QUIZ

Yes/No Type Question

Q.1 Binomial array is a uniform linear array.

Q.2 The beam width of a binomial array is greater than that of a uniform linear array.

Q.3 The radiation patterns of terminated and unterminated antennas are the same.

Q.4 Antenna temperature is the temperature of the antenna.

Q.5 When side lobe level increases, beam width also increase in general.

Q.6 The directivity of an antenna is determined by the beam width.

Q.7 The received power in a communication system is inversely proportional to the square of frequency.

Q.8 The extent of visible region can be controlled by the spacing between elements.

Q.9 The Schelkunoff polynomial method is useful to design an array of elements which produces a pattern with nulls in the desired directions.

Q.10 Dolph-Chebychev method yields a pattern which contains side lobes of unequal level.

Q.11 The side lobe level of triangular distribution for the array is higher than that of uniform linear array.

Q.12 Radiation pattern can be controlled by amplitude distribution only.

Q.13 In an array pattern, the number of nulls are influenced by the number of elements in the array.

Q.14 The degree of Tschebyscheff polynomial is equal to the number of elements minus one.

Q.15 Isotropic radiator and omni-directional radiator are one and the same.

Q.16 Radiation beam in broadside array is along the axis of the array.

Q.17 If the number of element is more in an array, beam width is small.

Q.18 The band width of Yagi-Uda antenna is limited.

Q.19 In broadside array, the elements are in phase.

Q.20 The impedance and directivity changes with frequency in log-periodic array.

Q.21 Log-periodic antenna is a wide-band antenna.

Q.22 Log-periodic array is a uniform linear array.

Q.23 The radiation pattern of loop antenna is the same as that of a half-wave dipole.

Q.24 If the length of antenna is more, its directivity is high.

Q.25 Loop antenna can be of any shape including triangular loop for direction-finding.

Q.26 For small square and circular loop antennas, the field patterns are identical.

Q.27 The polarisation and position of the primary antennas control the radiating properties of the complete system.

Q.28 Efficiency of corner reflector is reduced when spacing of feed element becomes small.

Q.29 If the main beam is narrow, the directivity is small.

Q.30 Dish antenna and paraboloid are one and the same.

Q.31 The disadvantage of Cassegrain feed is the obstruction of electromagnetic by hyperbolic reflector.

Q.32 Narrow beams are used for point-to-point communication purposes.

Q.33 Directivity of horns is greater than that of waveguide.

Q.34 Horizontal slot produces vertical polarised radiation fields.

Q.35 Horizontal dipole produces horizontal polarised radiation fields.

Q.36 If impedance of dipole is inductive, slot impedance is capacitive.

Q.37 From slot antenna, in a conducting plane, its complementary dipole is formed by interchanging air and metallic regions in the slot.

Q.38 If $\in_r$ of substrate is high in microstrip antenna, Beam width increases.

Q.39 If reactive component is added in microstrip antenna, B.W. is increased.

Q.40 Horn antenna is called secondary antenna when used with paraboloid.

Q.41 Babinet's principle is applicable in electromagnetic problems.

Q.42 For a slot in conducting sheet, there exists a complementary dipole.

Q.43 For lossless antenna, directivity is the same as gain.

Q.44 A slot can be excited by a waveguide.

Multi-choice questions (tick the write answer/answers)

Q.45 The directivity of a half-wave dipole is

(a)10 (b)1 (c)1.5 (d) 1.64

Q.46 The directivity of isotropic radiator is

(a) 1 (b) zero (c) more than 1 (d) ∞

Q.47 Crossed dipoles produce ..... polarisation.

(a) Linear (b) Circular (c) Horizontal (d) Vertical

Q.48 For broadside linear array, excitation phase is

(a) $\sim = - d$ (b) $\sim = d$ (c) zero (d) 90^0

Q.49 For end-fire array, the excitation phase is

(a) zero (b) $\sim = - d$ (c) $\sim = d$ (d) 180^0

Q.50 The size of the antenna is

(a) inversely proportional to frequency

(b) directly proportional to frequency

(c) independent of frequency

(d) inversely proportional to the square to the frequency

Q.51 Antenna is a

(a) transducer (b) filter (c) regulator (d) amplifier

Q.52 The radiation resistance of a half-wave dipole close to earth is

(a) 73Ω (b) $< 73\Omega$ (c) $> 73\Omega$ (d) infinity

Q.53 Reflector in Yagi-Uda antenna is

(a) active element (b) driven element

(c) identical to dipole (d) identical to dipole

Q.54 Log-periodic antenna is

(a) narrow band (b) wide band

(c) frequency independent (d) frequency dependent

Q.55 The first side lobe level in uniform linear array is

(a) 0.212 (b) 0.121 (c) 0.312 (d)0.51

Q.56 The side lobe level in binomial array is

(a) zero (b) -13.5 dB (c) -20 dB (d) zero dB

Q.57 The real part of antenna impedance consists of

(a) R_r only (b) R_r and R_l

(c) R_l only (d) zero ohms of resistance

Q.58 For radiation pattern measurements, the distance of the far-field region is

(a) $r > \frac{2D^2}{\lambda}$ (b) $r < \frac{D^2}{\lambda}$ (c) $r = \frac{\lambda}{\pi}$ (d) $r = \frac{D}{\lambda}$

Q.60 The excitation levels of a three elements binomial array are

(a) 1, 2, 1 (b) 1, 3, 1 (c) 1, 4, 1 (d) 2, 3, 2

Q.61 The basic transmission loss between transmitter and receiver is

(a) $10\log\left(\frac{4\pi d}{\lambda}\right)^2$ (b) $10\log\left(\frac{\lambda}{4\pi d}\right)^2$

(c) $10\log\left(G_{TX}G_{RX}\right)$ (d) zero

Q.62 In a conductor, if the charge is not moving, the radiation is

(a) very high (b) zero

(c) the same as when the charge moves (d) moderate

Q.63 If the charge is moving with a uniform velocity in a infinite straight wire, the radiator is

(a) infinite (b) moderate (c) zero (d) high

Q. 64 If the charge is moving in a curved wire, radiation

(a) exists (b) does not exist

(c) is infinite (d) same as when the wire is straight.

Q.66 If the charge oscillates with time in a straight wire, it

(a) radiates (b) does not radiate

(c) stores energy (d) oscillates

Q.67 If the charge accelerates, there exists

(a) no radiation (b) radiation

(c) stored energy (d) acceleration of antenna

Q.68 If the charge decelerates, radiation

(a) is zero (b) exists

(c) does not exist in any antenna. (d) exists only in some wire antennas

Q.69 Radiation with broad frequency spectrum is very strong if

(a) the pulses are of shorter duration (b) the pulses are of longer duration

(c) the pulses have more amplitude (d) the pulses have small amplitude

Q.70 The radition intensity of an isotropic radiator is

(a) $\frac{P_r}{4\pi r^2}$ (b) $\frac{P_r}{4\pi r}$ (c) $\frac{P_r}{4\pi}$ (d) P_r

Q.71 An omni-directional antenna is a

(a) parabolic dish (b) dipole

(c) horn (d) Yagi-Uda antenna

Q.72 Loop antenna is

(a) isotropic radiator (b) directional radiator

(c) omni-directional radiator (d) point source

Q.73 Broadside arrays are

(a) omni-directional (b) point sources

(c) directional antennas (d) isotropic antennas

Q.74 In linear polarisation, there exists

(a) three components

(b) only one component

(c) two components differing by 90^0 phase

(d) two components differing by 270^0 phase

Q.75 If there exists two orthogonal linear components which are in time phase, polarisation is

(a) linear (b) circular (c) elliptical (d) not present

Q.76 In far-field region, the angular field distribution is independent of

(a) transmitter power (b) distance from the antenna

(c) angular region (d) antenna type

Q.77 Reactive near-field region exists when

(a) $R > 0.62\sqrt{\frac{D^3}{a}}$ (b) $R < 0.62\sqrt{\frac{D^2}{a}}$

(c) $R < 0.62\sqrt{\frac{D^3}{a}}$ (d) $R > 0.62\sqrt{\frac{D^2}{a}}$

Q.78 Fresnel region exists when

(a) $R \le 0.62\sqrt{\frac{D^3}{a}}$ (b) $R \ge 0.62\sqrt{\frac{D^3}{a}} and\ R < \frac{2D^2}{a}$

(c) $R \ge \frac{2D^2}{a}$ (d) $R \ge 0.62\sqrt{\frac{D^3}{a}}$

Q.79 Fraunhofer region exists when

(a) $R > \frac{2D^2}{a}$ (b) $R < \frac{2D^2}{a}$

(c) $R \ge 0.62\sqrt{\frac{D^3}{a}}$ (d) $R \le 0.62\sqrt{\frac{D^3}{a}}$

Q.80 If R_r is radiation resistance, μ_e is effective permeability of ferrite core, the radiation resistance of ferrite loop is

(a) $R_r\left(\frac{\mu_0}{\mu_e}\right)^2$ (b) $R_r\left(\frac{\mu_e}{\mu_0}\right)^2$ (c) R_r (d) $R_r \mu_0$

Q.81 The resultant field of an array antenna is

(a) the product of element pattern and array factor

(b) array factor

(c) sum of element patterns

(d) element pattern

Q.82 The excitation required to orient a beam in θ_0 direction is

(a) $kd\cos\theta_0$ (b) $-kd\cos\theta_0$ (c) $-kd$ (d) kd

Q.83 Super directivity of an array can be obtained by

(a) reducing the spacing (b) increasing the spacing

(c) reducing the number of elements (d) decreasing array length

Q.84 Super directivity obtained by reducing the spacing and increasing the number of elements result in

(a) high reactive power and Q

(b) low reactive power and Q

(c) small Q

(d) high reactive power and lower Q

Q.85 Circular antennas are most sensitive to

(a) linearly polarised waves (b) elliptically polarised waves

(c) circularly polarised waves (d) unpolarised waves

Q.86 Circular antenna has usually a length of

(a) $\frac{a}{2}$ (b) a (c) $2a$ (d) $\frac{a}{4}$

Q.87 The horizontal pattern of circular antenna is

(a) circle (b) four equal lobe pattern

(c) figure-eight pattern (d) six equal-lobe pattern

Q.88 Tow end-fire circular antenna elements with 90^0 phasing produce

(a) uni-directional pattern (b) figure eight pattern

(c) multi-directional pattern (d) no radiation pattern

Q.89 Directors in Yagi-Uda antenna

(a) reduces the characteristic impedance of driven antenna element

(b) increases the characteristic impedance of driven antenna element

(c) has no effect on the characteristic impedance of driven element

(d) act as open circuit

Q.90 Directors and reflectors are used to

(a) reduce the impedance (b) increase the impedance

(c) increase the gain (d) form an array

Q.91 Due to the use of parasitic elements the band width of Yagi-Uda antenna is

(a) increased (b) not affected

(c) made ideal (d) limited

Q.92 Yagi-Uda antenna has

(a) poor front-to-back ration (b) good front-to-back ratio

(c) infinite front-to-back ratio (d) zero front-to-back ratio

Q.93 A good front-to-back ratio

(a) increases co-channel interference (b) reduces co-channel interference

(c) has no effect on co-channel interference (d) none of these

Q.94 If the power gain of an antenna is 0.5 dB, the power ration is

(a) 0.216 (b) 12.6 (c) 1.26 (d) 1.06

Q.95 If the voltage gain of an antenna is 1.0 dB, the voltage ratio is

(a) 1.26 (b) 0.126 (c) 1.06 (d) 1.0

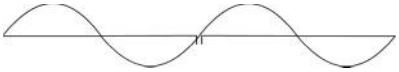
Q.96 If the power gain of an antenna is 30 dB, the power ratio is

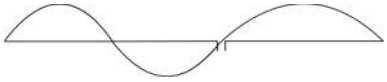
(a) 1.477 (b) 1000 (c) 100 (d) 10

Q.97 If the power gain of an antenna is 20, the power gain in dB is

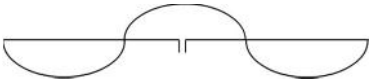
(a) 13 (b) 130 (c) 20 (d) 200

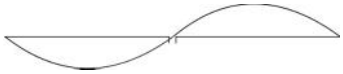
Q.98 Voltage distribution on a 1.5^a dipole is

(a)  (b) 

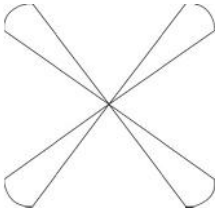
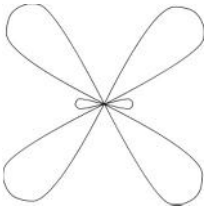
(c)  (d) 

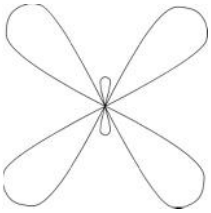
Q.99 Current distribution in 1.5^a dipole is

(a)  (b) 

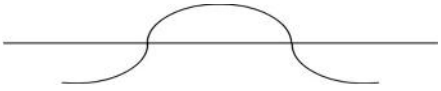
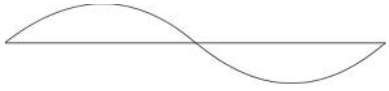
(c)  (d) 

Q.100 Radiation pattern of a full-wave dipole is

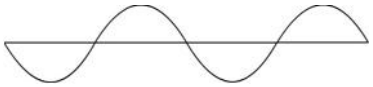
(a)  (b) 

(c)  (d) 

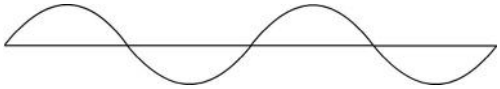
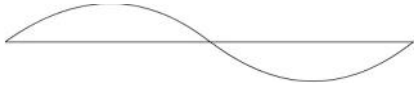
Q.101 Voltage distribution on a full-wave dipole is

(a) (b)

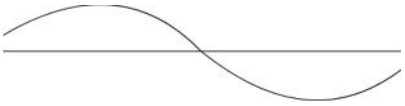
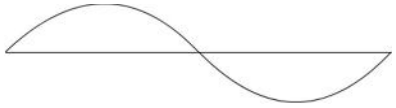
(c)  (d) 

Q.102 Current distribution on a full-wave dipole is

(a)  (b) 

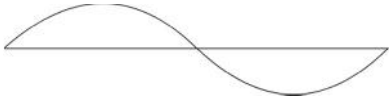
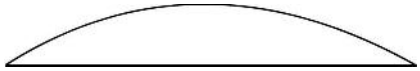
(c)  (d) 

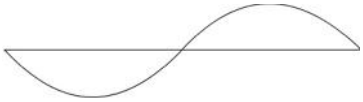
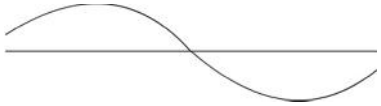
Q.103 The voltage distribution of a half-wave dipole is

(a)  (b) 

(c)  (d) 

Q.104 Current distribution in a half-wave dipole is

(a)  (b) 

(c)  (d) 

Q.105 Directivity of a loop antenna whose radius is 0.5 m at f = 0.9 MHz is

(a) 1.0 (b) 1.5 (c) 2.5 (d) 3.5

Q.106 The number of log-periodic antenna elements depends on

(a) gain only (b) wedge angle only

(c) band width only (d) band width, scale and space factors

Q.107 Antenna radiation efficiency is high when its length is

(a) $\frac{a}{2}$ (b) a (c) $3\frac{a}{2}$ (d) ∞

Q.108 Antenna resonates when its length is integer multiples of

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

Q.109 For a 100Ω antenna with 2 A of current, radiated power is

(a) 400 watts (b) 200 watts

(c) 50 watts (d) 25 watts

Q.110 For an operating frequency of 6 GHz, the basic transmission loss at a distance of 50 km from the transmitter is

(a) 132 dB (b) 152 dB (c) 142 dB (d) 42 dB

Q.111 The percent band width of an antenna with an optimum frequency of operation of 500 MHz and -3 dB of frequencies of 300 and 350 MHz is

(a) 20% (b) 100% (c) 500% (d) 10%

Q.112 The received power of a receiving antenna whose effective area is $0.2m^2$ for an available power density of 100μ W/m^2 is

(a) 200_{μ} W/m^2 (b) 20_{μ} W/m^2

(c) 50_{μ} W/m^2 (d) 500_{μ} W/m^2

Q.113 For an ideal antenna, the directivity is

(a) power gain (b) 1

(c) 1.64 (d) 1.5

Q.114 For an ideal antenna, the radiation resistance is

(a) 73Ω (b) 36.5Ω

(c) 293Ω (d) input impedance

Q.115 The power gain in dB of isotropic radiator is

(a) 0 (b) 1 (c) 1.5 (d) 1.64

Q.116 The radiation resistance of a small loop antenna is

(a) 31,200 $\frac{A^2}{a^4}$ (b) 73Ω

(c) 36.5Ω (d) 292Ω

Q.117 Half-power beam width of optimum flare horn in *E*-plane, is

(a) $\frac{56^{a}}{d_E}$ (b) $\frac{28^{a}}{d_E}$ (c) $\frac{122^{a}}{d_E}$ (d) 112^{0}

Q.118 Half-power beam width of optimum flare horn in *H*-plane, is

(a) $\frac{28^{a}}{d_H}$ (b) $\frac{56^{a}}{d_H}$ (c) 56^{a} (d) 28^{a}

Q.119 The normalised radiated power of a dipole is

(a) 1 (b) 1.5 (c) $\sin^2 \theta$ (d) 1.64

Q.120 The directive gain of electric dipole is

(a)1.5 (b) $1.5\sin^{2-}$ (c) 1.64 (d) 1.0

Q.121 A magnetic dipole is

(a) a small circular loop (b) a piece of wire
(c) a piece of conducting rod (d) the same as electric dipole

Q.122 If the resistance part id antenna is $100\,\Omega$, radiation resistance is $80\,\Omega$, the antenna efficiency is

(a) 0.8 (b) 10/8 (c) 0.4 (d) 8/18

Q.123 If ¤ is the angle between the axis of a receiving dipole and the direction of electric field, the polarisation loss factor is

(a) sin¤ (b) cos¤ (c) tan¤ (d) sec¤

Q.124 The effective length of a half-wave dipole is

(a) 0.4^{a} (b) 0.45^{a} (c) $\frac{a}{®}$ (d) 0.55^{a}

Q.125 Effective area of a Hertzain dipole is

(a) 0.2^{a^2} (b) 0.25^{a^2} (c) 0.119^{a^2} (d)0.3^{a^2}

Q.126 Directive gain is equal to power gain is

(a) ¦ $=\infty$ (b) ¦ $=1$ (c) ¦ $= g_p$ (d) ¦ $= g_d$

Q.127 Directive gain and directivity are equal for

(a) directional antenna (b) dipole

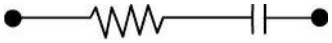
(b) parabolic dish (d) isotropic antenna

Q.128 For an isotropic antenna operating at $^{a} = \sqrt{4®}$, the effective area is

(a) 4® (b)1 (c) $(4®)^2$ (d) 2

Q.129 Equivalent circuit of a half-wave dipole is

(a)  (b) 

(c)  (d) 

Q.129 For direction finding applications, the required radiation beam should be

(a) narrow (b) broad (c) cosecant (d) ramp

Q.130 Directivity is

(a) inversely proportional to beam width

(b) inversely proportional to square of beam width

(c) directly proportional to beam width

(d) directly proportional to square of beam width

Q.131 If the direction of propagation of an electromagnetic wave is in z-direction, the polarisation is in

(a) z-direction (b) y-direction

(c) x-direction (d) circular polarisation

Q.132 If the equality of an antenna is 1000. resonant frequency is 10MHz, its band width is

(a) 100 KHz (b) 10 KHz (c) 10 Hz (d) 10 MHz

Q.133 The maximum effective area of an antenna operating at ^{a} = 10cm with directivity of 100 is

(a) 1000 cm^2 (b) $\left(\frac{1}{4®} \right) m^2$ (c) 4® m^2 (d) 10® m^2

Q.134 The radiation resistance of an antenna which radiates 10 kW when a current of 10 ampere flows in it, is

(a) $100\,\Omega$ (b) $1{,}000\,\Omega$ (c) $10\,\Omega$ (d) $1000\ \mathrm{K}\,\Omega$

Q.135 When an antenna radiates 10 kW in forward and 1 kW in backward directions, the front-to-back ration of the antenna is

(a) 1 dB (b) 10 dB (c) 100 dB (d) 0 dB

Q.136 The maximum gain of 1200 element uniform linear array is

(a) 10 (b) 100 (c) 1,000 (d) 1

Q.137 If half-power beam width of parabolic antenna is 12^0, its Null-to-Null beam width is

(a) 12^0 (b) 6^0 (c) 24^0 (d) 48^0

Q.138 If parabolic dish diameter increase

(a) beam width becomes small

(b) beam width becomes high

(c) beam width becomes high and sometimes small

(d) beam width remains constant

Q.139 The radiation resistance of a current elements is

(a) $\propto dl$ (b) $\propto (dl)^2$ (c) $\propto \frac{1}{dl}$ (d) $\propto \frac{1}{(dl)^2}$

Q.140 The polarisation of horizontal dipole is

(a) vertical (b) horizontal (c) θ -polarisation (d) elliptical

Q.141 The ionospheric layer that exists during day and night is

(a) D (b) E (c) F_1 (d) F_2

Q.142 To receive horizontally polarised wave, the receiving antenna should be polarised

(a) vertically (b) horizontally (c) circularly (d) elliptically

Q.143 The unit of $\iint (E \times H).ds$

(a) watts/ m^2 (b) watts/ m^3 (c) watts (d) volt-ampere

Q.144 The electric field of a circularly polarised wave is represented by

(a) $\left(a_x + ja_y\right)e^{j(\mu t - z)}$ (b) $\left(a_x + a_y\right)e^{j(\mu t - z)}$

(c) $a_x e^{j(\mu t - z)}$ (d) $a_y e^{j(\mu t - z)}$

Q.145 The tangential electric field at a perfect conductor is

(a) 1 (b) ∞ (c) zero (d) $-\infty$

Q.146 An electromagnetic wave, when incident on a perfect conductor is

(a) reflected completely (b) non-directive antenna

(c) reflected and transmitted (d) refracted completely

Q.147 The electric field of elliptically polarised electromagnetic wave is represented by

(a) $\left(a_x + ja_y\right)e^{j(\mu t - z)}$ (b) $\left(E_x a_x + jE_y a_y\right)e^{j(\mu t - z)}$

(c) $E_x a_x e^{j(\mu t - z)}$ (d) $E_y a_y e^{j(\mu t - z)}$

Q.148 The polarisation of ration broadcast antennas is

(a) horizontal (b) elliptical (c) vertical (d) nil

Q.149 The length of the mobile antenna is a

(a) a (b) $\frac{a}{2}$ (c) $\frac{a}{4}$ (d) $> a$

Q.150 At $f = 30$ MHz, the length of the mobile whip antenna is

(a) 0.4572 m (b) 4.572 m (c) 45.72 m (d) 0.4572 m