

**CSSR & SRRM DEGREE & PG COLLEGE**

(AUTONOMOUS)

UG (CBCS) REGULAR EXAMINATIONS, DECEMBER-2024

BSc (Computer Science) Honours, SEMESTER-I

**Course-1: Essentials and Applications of Mathematical, Physical and Chemical Sciences**

(w.e.f. 2024-25 Admitted Batch)

Time: 2 hours

Max Marks: 70

**A**

(No additional sheet will be supplied)

**Section-A****Answer all the multiple choice questions. Each question carries 1 mark.****30x1=30M****1. In the complex number  $Z=2+4i$ , the real part is**

A) 2

C)  $4i$ 

B) 4

D) None of the above

**2. What is the conjugate of the complex number  $z= 3-2i$** A)  $-3+2i$ C)  $-3-2i$ B)  $3+2i$ 

D) None of the above

**3. If  $(1+i)(x+iy)=2+4i$  then  $5x=$ -----**

A) 11

C) 15

B) 13

D) 14

**4. The value of  $\sin 45^\circ + \cos 45^\circ$  is -----**A)  $1/\sqrt{2}$ C)  $\sqrt{3}/2$ B)  $\sqrt{2}$ 

D) 1

**5. If  $\cos x = 2/3$  then  $\tan x=$ -----**A)  $5/2$ C)  $\sqrt{5/2}$ B)  $\sqrt{5}/2$ D)  $2/\sqrt{5}$ **6. The value of  $\bar{i} \times i=$ -----**

A) 0

C) 3

B) 2

D) 1

**7. Which of the following is a unit of pressure?**

A) Pascal

C) Joule

B) Newton

D) Kilogram

**8. Which law of thermodynamics states that energy cannot be created or destroyed, only transferred or converted from one form to another?**

A) Zeroth Law

C) Second Law

B) First Law

D) Third Law

**9. Which material is commonly used as a semiconductor in the electronics industry?**

A) Copper

C) Aluminum

B) Silicon

D) Gold

**10. What is the principle involved in optical fiber?**

A) Total internal Absorption

C) Total internal Refraction

B) Total internal reflection

D) Total internal Dispersion

[P.T.O]

- 11. What does the term "Ohm's Law" describe in electronics?**  
 A) The relationship between voltage, current, and resistance  
 B) The behavior of capacitors  
 C) The operation of transistors  
 D) None of the above
- 12. Which equation expresses the de Broglie wavelength ( $\lambda$ ) of a particle in terms of its momentum ( $p$ )?**  
 A)  $\lambda = hp$   
 B)  $\lambda = h/2\pi p$   
 C)  $\lambda = 2\pi hp$   
 D)  $\lambda = h/p$
- 13. What is the major greenhouse gas released from the burning of fossil fuels?**  
 A) Methane  
 B) Carbon dioxide  
 C) Nitrous oxide  
 D) Ozone
- 14. What is the electron configuration of Oxygen(O)?**  
 A)  $1S^2 2S^2 2P^4$   
 B)  $1S^2 2S^2 2P^6$   
 C)  $1S^2 2S^1 2P^4$   
 D)  $1S^2 2S^1 2P^4$
- 15. Which group in the periodic table contains noble gases?**  
 A) Group-1  
 B) Group-2  
 C) Group-17  
 D) Group-18
- 16. What is the general formula of a carbohydrate?**  
 A)  $C_nH_{2n+2}$   
 B)  $C_nH_{2n}$   
 C)  $C_nH_{2n-2}$   
 D)  $C_nH_{2n}O$
- 17. What role does pH play in the brewing process of beer?**  
 A) Controls bitterness  
 B) Enhances carbonation  
 C) Influences color  
 D) Affects fermentation efficiency
- 18. What is Avogadro's number?**  
 A)  $6.02 \times 10^{23}$   
 B) 3.14  
 C) 9.8  
 D) 2.718
- 19. If the heat energy is released in a chemical reaction, the reaction is**  
 A) Exothermic  
 B) Endothermic  
 C) Stoichiometric  
 D) Reversible
- 20. What is the primary goal of drug design?**  
 A) To increase drug production costs  
 B) To enhance the taste of medications  
 C) To discover and develop effective therapeutic agents  
 D) to enhance flavor of Drug
- 21. What is the primary goal of computer-aided drug design (CADD)?**  
 A) Develop new computer programs  
 B) Discover and design new drugs  
 C) Analyze existing drugs  
 D) Enhance laboratory equipment
- 22. Which software is commonly used for molecular visualization in CADD?**  
 A) Photoshop  
 B) ChemDraw  
 C) PyMOL  
 D) AutoCAD
- 23. AI Stands for**  
 A) Advanced Internet  
 B) Artificial Interface  
 C) App Integration  
 D) None
- 24. Which of the following is not an Operating system?**  
 A) Windows  
 B) MS-DOS  
 C) UNIX  
 D) None of the above
- 25. Who is the father of Computer?**  
 A) James Gosling  
 B) Charles Babbage  
 C) Dennis Ritchie  
 D) None

[P.T.O]

26. Which of the following is the smallest unit of data in Computer?

- A) KB
- C) MB

- B) GB
- D) TB

27. What is the full form of CPU?

- A) Computer Processing Unit
- C) Central Processing Unit

- B) Computer Principle Unit
- D) Control Processing Unit

28. Which type of Energy is stored in the Battery?

- A) Mechanical
- C) Nuclear

- B) Chemical
- D) Electrical

29. Angle  $130^\circ$  represents which angle?

- A) Acute
- C) Right angle

- B) Obtuse
- D) None

30. Einstein Mass – Energy relation

- A)  $E = m + c^2$
- C)  $E = m/c^2$

- B)  $E = m \cdot c^2$
- D)  $E = mc^2$

### Section-B

Answer all fill in the blanks questions. Each question carries 1 mark.

10x1=10M

31. If  $Z=3+4i$ , then  $|Z| =$  \_\_\_\_\_

32. If  $\tan \Theta = \frac{3}{4}$  then  $\sin \Theta =$  \_\_\_\_\_

33. Mode of the data 3,8,9,7,6,5,6,8,4,3,8,4,7,8 is \_\_\_\_\_

34. An electric current flowing through a conductor creates a \_\_\_\_\_ field around the conductor.

35. Newton's Third Law of Motion states that for every action, there is an equal and opposite \_\_\_\_\_

36. Carbons involving branch is called \_\_\_\_\_

37. Fats are also known as \_\_\_\_\_ and are composed of glycerol & fatty acids.

38. Sound waves do not travel through \_\_\_\_\_

39. WAN stands for \_\_\_\_\_

40. WWW stands for \_\_\_\_\_

### Section-C

Answer all very short answer questions. Each question carries 1 mark.

10x1=10M

41. Define scalar and vector?

42. What are the parts of complex number?

43. State Newton's second law?

44. Write different units of temperature?

45. How is the periodic table arranged?

46. Difference between element and compounds?

47. Write any two importance of Chemistry in daily life?

48. Find the magnitude of  $6\bar{i} + 2\bar{j} + 3\bar{k}$

49. Write any two output devices?

50. Write any three computer languages?

[P.T.O]

### Section-D

Answer all match the following questions. Each question carries 1 mark.

10x1=10M

#### Group-A

#### Group-B

51. Energy gap of Silicon
52. Proton
53. Length of the zero vector
54.  $\sin 90^\circ =$
55.  $\tan 90^\circ =$
56. TCP
57. Microprocessor
58. pH value of normal Water
59. pH value of Blood
60. One byte

- A). Positive charge
- B). 1
- C). 1.12eV
- D). 8 bits
- E). Network Protocol
- F). 6.5 to 8.5
- G). Fourth generation
- H).  $\infty$
- I). 7.35 to 7.45
- J). 0

### Section-E

Answer all True or False questions. Each question carries 1 mark.

10x1=10M

61. Scalar product of two vectors is also a vector
62. The value of  $\cos 90^\circ$  is 1
63. Entropy is a measure of the disorder or randomness in a system
64. Isotopes of an element have the same number of protons but Different numbers of neutrons.
65. The noble gases have a fully filled outer electron shell
66. Glucose is one of the amino acid
67. The mean of 3,6,9,12,15 is 10
68. Key board is a input device
69. Transistors are used in second generation computers
70. 1KB = 1024 TB

