University of Mumbai
Examination 2020 under cluster 5 (APSIT)

Program: Computer Engineering
Curriculum Scheme: Rev2016
Examination: Second Year   Semester III
Course Code: CSC304   and Course Name: Electronic Circuits and Communication Fundamentals
Time: 1 hour   Max. Marks: 50

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For the students:- All the Questions are compulsory and carry equal marks .

Q1.	Indicate the false statement. The need for modulation can best be exemplified by the following.
Option A:	Antenna lengths will be approximately $\lambda/4$ long
Option B:	An antenna in the standard broadcast AM band is 16,000 ft
Option C:	All sound is concentrated from 20 Hz to 20 kHz
Option D:	A message is composed of unpredictable variations in both amplitude and frequency
Q2.	What is the maximum efficiency of a class A circuit with a direct or series-fed load connection?
Option A:	90%
Option B:	78.5%
Option C:	50%
Option D:	25%
Q3.	In a typical op-amp, which stage is supposed to be a dual-input unbalanced output or single-ended output differential amplifier?
Option A:	Input stage
Option B:	Intermediate stage
Option C:	Output stage
Option D:	Level shifting stage
Q4.	Amplitude modulation is the process of
Option A:	superimposing a low frequency on a high frequency
Option B:	superimposing a high frequency on a low frequency
Option C:	carrier interruption
Option D:	frequency shift and phase shift
Q5.	What is the feedback factor of voltage follower circuit?
Option A:	zero
Option B:	unity
Option C:	infinity
Option D:	Between zero and one
Q6.	The capacity of a communication channel with a bandwidth of 4 kHz and 15 SNR is
Option A:	20 kbps
Option B:	16 kbps
Option C:	10 kbps

Option D:	8 kbps
Q7.	For non-inverting adder, which theorem is applicable to determine the expression for output voltage?
Option A:	Thevenin's
Option B:	Norton's
Option C:	Miller's
Option D:	Superposition
Q8.	Calculate the minimum sampling rate to avoid aliasing when a continuous time signal is given by $x(t) = 5 \cos 400\pi t$
Option A	100 Hz
Option B:	200 Hz
Option C:	400 Hz
Option D:	250 Hz
Q9.	What is PSRR value of an ideal opamp?
Option A:	zero
Option B:	unity
Option C:	infinite
Option D:	unpredictable
Q10.	For a transistor to operate in an active region what is the essential possible condition of biasing?
Option A:	Collector-base and emitter-base junctions are reverse biased.
Option B:	Collector-base junction is reverse biased and the emitter-base is forward biased
Option C:	Collector-base and emitter-base junctions are forward biased
Option D:	Collector-base junction is forward biased and emitter-base is reverse biased
Q11.	If the carrier of a 100 percent modulated AM wave is suppressed, the percentage power saving will be
Option A:	50
Option B:	150
Option C:	100
Option D:	66.66
Q12.	Which type of power amplifier is biased for operation at less than 180° of the cycle?
Option A:	Class A
Option B:	Class B or AB
Option C:	Class C
Option D:	Class D
Q13.	In delta modulation, the slope overload distortion can be reduced by
Option A:	decreasing the step size
Option B:	decreasing the granular noise

Option C:	decreasing the sampling noise
Option D:	increasing the step size
Q14.	One of the following cannot be used to remove the unwanted sideband in SSB. This is the
Option A:	filter system
Option B:	phase-shift method
Option C:	third method
Option D:	balanced modulator
Q15.	Indicate which of the following system is digital.
Option A:	Pulse-position modulation
Option B:	Pulse-code modulation
Option C:	Pulse-width modulation
Option D:	Pulse-frequency modulation
Q16.	The signal to quantization noise ratio in an n-bit PCM system
Option A:	depends upon the sampling frequency employed
Option B:	is independent of the value of 'n'
Option C:	increasing with increasing value of 'n'
Option D:	decreases with the increasing value of 'n'
Q17.	What is the required bandwidth according to the Carson's rule, when a 100 MHz carrier is modulated with a sinusoidal signal at 1KHz, the maximum frequency deviation being 50 KHz.
Option A:	1 kHz
Option B:	50 kHz
Option C:	102 kHz
Option D:	150kHz
Q18.	A transistor has a ßdc of 250 and a base current, IB, of 20µA. The collector current, IC, equals:
Option A:	500 µA
Option B:	5 mA
Option C:	50 mA
Option D:	5 A
Q19.	Voltage-divider bias provides:
Option A:	an unstable Q point
Option B:	a stable Q point
Option C:	a Q point that easily varies with changes in the transistor's current gain
Option D:	a Q point that is stable and easily varies with changes in the transistor's current gain
Q20.	FDM uses_____to prevent signals from overlapping

Option A:	Physical hardware devices
Option B:	Carrier frequencies
Option C:	Guard bands
Option D:	demultiplexers
Q21.	Which concept states that if one input terminal of an op-amp is at zero potential, then the other one also will be at zero potential?
Option A:	Virtual short
Option B:	Virtual ground
Option C:	Zero input current
Option D:	CMRR
Q22.	In synchronous TDM, for n signal sources of same data rate, each frame contains _____ slots
Option A:	n
Option B:	n+1
Option C:	n-1
Option D:	0 to n
Q23.	For which value of p is the binary entropy function H(p) maximized?
Option A:	0
Option B:	0.5
Option C:	1
Option D:	1.2
Q24.	Zero crossing detector circuit plays a crucial role in conversion of input sine wave into a perfect _____at its output.
Option A:	triangular wave
Option B:	square wave
Option C:	saw-tooth wave
Option D:	pulse wave
Q25.	In a C-E configuration, an emitter resistor is used for:
Option A:	stabilization
Option B:	ac signal bypass
Option C:	collector bias
Option D:	higher gain