Results for sample extra2016 test paper

Your answers are marked like this:

✔ **A. You got this question right, this is your correct answer.**

x *A. You got this question wrong, this is your incorrect answer.*

✔ *A. You got this question wrong, this is the correct answer.*

✔ **A. You didnt answer this question but this would be the correct answer.**

Subelement E0

1: E0A09
Which insulating material commonly used as a thermal conductor for some types of electronic devices is extremely toxic if broken or crushed and the particles are accidentally inhaled?

A. Mica
B. Zinc oxide
✔ **C. Beryllium Oxide**
D. Uranium Hexafluoride

Subelement E1

2: E1A03
With your transceiver displaying the carrier frequency of phone signals, you hear a station calling CQ on 14.349 MHz USB. Is it legal to return the call using upper sideband on the same frequency?

A. Yes, because you were not the station calling CQ
B. Yes, because the displayed frequency is within the 20 meter band
✔ **C. No, the sideband will extend beyond the band edge**
D. No, U.S. stations are not permitted to use phone emissions above 14.340 MHz

3: E1B03
Within what distance must an amateur station protect an FCC monitoring facility from harmful interference?

✔ **A. 1 mile**
B. 3 miles
C. 10 miles

D. 30 miles

4: E1C08

What is the maximum permissible duration of a remotely controlled station's transmissions if its control link malfunctions?

A. 30 seconds

✔ **B. 3 minutes**

C. 5 minutes

D. 10 minutes

5: E1D03

What is a telecommand station in the amateur satellite service?

A. An amateur station located on the Earth's surface for communication with other Earth stations by means of Earth satellites

✔ **B. An amateur station that transmits communications to initiate, modify or terminate functions of a space station**

C. An amateur station located more than 50 km above the Earth's surface

D. An amateur station that transmits telemetry consisting of measurements of upper atmosphere

6: E1E08

To which of the following examinees may a VE not administer an examination?

A. Employees of the VE

B. Friends of the VE

✔ **C. Relatives of the VE as listed in the FCC rules**

D. All of these choices are correct

7: E1F11

Which of the following best describes one of the standards that must be met by an external RF power amplifier if it is to qualify for a grant of FCC certification?

A. It must produce full legal output when driven by not more than 5 watts of mean RF input power

B. It must be capable of external RF switching between its input and output networks

C. It must exhibit a gain of 0 dB or less over its full output range

✔ **D. It must satisfy the FCC's spurious emission standards when operated at the lesser of 1500 watts or its full output power**

Subelement E2

8: E2A06

On what band would a satellite receive signals if it were operating in mode U/V?

✔ **A. 435 MHz - 438 MHz**

xB. 144 MHz - 146 MHz

C. 50.0 MHz - 50.2 MHz

D. 29.5 MHz - 29.7 MHz

9: E2B18

On which of the following frequencies is one likely to find FM ATV transmissions?

A. 14.230 MHz
B. 29.6 MHz
C. 52.525 MHz
✔ **D. 1255 MHz**

10: E2C05

What is the function of a DX QSL Manager?

A. To allocate frequencies for DXpeditions
✔ **B. To handle the receiving and sending of confirmation cards for a DX station**
C. To run a net to allow many stations to contact a rare DX station
D. To relay calls to and from a DX station

11: E2D14

What is one advantage of using JT65 coding?

A. Uses only a 65 Hz bandwidth
✔ **B. The ability to decode signals which have a very low signal to noise ratio**
C. Easily copied by ear if necessary
D. Permits fast-scan TV transmissions over narrow bandwidth

12: E2E13

Which of the following is a possible reason that attempts to initiate contact with a digital station on a clear frequency are unsuccessful?

A. Your transmit frequency is incorrect
B. The protocol version you are using is not the supported by the digital station
xC. Another station you are unable to hear is using the frequency
✔ **D. All of these choices are correct**

Subelement E3

13: E3A11

What is a typical range for tropospheric propagation of microwave signals?

A. 10 miles to 50 miles
✔ **B. 100 miles to 300 miles**
C. 1200 miles
xD. 2500 miles

14: E3B09

At what time of year is Sporadic E propagation most likely to occur?

✔ **A. Around the solstices, especially the summer solstice**
B. Around the solstices, especially the winter solstice
C. Around the equinoxes, especially the spring equinox
D. Around the equinoxes, especially the fall equinox

15: E3C01

What does the term ray tracing describe in regard to radio communications?

A. The process in which an electronic display presents a pattern

✔ **B. Modeling a radio wave's path through the ionosphere**

C. Determining the radiation pattern from an array of antennas

D. Evaluating high voltage sources for X-Rays

Subelement E4

16: E4A01

Which of the following parameter determines the bandwidth of a digital or computer-based oscilloscope?

A. Input capacitance

B. Input impedance

✔ **C. Sampling rate**

D. Sample resolution

17: E4B01

Which of the following factors most affects the accuracy of a frequency counter?

A. Input attenuator accuracy

✔ **B. Time base accuracy**

C. Decade divider accuracy

D. Temperature coefficient of the logic

18: E4C07

What does the MDS of a receiver represent?

A. The meter display sensitivity

✔ **B. The minimum discernible signal**

C. The multiplex distortion stability

D. The maximum detectable spectrum

19: E4D07

Which describes the most significant effect of an off-frequency signal when it is causing cross-modulation interference to a desired signal?

A. A large increase in background noise

B. A reduction in apparent signal strength

C. The desired signal can no longer be heard

✔ **D. The off-frequency unwanted signal is heard in addition to the desired signal**

20: E4E16

What current flows equally on all conductors of an unshielded multi-conductor cable?

A. Differential-mode current

✔ **B. Common-mode current**

C. Reactive current only

D. Return current

Subelement E5

21: E5A08

What is the phase relationship between the current through and the voltage across a series resonant circuit at resonance?

A. The voltage leads the current by 90 degrees
B. The current leads the voltage by 90 degrees
✔ **C. The voltage and current are in phase**
D. The voltage and current are 180 degrees out of phase

22: E5B09

What is the relationship between the current through a capacitor and the voltage across a capacitor?

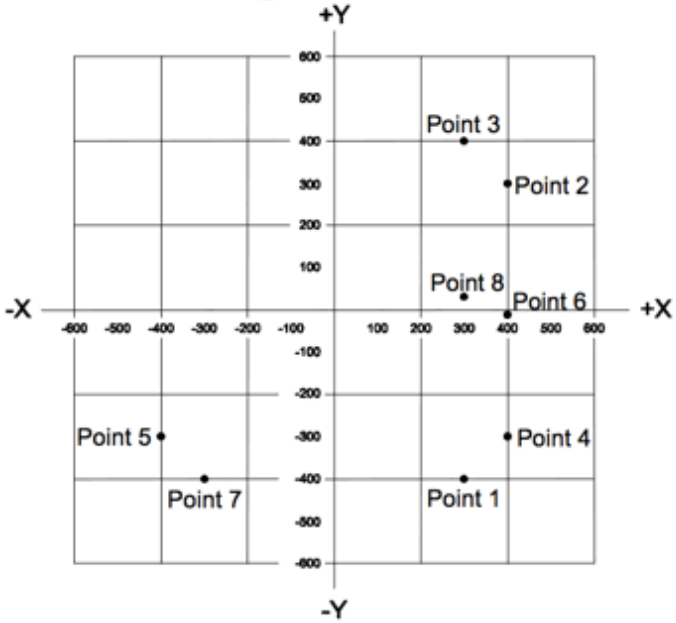
A. Voltage and current are in phase
B. Voltage and current are 180 degrees out of phase
C. Voltage leads current by 90 degrees
✔ **D. Current leads voltage by 90 degrees**

23: E5C17

Which point on Figure E5-2 best represents the impedance of a series circuit consisting of a 300 ohm resistor, a 0.64-microhenry inductor and an 85-picofarad capacitor at 24.900 MHz?

A. Point 1
B. Point 3
C. Point 5
✔ **D. Point 8**

Figure E5-2



24: E5D16

What is the power factor of an R-L circuit having a 30 degree phase angle between the voltage and the current?

A. 1.73
B. 0.5
✔ **C. 0.866**
D. 0.577

Subelement E6

25: E6A16

What are the majority charge carriers in N-type semiconductor material?

A. Holes
✔ **B. Free electrons**
C. Free protons
D. Free neutrons

26: E6B08

Which of the following describes a type of semiconductor diode?

✔ **A. Metal-semiconductor junction**
B. Electrolytic rectifier
C. CMOS-field effect
D. Thermionic emission diode

27: E6C13

Which of the following is an advantage of BiCMOS logic?

A. Its simplicity results in much less expensive devices than standard CMOS
B. It is totally immune to electrostatic damage
✔ **C. It has the high input impedance of CMOS and the low output impedance of bipolar transistors**
D. All of these choices are correct

28: E6D11

How many turns will be required to produce a 1-mH inductor using a core that has an inductance index (A L) value of 523 millihenrys/1000 turns?

A. 2 turns
B. 4 turns
✔ **C. 43 turns**
D. 229 turns

29: E6E05

Which of the following noise figure values is typical of a low-noise UHF preamplifier?

✔ **A. 2 dB**
B. -10 dB
C. 44 dBm
D. -20 dBm

30: E6F03

What is the most common configuration of an optoisolator or optocoupler?

A. A lens and a photomultiplier
B. A frequency modulated helium-neon laser
C. An amplitude modulated helium-neon laser
✔ **D. An LED and a phototransistor**

Subelement E7

31: E7A02

What is the function of a decade counter digital IC?

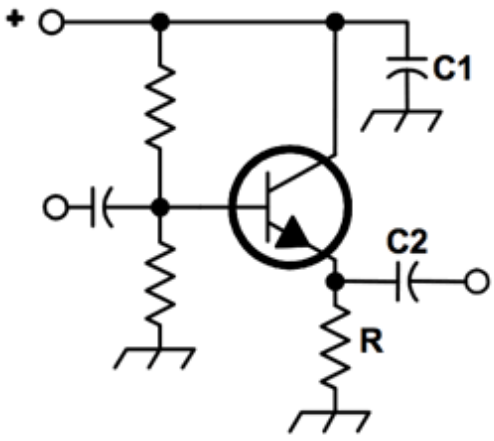
✔ **A. It produces one output pulse for every ten input pulses**
B. It decodes a decimal number for display on a seven segment LED display
C. It produces ten output pulses for every input pulse
D. It adds two decimal numbers together

32: E7B13

In Figure E7-2, what is the purpose of R?

✔ **A. Emitter load**
B. Fixed bias
C. Collector load
D. Voltage regulation

Figure E7-2



33: E7C06

What are the distinguishing features of an elliptical filter?

A. Gradual passband rolloff with minimal stop band ripple
B. Extremely flat response over its pass band with gradually rounded stop band corners
✔ **C. Extremely sharp cutoff with one or more notches in the stop band**
D. Gradual passband rolloff with extreme stop band ripple

34: E7D05

Which of the following types of linear voltage regulator places a constant load on the unregulated voltage source?

A. A constant current source
B. A series regulator
C. A shunt current source
✔ **D. A shunt regulator**

35: E7E05
What circuit is added to an FM transmitter to boost the higher audio frequencies?
A. A de-emphasis network
B. A heterodyne suppressor
C. An audio prescaler
✔ **D. A pre-emphasis network**

36: E7F06
What is the minimum number of bits required for an analog-to-digital converter to sample a signal with a range of 1 volt at a resolution of 1 millivolt?
A. 4 bits
B. 6 bits
xC. 8 bits
✔ **D. 10 bits**

37: E7G08
How does the gain of an ideal operational amplifier vary with frequency?
A. It increases linearly with increasing frequency
B. It decreases linearly with increasing frequency
C. It decreases logarithmically with increasing frequency
✔ **D. It does not vary with frequency**

38: E7H05
How is positive feedback supplied in a Pierce oscillator?
A. Through a tapped coil
B. Through link coupling
C. Through a neutralizing capacitor
✔ **D. Through a quartz crystal**

Subelement E8

39: E8A04
What is "dither" with respect to analog to digital converters?
A. An abnormal condition where the converter cannot settle on a value to represent the signal
✔ **B. A small amount of noise added to the input signal to allow more precise representation of a signal over time**
C. An error caused by irregular quantization step size
xD. A method of decimation by randomly skipping samples

40: E8B04

What is the modulation index of an FM-phone signal having a maximum carrier deviation of plus or minus 6 kHz when modulated with a 2 kHz modulating frequency?

A. 6000

✔ **B. 3**

C. 2000

D. 1/3

41: E8C07

What is the necessary bandwidth of a 4800-Hz frequency shift, 9600-baud ASCII FM transmission?

✔ **A. 15.36 kHz**

B. 9.6 kHz

C. 4.8 kHz

D. 5.76 kHz

42: E8D09

What is considered a good minimum IMD level for an idling PSK signal?

A. +10 dB

B. +15 dB

C. -20 dB

✔ **D. -30 dB**

Subelement E9

43: E9A05

What is included in the total resistance of an antenna system?

A. Radiation resistance plus space impedance

B. Radiation resistance plus transmission resistance

C. Transmission-line resistance plus radiation resistance

✔ **D. Radiation resistance plus ohmic resistance**

44: E9B10

What is the principle of a Method of Moments analysis?

✔ **A. A wire is modeled as a series of segments, each having a uniform value of current**

B. A wire is modeled as a single sine-wave current generator

C. A wire is modeled as a series of points, each having a distinct location in space

D. A wire is modeled as a series of segments, each having a distinct value of voltage across it

45: E9C12

Which of the following describes an extended double Zepp antenna?

A. A wideband vertical antenna constructed from precisely tapered aluminum tubing

B. A portable antenna erected using two push support poles

✔ **C. A center fed 1.25 wavelength antenna (two 5/8 wave elements in phase)**
D. An end fed folded dipole antenna

46: E9D10
What happens to feed point impedance at the base of a fixed length HF mobile antenna as the frequency of operation is lowered?
A. The radiation resistance decreases and the capacitive reactance decreases
✔ **B. The radiation resistance decreases and the capacitive reactance increases**
C. The radiation resistance increases and the capacitive reactance decreases
D. The radiation resistance increases and the capacitive reactance increases

47: E9E02
What is the name of an antenna matching system that matches an unbalanced feed line to an antenna by feeding the driven element both at the center of the element and at a fraction of a wavelength to one side of center?
✔ **A. The gamma match**
B. The delta match
C. The epsilon match
D. The stub match

48: E9F16
Which of the following is a significant difference between foam dielectric coaxial cable and solid dielectric cable, assuming all other parameters are the same?
A. Foam dielectric has lower safe operating voltage limits
B. Foam dielectric has lower loss per unit of length
x C. Foam dielectric has higher velocity factor
✔ **D. All of these choices are correct**

49: E9G04
What are the two families of circles and arcs that make up a Smith chart?
A. Resistance and voltage
B. Reactance and voltage
✔ **C. Resistance and reactance**
D. Voltage and impedance

50: E9H02
Which is generally true for low band (160 meter and 80 meter) receiving antennas?
✔ **A. Atmospheric noise is so high that gain over a dipole is not important**
B. They must be erected at least 1/2 wavelength above the ground to attain good directivity
C. Low loss coax transmission line is essential for good performance
D. All of these choices are correct

Results:
You scored 44 correct answers and 6 incorrect answers from a total of 50.

You would have passed the exam! Congratulations!

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