ (iii) $x = y$ (iv) $x = 0$

4. A square matrix A is said to be idempotent if $A^2 = $ -------- .

   (i) $\bar{A}$ (ii) A   (iii) $-A^T$ (iv) $-\bar{A}$

5. The characteristic roots of skew hermitian matrix are all -----------

   (i) Imaginary   (ii) Real   (iii) Positive   (iv) Negative

SECTION - B (15 Marks)
Answer ALL Questions
ALL Questions Carry EQUAL Marks   (5 x 3 = 15)

6. (a) Prove that the intersection of two sub-spaces of a vector space is a subspace.

<div align="center">(OR)</div>

   (b) Let S={$v_1, v_2, v_3,...,v_n$} be a linearly dependent set of vectors in V iff there exists a Vector $v_k \in S$ such that v_k is a linear combination of the preceding vectors $v_1, v_2, v_3,...,v_{k-1}$.

7. (a) Let S={$v_1, v_2, v_3,...,v_n$} be a linearly independent set of vectors in V iff there exists a vector $v_k \in S$ such that v_k is a linear combination of the preceding vectors $v_1, v_2, v_3,...,v_{k-1}$.

<div align="center">(OR)</div>

   (b) Let V and W be two finite dimensional vector spaces over a field F. Let dim V=m and dim W=n. Then prove that L(V,W) is a vector space of dimension mn over F.

8. (a) Let V be the vector space of polynomials with inner product given by

   $$<f, g> = \int_0^1 f(t) g(t) \, dt \quad , f(t) = t+2 \text{ and } g(t) = t^2 - 2t - 3$$

   Find (i) $<f, g>$ (ii) $\|f\|$.

<div align="center">(OR)</div>

   (b) Let W_1 and W_2 be subspaces of a finite dimensional inner product space. Then prove that
   (i) $(W_1 + W_2)^\perp = W_1^\perp \cap W_2^\perp$
   (ii) $(W_1 \cap W_2)^\perp = W_1^\perp + W_2^\perp$

9. (a) Prove that any square matrix A can be expressed uniquely as the sum of a symmetric matrix and a skew symmetric matrix.
<div align="center">(OR)</div>

9. (b) Reduce the matrix A= $\begin{pmatrix} 1 & 2 & -1 \\ 1 & 1 & 2 \\ 2 & 4 & -2 \end{pmatrix}$

10. (a) State and prove Cayley Hamilton theorem.

(or)

(b) Prove that the characteristic roots of a Hermitian matrix are all real.

SECTION -C (30 Marks)
Answer ALL questions
ALL questions carry EQUAL Marks   (5 x 6 = 30)

11. (a) State and prove Fundamental theorem of homomorphism in Vector spaces.

OR

(b) Let V be a vector space over a field F and S be any non-empty subset of V. Then prove the following

(i) L(S) is a subspace of V.

(ii) $S \subseteq L(S)$.

(iii) L(S) is the smallest subspace of V containing S.

12. (a) Let V be a vector space over a field F. Let W be a subspace of V. Then prove the following

(i) $\dim W \le \dim V$ (ii) $\dim \dfrac{V}{W} = \dim V - \dim W$.

OR

(b) Let V be a finite dimensional vector space over a field F. Let A and B be subspaces of V. Then prove that dim(A+B)=dim A + dim B - dim(A∩B).

13. (a) Prove that every finite dimensional inner product space has an orthonormal basis.

OR

(b) Prove the norm defined in an inner product space V has the following properties.

i) $|<x, y>| \le \|x\| \|y\|$

ii) $\| x + y \| \le \|x\| + \|y\|$

14. (a) If A= $\begin{pmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 2 & 0 & 3 \end{pmatrix}$ show that $A^3-6A^2+7A+2I =0$.

OR

(b) Compute the inverse of the matrix $\begin{pmatrix} 1 & 2 & 3 \\ 0 & -1 & 4 \\ -2 & 2 & 1 \end{pmatrix}$.

15. (a) Show that the equations
$$x + y + z = 6$$
$$x + 2y + 3z = 14$$
$$x + 4y + 7z = 30$$
are consistent and solve them.

OR

(b) Find the eigen values and eigen vectors of the matrix A= $\begin{pmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{pmatrix}$

Z-Z-Z   END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2022
(Third Semester)

Branch – COMPUTER SCIENCE WITH DATA ANALYTICS

APPLIED STATISTICS

Time: Three Hours   Maximum: 50 Marks

SECTION-A (5 Marks)
Answer ALL questions
ALL questions carry EQUAL marks   (5 x 1 = 5)

1. Sample is a subset of........
   (i) Data
   (iii) Distribution
   (ii) set
   (iv) Population

2. An orderly set of data arranged in accordance with their time of occurrence is called........
   (i) Arithmetic series
   (iii) Geometric series
   (ii) Harmonic series
   (iv) Time series

3. The condition for the time reversal test to hold with usual notations is........
   (i) $P_{01} \times P_{10} = 1$
   (iii) $P_{01}/P_{10} = 1$
   (ii) $P_{01} \times P_{10} = 0$
   (iv) $P_{01} + P_{10} = 1$

4. Quality means degree of........
   (i) Perfection
   (iii) Both (i) & (ii)
   (ii) Imperfection
   (iv) None of these

5. The sum of deviations from the _____ is always zero
   (i) Median
   (iii) Mean
   (ii) Mode
   (iv) None of the above

SECTION - B (15 Marks)
Answer ALL Questions
ALL Questions Carry EQUAL Marks   (5 x 3 = 15)

6 a. Define SRSWR and SRSWOR.

OR

b. Explain Non probability sampling.

7 a. Find the centered 4-year moving averages from the following time series data:

Years:	1995	1996	1997	1998	1999	2000	2001	2002
Output:	30.1	45.4	39.3	41.4	42.2	46.4	46.6	49.2

OR

b. Describe trend analysis.

8 a. What are the uses of Index Numbers?

OR

b. Calculate the index number, using the aggregate expenditure method for the year 2003 with 2000 as base year, from the following data:

Commodity	Quality in units	Price per unit 2000(Rs)	Price per unit 2003 (Rs)
A	100	8	12.0
B	25	6	7.50
C	10	5	5.25
D	20	48	52.00
E	65	15	16.50
F	30	19	27.00

9 a. What is meant by Statistical Quality Control? Mention two types of causes for variation in a manufacturing process?

OR

b. A machine drills in a pipe with a mean diameter of 0.532cm and a standard deviation of 0.002cm. Calculate the Control limits for mean of sample 5.

10   a. Explain the steps involved in fitting a straight line trend using MS Excel.
<div align="center">OR</div>
b. Write down the steps involving in calculating ANOVA using MS Excel.

<div align="center">

SECTION -C (30 Marks)
Answer ALL questions
ALL questions carry EQUAL Marks   (5 x 6 = 30)

</div>

11 a   Describe stratified random sampling and systematic random sampling.
<div align="center">OR</div>
b   Explain in detail the Sampling error and Non-sampling errors. Give an examples

12 a. Fit a straight line trend to the data given below by the method of least squares and estimate the number of sales men in 2003

Year	:	1998	1999	2000	2001	2002
No. of Sales men	:	28	38	46	40	56

<div align="center">OR</div>
b. Find the seasonal index from the following table by ratio to moving average method

Seasons	1999	2000	2001	2002	2003
I Quarter	40	42	41	45	44
II Quarter	35	37	35	36	38
III Quarter	38	39	38	36	38
IV Quarter	40	38	42	41	42

13 a. Calculate Fisher's ideal index from the data given below and show that it satisfies Time reversal test and factor reversal test.

Commodity	2000		2001	
	Price	Quantity	Price	Quantity
A	10	49	12	50
B	12	25	15	20
C	18	10	20	12
D	20	5	40	2

<div align="center">OR</div>
b. Calculate the Cost Of Living Index Number by using
i) The weighted arithmetic mean and   (ii) The weighted geometric mean

Group	Index Number	Weight
Food	352	48
Fuel and Lightning	200	10
Clothing	230	8
House Rent	160	12
Miscellaneous	190	15

14 a. Find the values of sample mean ($\bar{X}$) and the range (R) for ten samples of size 5 each. Draw mean chart and comment on the state of control of the process.

Sample number :	1	2	3	4	5	6	7	8	9	10
$\bar{X}$	47	: 43	49	37	44	45	37	51	46	43
R	6	: 5	6	5	7	7	4	8	6	4

Given the following control chart constraint for: n = 5, A_2 = 0.58, D_3 = 0 and D_4 = 2.115

<div align="center">OR</div>
b. Describe the control charts.

15 a . Explain the steps involved in measure of dispersion using MS Excel
<div align="center">OR</div>
b Explain briefly about the descriptive statistics computational functions in Excel.

<div align="center">Z-Z-Z   END</div>

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2022
(Fifth Semester)

Branch – COMPUTER SCIENCE WITH DATA ANALYTICS

MOBILE AND WEB APPLICATIONS DEVELOPMENT

Time: Three Hours   Maximum: 75 Marks
SECTION-A (10 Marks)
Answer ALL questions
ALL questions carry EQUAL marks   (10 x 1 = 10)

1. Android is based on which kernel?
   a) Linux kernel   b) Windows kernel
   c) MAC kernel   d) Hybrid Kernel

2. A ____ is a piece of an activity that enable more modular activity design.
   a) Intents   b) sub-activity
   c) Fragment   d) Filters

3. If you want to configure a link between two Android activities in the same Android application, you need to use:
   a) Intent   b) Gradle
   c) Toast   d) Progressbar

4. Which of the following files has the correct name for a layout design file of an activity in an Android app?
   a) MainActivity.java or MainActivity.kt   b) activity_main.xml
   c) Sample.class   d) Gradle.sql

5. A ____ work, as it relates to WordPress, is a work that contains programming whose functionality depends on the core WordPress file.
   a) derivative   b) program
   c) function   d) core file

6. Which one of the following is not a WordPress role?
   a) Administrator   b) Subscriber
   c) System   d) Editor

7. A ____ is an episodic series of digital audio files that a user can download to a personal device for easy listening.
   a) Archive   b) podcast
   c) promotion   d) RSS feed

8. The ____ defines the HTML markup around each individual thumbnail image in your gallery.
   a) captiontag   b) icontag
   c) itemtag   d) orderby

9. We can change the WordPress theme using ____.
   a) wordpress_setting.php file   b) WordPress Settings
   c) wp_config.php file   d) WordPress Appearance

10. Which plugin is a page builder?
    a) WP Forms   b) Elementor
    c) Smart Slider   d) All in one Migration

SECTION - B (25 Marks)
Answer ALL questions
ALL questions carry EQUAL Marks   (5 x 5 = 25)

11.   (a) Describe various Android versions.
               (OR)
      (b) How to show progress dialog in Android? Explain.

12.   (a) Explain the life cycle methods of a fragment.
               (OR)
      (b) Outline the components of Action Bar.

13.   (a) Describe the features of the word press.
               (OR)
      (b) Summarize the upgrades available on WordPress.com.

14.   (a) State the steps to add an image from the web into blog posts.
               (OR)
      (b) Explain the advantages of custom fields.

15.   (a) Bring out the uses of bloginfo() parameters.
               (OR)
      (b) Analyse the best practices to use plug-ins code.

SECTION -C (40 Marks)
Answer ALL questions
ALL questions carry EQUAL Marks   (5 x 8 = 40)

16.   (a) Classify the types of Android devices in the market.
               (OR)
      (b) Elucidate the method of displaying a dialog window using an activity.

17.   (a) Summarize the procedure of linking activities using intent.
               (OR)
      (b) Discuss the behavior of an activity when the device changes orientation.

18.   (a) Examine the WordPress development process.
               (OR)
      (b) Outline the general settings to be followed to personalize the blog.

19.   (a) Discuss the three options for saving or publishing posts.
               (OR)
      (b) Identify the steps to insert a photo gallery into a blog post.

20.   (a) Highlight the CSS background properties.
               (OR)
      (b) Enumerate the functions of the WP plugin.

Z-Z-Z   END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2022
(Fifth Semester)

Branch – **COMPUTER SCIENCE WITH DATA ANALYTICS**

MACHINE LEARNING

Time: Three Hours   Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks   (10 x 1 = 10)

1 . Application of Machine learning is --------.
   (i)   email filtering   (ii)   sentimental analysis
   (iii) face recognition   (iv) all of the above

2 . How do you perform Bayesian classification when some features are missing?
   (i) Assuming the missing values as the mean of all values.
   (ii) Ignore the missing features.
   (iii) integrate the posteriors probabilities over the missing features
   (iv) drop the features completely.

3 . Residual ------ plots investigate normality of the errors.
   (i)   RR   (ii) PP
   (iii) QQ   (iv) None of the above

4 . Which of the following can be useful for diagnosing data entry errors?
   (i)   hat values   (ii)   dffit
   (iii) resid   (iv) all of the above.

5 . What symbol represents the test statistic for the Mann-Whitney test?
   (i) Ws   (ii) T
   (iii) U   (iv) H

6 . D is the _____ in the model $D=b_0+ b_1 X_1+ b_2 X_2+ b_3 X_3+...+ b_k X_k$.
   (i)   discriminant score   (ii) disordinal interaction
   (iii) difference variable   (iv) discriminant coefficients or weights

7 . Match List I and List II

	List I		List II
A	Bayes' Theorem	I	$P(\bar{E}) = 1 - P(E)$
B	Conditional Probability	II	$P(E_1 \cup E_2) = P(E_1) + P(E_2)$
C	Theorem of Complementary event	III	$P(E_2/E_1) = \dfrac{P(E_1 \cap E_2)}{P(E_1)}$
D	Theorem of addition	IV	$P H_l/E = \dfrac{P(H_l \cap E)}{P(E)}$

Choose the correct answer from the options given below:
(i) A-I, B-IV, C-III, D-II   (ii) A-III, B-IV, C-II, D-I
(iii) A-III, B-IV, C-I, D-II   (iv) A-IV, B-III, C-I, D-II

8 . What is the use of the Hidden Markov Model?
   (i) Speech recognition   (ii) Understanding of the real world
   (iii) Both (i) and (ii)   (iv) None of these

9 . Which of the following statement is true in following case?
(i) Feature F1 is an example of nominal variable
(ii) Feature F1 is an example of ordinal variable
(iii) It doesn't belong to any of the above category
(iv) Both of these

10 Which of the following is an example of a deterministic algorithm?
(i) PCA (ii) K-Means
(iii) None of the above (iv) Both of these

SECTION - B (25 Marks)
Answer ALL questions
ALL questions carry EQUAL Marks   (5 x 5 = 25)

11 a What are the different types of Machine Learning?
OR
b How is KNN different from K-means clustering?

12 a Define Multivariate regression with its characteristics. Explain with steps to achieve it.
OR
b Summarize Linear Discriminant analysis.

13 a Differentiate Parametric and non-parametric method.
OR
b Describe about Gradient Descent.

14 a What is parameter estimation? Explain the types of parameter estimation.
OR
b State Hidden Markov model in detail.

15 a Describe Response surface designs.
OR
b What is hypothesis testing in ML? Summarise the steps.

SECTION -C (40 Marks)
Answer ALL questions
ALL questions carry EQUAL Marks   (5 x 8 = 40)

16 a Summarize Regression model in detail.
OR
b Explain in detail about Maximum Likelihood Estimation.

17 a State in detail the estimation of Missing values.
OR
b Summarise Multivariate Normal Distribution in detail.

18 a Narrate nonparametric regression smoothing models in detail.
OR
b Describe the parametric discrimination revisited in detail.

19 a Explain the use of basis/kernel functions in bayes estimation.
OR
b State continuous observations of learning model in detail

20 a Compare two classification algorithms in detail.
OR
b Summarize cross validation and Resampling methods in ML.

Z-Z-Z   END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2022
(Fifth Semester)

Branch – **COMPUTER SCIENCE WITH DATA ANALYTICS**

COMPUTER NETWORKS

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks   (10 x 1 = 10)

1. A short range wireless network called _____ is used to connect the components without wires.
   (i) LAN
   (ii) MAN
   (iii) WAN
   (iv) Bluetooth

2. _____ is an agreement between the communicating parties on how communication is to proceed.
   (i) Medium
   (ii) Interface
   (iii) Protocol
   (iv) Layers

3. _____ are used for cellular phone satellite and wireless LAN communications.
   (i) Radio waves
   (ii) Micro waves
   (iii) Infrared waves
   (iv) None of the above

4. _____ cable consists of an inner core and a second conducting outer sheath.
   (i) Twisted pair
   (ii) Coaxial
   (iii) Fiber-optic
   (iv) Shielded twisted pair

5. Header of a frame generally contains _____.
   (i) Synchronization bytes
   (ii) Addresses
   (iii) Frame identifier
   (iv) All of these

6. Error detection at the data link layer is achieved by _____.
   (i) Bit stuffing
   (ii) Cyclic redundancy codes
   (iii) Hamming codes
   (iv) Equalization

7. A 4 byte IP address consists of _____.
   (i) Only network address
   (ii) Only host address
   (iii) Network address and host address
   (iv) Network address and MAC address

8. The network layer protocol for internet is _____.
   (i) Ethernet
   (ii) Internet protocol
   (iii) Hypertext transfer protocol
   (iv) File transfer protocol

9. Which of the following are transport layer protocol used in networking?
   (i) TCP and FTP
   (ii) UDP and HTTP
   (iii) TCP and UDP
   (iv) HTTP and FTP

10. Application layer offers _____ service.
    (i) End to end
    (ii) Process to process
    (iii) Both end to end and process to process
    (iv) None of the above

SECTION - B (25 Marks)
Answer ALL questions
ALL questions carry EQUAL Marks   (5 x 5 = 25)

11. a) Bring out the types of computer networks.
                          OR
   b) State the connection oriented service primitives.

12. a) Narrate about fiber optic cables used in network.
                          OR
   b) Describe about geo-stationary satellites in detail.

13. a) Summarize the services provided to the network layer by the data link layer.
                          OR
   b) What do you know about Data Link Protocol?

14. a) Discuss about flooding in detail.
                          OR
   b) Describe IP protocol and its importance with example.

15. a) Summarize the HTTP methods with example.
                          OR
   b) Explain WAP protocol stack in detail.

SECTION -C (40 Marks)
Answer ALL questions
ALL questions carry EQUAL Marks   (5 x 8 = 40)

16. a) Enumerate TCP/IP reference model in detail.
                          OR
   b) Elucidate protocol hierarchies in detail.

17. a) Discuss about radio transmission and microwave transmission.
                          OR
   b) Elucidate wavelength division multiplexing and time-division multiplexing.

18. a) Discuss about sliding – window protocol.
                          OR
   b) Write short notes on: 1.Error correcting codes
                                2. Error Detecting codes

19. a) Explain the shortest path routing algorithm in detail.
                          OR
   b) Elucidate Broadcast Routing in detail.

20. a) Analyze the elements of transport protocols in detail.
                          OR
   b) Explain TCP congestion control with example.

Z-Z-Z   END