## EXERCISE – I

## **CONCEPTUAL QUESTIONS**

1.	Modulation is not used to :-										
	(1*) reduce the bandwidth used										
	(2) separate the transmissions of different users										
	(3) ensure that intelligence may be transmitted to long distances										
	(4) allow the use of practical antennas										
2.	AM is used for broadcasting because :-										
	(1) It is more noise immune than other modulation systems.										
	(2) It requires less transmitting power compared with other systems.										
	(3*) Its use avoids transmitter complexity.										
	(4) No other modulation system can provide the necessary bandwidth faithful transmission.										
3	Frequencies in the LIHE range normally propagate by means of the										
5.	(1) Ground waves (2) Sky waves (3) Surface waves (4*) Space waves										
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4	Digital signals (i) do not provide a continuous set of values (ii) represent values as discrete steps										
	(iii) can utilize only binary system, and (iv) can utilize decimal as well as binary system which of										
	the following options is True :										
	(1) Only (i) and (ii) (2) Only (ii) and (iii)										
	$(3^{*})$ (i), (ii) and (iii), but not (iv) (4) All the above (i) to (iv)										
5.	An 'antenna' is :-										
	(1) Inductive (2) Capacitive										
	(3*) Resistive at its resonance frequency (4) None of the above										
6.	Long distance short-wave radio broad-casting uses:-										
	(1) Ground wave (2*) Ionospheric wave(3) Direct wave (4) Space wave										
7.	For television broadcasting, the frequency employed is normally :-										
	(1*) 30 - 300 MHz (2) 30 - 300 GHz (3) 30 - 300 KHz (4) 30 - 300 Hz										
8.	The sound waves after being converted into electrical waves are not transmitted as such because										
	(1) they travel with the speed of sound.										
	(2) the frequency is not constant.										
	(3) they are heavily absorbed by the atmosphere										
	(4*) the height of antenna has to be increased several times.										

9. The process of superimposing signal frequency (i.e. audio wave) on the carrier wave is known as

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	(1) Transmission	(2) Reception	(3*) Modulation	(4) Detection							
10.	In an amplitude modulated wave for audio–frequency of 500 cycles/second, the appropriate carrier frequency will be :-										
	(1) 50 cycles/sec.	(2) 100 cycles/sec.	(3) 500 cycles/se	(4*) 50,000 cycles/sec.							
11.	Which of the following is not transducer ?										
	(1) Loudspeaker	(2*) Amplifier	(3) Microphone	(4) All of these							
12.	The T.V. transmission tower in Delhi has a height of 240 m. The distance up to which the broadcast can be received, (taking the radius of earth to be $6.4 \times 10^6$ m) is :-										
	(1) 100 km	(2) 60 km	(3*) 55 km	(4) 50 km							
13.	Radio waves of const	ant amplitude can be g	enerated with :-								
	(1) Filter	(2) Rectifier	(3) FET	(4*) Oscillator							
14.	The maximum distan	ce upto which TV tran	smission from a TV to	ower of height h can be received							
	is proportional to :-			[AIIMS-2003]							
	$(1^*) h^{1/2}$	(2) h	$(3) h^{3/2}$	(4) $h^2$							
15.	In short wave commute the ionospheric layer	unication waves which having electron densit	of the following frequency $10^{11}$ per m <sup>3</sup> ?	nencies will be reflected back by							
	(1*) 2 MHz	(2) 10 MHz	(3) 12 MH	(4) 18 MHz							
16.	For skywave propagation for skywave propagation for the second se	ation of a 10 MHz sig	gnal, what should be the	he minimum electron density in							
	$(1^*) \sim 1.2 \times 10^{12} \text{ m}^{-3}$	$(2) \sim 10^6 \text{ m}^{-3}$	$(3) \sim 10^{14} \text{ m}^{-13}$	$(4) \sim 10^{22} \text{ m}^{-3}$							
17.	Give below is a circuit diagram of an AM demodulator. [AIIMS-2006]										
			•								
		AM Signal	$C = {}^{\downarrow}_{R} $ $\mathcal{O}$ utp	ut							
	For good demodulation	on of AM signal of car	rier frequency f, the va	lue of RC should be :-							
	(1) RC = $\frac{1}{f}$	$(2) \mathbf{RC} < \frac{1}{\mathbf{f}}$	(3) $\operatorname{RC} \ge \frac{1}{f}$	(4*) RC >> $\frac{1}{f}$							
18.	Audio signal cannot l (1) the signal has more	be transmitted because re noise.	:-								

(2) the signal connot be amplified for distance communication.

	<ul><li>(3) the transmitting antenna length is very small to design.</li><li>(4*) the transmitting antenna length is very large and impracticable.</li></ul>													
19.	In frequency modulation :- (1) the amplitude of career wave varies according to the frequency of message signal. (2*) the frequency of career wave varies according to the voltage of message signal. (3) the frequency of career wave varies according to the frequency of message signal. (4) the amplitude of career wave varies according to the voltage of message signal.													
20.	Range of frequencies allotted for commercial FM radio broadcast is :- (1*) 88 to 108 MHz (2) 88 to 108 kHz (3) 8 to 88 MHz (4) 88 to 108 GHz													
21.	Sound produced by a tuning fork is a sort of :- (1) digital signal (2*) analog signal (3) both (1) and (2) (4) neither (1) or (2)													
22.	The space waves whi (1) MF	ch are affected serious (2) LF	ly by atmospheric cond (3) VHF	ditions are :- (4*) UHF										
23.	An antenna is of heig (1) 800 km	ht 500 m. What will be (2) 100 km	e its ran <mark>ge (Radius of</mark> th (3) 50 km	he earth is 6400 km) ? (4*) 80 km										
24.	In amplitude modula out the modulating in (1) 7	ted waves, maximum dex. (2) 3	amplitude is 30 mV a (3*) 0.7	nd minimum is 5 mV, then find [AIIMS 2010] (4) 0.45										
25.	Voltage of modulating wave of 5 V with 10 MHz frequency, it was superimposed on carrier wave of frequency 20 MHz & 20 V then the modulation index :- (1*) 0.25(2) 1.25(3) 2.43(4) 64.0													
26.	Find the area covered (1) 320 $\pi$ km <sup>2</sup>	by a transmitting ante (2) 1440 km <sup>2</sup>	nna of height 50 m : $(3^*) 640 \pi \text{ km}^2$	[AIIMS 2011] (4) 120 $\pi$ km <sup>2</sup>										
27.	For satellite commun (1*) Space wave	ication which wave is ( (2) Sky wave	used:- (3) Ground wave	(4) Microwave										
28.	If modulation index i of side band :- (1) 0.5	<ul><li>(2) 1</li></ul>	rrier wave is 2 units, the (3*) 0.25	hen what will be the total power [AIIMS 2013] (4) 0.75										
29.	Long distance comm (1) Space wave comm (3) Ground wave com	unication between two nunication nmunication	points on earth is achi (2*) Sky wave comm (4) Line of sight trans	eved by [AIIMS 2013] nunication smission										
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**30.** In sky wave communication which of the frequency will be reflected back by the ionospheric layer<br/>having electron density  $4 \times 10^6/\text{m}^3$ ?[AIIMS 2014](1)  $19 \times 10^3$  Hz(2\*)  $9 \times 10^3$  Hz(3)  $31 \times 10^3$  Hz(4)  $20 \times 10^3$  Hz

**31.** In a sky wave propagation the maximum frequency transmitted is 27 MHz, then the ion density (per m<sup>3</sup>) is [AIIMS 2015] (1\*)  $3 \times 10^{6}$  (2)  $9 \times 10^{6}$  (3)  $3 \times 10^{12}$  (4)  $9 \times 10^{12}$ 

32. What should be the minimum height of the tower so that signals can be sent upto distance R? (Re = Radius of earth) [AIIMS 2015]

(1\*) 
$$\frac{R^2}{2R_e}$$
 (2)  $\frac{R_e^2}{2R}$  (3)  $\sqrt{R_e R}$  (4)

33. In amplitude modulation index is 0. 6 and  $V_{max} = 5V$  then the value of  $V_{min}$  will be :-

[AIIMS 2016]

 $\frac{R_e R}{2}$ 

(1) 1.5 V	(2*) 1.25 V	(3) 1.3 V	(4) 2.5 V
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E)	KER	CIS	E-I														ANS	SWE	RK	EY
Que.	1	2	3	4	5	6	7	8	9	10	11	12	.13	14	15	16	17	18	19	20
Ans.	1	3	4	3	3	2	1	4	3	4	2	3	4	1	1	1	4	4	2	1
Que.	21	22	23	24	25	26	27	.28	29	30	31	32	33					Sal		Datesta
Ans.	2	4	4	3	1	3	1	3	2	2	4	1	2							a share