Shivaji University Kolhapur

M.Sc. Entrance Examination 2025

Subject: Physics

Answer key

1.	(b)	**Magnetic flux density (B) versus magnetizing field (H)**
2.	(d)	**Strong nuclear force**
3.	(c)	**Synchrotron**
4.	(b)	**To detect and visualize the tracks of charged particles**
5.	(d)	**Non-primitive unit cell**
6.	(b)	**Protons and neutrons**
7.	(c)	**Protons**
8.	(c)	**A continuous spectrum**
9.	(c)	**Unit cell**
10.	(d)	**15**
11.	(c)	**Synchrotron**
12.	(b)	**The rate of change of the magnetic flux through the orbit**
13.	(c)	**Photo-multiplier tube (PMT)**
14.	(c)	**Electron**
15.	(b)	**2**
16.	(c)	**12**
17.	(b)	**Analysing the crystal structure of polycrystalline materials**
18.	(a)	**Curie temperature**
19.	(b)	**The slope of the energy versus wave vector (E-k) relationship**
20.	(b)	**The interaction of the electron with the periodic potential of the lattice**
21.	(c)	$\boldsymbol{l = 0}$
22.	(c)	**Electron spin-orbit interaction**
23.	(b)	**Non-zero electron spin angular momentum**
24.	(c)	**Electron sharing**
25.	(c)	**Bands**
26.	(d)	**The electrons**
27.	(d)	**Watts (W)**
28.	(c)	**Meissner effect**
29.	(d)	**Oblique**
30.	(c)	**Poisson's equation**
31.	(c)	**Change in the molecule's polarizability**
32.	(b)	**Quantum confinement**
33.	(c)	**Solar constant**
34.	(c)	**Nanowire**
35.	(b)	**It involves partial derivatives with respect to multiple independent variables**
36.	(c)	**The wave nature of electrons**
37.	(d)	**the rate of change of magnetic flux**
38.	(b)	**Magnetic monopoles do not exist**
39.	(c)	**Zero**
40.	(c)	**Molecules that are IR inactive but Raman active**

41. (c) **Galaxy**
42. (c) **Milky Way**
43. (a) **Solar radiation heating the Earth unevenly**
44. (c) **The available wind power per unit area**
45. (c) **Ultraviolet (UV)**
46. (c) **Photosynthesis**
47. (c) **Critical temperature**
48. (b) $(1, r, rsin\theta)$
49. (c) **Harmonic functions**
50. (d) x, y, and z
51. (c) **perpendicular to both the velocity and the magnetic field**
52. (c) **Conduction current**
53. (b) **Wave-particle duality**
54. (c) **Louis de Broglie**
55. (c) **The probability density of finding a particle at a specific position and time**
56. (a) **The possible values of a dynamical variable that can be obtained from a measurement**
57. (b) **The solutions to the Schrödinger equation for specific energy eigenvalues**
58. (c) **Total energy of the system**
59. (c) **Tunneling**
60. (c) **Spherical polar coordinates**
61. (b) **Holonomic constraint**
62. (b) **Degrees of freedom**
63. (b) **cycloid**
64. (c) **Angular momentum only**
65. (c) **Luminiferous ether**
66. (c) **All inputs are LOW**
67. (c) **XNOR gate**
68. (c) **To provide the frequency-determining element**
69. (d) **Crystal oscillator**
70. (d) **Angular momentum**
71. (c) **Current-carrying conductor**
72. (b) **Vector field**
73. (a) **1**
74. (c) **Generalized coordinates and their time derivatives**
75. (c) **the calculus of variations**
76. (b) **External torques and the rate of change of angular momentum in a body-fixed frame**
77. (c) **Objects moving at speeds much smaller than the speed of light**
78. (d) **NAND gate**
79. (c) **Counting pulses**
80. (c) **1**
81. (b) **DC power to AC power**
82. (c) **Practical op-amp**
83. (c) **Voltage Comparator**
84. (b) **Scalar quantity**
85. (b) **Kinetic energy**
86. (c) **viscous**
87. (c) **Admittance**

88. (c) **No heat is exchanged with the surroundings**
89. (c) **The dipole moment per unit volume of the dielectric material**
90. (c) **Angular displacement**
91. (c) **Less than 90 degrees**
92. (c) **Inductance**
93. (d) **Mechanical, thermal, and chemical equilibrium**
94. (c) **Momentum**
95. (c) **Distinguish between two closely spaced objects**
96. (c) **Temperature**
97. (c) **above the audible range**
98. (c) **Absorbing all incident radiation**
99. (b) **The total energy, number of particles, and volume of the system**
100. (c) **Lateral magnification**

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