

SET-B

24MAT-MJ1-1A/24PHY-MJ1-1A/24CHE-MJ1-1A/24CS-MJ1-1A

23MAT-MJ1-1A/23PHY-MJ1-1A/23CHE-MJ1-1A/23CS-MJ1-1A

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: Essentials and Applications of Basic Sciences

TIME: 2 Hrs

Marks : 60

Date :17-12-2024

SECTION -A

I. Multiple choice questions

20x1=20

1. The value of λ for which the vector $3i - 6j + k$ and $2i - 4j + \lambda k$ are parallel is

- (a) $2/3$ (b) $3/2$ (c) $5/2$ (d) $2/5$

2. Which of the physical quantity is same for X- rays and gamma rays in vacuum?

- (a) Frequency (b) wavelength (c) energy of one photon (d) speed

3. Acoustic waves cannot travel through

- (a) Solids (b) liquids (c) vacuum (d) all

4. Which of the following EM radiation has least wavelength?

- (a) Gamma rays (b) X-rays (c) infrared (d) radio waves

5. When steam is converted into water the internal energy of the system

- (a) Becomes zero (b) remains same (c) increases (d) decreases

6. Which of the following is not semiconductor?

- (a) Si (b) Ge (c) Fe (d) GaAs

7. The value of $\sqrt{i} + \sqrt{-i}$

- (a) 0 (b) $\sqrt{2}$ (c) $-i$ (d) i

8. The complex number z which satisfies the condition lies on $\left| \frac{(i+z)}{(i-z)} \right| = 1$

- (a) Circle $x^2 + y^2 = 1$ (b) the x-axis (c) the y-axis (d) the line $x + y = 1$

9. Which of the following is not defined?

(a) $\cos 0^\circ$ (b) $\tan 45^\circ$ (c) $\sec 90^\circ$ (d) $\sin 90^\circ$

10. If $3 \cos \theta = 1$ then the value of $\operatorname{cosec} \theta$ is:

(a) $2\sqrt{2}$ (b) $3/2\sqrt{2}$ (c) $2\sqrt{3}/3$ (d) $4/3\sqrt{2}$

11. Particles that most effects material properties.

(a) Neutrons (b) Proton (c) Electrons (d) Valence electrons

12. Which of the following is designed to control the operations of a computer?

(a) User (b) Application Software

(c) System Software (d) Utility Software

13. Artificial Intelligence is mainly used in this generation.

(a) 5th (b) 2nd (c) 3rd (d) 4th

14. A computer's hard disk is

(a) an arithmetic and logical unit (b) computer software

(c) an operating system (d) computer hardware

15. All of the following are examples of storage devices except:

(a) Hard disk drives (b) Printers (c) USB drive (d) DVD drives

16. A keyboard is this kind of device—

(a) black (b) input (c) output (d) word Processing

17. Which one of these elements was Suggested as Transition element by

Mendeleev

(a) N (b) Ni (c) Ne (d) B

18. How many Elements do Lanthanides have?

(a) 14 (b) 15 (c) 13 (d) 17

19. Organic reactions are slow because they have.

(a) High activation energy (b) Low activation energy

(c) Less number of chemical bonds (d) Volatile nature

20. Which is the example of chemical change?

(a) Water freezes (b) Wood is cut

(c) Bread is baked (d) Wire is bent

SECTION-B

II. Fill in the blanks

10x1=10

21. First law of thermodynamics is based on the principle of conservation of _____.
22. Sea food is rich source of _____.
23. Give on example of Food preservative _____.
24. PDA Stands for _____.
25. _____ is any part of the computer that you can physically touch.
36. _____ is an output device that lets you see what the computer is doing.
27. $\arg(z) + \arg \bar{z}$ ($z \neq 0$) is _____.
28. The value of $[\sin^2 20^\circ + \sin^2 70^\circ - \tan^2 45^\circ]$ is _____.
29. If PQR is right angled at R, then the value of $\cos(P + Q)$ is _____.
30. Acoustic waves are ----- in nature

SECTION-C

III. Very Short Answer Questions

10 x 1 = 10

31. Define entropy?
31. Glucose chemical formula?
33. What is the full form of RNA?
34. State some of the applications of a computer.
35. List various types of system software.
36. What is multiprogramming?
37. Find the modulus of the complex number $z = \frac{(1+i)^{13}}{(1-i)^7}$
38. If $\tan A = \frac{1}{\sqrt{3}}$ then the value of $7\sin^2 A + 3\cos^2 A$?
39. Find the angle between the vectors $a = i - j + k$ and $b = i + j - k$?
40. State second law of thermodynamics?

SECTION-D

IV. Match the following

10 x 1 = 10

- | | |
|-----------------------------|--------------------|
| 41. Low frequency radiation | a) Nucleus |
| 42. Vitamin- A | b) Keyboard |
| 43. Vitamin – E | c) 0 |
| 44. Penicillin | d) 1 |
| 45. Input device | e) Gamma rays |
| 46. Storage information | f) Antibiotic drug |
| 47. $k \times k =$ | g) RAM |
| 48. $\tan 45^\circ$ | h) Tocopherol |
| 49. Rutherford | i) Universe |
| 50. Big Bang theory | j) Retinol |

SECTION-E

V. True or False

10 x 1 = 10

51. X-rays are used in communication
52. Disinfection of water is the most important water treatment step.
53. Carbohydrates are the back-up energy source for humans.
54. Large hardness means large resistance to elastic deformation.
55. Joystick is an output device.
56. Supercomputers are very expensive to operate and maintain
57. The Arithmetic mean can be computed even if an observation of the series is missing.
58. Arithmetic mean is highly affected by extreme values.
59. Acoustic waves does not requires medium to propagate
60. Velocity of light in vacuum is 3×10^{10} cm/sec