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: E1A14
What is the maximum bandwidth for a data emission on 60 meters?

A. 60 Hz
B. 170 Hz
C. 1.5 kHz
✔ **D. 2.8 kHz**

3: E1B04
What must be done before placing an amateur station within an officially designated wilderness area or wildlife preserve, or an area listed in the National Register of Historical Places?

A. A proposal must be submitted to the National Park Service
B. A letter of intent must be filed with the National Audubon Society
✔ **C. An Environmental Assessment must be submitted to the FCC**
D. A form FSD-15 must be submitted to the Department of the Interior

4: E1C01
What is a remotely controlled station?
A. A station operated away from its regular home location
B. A station controlled by someone other than the licensee
C. A station operating under automatic control
✔ **D. A station controlled indirectly through a control link**

5: E1D04
What is an Earth station in the amateur satellite service?
✔ **A. An amateur station within 50 km of the Earth's surface intended for communications with amateur stations by means of objects in space**
B. An amateur station that is not able to communicate using amateur satellites
C. An amateur station that transmits telemetry consisting of measurement of upper atmosphere
D. Any amateur station on the surface of the Earth

6: E1E12
What must the VE team do with the application form if the examinee does not pass the exam?
✔ **A. Return the application document to the examinee**
B. Maintain the application form with the VEC's records
C. Send the application form to the FCC and inform the FCC of the grade
D. Destroy the application form

7: E1F08
Which of the following types of amateur station communications are prohibited?
✔ **A. Communications transmitted for hire or material compensation, except as otherwise provided in the rules**
B. Communications that have a political content, except as allowed by the Fairness Doctrine
C. Communications that have a religious content
D. Communications in a language other than English

Subelement E2

8: E2A02
What is the direction of a descending pass for an amateur satellite?
✔ **A. From north to south**
B. From west to east
C. From east to west
D. From south to north

9: E2B10
Which of the following is an acceptable bandwidth for Digital Radio Mondiale (DRM) based voice or SSTV digital transmissions made on the HF amateur bands?
✔ **A. 3 KHz**
B. 10 KHz

C. 15 KHz
D. 20 KHz

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: E2D08
What type of packet frame is used to transmit APRS beacon data?
✔ **A. Unnumbered Information**
B. Disconnect
C. Acknowledgement
D. Connect

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
C. Another station you are unable to hear is using the frequency
✔ **D. All of these choices are correct**

Subelement E3

13: E3A15
What is an electromagnetic wave?
A. A wave of alternating current, in the core of an electromagnet
B. A wave consisting of two electric fields at parallel right angles to each other
✔ **C. A wave consisting of an electric field and a magnetic field oscillating at right angles to each other**
D. A wave consisting of two magnetic fields at right angles to each other

14: E3B13
Why is chordal hop propagation desirable?
✔ **A. The signal experiences less loss along the path compared to normal skip propagation**
B. The MUF for chordal hop propagation is much lower than for normal skip propagation
C. Atmospheric noise is lower in the direction of chordal hop propagation
D. Signals travel faster along ionospheric chords

15: E3C14
Why does the radio-path horizon distance exceed the geometric horizon?
A. E-region skip
B. D-region skip

C. Downward bending due to aurora refraction
✔ **D. Downward bending due to density variations in the atmosphere**

Subelement E4

16: E4A08
Which of the following instrument would be best for measuring the SWR of a beam antenna?
A. A spectrum analyzer
B. A Q meter
C. An ohmmeter
✔ **D. An antenna analyzer**

17: E4B03
If a frequency counter with a specified accuracy of +/- 1.0 ppm reads 146,520,000 Hz, what is the most the actual frequency being measured could differ from the reading?
A. 165.2 Hz
B. 14.652 kHz
✔ **C. 146.52 Hz**
D. 1.4652 MHz

18: E4C09
Which of the following choices is a good reason for selecting a high frequency for the design of the IF in a conventional HF or VHF communications receiver?
A. Fewer components in the receiver
B. Reduced drift
✔ **C. Easier for front-end circuitry to eliminate image responses**
D. Improved receiver noise figure

19: E4D03
How can intermodulation interference between two repeaters occur?
A. When the repeaters are in close proximity and the signals cause feedback in the final amplifier of one or both transmitters
✔ **B. When the repeaters are in close proximity and the signals mix in the final amplifier of one or both transmitters**
C. When the signals from the transmitters are reflected out of phase from airplanes passing overhead
D. When the signals from the transmitters are reflected in phase from airplanes passing overhead

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: E5A03

What is the magnitude of the impedance of a series RLC circuit at resonance?

A. High, as compared to the circuit resistance
B. Approximately equal to capacitive reactance
C. Approximately equal to inductive reactance
✔ **D. Approximately equal to circuit resistance**

22: E5B11

What is the phase angle between the voltage across and the current through a series RLC circuit if XC is 25 ohms, R is 100 ohms, and XL is 50 ohms?

A. 14 degrees with the voltage lagging the current
✔ **B. 14 degrees with the voltage leading the current**
C. 76 degrees with the voltage lagging the current
D. 76 degrees with the voltage leading the current

23: E5C10

When using rectangular coordinates to graph the impedance of a circuit, what does the vertical axis represent?

A. Resistive component
✔ **B. Reactive component**
C. The sum of the reactive and resistive components
D. The difference between the resistive and reactive components

24: E5D18

How many watts are consumed in a circuit having a power factor of 0.71 if the apparent power is 500VA?

A. 704 W
✔ **B. 355 W**
C. 252 W
D. 1.42 mW

Subelement E6

25: E6A01

In what application is gallium arsenide used as a semiconductor material in preference to germanium or silicon?

A. In high-current rectifier circuits
B. In high-power audio circuits
✔ **C. In microwave circuits**
D. In very low frequency RF circuits

26: E6B03
What special type of diode is capable of both amplification and oscillation?
A. Point contact
B. Zener
✔ **C. Tunnel**
D. Junction

27: E6C05
What is an advantage of CMOS logic devices over TTL devices?
A. Differential output capability
B. Lower distortion
C. Immune to damage from static discharge
✔ **D. Lower power consumption**

28: E6D09
What devices are commonly used as VHF and UHF parasitic suppressors at the input and output terminals of a transistor HF amplifier?
A. Electrolytic capacitors
B. Butterworth filters
✔ **C. Ferrite beads**
D. Steel-core toroids

29: E6E12
Why are high-power RF amplifier ICs and transistors sometimes mounted in ceramic packages?
A. High-voltage insulating ability
✔ **B. Better dissipation of heat**
C. Enhanced sensitivity to light
D. To provide a low-pass frequency response

30: E6F08
Why are optoisolators often used in conjunction with solid state circuits when switching 120VAC?
A. Optoisolators provide a low impedance link between a control circuit and a power circuit
B. Optoisolators provide impedance matching between the control circuit and power circuit
✔ **C. Optoisolators provide a very high degree of electrical isolation between a control circuit and the circuit being switched**
D. Optoisolators eliminate the effects of reflected light in the control circuit

Subelement E7

31: E7A04
How many flip-flops are required to divide a signal frequency by 4?
A. 1
✔ **B. 2**

C. 4
D. 8

32: E7B06
Which of the following amplifier types reduces or eliminates even order harmonics?
A. Push-push
✔ **B. Push-pull**
C. Class C
D. Class AB

33: E7C15
What is a crystal lattice filter?
A. A power supply filter made with interlaced quartz crystals
B. An audio filter made with four quartz crystals that resonate at 1kHz intervals
C. A filter with wide bandwidth and shallow skirts made using quartz crystals
✔ **D. A filter with narrow bandwidth and steep skirts made using quartz crystals**

34: E7D04
Which of the following types of linear voltage regulator usually make the most efficient use of the primary power source?
A. A series current source
✔ **B. A series regulator**
C. A shunt regulator
D. A shunt current source

35: E7E06
Why is de-emphasis commonly used in FM communications receivers?
✔ **A. For compatibility with transmitters using phase modulation**
B. To reduce impulse noise reception
C. For higher efficiency
D. To remove third-order distortion products

36: E7F09
Why is an anti-aliasing digital filter required in a digital decimator?
✔ **A. It removes high-frequency signal components which would otherwise be reproduced as lower frequency components**
B. It peaks the response of the decimator, improving bandwidth
C. It removes low frequency signal components to eliminate the need for DC restoration
D. It notches out the sampling frequency to avoid sampling errors

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: E7H09

What type of frequency synthesizer circuit uses a phase accumulator, lookup table, digital to analog converter, and a low-pass anti-alias filter?

✔ **A. A direct digital synthesizer**

B. A hybrid synthesizer
C. A phase locked loop synthesizer
D. A diode-switching matrix synthesizer

Subelement E8

39: E8A03

What type of wave does a Fourier analysis show to be made up of sine waves of a given fundamental frequency plus all of its harmonics?

✔ **A. A sawtooth wave**

xB. A square wave

C. A sine wave
D. A cosine wave

40: E8B05

What is the deviation ratio of an FM-phone signal having a maximum frequency swing of plus-or-minus 5 kHz when the maximum modulation frequency is 3 kHz?

A. 60
B. 0.167
C. 0.6

✔ **D. 1.67**

41: E8C11

What is the relationship between symbol rate and baud?

✔ **A. They are the same**

B. Baud is twice the symbol rate
C. Symbol rate is only used for packet-based modes
D. Baud is only used for RTTY

42: E8D06

Which of the following indicates likely overmodulation of an AFSK signal such as PSK or MFSK?

A. High reflected power

✔ **B. Strong ALC action**

C. Harmonics on higher bands
D. Rapid signal fading

Subelement E9

43: E9A18

What term describes station output, taking into account all gains and losses?

A. Power factor

B. Half-power bandwidth
✔ **C. Effective radiated power**
D. Apparent power

44: E9B12
What is the far field of an antenna?
A. The region of the ionosphere where radiated power is not refracted
B. The region where radiated power dissipates over a specified time period
xC. The region where radiated field strengths are obstructed by objects of reflection
✔ **D. The region where the shape of the antenna pattern is independent of distance**

45: E9C10
Which of the following describes a Zepp antenna?
A. A dipole constructed from zip cord
✔ **B. An end fed dipole antenna**
C. An omni-directional antenna commonly used for satellite communications
D. A vertical array capable of quickly changing the direction of maximum radiation by changing phasing lines

46: E9D09
What is the function of a loading coil used as part of an HF mobile antenna?
A. To increase the SWR bandwidth
B. To lower the losses
C. To lower the Q
✔ **D. To cancel capacitive reactance**

47: E9E05
How must the driven element in a 3-element Yagi be tuned to use a hairpin matching system?
✔ **A. The driven element reactance must be capacitive**
B. The driven element reactance must be inductive
C. The driven element resonance must be lower than the operating frequency
D. The driven element radiation resistance must be higher than the characteristic impedance of the transmission line

48: E9F13
What impedance does a 1/4 wavelength transmission line present to a generator when the line is shorted at the far end?
✔ **A. Very high impedance**
B. Very low impedance
C. The same as the characteristic impedance of the transmission line
D. The same as the generator output impedance

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 48 correct answers and 2 incorrect answers from a total of 50.

You would have passed the exam! Congratulations!

e)

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