

## ECAT Pre General Science Physics Chapter 19 Dawn of Modern Physics Online Test

Sr	Questions	Answers Choice
1	Compton studied the scattering of x-rays by loosely bound electrons from:	A. NaCl crystal B. Graphite crystal C. Zirconia D. Copper crystal E. None of these
2	An inertial frame of reference is a frame of reference which is	A. at rest B. moving with uniform velocity C. either at rest or moving with uniform velocity D. none of these
3	The year when A.H. Compton was awarded Nobel Prize is:	A. 1923 B. 1927 C. 1931 D. 1935 E. None of these
4	The special theory of relativity is based on the	A. one postulate B. two postulates C. three postulates D. four postulates
5	There is certain frequency below which no electrons are emitted from the metal surface, this frequency is known as	A. maximum frequency B. minimum frequency C. threshold frequency D. all of these
6	S.I. unit of Planck's constant is	A. $J \cdot s^{-1}$ B. $J \cdot s$ C. $J \cdot s^{-2}$ D. $J \cdot s^2$
7	The dilation of time applies to the timing processes which are:	A. Physical B. Chemical C. Biological D. All of these E. None of these
8	A photon is considered to have	A. Momentum B. Energy C. Wavelength D. All of the above
9	0.1 kg mass will be equivalent to the energy	A. $9 \times 10^{15} J$ B. $5 \times 10^8 J$ C. $6 \times 10^{16} J$ D. $9 \times 10^{-16} J$
10	At the temperature, a body emits radiation which is principally	A. of long wavelengths in the visible region B. of long wavelengths in the invisible infrared region C. of short wavelength in invisible ultraviolet region D. none of these
11	In order to produce pair production, a photon must have a energy	A. 0.511 MeV B. 0.256 MeV C. 1.02 MeV D. 0.956 MeV
12	When monochromatic light is allowed to fall on cathode, it begins to emit electrons, these electrons are called	A. thermionic electrons B. free electrons C. photoelectrons D. slow electrons
13	Max Planck founded a mathematical model resulting in an equation that describes the shape of observed black body radiation curves exactly, in	A. 1890 B. 1895 C. 1900 D. 1905
14	According to Einstein, with the great increase in the speed of the body the relativistic length of the body	A. Remains constant B. Decreases C. Increases D. —

		D. Reduces to zero
15	Practically the quantity $v/c$ is always:	A. less than one B. Equal to one C. Greater than one D. all of these E. None of these
16	According to the special theory of relativity	A. mass and energy are same entities B. mass and energy are same entities but interconvertible C. mass and energy are different entities but interconvertible D. mass and energy are different entities but non-interconvertible
17	If $A$ represents linear momentum and $c$ , the velocity of light, then unit of $pc$ in international system of units is:	A. Newton B. Joule C. Joule-Sec D. Joule- $s^{-1}$ E. Watt
18	The special theory of relativity treats problems involving	A. inertial frame of references B. accelerating frame of references C. both of these D. none of these
19	According to the Max plank, energy is radiated or absorbed in	A. discrete packets B. continuous waves C. either of them D. none of these
20	When a platinum wire is heated, it appears dull red at about	A. $500^{\circ}\text{C}$ B. $900^{\circ}\text{C}$ C. $1100^{\circ}\text{C}$ D. $1300^{\circ}\text{C}$
21	Victor de-Broglie received the Nobel prize in physics in	A. 1925 B. 1929 C. 1932 D. 1935
22	The nature of radiations emitted by a hot body depends upon its:	A. Material B. Temperature C. colour D. Volume E. Length
23	A particle of mass $5.0\text{ mg}$ moves with a speed of $8.0\text{ m/s}$ . Its de-Broglie wavelength is	A. $1.66\text{ m}$ B. $1.66 \times 10^{-10}\text{ m}$ C. $1.66 \times 10^{-29}\text{ cm}$ D. $1.66 \times 10^{-29}\text{ m}$
24	With the help of $50\text{ K v}$ electron microscope, a resolution of	A. $0.5$ to $1\text{ m}$ is possible B. $1\text{ m}$ to $10\text{ m}$ is possible C. $0.5$ to $1\text{ nm}$ is possible D. $1$ to $10\text{ nm}$ is possible
25	The photoelectric effect, the maximum energy of photoelectrons depends on the	A. particular metal surface B. frequency of incident light C. both of them D. none of them
26	The idea of quantization of energy was proposed by:	A. Einstein B. Max Planck C. Maxwell D. Bohr E. Rutherford
27	The concept of direction is purely:	A. Absolute B. Relative C. Relative to stars always D. Relative to the sun always E. None of these
28	The location and speed anywhere on earth can now be determined using relativistic effects by NAVISTAR to an accuracy of	A. $2\text{ cm/s}$ B. $20\text{ cm/s}$ C. $200\text{ cm/s}$ D. $2000\text{ cm/s}$
29	If a body reaches a speed equal to the speed of light, then its mass will become	A. zero B. very small C. infinity D. none of these
30	If you are moving at relativistic speed between two points that are a fixed distance apart, then the distance between the two points appears	A. larger B. shorter C. equal D. none of these

		D. none of these
31	The energy of the 4th orbit in hydrogen atom is	A. 2.5 ev B. - 3.5 ev C. -0.85 ev D. -13.6 ev
32	In photoelectric effect the energy of ejected electrons depend on	A. The frequency B. The intensity C. Both frequency and intensity D. None of these
33	The ratio of energy E to the corresponding frequency (f) of the radiation (emitted or absorbed) is called:	A. Wien's constant B. Stefen's constnat C. Planck's constant D. Boltzmann's constant E. None of these
34	When a platinum wire is heated, it appears yellow at	A. 1600°C B. 900°C C. 1100°C D. 1300°C
35	The unit of work function is:	A. Joule B. Electron volt C. That of threshold frequency D. Both (A) and (B) E. None of these
36	An electron is accelerated through a potential difference of 50v. its de-Brogile wavelength is	A. $1.66 \times 10^{-29}$ m B. $1.74 \times 10^{-10}$ cm C. $17.4 \times 10^{-6}$ m D. $1.74 \times 10^{-10}$ m
37	Compton was awarded Nobel prize in physics in	A. 1921 B. 1923 C. 1925 D. 1927
38	Momentum is a parameter associated with	A. wave motion B. particle motion C. neither wave nor particle motion D. none of these
39	The photon of radio-waves has energy of about	A. 1 Me V B. 1 Ke v C. $10^{-10}$ e v D. $10^{10}$ e v
40	Max plank received the Nobel Prize in physics for his discovery of energy quanta in	A. 1900 B. 1906 C. 1912 D. 1918
41	Which of the following phenomenon proves the particle nature of light	A. interference B. diffraction C. photoelectric effect D. none of these
42	Which of the following is not an example of inertial frame	A. a body placed on the surface of earth B. a body placed in a car moving with uniform velocity C. a body placed in a car moving with same acceleration D. none of these
43	The speed of a pendulum is measured to be 3.0 s in the inertial reference frame of the pendulum. What is its period measured by an observer moving at a speed of 0.95 c with respect to the pendulum	A. 2.9 s B. 3.0 s C. 6.6 s D. 9.6 s
44	The whole shape of the black body spectrum for all wavelengths was explained by the formula proposed by	A. Max plank B. Newton C. Einstein D. J.J. Thomson
45	When a platinum wire is heated, it appears white at	A. 1600 <span style="color: rgb(84, 84, 84); font-family: arial, sans-serif; font-size: small;">°C</span> B. 900 <span style="color: rgb(84, 84, 84); font-family: arial, sans-serif; font-size: small;">°C</span> C. 1100 <span style="color: rgb(84, 84, 84); font-family: arial, sans-serif; font-size: small;">°C</span> D. 1300 <span style="color: rgb(84, 84, 84); font-family: arial, sans-serif; font-size: small;">°C</span>

46	When a platinum wire is heated, it appears orange red at	A. 500 <span style="color: rgb(84, 84, 84); font-family: arial, sans-serif; font-size: small;">°C</span> B. 900 <span style="color: rgb(84, 84, 84); font-family: arial, sans-serif; font-size: small;">°C</span> C. 1100 <span style="color: rgb(84, 84, 84); font-family: arial, sans-serif; font-size: small;">°C</span> D. 1300 <span style="color: rgb(84, 84, 84); font-family: arial, sans-serif; font-size: small;">°C</span>
47	The energy of photon 'E' is proported to	A. The magnetic field H B. The electric field E C. Both the electric and magnetic field H and E D. Frequency
48	Photoelectrons are emitted when ultraviolet light falls on:	A. Casium B. Silver C. Potassium D. Any of these E. None of these
49	When a positron comes close to an electron they annihilate into photons such that	A. each photon has energy 0.51 Me v B. each photon has energy 1.02 Me v C. each photon has energy 0.25 Me v D. none of these
50	Positron was discovered by Carl Anderson in	A. 1920 B. 1925 C. 1928 D. 1932
51	The positron was discovered by:	A. In cosmic radiation B. In 1932 C. By Carl Anderson D. All above E. By direc
52	Albert Einstein got the Nobel prize in physics for his explanation of photoelectric effect in	A. 1916 B. 1919 C. 1921 D. 1923
53	The mass 'm' of a body moving at 0.8 c (whose rest mass is $m_0$ ) becomes	A. 2 $m_0$ B. 1.67 $m_0$ C. 0.67 $m_0$ D. 2.67 $m_0$
54	Max Planck received the Nobel Prize for his discovery of energy quants in:	A. 1718 AD B. 1918 AH C. 1818 AD D. 1918 AD E. None of these
55	As compared to the distance measured by an observer on Earth, the distance from Earth to a star measured by an observer in a moving spaceship would seem:	A. Smaller B. Leger C. Same D. Much larger E. None of these
56	There is no way to detect:	A. Absolute uniform motion B. Accelerated motion C. State rest D. State of motion E. None of these
57	de-Broglies hyphthesis was experimentally verified by	A. Maxwell B. Compton C. Einstein D. Davison and Germer
58	The intensity of emitted energy (with wavelength) radiated from a black body at different temperatures was initially measured by:	A. Lummer B. Planck C. Pringsheim D. Both (A ) and (B) E. Both (A) and (C)
59	The way through which electromagnetic radiations or photons interact with matter depends upon their:	A. Wavelength B. Frequency C. Energy D. Temperature E. All of these
60	Electromagnetic radiations with high energy	A. Very high energy B. Very low energy

60	Photoelectric effect takes place with a photon of:	C. Low energy D. High energy E. None of these
61	Compton shift refers to:	A. Photon B. Meson C. Proton D. Positron E. Both (B) and (D)
62	Electromagnetic radiation or photons interact with matter in	A. two distinct ways B. three distinct ways C. four distinct ways D. five distinct ways
63	A high temperature, the proportion of shorter wavelengths radiation, emitted by the body	A. decreases B. first increases then decreases C. increases D. any one of them
64	Davison and Germer performed experiment to verify	A. de-Broglie hypothesis B. theory of relativity C. Newton's law of gravitation D. Mass-energy relation
65	The energy of a photon is represented by	A. $\frac{h}{c} \times \nu^2$ B. $\frac{h}{T}$ C. $hc \times \nu^2$ D. $hf/c \times \nu^2$
66	The stopping voltage for a certain metal is 100 volts, then the work function for the cathode plate is	A. 100 J B. $1.6 \times 10^{-17}$ J C. 100 eV D. $1.6 \times 10^{-17}$ eV
67	According to the de-Broglie relation, an object of large mass and ordinary speed has	A. very small wavelength B. very large wavelength C. very small frequency D. all of these
68	A non-inertial frame of reference is one, in which	A. law of inertial is valid B. all laws of physics are the same in all frames C. $a > 0$ or $a < 0$ D. $a = 0$
69	According to the special theory of relativity, time is	A. absolute quantity B. not absolute quantity C. constant quantity D. none of these
70	The concept of direction and position are purely	A. absolute B. relative C. absolute or relative D. none of these
71	The analysis of the distribution of wavelengths of the radiation emitted from a hot body set the foundation of new mechanics, known as	A. classical mechanics B. Newtonian mechanics C. quantum mechanics D. statistical mechanics
72	According to Einstein, with the great increase in the speed of the body, the relativistic mass of the body	A. Remains constant B. Decreases C. Increases to infinity D. Reduced to zero
73	When platinum wire is heated, then at the temperature of 500 °C, it becomes:	A. Yellow B. Orange red C. Dull red D. White E. Cherry red
74	According to the special theory of relativity, a moving clock	A. runs faster B. runs slower C. neither runs faster nor slower D. all of these
75	The value of the plank's constant 'h' is given by	A. $1.6 \times 10^{-19}$ J B. $1.67 \times 10^{-27}$ Kg C. $6.63 \times 10^{-34}$ Js D. $6.63 \times 10^{-34}$ Js
76	The emission of electrons from a metal surface when exposed to light of suitable frequency is called the	A. pair production B. Compton effect C. photoelectric effect D. relativity

A.  $2.120 \times 10^{-18}$  J

77	If the radius of first orbit of hydrogen atom is $0.53^{\circ}$ A the radius of second orbit will be	<div>font-size: small;"&gt;&gt;<sup>°</sup>A&lt;/span&gt;</div> <div>B. <math>0.212</math>&lt;span style="color: rgb(84, 84, 84); font-family: arial, sans-serif; font-size: small;"&gt;&gt;<sup>°</sup>A&lt;/span&gt;</div> <div>C. <math>21.2</math>&lt;span style="color: rgb(84, 84, 84); font-family: arial, sans-serif; font-size: small;"&gt;&gt;<sup>°</sup>A&lt;/span&gt;</div> <div>D. <math>0.14</math>&lt;span style="color: rgb(84, 84, 84); font-family: arial, sans-serif; font-size: small;"&gt;&gt;<sup>°</sup>A&lt;/span&gt;</div>
78	Pair production is the phenomenon in which	<div>A. matter is converted into energy</div> <div>B. energy is converted into matter</div> <div>C. light is converted into electrical energy</div> <div>D. electrical energy is converted into light</div>
79	A bar $1.0$ m in length and located along x-axis moves with a speed of $0.75$ c with respect to a stationary observer. The length of the bar as measured by the stationary observer is	<div>A. <math>1.66</math> m</div> <div>B. <math>1.0</math> m</div> <div>C. <math>0.66</math> m</div> <div>D. <math>2.66</math> m</div>
80	When platinum wire is heated, it appears cherry red at	<div>A. <math>1600</math>&lt;span style="color: rgb(84, 84, 84); font-family: arial, sans-serif; font-size: small;"&gt;&gt;<sup>°</sup>C&lt;/span&gt;</div> <div>B. <math>900</math>&lt;span style="color: rgb(84, 84, 84); font-family: arial, sans-serif; font-size: small;"&gt;&gt;<sup>°</sup>C&lt;/span&gt;</div> <div>C. <math>1100</math>&lt;span style="color: rgb(84, 84, 84); font-family: arial, sans-serif; font-size: small;"&gt;&gt;<sup>°</sup>C&lt;/span&gt;</div> <div>D. <math>1300</math>&lt;span style="color: rgb(84, 84, 84); font-family: arial, sans-serif; font-size: small;"&gt;&gt;<sup>°</sup>C&lt;/span&gt;</div>
81	Strictly speaking, the earth is:	<div>A. An accelerated frame of reference</div> <div>B. A non-inertial frame of reference</div> <div>C. An inertial frame of reference</div> <div>D. &lt;sup&gt;A non-accelerated frame of reference&lt;/sup&gt;</div> <div>E. Both (A) and (B)</div>
82	Current, voltage, resistance measuring circuit is connected with the galvanometer with the help of switch, known as	<div>A. ON switch</div> <div>B. off switch</div> <div>C. function switch</div> <div>D. none of these</div>
83	The value of the Stephen's constant for black body radiations is given by	<div>A. <math>5.6 \times 10^{8} \text{ Wm}^{-2} \text{ K}^{-4}</math></div> <div>B. <math>5.67 \times 10^{8} \text{ Wm}^{-2} \text{ K}^{-4}</math></div> <div>C. <math>2.9 \times 10^{-3} \text{ mK}</math></div> <div>D. <math>2.9 \times 10^{3} \text{ mK}</math></div>
84	A black body is	<div>A. an ideal absorber</div> <div>B. an ideal radiator</div> <div>C. both of them</div> <div>D. none of them</div>
85	As the light shines on the metal surface, the electrons are ejected	<div>A. slowly</div> <div>B. instantaneously</div> <div>C. either of these</div> <div>D. none of these</div>
86	The existence of position was predicted by Dirace in	<div>A. 1920</div> <div>B. 1925</div> <div>C. 1930</div> <div>D. 1928</div>
87	If a material object moves with the speed of light 'C' its mass becomes	<div>A. Equal to its rest mass</div> <div>B. Four times of its rest mass</div> <div>C. Double of its rest mass</div> <div>D. Infinite</div>
88	The Einstein's changes in length, mass and time are not observed in common life because	<div>A. We dont observer then seriously</div> <div>B. The masses are too large</div> <div>C. Their speed is too small than the speed of right</div> <div>D. All of the above</div>
89	G.P. Thomson observer experimentally that electrons and neutrons possess	<div>A. particle-like properties</div> <div>B. wave-like properties</div> <div>C. neither particle nor wave like properties</div> <div>D. none of these</div>

90	The value of threshold frequency for different metals is	A. different B. same C. may be different or may be same D. none of these
91	Electromagnetic -radiation means:	A. Photons B. protons C. Electrons D. Mesons E. None of these
92	The mass of an object will be doubled at speed	A. $1.6 \times 10^{8} \text{ ms}^{-1}$ B. $2.6 \times 10^{8} \text{ ms}^{-1}$ C. $2.6 \times 10^{7} \text{ ms}^{-1}$ D. $2.6 \times 10^{9} \text{ ms}^{-1}$
93	An inertial frame is that frame in which	A. $a > 0$ B. $a = 0$ C. $a < 0$ D. none of these
94	The special theory of relativity is based on:	A. Four postulates B. Three postulates C. Two postulates D. One postulate E. None of these
95	Which one of the following physical quantities changes with relativistic speed	A. Length B. Mass C. Time D. All of the above
96	Newton's law of motion do not hold in	A. an accelerated frame of reference B. an unaccelerated frame of reference C. both of these D. none of these
97	Photocell is a device which converts	A. chemical energy into electrical energy B. electrical energy into light energy C. heat energy into electrical energy D. light energy into electrical energy
98	The Stephen-Boltzmann law for the black body radiation is given by	A. $E = T^2$ B. $E = -T^2$ C. $E = T^4$ D. $E = -T^4$
99	When a high energy photon interact with a metal, which of the following effect is most likely to be taken place	A. pair production B. photoelectric effect C. Compton effect D. None of these
100	When the atomic particle are moving with velocities approaching that of light:	A. Newton's laws become valid B. Relativistic effects become prominent C. Both (A) and (B) are valid D. Neither (A) nor (B) E. Their mass becomes zero.
101	Compton derived an expression to find Compton shift by applying to the process, the law of conservation of:	A. Energy only B. Momentum only C. Mass only D. Charge only E. Both (A) and (B)
102	Wave nature of particle was proposed by	A. Einstein B. Plank C. De-Broglie D. Max well
103	Wien's constant is measured in:	A. Metre per kelvin B. Metre kelvin C. Kelvin per meter D. Joules E. Dynes
104	Due to relative motion of observer and the frame of reference of events, time always:	A. Dilates itself B. Contracts itself C. Stretches itself D. Both (A) and (C) E. None of these

105	In the Compton's effect, it is found that the wavelength of incident x-rays is	A. greater than the wavelength of scattered x-rays B. equal to the wavelength of scattered x-rays C. less than the wavelength of scattered x-rays D. any one of these
106	the symbol to be used in relativity problems denotes:	A. Dilated time B. Proper time C. Life time D. Half time E. None of these
107	The general theory of relativity treats problems involving	A. inertial frame of references B. accelerating frame of references C. both of these D. none of these
108	Intensity of light determines the:	A. Energy of each photon B. Number of photons C. Speed of photons D. Size of photons E. None of these
109	Position and momentum of a particle cannot both be measured simultaneously with perfect accuracy. This is the statement of	A. photoelectric effect B. pair production C. Compton effect D. uncertainty principle
110	Absolute motion cannot be detected	A. in its own frame of references B. in a different frame of references C. both in its frame and different frame of references D. none of these
111	The energy of a photon in a beam of infrared radiation of wavelength 1240 nm is	A. 100 eV B. $10^{-6}$ eV C. $10^{-3}$ eV D. 1.0 eV
112	When a positron comes close to an electron they annihilate into	A. one photon B. two photons which travel in the same direction C. two photons which travel in the opposite direction D. two photons which travel in any direction
113	From the theory of relativity, momentum $p$ of the photon is related to energy as	A. $p = hf/c$ B. $p = hf/c$ C. $p = f(hc, f)$ D. $p = cf/h$
114	The special theory of relativity treats the problems involving:	A. Inertial frames of reference B. Non-inertial frames C. Non-accelerated frame D. Both (A) and (C) E. Both (B) and (C)
115	The length contraction happens only	A. Opposite to the direction of motion B. along the direction of motion C. perpendicular to the direction of motion D. In any direction
116	The threshold frequency of sodium is $6 \times 10^{14}$ Hz. The cut-off wavelength for this metal will be	A. 500 m B. 500 nm C. 500 km D. 500 cm E. None of these
117	According to the electromagnetic wave theory of light, increasing the intensity of incident light should increase the	A. number of photoelectrons B. size of the photoelectrons C. charge on photoelectrons D. K.E of photoelectrons
118	The Nobel Prize on the explanation of photoelectric effect was awarded to:	A. Max. Planck B. Maxwell C. Bohr D. Rutherford E. None of these
119	Converse of pair production is known as	A. Compton effect B. annihilation of matter C. photoelectric effect D. none of these

A. momentum

120	In process of annihilation of matter, the two photons produced move in opposite direction to converse	<p>A. momentum</p> <p>B. charge</p> <p>C. energy</p> <p>D. mass</p>
121	When low energy photon interact with a metal, which of the following effect is likely to be taken place	<p>A. pair production</p> <p>B. photoelectric</p> <p>C. Compton effect</p> <p>D. None of these</p>
122	The inside cavity of the black body is	<p>A. painted white</p> <p>B. painted silver</p> <p>C. blackened with soot</p> <p>D. painted red</p>
123	A particle having mass and charge equal to that of an electron is called:	<p>A. Proton</p> <p>B. Positron</p> <p>C. Pion</p> <p>D. Pi-meson</p> <p>E. Both (C) and (D)</p>