

SET-C

24MAT-MJ2-1A/24PHY-MJ2-1A/24CHE-MJ2-1A/24CS-MJ2-1A

23MAT-MJ2-1A/23PHY-MJ2-1A/23CHE-MJ2-1A/23CS-MJ2-1A

GOVERNMENT COLLEGE FOR WOMEN (AUTONOMOUS) SRIKAKULAM

REACCREDITED WITH NAAC 'A' GRADE

B.Sc (Regular/Supplementary) Semester-I

(W.e.f.2023-24 Admitted Batch)

TITLE: Advanced In Basic Sciences

TIME: 2 Hrs

Marks : 60

Date :18-12-2024

SECTION-A

I. Multiple Choice Questions

20X1=20

- 1) .Which of the answers below is not considered a pollutant.
a)chemicals in batteries b)Fertilizers c)Compost d)Trash
- 2) Which of the following is/are properties of analog signal?
a.Continuous b.Infinite Resolution c.Both a and b d.None of a and b
- 3) What is the primary purpose of transmission media in computer networks?
a.To store data b.To process data c.To transmit data d. To secure data
- 4) What type of transmission medium uses light signals to transmit data?
a.Coaxial cable b.Twisted pair cable
c.Fiber-optic cable d.Wireless communication
- 5) In the hexadecimal number system, what is the digit that follows 9?
a.A b.B c.C d.D
- 6) .Which error detection technique involves adding an extra bit to the data to ensure that the total number of bits with a value of 1 is either even or odd?
a.Cyclic Redundancy Check (CRC) b.Parity Bit
c.Hamming Code d.Checksum
- 7) A Catalyst.
a) Increases the average Kinetic energy of reacting molecule
b) Increases the activation energy c)Alters the reaction mechanism
d) Increases the frequency of collision of reacting species
- 8) .What is the purpose of phase II studies
a) Determining Postmarketing b) Large scale studies on 1000-3000 people
c) Animal testing d) Tests Drug's Effectiveness on 100-300 people

9) What is the most logical and molecular approach to drug discovery.

- a) Synthetic and Biophysical organic chemistry
b) Structure based drug design c) QSAR d) Isosteric replacement

10) Soil pollution is when there are harmful changes in the soil due to the adding or dumping of _____

- a) Recycling b) Pollutants c) Pollution d) The weather

11) If $X+Y = \begin{bmatrix} 5 & 2 \\ 0 & 9 \end{bmatrix}$ and $X-Y = \begin{bmatrix} 3 & 6 \\ -2 & 1 \end{bmatrix}$, then matrix X is

- a) $\begin{bmatrix} 4 & 4 \\ -1 & 5 \end{bmatrix}$ b) $\begin{bmatrix} 8 & 8 \\ -2 & 10 \end{bmatrix}$ c) $\begin{bmatrix} 1 & -2 \\ 1 & 4 \end{bmatrix}$ d) None of the above

12) The melting point of particles in nano form _____

- a) Increases b) Decreases c) Remains same d) Increases then decreases

13) Nano materials that are used to deliver gene or drug into stem cells are

- a) Carbon nano tubes b) Fluorescent CNTs
c) Fluorescent MNPs d) All above

14) Biosensors are used for the quick detection of

- a) Prions b) Pathogens c) Toxins d) All above

15) Nanomaterials are the materials with at least one dimension measuring less than _____

- a) 1 nm b) 10 nm c) 100 nm d) 1000 nm

16) Liposomes are

- a) Biocompatible b) Versatile c) Good Entrapment efficiency d) All above

17) If the line $\frac{x}{a} + \frac{y}{b} = 1$ passes through the points (2,-3) and (4, 5) then (a, b) is

- (a) (1, 1) (b) (-1, 1) (c) (1, - 1) (d) (- 1, - 1)

18) $\lim_{x \rightarrow 0} \frac{\sin x}{x}$ is equal to

- (a) 2 (b) 0 (c) 1 d) -1

19) $\int x^3 dx = ?$

- a) $2x^2 + c$ b) $\frac{x^3}{3} + c$ c) $\frac{x^4}{3} + c$ d) $\frac{x^4}{4} + c$

20) Total number of possible matrices of order 3 x 3 with each entry 2 or 0 is

- a) 9 b) 27 c) 81 d) 512

SECTION-B

II. Fill in the Blanks

10X1=10

- 21) .Without water _____ is impossible on the earth
- 22) .Chemical biology is a scientific discipline between the field of _____ and _____.
- 23) .Decimal equivalent of hexadecimal number 1A3 is _____
- 24). _____ signals work with specific, distinct values
- 25) .If A is symmetric matrix and k is constant, then KA is _____
- 26) .If A and B are symmetric matrices of same order, then AB is symmetric if and only if _____
- 27) .A material with two of the three dimensions are in nano range and third dimension is large known as _____
- 28) . Liposome's are mostly used in _____
- 29) .Scanning Probe Microscopy provides _____
- 30) .Chemical pollution refers to the _____ of our environment with _____ that are not found there naturally

SECTION-C

III. Very short Answer Questions

10X1=10

31. What is the full form of NMR?
32. How do you purify water at Home?
33. What is Codec?
34. In terms of accuracy and precision, which signal type is more resilient to noise and distortion?
35. Find $\int (3x^2 + e^x) dx$?
36. Find $\begin{vmatrix} -1 & 3 & 4 \\ 1 & 9 & 12 \\ 9 & 9 & 12 \end{vmatrix}$
37. Prove that $\log_{x \rightarrow 0} \frac{\tan x}{x} = 1$
38. Frequently used nanomaterials in medical field
39. Define TISSUE ENGINEERING
40. What is the full form of WTP?

SECTION-D

IV. Match the following

10X1=10

A

B

41) Meso porous silica

a) sp^2 – hybrid carbons

42) SWNT

b) Router

43) MNP means

c) Bridges

44) O atomic number

d) 2

45) Ethylene

e) Single walled nano tubes

46) Molecular Solid

f) Dry Ice

47) Device that connects networks and forwards data based on the IP address.

g) $3x^2 \cos x^3$

48) Device that microsegments a LAN and forwards data based on the MAC address

h) MAGNETIC NANO

PARTICLES

49) $\log_{x \rightarrow 0} \frac{x^2 \csc x}{1 - \cos x}$ is equal to

i) Gastric Cancer

50) $\frac{d}{dx} (\sin x^3)$

j) 8

SECTION-E

I. True or False

10X1=10

51) Transpose of a column matrix is a column matrix.

52) DNA Nanotechnology is used in Tissue engineering

53) Noble gases are highly reactive.

54) Males need more calories than females.

55) Precision farming can be utilized every crop

56) Infrared signals are used for short-range communication.

57) Through computer networking, information can be easily shared amongst the people.

58) Repeater and router precisely do the same thing.

59) If the line $\frac{x}{a} + \frac{y}{b} = 1$ passes through the points (2,-3) and (4, 5) then (a, b) is (-1,-1)

60) The distance between the points (2, 3, 5) and (4, 3, 1) is 5