+ 2 Physics * 2012-2013 * Unit – 6 Atomic Physics * Maximum marks : 90

1. At atmospheric pressure, air and other gases are …… conductors of electricity.
   a) good b) semi c) poor d) rich
2. Electric current may be passed through a gas by allowing ……. to pass through them.
   a) light b) infra-red c) X –rays d) none of the above
3. Electrons were discovered by ……
   a) Millikan b) Goldstein c) Einstein d) Thomson
4. …… is an arrangement to study the conduction of electricity through gases.
   a) X-ray tube b) Coolidge tube c) discharge tube d) GM counter
5. In a discharge tube, the potential difference applied between the two electrodes is ……
   a) 10000 V b) 20000 V c) 60000 V d) 50000 V
6. In a discharge tube, the discharge of electricity through gases starts at a pressure of about ……
   a) 100 mm of Hg b) 1 mm of Hg c) 10 mm of Hg d) 0.01 mm of Hg
7. In a discharge tube, the positive column is produced at a pressure of about ……
   a) 100 mm of Hg b) 1 mm of Hg c) 10 mm of Hg d) 0.01 mm of Hg
8. In a discharge tube, Crooke's dark space is produced at a pressure of about ……
   a) 100 mm of Hg b) 1 mm of Hg c) 10 mm of Hg d) 0.01 mm of Hg
9. Cathode rays travel with a velocity up to ……. of the velocity of light.
   a) $(1/100)^{th}$ b) $(1/10)^{th}$ c) $(1/1000)^{th}$ d) $(1/10000)^{th}$
10. Canal rays were discovered by ……in the year 18[illegible]
    a) Millikan b) Goldstein c) Einstein d) Thomson
11. In 1887, …… measured the specific charge of the cathode ray particles.
    a) Millikan b) Goldstein c) Einstein d) Thomson
12. If V is the potential difference between the two plates and d is the distance between them, then E = …
    a) V d b) d / V c) V / d d) V^2 / d
13. e / m value of the electron is ……
    a) 1.7592×10^{11} C kg^{-1} b) 1.7592×10^{11} C kg c) 1.602×10^{19} C kg^{-1} d) 1.602×10^{-19} C kg^{-1}
14. Millikan's experiment is used for the measurement of …… of the electron.
    a) density b) specific charge c) mass d) charge
15. In Millikan's experiment, the potential difference applied between the two electrodes is ……
    a) 10000 V b) 20000 V c) 60000 V d) 50000 V
16. The net downward force acting on the oil drop = ……..
    a) zero b) maximum c) minimum d) ⅓ X 4 π a3 (ρ - σ) g
17. In Millikan's experiment, the charge of the electron q = ……
    a) ⅓ X 4 π a3 (ρ - σ) g b) 4 π a3 (ρ - σ) g c) (⅓)π a3 (ρ - σ) g d) zero
18. In Millikan's experiment, the charge value of the electron = …….
    a) 1.7592×10^{11} C kg^{-1} b) 1.7592×10^{11} C kg c) 1.602×10^{19} C kg^{-1} d) 1.602×10^{-19} C kg^{-1}
19. The concept of atoms was proposed by ……
    a) Bohr b) Thomson c) Dalton d) Prout
20. Prout suggested that all elements are made up of atoms of ……
    a) carbon b) helium c) hydrogen d) nitrogen
21. Atom is a sphere of positive charge in which the electrons are embedded. This was suggested by ..…
    a) Bohr b) Thomson c) Dalton d) Prout
22. In the case of hydrogen atom, Thomson's model gives only one spectral line of about ……
    a) 3300 A^o b) 2300 A^o c) 1300 A^o d) 4300 A^o
23. The scattering of α particles provide useful information about the structure of the ……..
    a) atom b) hydrogen c) CO_2 d) oxygen

Best of luck

…… Continued in Page - 2

24. The diameter of the atom is about ……..
a) 10^{-20} m b) 10^{-10} m c) 10^{-14} m d) 10^{10} m

25. The diameter of the nucleus is about …….
a) 10^{-20} m b) 10^{-10} m c) 10^{-14} m d) 10^{10} m

26. According to electromagnetic theory, an accelerated electric charge must radiate energy in the form of ….
a) light b) infra-red rays c) X –rays d) electromagnetic waves

27. An electron revolving in the stationary orbit does not radiate ……...
a) lepton b) energy c) meson d) particle

28. According to Bohr's quantization condition, the angular momentum of the electron = ……
a) h / 2 b) 2 π / n h c) nh / 2π d) 2π nh

29. The radius of the n^{th} orbit of the electron is proportional to the square of the …… quantum number
a) spin b) principal c) magnetic d) angular momentum

30. Bohr radius value r_1 = ……
a) 0.63 A^o b) 0.83 A^o c) 0.53 A^o d) 0.43 A^o

31. The energy of the electron E_n = ……..
a) $- z^2me^4 / 8\varepsilon_0^2n^2h^2$ b) $z^2me^4 / 8\varepsilon_0^2n^2h^2$ c) $n^2h^2\varepsilon_0 / \pi\, mze^2$ d) $- z^2me^4 / 4\varepsilon_0^2n^2h^2$

32. 1 electron volt = …… J
a) 1.602×10^{19} b) 1.602×10^{-19} c) 9.11×10^{-31} d) 9.11×10^{31}

33. Rydberg's constant value R = …….
a) $1.094 \times 10^7\ m^{-1}$ b) 1.602×10^9 c) 1.602×10^{-19} d) 9.11×10^{-31}

34. The spectral lines of Lyman series of hydrogen atom lie in the …… region.
a) UV b) Visible c) infra - red d) gamma

35. The spectral lines of Balmer series of hydrogen atom lie in the ……..
a) UV b) Visible c) infra - red d) gamma

36. The spectral lines of Paschen series of hydrogen atom lie in the …….
a) UV b) Visible c) infra - red d) gamma

37. The spectral lines of Brakett series of hydrogen atom lie in the ……
a) UV b) Visible c) infra - red d) gamma

38. The spectral lines of Pfund series of hydrogen atom lie in the ……..
a) UV b) Visible c) infra - red d) gamma

39. The wavelengths of D_1 and D_2 lines of sodium are .....
a) 5809A^o ,5896 A^o b) 5986A^o ,5980 A^o c) 5689A^o ,5690 A^o d) 5896A^o ,5890 A^o

40. The energy required to raise an atom from its normal state into an excited state is called ……. energy.
a) excitation potential b) potential c) kinetic d) stellar

41. The value of ionization potential energy for hydrogen atom is ……
a) 13.6 eV b) 30.6 eV c) 3.4 eV d) 10.2 eV

42. The fine structure of spectral lines can not be explained by …… theory.
a) Raman b) Newton c) Bohr d) Huygens

43. It is found that when magnetic field is applied to the atom, each of the spectral line is split into several lines. This effect is called …… effect.
a) Stark b) Zeeman c) Raman d) Tyndal

44. According to Sommerfeld's atom model, for any principal quantum number *n*, there are *n* possible sub-shells, out of which one is circular and the remaining two are ……. in shape.
a) elliptical c) semi-circular c) square d) rectangle

45. X-rays were discovered by ……
a) Raman b) Newton c) Roentgen d) Huygens

46. X-rays are electromagnetic waves of short wavelength in the range of ……
a) 0.5 A^o to 10 A^o b) 0.5 A^o to 100 A^o c) 0.5 A^o to 1000 A^o d) 10 A^o to 100 A^o

…… Continued in Page - 3

47. Roentgen was awarded Nobel prize in 1901 for the discovery of …….
a) gamma b) UV c) beta d) X-rays
48. When fast moving electrons are suddenly stopped by a metallic target, …… are produced.
a) gamma rays b) UV rays c) X-rays d) beta rays
49. In Coolidge tube, a high potential of about …… is applied between filament F and the target T.
a) 10000 V b) 20000 V c) 60000 V d) 50000 V
50. X-rays are of ……. types.
a) 3 b) 4 c) 2 d) 5
51. X-rays having wavelength of $4A^o$ or above are called ……
a) hard X –rays b) soft X – rays c) medium X – rays d) gamma rays
52. X-rays having low wavelength in the order of $1A^o$ are called ……
a) hard X –rays b) soft X – rays c) medium X – rays d) gamma rays
53. The penetrating power of hard X-rays is …….
a) low b) very low c) high d) zero
54. When X-rays fall on certain metals, they liberate ……
a) protons b) photons c) electrons d) mesons
55. To detect and measure the intensity of the X-rays, ……. chamber is used.
a) Thomson b) Bohr c) ionization d) Dalton
56. Any plane containing an arrangement of atoms is known as a ……. plane.
a) lattice b) crystal c) metal d) molecular
57. Laue experiment is used to produce diffraction in ……..
a) gamma b) UV c) beta d) X-rays
58. Bragg's law is …….
a) $2d \tan\theta = \lambda$ b) $d \sin\theta = n\lambda$ c) $2d \sin\theta = n\lambda$ d) $2d \cos\theta = n\lambda$
59. Bragg's spectrometer is used to measure the wavelength of ……
a) gamma b) UV c) beta d) X-rays
60. The minimum wavelength of the radiation emitted in continuous X-ray spectra λ_{min} = ……
a) $12400A^o / V$ b) $1240\ A^o / V$ c) $124\ A^o / V$ d) $124000A^o / V$
61. When an electron jumps from M shell to the K shell, it gives ……in the case of characteristic X-rays.
a) L_β line b) K_β line c) $K\alpha$ line d) M_β line
62. The frequency of the spectral line in the characteristic X-rays is directly proportional to the square of the atomic number of the element. This is called …….
a) Moseley's law b) Stokes's law c) Newton's law d) Planck's law
63. ……. has led to the discovery of new elements like technetium, hafnium etc.
a) Planck's law b) Stokes's law c) Newton's law d) Moseley's law
64. In normal population, the number atoms in the ground state is …… than the excited state.
a) smaller b) lesser c) greater d) lower
65. In population inversion, the number atoms in the ground state is ……. than the excited state.
a) higher b) lesser c) greater d) more
66. The life time of atoms in the excited state is normally ……..
a) 10^{-6} second b) 10^{-3} second c) 10^{-8} second d) 10^{-10} second
67. The life time of atoms in the metastable state is normally ……
a) 10^{-6} second b) 10^{-3} second c) 10^{-8} second d) 10^{-10} second
68. A ruby is a crystal of ……. , in which of Al^{+3} ions are replaced by Cr^{+3} ions.
a) P_2O_5 b) Al_2O_6 c) Al_2O_2 d) Al_2O_3
69. The wavelength of green colour is ……
a) $7500\ A^o$ b) $5500\ A^o$ c) $6943\ A^o$ d) $6328A^o$

…… Continued in Page - 4

Best of luck

70. The wavelength of red colour is ……
a) 7500 A^o b) 5500 A^o c) 6943 A^o d) 6328A^o

71. He-Ne laser system consists of a quartz discharge containing helium and neon in the ratio of ….. at a pressure of about 1 mm of Hg.
a) 4 : 1 b) 1 : 2 c) 1 : 4 d) 2 : 1

72. The wavelength of the emitted photon in the He-Ne laser system ……..
a) 7500 A^o b) 5500 A^o c) 6943 A^o d) 6328A^o

73. The beam that is used in endoscopy is …….
a) laser b) maser c) ordinary light d) microwaves

74. The beam that is used in holography is ……
a) laser b) maser c) ordinary light d) microwaves

75. The …… action is based on the principle of population inversion followed by stimulated emission.
a) laser b) maser c) ordinary light d) microwaves

76. The ……. ions are used as maser materials.
a) diamagnetic b) paramagnetic c) ferromagnetic d) aluminum

77. Practical maser materials are often …….. ions doped as impurities in ionic crystals.
a) chromium b) sodium c) potassium d) calcium

78. ……. is used in molecular spectroscopy.
a) laser b) maser c) ordinary light d) microwaves

79. In optical fiber, ……. laser is used.
a) metal b) non-conducting c) semiconductor d) optical

80. The ratio of the radii of the first three orbits of an atom is ……
a) 1 : 2 : 3 b) 1 : 3 : 5 c) 1 : 4 : 9 d) 1: 3 : 9

81. The cathode rays are a stream of …….
a) protons b) photons c) electrons d) mesons

82. According to Bohr's postulates, ……. quantity take discrete values.
a) energy b) momentum c) radius d) angular momentum

83. For hydrogen atom, the minimum energy required to remove an electron from the first orbit to the outermost orbit is ……. eV.
a) 13.6 b) 10.2 c) 5.4 d) infinity

84. According to Rutherford atom model, atoms will give only …… spectrum.
a) continuous b) line c) band d) line absorption

85. The elliptical orbits of electron in the atom were proposed by …….
a) Thomson b) Sommerfeld c) Roentgen d) Huygens

86. X ray is the phenomenon of conversion of kinetic energy into ……
a) radiation b) potential energy c) magnetic d) electrostatic energy

87. The chromium ions doped in the ruby rod absorbs …… light.
a) red b) blue c) green d) yellow

88. Canal rays travel ……. than the cathode rays.
a) slower b) faster c) higher speed d) none of the above

89. The spectra of alkali metals such as K, Na etc cannot be explained by ……. atom model.
a) Thomson b) Sommerfeld c) Roentgen d) Huygens

90. In laser, all the photons are in ……. with each other.
a) phase b) face c) pace d) base

Best of luck

@@@@@@@@@@ **Best wishes** @@@@@@@@@@

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+2 PHYSICS **Test Number : 7** **Year : 2012 – 2013** **Time : 1 Hour**

Unit : 7 **Dual nature of radiation , Matter and Relativity** **Marks: 50**

1.The emission electrons from the metal surfaces when the electromagnetic radiations fall on them is called …….
a) Photo electric effect b) Tyndal effect c) Raman effect d) Zeeman effect

2.Photoelectric effect phenomenon was discovered by ……
a) Newton b) Maxwell c) Hertz d) Huygens

3.Hallwachs experiment set-up is used to study ……. effect.
a) Photo electric effect b) Tyndal effect c) Raman effect d) Zeeman effect

4.Photoelectric current is ……. proportional to the number of photoelectrons emitted per second.
a) inversely b) directly c) first directly and then inversely d) none of the above

5.The minimum negative potential given to the anode for which photoelectric current becomes zero is called …….
a) retarding potential b) increasing potential c) stopping potential d) critical potential

6.If **m** is the mass of the photoelectron and $\mathbf{v}_{max}$ is the velocity, then the kinetic energy of the electron is ……
a) $\mathbf{m v}_{max}^2$ b) $(\frac{1}{2})\mathbf{v}_{max}^2$ c) $(\frac{1}{2})\mathbf{m}^2$ d) $(\frac{1}{4})\mathbf{m v}_{max}^2$

7.The stopping potential depends upon the …….. of the fastest electron.
a) velocity b) charge c) mass d) density

8.For a given frequency of the incident radiation, the stopping potential ……..of its intensity.
a) depends b) is independent c) is proportional d) none of the above

9.The minimum frequency of the incident radiation below which the photoelectric effect is not possible is called ….
a) threshold frequency b) critical value c) critical mass d) critical density

10.Photoelectric emission is an ……. process.
a) slow b) fast c) instantaneous d) very slow

11.The maximum kinetic energy of the photoelectrons is …… proportional to the frequency of incident radiation.
a) inversely b) directly c) first directly and then inversely d) none of the above

12.The electromagnetic theory of light could not explain …… ….. effect.
a) Tyndal b) Raman c) Stark d) photoelectric

13.According to the quantum theory, light is emitted in the form discrete bundles of energy called ……..
a) waves b) corpuscles c) photons d) mesons

14.The energy of the photon is E = ……..
a) mc^2 b) $h\gamma$ c) mgh d) $(\frac{1}{2})\ mv^2$

15.In the phenomenon interference, the photons behave like a ……..
a) waves b) corpuscles c) photons d) mesons

16.In the phenomenon like emission, the photon behaves like a ……..
a) waves b) corpuscles c) photons d) particles

17.In 1905, Einstein, successfully applied ……theory to photoelectric effect.
a) waves b) corpuscular c) quantum d) mesons

18.The energy spent in releasing the photoelectrons from a metal surface is called ……
a) kinetic energy b) potential energy c) work function d) excitation energy

19.Einstein's photoelectric equation is ……..
a) $\mathbf{h\gamma - h\gamma_0 = \frac{1}{2} m v_{max}^2}$ b) $\mathbf{h\gamma = \frac{1}{2} m v_{max}^2}$ c) $\mathbf{h\gamma - h\gamma_0 = m v_{max}^2}$ d) $\mathbf{h\gamma_0 = \frac{1}{2} m v_{max}^2}$

20.The photoelectric cell is a device which converts light energy into …… energy.
a) chemical b) kinetic c) potential d) electric

21.Caesium oxide has …….. work function to give large number of photoelectrons.
a) high b) low c) large d) zero

22.The three types of the photoelectric cells are of ……. types.
a) 2 b) 5 c) 4 d) 3

23.Photoelectric cells are used to reproduce sound in …….
a) solar heater b) bulbs c) furnaces d) stars

24.Photoelectric cells are used to control the temperatures of …….
a) solar heater b) bulbs c) furnaces d) stars

25.Photoelectric cells are used to study the spectra and the temperatures of …….
a) solar heater b) bulbs c) furnaces d) stars

Best of luck

26.In opening and closing of doors ……. cells are used.
a) primary b) secondary c) photo electric d) Daniel

27.In burglar and fire alarms …… cells are used.
a) primary b) secondary c) photo electric d) Daniel

28.Matter in motion must be accompanied by waves called …… waves.
a) transverse b) longitudinal c) de Broglie d) stationary

29.The de Broglie wavelength of the de Broglie waves is λ = ……..
a) $\lambda = h / v$ b) $\lambda = h / mv$ c) $\lambda = h / mv^2$ d) $\lambda = h / 2mv$

30.The de Broglie wavelength of the de Broglie waves is $\lambda = 12.27\ A^0 / (\ \ldots\ldots)^{1/2}$
a) E b) P c) V d) h

31.The stationary orbits of electrons are those in which orbital circumference($2\pi r$) is an integral multiple of. …
a) energy b) wave number c) frequency d) de Broglie wavelength

32.The electron microscope is used for …….. small objects.
a)splitting b) magnifying c) destroying d) producing

33.The resolving power of the microscope is limited by the ……. of the radiation.
a) energy b) wavelength c) momentum d) type

34.In an electron microscope, electrons are accelerated by a potential difference of about ……..volt.
a) 20000 V b) 50000 V c) 60000 V d) 10000 V

35.The wavelength of the electron beam is about …….
a) 5×10^{-10} m b) 5×10^{-12} m c0 5×10^{-7} m d) 5×10^{-9} m

36.The wavelength of the electron beam is ……. times smaller than that of the visible light.
a) 10^5 b) 10^{50} c) 10^{10} d) 10^{15}

37.In medicine and biology, the electron microscope is used study ……
a) virus b) crystal structure c) bones d) ions

38.Structure of crystals can be studied using …… microscope.
a) optical b) ordinary c) electron d) proton

39.In Einstein's view, there is no absolute space and all motions are ……..
a) relative b) independent c) slow d) fast

40.The special theory of relativity was profounded by …….
a) Newton b) de Broglie c) Kepler d) Einstein

41.In classical mechanics, the mass of the body is absolute and …….
a) variable b) zero c) constant d) infinite

42.A system of co-ordinate axes that defines the position of a particle in three dimensional space is called….
a) frame of reference b) inertial frame c) time dilation d) length contraction

43.When the bodies in a frame of reference obey Newton's law of inertia, the frame is called …….
a) frameless b) inertial frame c) non-inertial d) length contraction

44.When the bodies in a frame of reference do not obey Newton's law of inertia, the frame is called …….
a) frameless b) inertial frame c) non-inertial d) length contraction

45.The simplest frame of reference is the …….. co-ordinate system in which the position of a particle is specified by 3 co-ordinates.
a) Newton b) de Broglie c) Cartesian d) Einstein

46.The velocity of light in free space is a …….. in all frames of references.
a) variable b) zero c) constant d) infinite

47.A circular object will appear as an …… for a fast moving observer.
a) circle b) ellipse c) square d) rectangle

48.The clocks in the moving space ships will appear to go ……. than the clocks on the earth.
a) faster b) very faster c) slower d) none of the above

49.The relation between the mass of a body at rest ($\mathbf{m_0}$)and the mass of the same body moving with velocity v as **m =** ……
a) $m = m_o / (1 - v^2/c^2)$ b) $m = m_o / (v^2/c^2)$ c) $m = m_o$ d) $m = m_o / (\sqrt{1 - v^2/c^2})$

50.Einstein's mass – energy equivalence is given by …….
a) E = mC / 2 b) $E = m/ C^2$ c) E = m C d) $E = m C^2$

@@@@@@@ Best wishes @@@@@@@

+2 Physics **Test Number : 8** **Year : 2012 – 13** **Time : 1½ Hours**

UNIT : 8 NUCLEAR PHYSICS **MARKS : 100**

1. The atomic nucleus was discovered by ---------- in 1911.
   a) Rutherford b) Thomson c) Bohr d) Chadwick.
2. Protons and neutrons inside the nucleus are called ----------
   a) nuclear forces b) atomic number c) nucleons d) neutral particles.
3. The mass of the proton is ---------- times greater than the mass of the electron.
   a) 1386 b) 1886 c) 1836 d) 3186.
4. The total number of protons and neutrons is called ---------- number.
   a) atomic b) mass c) neutron d) quantum
5. The total number of protons or the total number of electrons is called ---------- number.
   a) atomic b) mass c) neutron d) quantum
6. The atoms of the same element with same atomic number but different mass number are called ----------.
   a) isotones b) isobars c) isotopes d) none of the above.
7. The isotopes have different number of ----------.
   a) electrons b) photons c) protons d) neutrons.
8. The ---------- have identical chemical properties.
   a) isotones b) isomers c) isotopes d) none of the above.
9. The atoms of different elements with same mass number but different atomic number are called ----------.
   a) isotones b) isobars c) isotopes d) none of the above.
10. ${}_8O^{16}$, ${}_7N^{16}$ are called ----------
    a) isotones b) isomers c) isotopes d) none of the above.
11. The isotones of different elements have same number of ----------
    a) electrons b) photons c) protons d) neutrons.
12. The empirical formula for the nuclear radius is ----------
    a) $R = r_o A^{1/3}$ b) $R = r_o / A^{1/3}$ c) $R = A^{1/3} / r_o$ d) none of the above.
13. One fermi is ----------
    a) 10^{-15} m. b) 10^{-16} m. c) 10^{-10} m. d) 10^{-16} m.
14. The mass of one nucleon is approximately ---------- kg.
    a) 1.66×10^{-27} b) 9.11×10^{-31} c) 6.623×10^{-34} d) 1.602×10^{-19}
15. The nuclear density value is ---------- kg m^{-3}.
    a) 1.816×10^{-17} b) 9.11×10^{-31} c) 6.623×10^{-34} d) 1.816×10^{17}
16. The charge value one proton is ---------- C.
    a) 1.66×10^{-27} b) 9.11×10^{-31} c) 6.623×10^{-34} d) 1.602×10^{-19}
17. One twelfth of the mass of the carbon atom (${}_6C^{12}$)is called ----------
    a) 1 amu b) binding energy c) mass defect d) critical mass
18. 1 amu = ---------- kg.
    a) 1.66×10^{-27} b) 9.11×10^{-31} c) 6.623×10^{-34} d) 1.602×10^{-19}
19. The mass of one proton = ---------- amu.
    a) 1.009665 b) 1.007772 c) 1.007276 d) 1.008665
20. The mass of one neutron = ---------- amu.
    a) 1.009665 b) 1.007772 c) 1.007276 d) 1.008665
21. 1 eV = ---------- J.
    a) 1.66×10^{-27} b) 9.11×10^{-31} c) 6.623×10^{-34} d) 1.602×10^{-19}
22. The energy equivalent of 1 amu is ---------- .
    a) 913 MeV b) 931 MeV c) 319 MeV d) 193 MeV
23. The binding energy = ---------- X C^2.
    a) 1 amu b) binding energy c) mass defect d) critical mass.
24. In BE / A curve, for A < 20, there exists peaks to those nuclei whose mass numbers are multiples of ----------.
    a) 6 b) 8 c) 4 d) 2
25. Binding energy per nucleon of the iron nucleus is ---------- .
    a) 7.6 MeV b) 8.5 MeV c) 8.8 MeV d) 931 MeV.

…… Continued in Page -2

Best of luck

26. BE/A is about ---------- for nuclei having mass numbers ranging between 40 and 120.
    a) 7.6 MeV b) 8.5 MeV c) 8.8 MeV d) 931 MeV.
27. BE/A is about ---------- for uranium.
    a) 7.6 MeV b) 8.5 MeV c) 8.8 MeV d) 931 MeV.
28. Mass spectrometer is used to find ----------
    a) light spectrum b) charge c) isotopic masses d) velocity
29. In Bainbridge mass spectrometer, ---------- arrangement selects ions of a particular velocity to come out of it
    a) velocity selector b) cyclotron c) slit d) cathode
30. The force between the nucleons is called ---------- .
    a) gravitational force b) electrostatic force c) centripetal force d) nuclear force.
31. Nuclear force is ---------- times stronger than the gravitational force.
    a) 10^{40} b) 10^{30} c) 10^{10} d) 10^{15}
32. Nuclear force is strong between nucleons which are less than ---------- m.
    a) 10^{-40} b) 10^{-30} c) 10^{-10} d) 10^{-15}
33. Nuclear force is due to the continuous exchange of the particles called ---------- .
    a) leptons b) baryons c) photons d) mesons
34. Radioactivity was discovered by ---------- in the year 1896.
    a) Marie Currie b) Pierre Curie c) Rutherford d) Henri Becquerel.
35. Radium and polonium were discovered by ----------
    a) Marie Currie b) Fajans c) Rutherford d) Henri Becquerel.
36. The phenomenon of spontaneous emission of α , β , γ rays by elements having atomic number greater than 82 is called ----------
    a) radioactivity b) induced radioactivity c) photo electricity d) ionisation.
37. The ---------- is unaffected by any external agent like pressure, temperature and electric, magnetic fields.
    a) radioactivity b) induced radioactivity c) photo electricity d) ionisation.
38. An α particle is a ---------- nucleus.
    a) hydrogen b) nitrogen c) oxygen d) helium
39. The ionising power of α rays is ---------- times greater than the β rays.
    a) 1000 b) 10 c) 100 d) 10,000
40. The displacement laws were framed by ---------- .
    a) Marie Currie b) Soddy and Fajans c) Rutherford d) Henri Becquerel.
41. Radium is converted into radon in the ---------- decay.
    a) α b) β c) γ d) δ
42. In β decay , the atomic number increases by ---------- .
    a) 4 b) 2 c) 1 d) 5
43. Theoretically, ---------- time is needed for the disintegration of all the radioactive atoms.
    a) infinite b) zero c) minimum d) fractional
44. The relation between half life period and the decay constant is T = ----------
    a) 0.6931 / 2 λ b) 0.6931 / λ c) 0.6931 / 3 λ d) 0.6931 / 4 λ
45. The mean life period is ---------- proportional to the decay constant.
    a) directly b) directly and inversely c) inversely d) none of the above
46. The rate at which the radioactive atoms decay is called ----------
    a) Nuclear fission b) Nuclear fusion c) activity d) none of the above
47. 1 becquerel = ----------disintegration / second
    a) 10 b) 1000 c) 100 d) 1
48. The activity of a radioactive substance is generally expressed in ----------
    a) newton b) henry c) curie d) joule
49. Neutron was discovered by ----------
    a) Newton b) Henry c) Curie d) Chadwick
50. $_4Be^9 + {}_2He^4 \rightarrow {}_6C^{12} +$ ----------
    a) $_0n^1$ b) $_1H^1$ c) $_1H^2$ d) $_2He^4$

…… Continued in Page -3

51. Neutrons are the constituent particles of all nuclei, except ----------
    a) ${}_1H^3$ b) ${}_1H^1$ c) ${}_1H^2$ d) ${}_2He^4$
52. The half life period of an isolated neutron is ---------- minutes.
    a) 10.1 b) 3 c) 13 d) 7
53. The energy of a slow moving neutron is ---------- .
    a) 0 to 1000 eV b) 0.5 MeV to 10 MeV c) 2 MeV d) 5 MeV.
54. The energy of a fast moving neutron is ----------
    a) 0 to 1000 eV b) 0.5 MeV to 10 MeV c) 2 MeV d) 5 MeV.
55. Induced radioactivity was discovered by ---------- in the year1934.
    a) Rutherford & Soddy b) Chadwick c) Thomson d) Irene Curie & Joliot
56. Positron is emitted only in ---------- radioactivity.
    a) radioactivity b) induced radioactivity c) photo electricity d) ionisation.
57. The half life period of ${}_7N^{13*}$ is ---------- minutes.
    a) 10.1 b) 3 c) 13 d) 7
58. The half life period of ${}_{15}P^{30*}$ is ---------- minutes.
    a) 10.1 b) 3 c) 13 d) 7
59. Radio-isotopes can be obtained using the particle accelerator like ----------
    a) GM counter b) Cyclotron c) Mass spectrometer d) Radio
60. Co^{60*} is used in the treatment of ----------
    a) checking blood circulation b) cancer c) anaemia d) thyroid glands.
61. Na^{24*} is used in the treatment of ---------- .
    a) checking blood circulation b) cancer c) anaemia d) thyroid glands.
62. I^{131*} is used in the treatment of ----------
    a) checking blood circulation b) cancer c) anaemia d) thyroid glands.
63. Fe^{59*} is used in the treatment of ----------
    a) checking blood circulation b) cancer c) anaemia d) thyroid glands.
64. P^{32*} is used in the treatment of ----------
    a) skin diseases. b) cancer c) anaemia d) thyroid glands.
65. The ratio of C^{14} and C^{12} atoms in atmosphere is ----------.
    a) $1 : 10^6$ b) $10^6 : 1$ c) $1 : 10^{15}$ d) $1 : 10^{16}$
66. The half life period of the radio – carbon is ---------- .
    a) 6550 years b) 7550 years c) 5570 years d) 7570 years
67. The genetic damage is caused by ---------- rays.
    a) α b) β c) γ d) δ
68. If the radiation exposure is --------- , it may cause diseases like leukemia.
    a) 300 R b) 600 R c) 100 R d) 250 mR
69. If the radiation exposure is ---------- , it causes death.
    a) 300 R b) 600 R c) 100 R d) 250 mR
70. Safe limit of receiving the radiations is ---------- per week.
    a) 300 R b) 600 R c) 100 R d) 250 mR
71. The intensity of the radioactive radiation is measured by the device ---------- .
    a) GM counter b) Cyclotron c) Mass spectrometer d) Radio
72. The most probable mass numbers of the fission fragments lie between ----------.
    a) 110 to 150 b) 80 to 110 c) 95 and 140 d) 40 to 120
73. When ${}_{92}U^{235}$ is bombarded with a neutron , the value of the energy released is ----------.
    a) 1000 eV b) 10 MeV c) 200 MeV d) 0.025 eV
74. Niels Bohr and John A. Wheeler explained the nuclear fission by ---------- model.
    a) Thomson atom b) Rutherford atom c) nuclear d) liquid drop
75. Natural uranium consists of ---------- of U^{238} .
    a) 0.28 % b) 0.72 % c) 99.28 % d) 9.28 %

…… Continued in Page -4

76. Atom bombs were exploded over Nagasaki and Hiroshima in ----------.
    a) India b) USA c) Russia d) Japan
77. Synchrocyclotron can accelerate particles to an energy of the order of ----------.
    a) 10^6 eV b) 10^3 eV c) 10^9 eV d) 10^8 eV
78. In PHWR , ---------- oxide is used as fuel.
    a) plutonium b) thorium c) silver d) uranium.
79. The energy value of the thermal neutrons is ---------- .
    a) 1000 eV b) 10 MeV c) 200 MeV d) 0.025 eV
80. Cadmium or boron rods are called as ---------- rods.
    a) shielding b) reflector c) moderator d) control
81. A mixture of beryllium with plutonium is used as a source of ----------.
    a) protons b) electrons c) neutrons d) photons.
82. The boiling point of liquid sodium is ---------- .
    a) $10\ ^0$C b) $100\ ^0$C c) $1000\ ^0$C d) $10000\ ^0$C
83. The name of the nuclear reactor in Kalpakkam is ---------- .
    a) Yamini b) Kamini c) BARC d) Minmini.
84. The total power generation by all the operating power reactors is ---------- .
    a) 270 MW b) 27700 MW c) 2770 MW d) 20770 MW
85. The process of combining two or more number lighter nuclei to form a heavy nucleus is ---------- .
    a) nuclear fission b) nuclear force c) nuclear fusion d) nuclear reaction
86. The principle involved in hydrogen bomb is ---------- .
    a) nuclear fission b) nuclear force c) nuclear fusion d) nuclear reaction
87. The energy radiated per second by the sun is ---------- .
    a) 3.8×10^{28} b) 3.8×10^{26} c) 3.8×10^{22} d) 3.8×10^{24}
88. In sun , hydrogen and helium are in a state called ----------.
    a) photosphere b) chromosphere c) thermosphere d) plasma.
89. In proton – proton cycle fusion, the energy released is in the order of ---------- .
    a) 36.7 MeV b) 26.7 MeV c) 16.7 MeV d) 46.7 MeV.
90. The study of cosmic rays started with ----------
    a) cyclotron b) GM counter c) gold leaf electroscope d) capacitor
91. The intensity of cosmic rays is ---------- at the equator.
    a) maximum b) zero c) minimum d) infinity.
92. The intensity of cosmic rays is maximum at the height of ---------- km.
    a) 42 b) 90 c) 20 d) 30
93. In pair production, the particles produced are ----------.
    a) electron - proton b) electron - positron c) neutron - proton d) proton - positron
94. The name cosmic rays was given by ----------.
    a) Marie Currie b) Millikan c) Rutherford d) Henri Becquerel.
95. The energy of the primary cosmic rays is in the order of ---------- .
    a) 10^7 eV b) 10^8 eV c) 10^9 eV d) 10^6 eV
96. The quantum of radiation with no charge and no mass is called ----------.
    a) electron b) photon c) proton d) neutron.
97. The rest mass of ---------- vary between 250 m_e and 1000 m_e .
    a) electron b) photon c) proton d) mesons
98. The rest mass of the ---------- vary from 2180 m_e to 3275 m_e.
    a) hyperons b) photons c) protons d) mesons
99. $_1H^3 + {}_1H^2 \rightarrow {}_2He^4 +$ ---------- + energy.
    a) $_1H^1$ b) $_0n^1$ c) $_1H^2$ d) $_1H^3$
100. In GM counter, the potential difference of about ---------- is applied through a high resistance of ---------
    a) 100 V, 100 MΩ b) 100 V, 1000 MΩ c) 1000 V, 100 MΩ d) 100 V, 10 MΩ

********* **Best wishes** *********

+2 Physics Unit : 9 SEMICONDUCTOR DEVICES AND THEIR APPLICATIONS MARKS: 100

1. Germanium and Silicon are most widely used as ……..
   a) metals b) insulators c) semi conductors d) poor conductors
2. The resistivity of a semiconductor lie approximately between …….. Ωm at room temperature.
   a) 10^{-2} and 10^{4} b) 10^{-8} and 10^{14} c) 10^{-2} and 10^{8} d) 10^{11} and 10^{16}
3. A set of closely packed energy levels is called an …….
   a) valence level b) conduction level c) forbidden level d) energy band
4. Each silicon atom has ……. electrons.
   a) 8 b) 6 c) 14 d) 4
5. The subshell 3p can accommodate a total of …….. electrons.
   a) 6 b) 8 c) 4 d) 14
6. The electrons in the outermost level are called …….. electrons.
   a) valence b) conduction c) non-conducting d) none of the above
7. The energy gap between the valence band and the conduction band is called ……..
   a) valence level b) conduction level c) forbidden energy gap d) energy band
8. In insulators, the forbidden energy gap is more than ……
   a) 1.1 eV b) 3 eV c) 0.7 eV d) 0 eV
9. In glass, the forbidden energy gap is in the order of …… at 0 K.
   a) 10 eV b) 3 eV c) 0.7 eV d) 0 eV
10. The resistivity of insulator approximately lies between …….
    a) 10^{-2} and 10^{4} b) 10^{-8} and 10^{14} c) 10^{-2} and 10^{8} d) 10^{11} and 10^{16}
11. The forbidden energy gap is of the order of ……. for Germanium.
    a) 0.7 eV b) 1.1 eV c) 10 eV d) 3 eV
12. The forbidden energy gap is of the order of …… for Silicon.
    a) 10 eV b) 3 eV c) 0.3 eV d) 1.1 eV
13. The conductivity of a semi conductor is of the order of …… mho / m
    a) 10^{3} b) 10^{2} c) 10^{6} d) 10^{9}
14. The forbidden energy gap is of the order of ……. eV for conductors.
    a) 0.7 b) 1.1 c) 10 d) zero
15. A semiconductor in the purest form is called ……
    a) extrinsic b) intrinsic c) conductor d) insulator
16. In a pure Germanium semiconductor, the number of valence electrons is ……..
    a) 8 b) 6 c) 4 d) 16
17. In intrinsic semiconductors, the electrons and the holes move in the …….. directions.
    a) same b) opposite c) parallel d) perpendicular
18. The process of addition of a very small amount of impurity into an intrinsic semiconductor is …..
    a) diffusion b) doping c) diffraction d) deflection
19. When a small amount of impurity atoms are added to a pure semiconductor, it is …….. semiconductor.
    a) intrinsic b) extrinsic c) poor d) non-conducting
20. The valency bismuth, antimony, phosphorus etc is ……
    a) 3 b) 4 c) 5 d) 6
21. The valency of aluminium, gallium, boron etc is ……..
    a) 3 b) 4 c) 5 d) 6
22. If arsenic is added to a pure germanium, the resulting crystal is called …… semiconductor.
    a) P –type b) N-type c) intrinsic d) R - type
23. If boron is added to a pure germanium, the resulting crystal is called …….. semiconductor.
    a) P-type b) N-type c) intrinsic d) R – type
24. In N-type semiconductor , …….. are the majority charge carriers.
    a) protons b) positrons c) holes d) electrons
25. In P-type semiconductor, …… are the majority charge carriers.
    a) protons b) positrons c) holes d) electrons
26. The region which does not have any mobile charges very close to the PN junction is called ……. region.
    a) depletion b) forbidden c) break down d) none of the above

Best of luck

+ 2 Physics Unit : 9 ……. Continued in Page - 2

27. In a PN junction diode, the potential barrier is approximately …… for a silicon PN junction.
a) 0.3 V b) 1.1 V c) 0.7 V d) 5 V

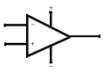
28. In a PN junction diode, the potential barrier is approximately …….. for a germanium PN junction.
a) 0.3 V b) 1.1 V c) 0.7 V d) 5 V

29. In a PN junction diode forward bias, the potential barrier ……
a) increases b) does not decrease c) reduces d) is constant

30. In a PN junction diode reverse bias, the potential barrier is ……
a) increases b) does not decrease c) reduces d) is constant

31. In a PN junction diode forward bias, the current is of the order of ……..
a) nA b) pA c) m A d) μ A

32. In a PN junction diode reverse bias, the current is of the order of ……
a) nA b) pA c) m A d) μ A

33. The circuit symbol for a semiconductor diode is ……
a)  b)  c)  d) 

34. In a PN junction diode forward bias, V / I is ……
a) a constant b) not a constant c) not a variable d) infinity

35. The conversion of AC into DC is called ……..
a) rectification b) oscillation c) diffraction d) modulation

36. A circuit which rectifies half of the a.c wave is called …….. rectifier.
a) full wave b) half –wave c) bridge d) Colpitt's

37. The ratio of the d.c power output to the a.c power input is known as rectifier ……..
a) power factor b) power gain c) efficiency d) transformer ratio

38. The efficiency of a half wave rectifier is approximately ……
a) 25 % b) 50 % c) 40.6 % d) 81.2 %

39. The efficiency of a bridge rectifier is approximately ……..
a) 25 % b) 50 % c) 40.6 % d) 81.2 %

40. There are two mechanisms which give rise to the breakdown of a PN junction under reverse bias condition. They are (i) Avalanche breakdown and (ii) …….. breakdown.
a) diode b) transistor c) capacitor d) zener

41. The reverse biased heavily doped semiconductor PN junction diode, which is operated in the breakdown region is called …… diode
a) Zener b) PN junction forward bias c) inductor d) none of the above

42. In a Zener diode, at a particular reverse bias voltage called ……., the current increases enormously.
a) zener voltage b) critical voltage c) bias voltage d) internal barrier

43. A forward biased PN junction diode which emits visible light when energized is called ……
a) RED b) LEAD c) LED d) LCD

44. In instrument displays, calculators and digital watches ..... is used.
a) RED b) LEAD c) LED d) LCD

45. In a junction transistor, the thickness of the base layer is about …… microns.
a) 10 b) 50 c) 25 d) 100

46. In a junction transistor, the ……. region is heavily doped.
a) base b) collector c) depletion d) emitter

47. In a junction transistor, the ……. region physically larger in size.
a) base b) collector c) depletion d) emitter

48. In a junction transistor, the emitter – base junction is …… biased.
a) forward b) reverse c) inverse d) positve

49. In a junction transistor, the collector – base junction is …….. biased.
a) forward b) reverse c) direct d) positve

50. In a CB mode transistor circuit, the current gain α = …….
a) I_B / I_E b) I_C / I_B c) I_C / I_E d) I_E / I_C

51. In CE mode transistor circuit, the current gain is given by β = …….
a) I_B / I_E b) I_C / I_B c) I_C / I_E d) I_E / I_C

52. The value of α lies between …….. and …….
a) 95, 99 b) 0.95 , 0.99 c) 9.5, 9.9 d) 50, 300

Best of luck

53. Usually β lies between ……. and ……...
a) 95, 99 b) 0.95 , 0.99 c) 9.5, 9.9 d) 50, 300

54. The relation between α and β is β = ……..
a) $\alpha / (1+\alpha)$ b) $(1-\alpha)/\alpha$ c) $(1+\alpha)/\alpha$ d) $\alpha / (1-\alpha)$

55. In a transistor, the ratio between emitter-base potential and base current is called ……
a) current gain b) output impedance c) input impedance d) output admittance

56. In the output characteristics, the region below the curve for I_B =0 is called ……. region.
a) cut-off b) let-off c) depletion d) critical

57. In a transistor, the ratio between emitter-collector potential and collector current is called …….
a) current gain b) output impedance c) input impedance d) output admittance

58. In a transistor, the ratio between collector current and the base current is called …….
a) current gain b) output impedance c) input impedance d) output admittance

59. A circuit capable of magnifying the amplitude of weak signals is called ……
a) amplifier b) transistor c) oscillator d) modulator

60. There is always a phase reversal of …… between the input and the output voltages in CE amplifier.
a) 180^0 b) 30^0 c) 90^0 d) 60^0

61. β of a transistor is very ……. to temperature changes.
a) sensitive b) soluble c) positive d) negative

62. In an amplifier, the ratio of the output and the input voltages is called ……
a) current gain b) output impedance c) input impedance d) voltage gain

63. The frequency response curve gives the relation between …….
a) frequency and the voltage b) current and the voltage
c) frequency and the current d) frequency and the phase

64. The frequency interval between lower cut off and upper cut off frequencies is called ……..
a) band width b) current width c) voltage width d) channel width

65. When a fraction of the output signal is combined with the input, ……. is said to exist in an amplifier.
a) rectification b) feed back c) modulation d) demodulation

66. If the magnitude of the input signal is reduced by the feedback, the feedback is called ……..
a) negative feedback b) positive feedback c) direct feedback d) regenerative feedback

67. If the magnitude of the input signal is increased by the feedback, it is called …….
a) negative feedback b) positive feedback c) indirect feedback d) degenerative feedback

68. The voltage gain of the amplifier with positive feedback is ……..
a) $A_f = A/(1+\beta A)$ b) $A_f = A/(1-\beta A)$ c) $A_f = (1-\beta A)/A$ d) $A_f = (1+\beta A)/A$

69. The term $A\beta$ is called ……. and β is called feedback ratio.
a) loop gain b) current gain c) voltage d) power gain

70. The circuit which converts energy from d.c source into a periodically varying output is called …….
a) amplifier b) oscillator c) modulator d) transistor

71. In oscillators βA = …….
a) 2 b) $1/\beta$ c) 1 d) 1 / A

72. If an oscillator generates a …….. wave, it is called non-sinusoidal oscillator.
a) circular b) elliptical c) triangular d) rectangular

73. In a tank circuit, the frequency of oscillation is given by **f =** …….
a) $1/2\pi(C)^{1/2}$ b) $1/2\pi(L)^{1/2}$ c) $1/2\pi(LC)^{1/2}$ d) $1/2(LC)^{1/2}$

74. In Colpitt's oscillator, the total phase shift between the input and output is …….
a) 180^0 b) 30^0 c) 90^0 d) 360^0

75. Diodes and transistors are called ……. elements.
a) active b) inactive c) passive d) massive

76. Resistors and capacitors are called …… elements.
a) active b) inactive c) passive d) massive

77. Circuits which are used to process digital signals are called ……... circuits.
a) digital b) analog c) active d) passive

78. If the signal current is in the form of continuous, time varying current, the signal is called …… signals.
a) digital b) analog c) active d) passive

79. The integrated circuits which process the analog signals are called …….... ICs.
a) linear b) non-linear c) active d) passive

80. The typical IC chip sizes from about 40 X 40 mils to about ……
a) 100 X 300 mils b) 300 X 3 mils c) 300 X 300 mils d) 300 X 30 mils

81. The Boolean equation of a OR gate is **y =** …….
a) A – B b) A + B c) A.B d) A / B

82. The Boolean equation of a AND gate is **y =** …….
a) A – B b) A + B c) A.B d) A / B

83. The Boolean equation of a NOT gate is **y =** …….
a) $Y = \bar{A}$ b) A + B c) A.B d) A / B

84. The Boolean equation of a Ex - OR gate is ……..
a) $Y = A \oplus B = A\bar{B} + \bar{A}B$ b) A + B c) A.B d) A / B

85. The Boolean equation of a NOR gate is ……..
a) $Y = \overline{A+B}$ b) A + B c) A.B d) A / B

86. The Boolean equation of a NAND gate is ……
a) $Y = \overline{AB}$ b) $Y = \overline{A+B}$ c) A+B d) A.B

87. One of the universal gate is …….
a) OR b) AND c) NOT d) NOR

88. First De Morgan's theorem is $\overline{A+B} =$ ……..
a) $\overline{A \cdot B}$ b) $A + B$ c) $\bar{A} \cdot \bar{B}$ d) A / B

89. Second De Morgan's theorem is $\overline{A \cdot B}$ = ……..
a) $\bar{A} + \bar{B}$ b) $A + B$ c) $\bar{A} \cdot \bar{B}$ d) A / B

90. OP-AMP consists of ….. transistors, ……. resistors and …… capacitor.
a) 1, 11 , 20 b) 20, 11 , 1 c) 20,1,11 d) 1,20,11

91. In an inverting amplifier, the output voltage V_{out} = ……
a) $(1 + R_f / R_{in}) V_{in}$ b) $(R_f / R_{in}) V_{in}$ c) $-(R_f / R_{in}) V_{in}$ d) $-(R_f \times R_{in}) / V_{in}$

92. In a non- inverting amplifier, the output voltage V_{out} = ……..
a) $(1 + R_f / R_{in}) V_{in}$ b) $(R_f / R_{in}) V_{in}$ c) $-(R_f / R_{in}) V_{in}$ d) $-(R_f \times R_{in}) / V_{in}$

93. In a summing amplifier, the output voltage V_{out} = ……
a) $(1 + R_f / R_{in}) V_{in}$ b) $(R_f / R_{in}) V_{in}$ c) $-(R_f / R_{in}) V_{in}$ d) $-(V_1 + V_2)$

94. In a difference amplifier, the output voltage V_{out} = ……
a) $(v_1 - v_2)$ b) $(R_f / R_{in}) V_{in}$ c) $-(R_f / R_{in}) V_{in}$ d) $-(V_1 + V_2)$

95. The property of the ……. being deflected by electric and magnetic fields is used in CRO.
a) X –rays b) microwaves c) EM waves d) cathode rays

96. If the emitter current is 1 mA, then the collector current is approximately equal to ……. mA.
a) 5 b) 10 c) 9.9 d) 1

97. The unit of the out impedance ……..
a) ampere b) kelvin c) ohm d) mho

98. The device which is used to measure the current, the voltage and resistance is used to measure ……
a) GM counter b) oscillator c) ammeter d) multimeter

99. Multimeter is also called as …….. meter.
a) MUL b) CVR c) AVO d) MVO

100. The gate which is called as an inverter gate is ……..
a) AND b) NAND c) NOR d) NOT

Best of luck

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+2 Physics **Unit :10 Communication Systems** **Marks - 60**

1. For communication purposes, radio waves and ……. are used.
   a) microwaves b) IR rays c) UV rays d) X-rays
2. High frequency waves follow …. ……. propagation.
   a) ionospheric b) ground wave c) surface wave d) space wave
3. All medium wave signals received during the day time use ……. propagation.
   a) ionospheric b) longitudinal wave c) surface wave d) space wave
4. The radio waves which travel along the surface of the earth are called ……
   a) sky waves b) longitudinal waves c) surface waves d) space waves
5. Radio waves propagated through the troposphere of the earth are known as ……..
   a) sky waves b) longitudinal waves c) surface waves d) space waves
6. The portion of the earth's atmosphere which extends upto 15 km from the surface of the earth is called ……
   a) troposphere b) stratosphere c) ionosphere d) thermosphere
7. Space wave propagation is particularly suitable for the waves having frequencies above ……
   a) 30 MHz b) 15 MHz c) 90 Hz d) 20 MHz
8. The ionised region containing free electrons, positive and negative ions in the earth's atmosphere is called …….
   a) troposphere b) stratosphere c) ionosphere d) thermosphere
9. Long distance radio communication is possible through the …… propagation.
   a) sky waves b) longitudinal waves c) surface waves d) stationary waves
10. The refractive indices of the various layers in the ionosphere vary with respect to …… of the incident wave.
    a) density b) phase c) frequency d) intensity
11. The audio frequency ranges from ……..
    a) 20 Hz – 200 Hz b) 200 Hz – 20000 Hz c) 20 Hz – 2000 Hz d) 20 Hz – 20000 Hz
12. The process of changing amplitude or frequency or phase of the carrier wave (RF wave) in accordance with the intensity of the signal wave (AF wave) is called ……
    a) demodulation b) diffraction c) interference d) modulation
13. The process of changing amplitude of the carrier wave in accordance with the intensity of the signal wave is …….
    a) amplitude modulation b) phase modulation c) frequency modulation d) none of the above
14. The ratio of the amplitude change of the carrier wave after modulation to the amplitude of the carrier wave before modulation is called ……. factor.
    a) power b) spring c) modulation d) Q
15. Signal amplitude / carrier amplitude is called as ……. factor.
    a) power b) spring c) modulation d) Q
16. The strength and the quality of the transmitted signal can be determined by the ……..
    a) power b) spring c) modulation d) Q
17. When the modulation factor is ……., the transmitted signal will not be very strong.
    a) greater than one b) less than one c) equal to one d)
18. When the modulation factor is greater than one, …….. is produced in the transmitted signal.
    a) distortion b) strong signal c) weak signal d) none of the above

 …… continued in page number : 2

19. For effective modulation, the degree of modulation should never exceed ……..
    a) 200% b) 100% c) 20% d) 50%
20. In AM, the component having a frequency greater than that of the carrier wave is called as the….
    a) Upper Side Band b) Bottom Side Band c) Lower Side Band d) Middle Side Band
21. In AM, the component having a frequency lesser than that of the carrier wave is called as the …..
    a) Upper Side Band b) Top Side Band c) Lower Side Band d) Middle Side Band
22. The magnitude of both the upper and lower side bands is …… times the carrier amplitude E_c .
    a) m b) m /4 c) 2m d) m /2
23. In an AM wave, the bandwidth is from ($\omega_c - \omega_s$) to ($\omega_c + \omega_s$) i.e. ……. the signal frequency.
    a) twice b) three times c) equal to d) half of the
24. The channel width = …….. X maximum frequency of the modulating signal.
    a) 3 b) 4 c) 6 d) 2
25. In an AM wave, the reception is generally ……
    a) clear b) noiseless c) noisy d) strong
26. The efficiency of AM wave is …….
    a) high b) low c) medium d) strong
27. The messages cannot be transmitted over long distances in …….
    a) AM wave b) FM wave c) Phase modulated d) none of the above
28. The process of changing frequency of the carrier wave in accordance with the intensity of the signal wave is …….
    a) amplitude modulation b) phase modulation c) frequency modulation d) none of the above
29. The frequency of the FM transmitter without signal input is called …… frequency.
    a) centre b) upper c) lower d) threshold
30. Carrier swing in FM transmitter = …… X frequency deviation.
    a) 3 b) 4 c) 6 d) 2
31. FM receiver gives ……. reception.
    a) weak b) noiseless c) noisy d) no
32. The process of changing phase of the carrier wave in accordance with the intensity of the signal wave is ……..
    a) amplitude modulation b) phase modulation c) frequency modulation d) none of the above
33. The phase modulation generally uses a …….. bandwidth than FM.
    a) smaller b) larger c) higher d) none of the above
34. The centre frequency is extremely stable in ……. modulation.
    a) amplitude modulation b) phase modulation c) frequency modulation d) none of the above
35. Frequency modulated systems are operated usually at a frequency above …….
    a) 40 MHz b) 20 KHz c) 40 KHz d) 20 MHz
36. In a superheterodyne receiver, the output from the mixer will have a frequency of ……. .
    a) 555 MHz b) 455 kHz c) 1000 Mhz d) 455 MHz
37. In television, usually sound signals are ……. … modulated and picture signals are amplitude modulated.
    a) frequency b) phase c) amplitude d) both frequency and phase

Best of luck

 …… continued in page number : 3

38. A television camera converts the light energy into ……
    a) electrical energy b) heat energy c) sound energy d) chemical energy
39. A blanking pulse is a high negative potential applied to the ……. of the electron gun.
    a) control grid b) anode c) cathode d) filament
40. In a 625 line system, transmitting 25 frames per second, the horizontal scanning frequency is ……. Hz.
    a) 15,625 b) 14,625 c) 12,625 d) 10,625
41. In a 625 line system, transmitting 25 frames per second, time taken to scan one line is ……
    a) 164 μ s b) 64 μ s c) 44 μ s d) 264 μ s
42. Video signals upto about ……. are allowed in CCIR mode.
    a) 25 MHz b) 15 MHz c) 10 MHz d) 5 MHz
43. The system which uses radio waves to detect and to fix the position of targets at a distance is called as…….
    a) RADAR b) SONAR c) LASER d) MASER
44. Air and sea navigation is made entirely safe with ……. installations.
    a) RADAR b) SONAR c) LASER d) MASER
45. The name …… is the abbreviation of the term Modulator and Demodulator.
    a) FAX b) RADAR c) MODEM d) MASER
46. The device that is used to convert digital signals into analog signals capable of being transmitted over telephone lines is called as …….
    a) FAX b) RADAR c) MODEM d) MASER
47. The electronic system for transmitting graphical information by wire or radio is called as ……
    a) FAX b) RADAR c) MODEM d) MASER
48. Coherent light can be detected by ……
    a) photo – diodes b) PN junction diodes c) zener diodes d) transistors
49. The principle of ……. is used for the transmission of light signals through an optical fiber.
    a) reflection b) total internal reflection c) refraction d) diffraction
50. Satellite orbiting the earth will be geostationary when it is about …….. km away from the earth.
    a) 16,000 b) 26,000 c) 36,000 d) 46,000
51. The downlink frequencies are kept different from the uplink frequencies in order to avoid ……
    a) reflection b) interference c) refraction d) diffraction
52. In satellite communication the downlink frequencies are kept different from the uplink frequencies by ……..
    a) 2 kHz b) 2 MHz c) 2 GHz d) 20 kHz
53. The …… amplifier isolates the RF power amplifier from the oscillator. This arrangement keeps the frequency of the crystal controlled oscillator as a constant.
    a) power b) voltage c) buffer d) AF
54. For FM receivers, the IF is ……..
    a) 10.7 MHz b) 20.7 MHz c) 30.7 MHz d) 40.7 MHz
55. The transmitter and receiver switch in a …….. is called as a duplexer.
    a) RADAR b) SONAR c) LASER d) MASER

Best of luck

 …… continued in page number : 4

56. In ……. modulation, both the phase and the frequency of the carrier wave varies.
    a) frequency b) phase c) amplitude d) none of the above
57. The printed documents to be transmitted by fax are converted into electrical signals by the process ……
    a) scanning b) modulation c) demodulation d) interference
58. The purpose of dividing each frame into two fields so as to transmit 50 views of the picture per second is to avoid ……
    a) flicker in the picture b) to remove the noise c) easy to handle the HF waves d) modulation
59. Digital signals are converted into analog signals using ……
    a) FAX b) MODEM c) cable d) co-axial cable
60. The RF channel in a radio transmitter produces ……
    a) audio signals b) high frequency carrier waves
    c) low frequency carrier waves d) both audio and high frequency carrier waves.

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Best of luck

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