INDUSTRY CANADA
BASIC QUALIFICATION QUESTION BANK

INDEX

VE2DM HOME PAGE

Ia) REGULATIONS

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6001. The d.c. power input to the anode or collector circuit of the final R.F. stage of a transmitter used by a holder of an Amateur Operator's Certificate with an Advanced Qualification shall not exceed: (1) l000 watts (2) 750 watts (3) 500 watts (4) 250 watts

6002. The licensee of an amateur station may: (1) permit anyone to use his station and take part in communications (2) permit any person to operate the amateur station under the supervision and in the presence of the licensee (3) permit anyone to use his station without restrictions (4) permit anyone to take part in communications only if prior written permission is received from the D.O.C.

6003. The call sign of an Amateur station must be transmitted: (1) at intervals not greater than ten minutes when using Morse code (2) at intervals not greater than three minutes when using voice communications (3) at the beginning and end of each exchange of communications or at intervals not greater than 30 minutes during any period in which the station is transmitting (4) when requested to do so by the station being called

6004. For any transmission, the operator of an amateur station shall transmit his call sign at intervals not greater than: (1) ten minutes (2) thirty minutes (3) twenty minutes (4) fifteen minutes

6005. Amateur operators may use their stations to transmit international communications on behalf of a third party only if: (1) prior remuneration has been received (2) such communications have been authorized by the countries concerned (3) the communication is transmitted by secret code (4) the amateur station has received written authorization from D.O.C. to pass third party traffic

6006. An unmodulated carrier may only be transmitted: (1) if the output to the final RF amplifier is kept under 5 W (2) in frequency bands below 30 MHz (3) for brief tests on frequencies below 30 MHz (4) when transmitting SSB

6007. When operating on frequencies below 148 MHz: (1) the bandwidth for any emission must not exceed 3 kHz (2) an overmodulation indicator must be used (3) the frequency stability of the transmitter must be at least 2 parts per million over a period of one hour (4) the frequency stability must be comparable to crystal control

6008. A reliable means to prevent or indicate overmodulation must be employed at an Amateur station, if: (1) radiotelegraphy is used (2) d.c. input power to the anode or collector circuit of the final RF stage is in excess of 250 watts (3) radiotelephony is used (4) persons, other than the licensee, use the station

6009. An Amateur station using radiotelephony emission must: (1) have a reliable method to monitor the transmitter power output (2) display the transmitter output frequency on a frequency counter (3) be able to determine the occupied bandwidth of the transmitter at all times (4) ensure that the transmitter does not exceed 100% modulation and does not exceed a bandwidth of 6 kHz

6010. An amateur station using radiotelephony must install a device for indicating: (1) overmodulation (2) resonance (3) antenna power (4) plate voltage

6011. The operator of a station using radio telegraphy shall: (1) display the transmitter output frequency on a frequency counter (2) have a reliable method to monitor the transmitter power output (3) ensure that the occupied bandwidth does not exceed 6 kHz (4) have an adequate means of determining the transmitter output frequency and of measuring the direct current power to the final stage of the transmitter (over 400 watts)

6012. The maximum power input to the final stage of an amateur transmitter, when the operator is the holder of both the Basic and Advanced Qualification, is: (1) 250 watts (2) 500 watts (3) 1000 watts (4) 1500 watts

6013. The operator of an amateur station shall ensure that: (1) all communications are conducted in secret code (2) communications are exchanged only with commercial stations (3) communications are limited to messages of a technical or personal nature (4) charges are properly applied to all third party communications

6014. The licensee of an amateur station may operate radio controlled models: (1) on all frequencies above 30 MHz (2) if pulse modulation only is used (3) if the control transmitter does not exceed 15 kHz of occupied bandwidth (4) if the frequency used is below 30 MHz

6015. The operator of an amateur station who is the holder of a Basic Qualification shall ensure that the station power when expressed as RF output power measured across an impedance matched load does not exceed: (1) 150 watts peak power (2) 560 watts peak envelope power for transmitters producing any type of single sideband emission (3) 1000 watts carrier power for transmitters producing other than single sideband emissions (4) 2500 watts peak power

6016. A frequency measuring device is required when: (1) operating in any amateur band (2) using SSB mode of emission (3) operating in the 20 metre band (4) when output power exceeds 750 watts

6017. The call sign of an amateur station must be sent: (1) every minute (2) once after initial contact (3) every fifteen minutes (4) at the beginning and end of each exchange of communications with another station, and no longer than 30 minutes while in communications

6018. The maximum percentage of modulation permitted in the use of radiotelephony by an amateur station is: (1) 50 percent (2) 90 percent (3) 75 percent (4) 100 percent

6021. A station licence is valid for a period of: (1) ten years (2) five years (3) three years (4) one year

6051. An amateur station with a maximum input to the final stage of 2 watts: (1) must be licensed in built-up areas only (2) must be licensed at all locations (3) must be licensed in isolated areas only (4) is exempt from licensing

6052. Radio apparatus may be installed, placed in operation, repaired or maintained by the holder of an Amateur Class Certificate with an Advanced qualification on behalf of another person: (1) pending the granting of a station licence if the apparatus covers the amateur frequency bands only (2) pending the granting of a station licence if the apparatus covers the amateur and commercial frequency bands (3) if the station is licensed (4) if the transmitter of a station to be licensed is type approved and crystal controlled

6053. Radiocommunications transmitted by stations other than a broadcasting station may be divulged or used: (1) if it is transmitted by an amateur station (2) during peacetime civil emergencies (3) if transmitted by any station using the international Morse code (4) if transmitted in English or French

6054. An Amateur station may be used to communicate with: (1) armed forces stations during special contests and training exercises (2) any station transmitting in the amateur bands (3) similarly licensed stations (4) any stations which are identified for special contests

6055. An Amateur station may provide a radiocommunication service on behalf of recognized public service agencies: (1) only on the 7 and 14 MHz band (2) using Morse code only (3) when special authorization has been issued by a departmental radio inspector (4) during peace time civil emergencies and exercises

6056. A person operating a Canadian amateur station is forbidden to communicate with amateur stations of another country: (1) without written permission from the Department of Communications (2) when that country has notified the International Telecommunications Union that it objects to such communications (3) until he has properly identified his station (4) unless he is passing third party traffic

6057. International communications on behalf of third parties may be transmitted by an Amateur station only if: (1) radiotelegraphy is used (2) the countries concerned have authorized such communications (3) English or French is used to identify the station at the end of each transmission (4) the countries for which the traffic is intended have registered their consent to such communications with the International Telecommunications Union

6058. The use of cipher codes by Amateur stations is: (1) permitted when communications are transmitted on behalf of a Federal Government Agency (2) permitted when communications are transmitted on behalf of third parties (3) permitted during amateur organized contests (4) not permitted under any circumstances

6059. The transmission of a secret code by the operator of an amateur station: (1) is permitted for contests (2) is permitted for third party traffic (3) must be approved by the Department of Communications (4) is not permitted

6061. Whenever a change of address is made: (1) the station shall not be operated until a change of address card is forwarded to the Department of Communications (2) within the same province, there is no need to notify the Department of Communications (3) the licensee must notify the Department of Communications of any change in his postal address (4) the Department of Communications must be notified within l4 days of operation at the new address

6062. The order of priority of communication is: (1) safety, distress and urgency messages (2) urgency, safety and distress messages (3) distress, safety and urgency messages (4) distress, urgency and safety messages

6063. All Amateur stations, regardless of the mode of transmission used, must be equipped with: (1) a reliable means of determining the operating radio frequency (2) a dummy antenna (3) an overmodulation indicating device (4) a d.c. power meter

6064. Amateur third party communications is: (1) a simultaneous communication between three operators (2) the transmission of commercial or secret messages (3) the transmission of non commercial or personal messages to or on behalf of a third party (4) none of the above

6065. If no station licence has been obtained, an amateur with a valid operator’s certificate may: (1) assist in the installation of the transmitter of that station (2) carry out maintenance or repair of the transmitter of that station (3) operate the radio apparatus when installed (4) not install, place in operation, repair or maintain that station

6066. The Amateur Radio Station licence: (1) must be kept on the person to whom the licence is issued (2) must be posted in a conspicuous place at the station (3) must be kept in a safe place (4) must be put on file

6067. Where interference to the reception of radiocommunications is caused by the operation of an amateur station: (1) the Minister may require that the necessary steps for the prevention of the interference be taken and the amateur station operator shall immediately comply (2) it may continue to operate and the necessary steps can be taken when the amateur operator can afford it (3) it may continue to operate without restrictions (4) the amateur station operator is not obligated to take any action

6068. The maximum percentage of modulation permitted in the use of radiotelephony by an amateur station is: (1) 50 percent (2) 90 percent (3) 75 percent (4) 100 percent

6069. Which of the following statements is false? (1) a person may make trials or tests even though there is a possibility of interfering with other stations (2) no person shall operate an amateur station to communicate a message on behalf of a third party to or from a similar station of another country unless such communications are authorized by an arrangement or agreement with the country concerned (3) no person shall transmit superfluous signals (4) no person shall transmit or make a signal containing profane or obscene words or language

6070. In order of priority, a distress message comes immediately before: (1) a safety message (2) an urgency message (3) a government priority message (4) no other messages

6071. Which of the following statements is false? The operator of an amateur station: (1) shall transmit his assigned call sign at the termination of each exchange of communications with another station (2) may transmit superfluous signals (3) may pass third party traffic during an emergency (4) shall not transmit profane or obscene words or language

6072. The call sign of a Canadian radio amateur station would normally start with the letters: (1) GE, MO, VQ (2) VE, VO or VY (3) AA, KE or WY (4) ER, RO or UY

6073. Which of the following statements is false? The operator of an amateur station: (1) shall ensure that all communications exchanges with other licensed amateurs are conducted in secret code (2) may conduct technical experiments using his station apparatus (3) may not communicate with a similar station of a country that has notified the ITU that it objects to such communications (4) shall not transmit superfluous signals

6074. Which of the following statements is false? No person shall: (1) transmit superfluous signals

(2) make trials or tests except under such circumstances as preclude the possibility of interference with other stations (3) transmit a signal containing profane or obscene words or language (4) pass third party traffic, no matter what the circumstance

6075. It is permissible to interfere with the working of another station if: (1) the other station is not operating according to the regulations (2) your station is directly involved with a distress situation (3) you both wish to contact the same station (4) the other station is interfering with your transmission

6076. If you hear distress traffic and are unable to render assistance, you should: (1) maintain watch until you are certain that assistance will be forthcoming (2) enter the details in the log book and take no further action (3) take no action (4) tell all other stations to cease transmitting

6077. Which of the following statements is false? No person shall: (1) transmit superfluous signals (2) transmit or make a signal containing profane or obscene words or language (3) pass third party traffic no matter what the circumstance (4) make trials or tests

6078. The minimum age for a person to hold a licence in the Amateur Service is: (1) 12 years (2) 16 years (3) 21 years (4) There is no age limit

6079. Upon presentation of all but one of the following certificates, the holder may be issued a radio licence for an amateur station. (Choose the certificate that does not qualify) (1) Radiocommunications Operator’s General Certificate (2) Radio Operator’s Second Class Certificate (3) Radiotelephone Operator’s General Certificate (4) Radiotelephone Operator’s Restricted Certificate

6080. Which of the following certificates, will not allow full privileges being granted to it’s holder for operation on the Amateur frequencies when a licence is issued? (1) Radiocommunication Operator’s General Certificate (Maritime) (2) Radio Operator’s First Class Certificate (3) Amateur Radio Operator’s Advanced Certificate (4) Amateur Digital Radio Operator’s Certificate

6081. Which of the following certificates will not allow full privileges being granted to it’s holder for operation on amateur frequencies when a licence is issued? (1) Radio Operator’s First Class Certificate (2) Radio Operator’s Second Class Certificate (3) Amateur Radio Operator’s Certificate (4) Radiotelephone Operator’s General Certificate (Maritime)

6082. Two Morse code qualifications are available for the Amateur Operator’s Certificate. They are: (1) 5 and 10 w.p.m. (2) 5 and 12 w.p.m. (3) 7 and 12 w.p.m. (4) 7 and 15 w.p.m.

6083. No operator of an amateur station shall: (Which of the following answers does NOT apply?)

(1) communicate with a radio station other than stations licensed in the Amateur Service (2) use secret codes or ciphers (3) transmit music (4) send messages to non-amateurs during times of emergency

6084. Third party traffic is: (1) any message passed by an amateur station (2) any communication between two amateur operators (3) coded communications of any type (4) a message sent to a non-amateur via an amateur station

6103. An amateur radio station must be identified in which of the following? (1) in any language (2) English only in all provinces except Quebec (3) English or French in all parts of Canada (4) French or English in New Brunswick and Manitoba, French in Quebec and English in all other provinces and territories

6104. The holder of an Amateur Operator's Certificate with the Basic Qualification is limited to a maximum of _____ watts when expressed as direct current input power to the anode or collector circuit of the transmitter stage supplying radio frequency energy to the antenna. (1) 100 watts (2) 250 watts (3) 750 watts (4) 1000 watts

6105. One of the following is not considered to be communications on behalf of a third party, even though the message is originated by or addressed to a non-amateur: (1) messages addressed to points within Canada (2) All messages received from Canadian stations (3) Messages originated from Canadian Forces Affiliated Radio Service (CFARS) (4) Messages that are handled within a local network

6106. One of the following is not considered to be communications on behalf of a third party, even though the message may be originated by, or addressed to, a non-amateur: (1) messages addressed to points within Canada from the United States (2) all messages originated by Canadian stations (3) messages that originate from the United States Military Affiliated Radio System (MARS) (4) messages that are handled within local networks during a simulated emergency exercise

6107. The bandwidth of an amateur station shall be determined by measuring the frequency band occupied by that signal at a level of ___ dB below the maximum amplitude of that signal. (1) 13 (2) 26 (3) 39 (4) 52

Ib) BANDS FOR OPERATION

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6019. The bandwidth of a frequency modulated emission in the frequency band 50-54 MHz shall not exceed: (1) 5 kHz (2) 6 kHz (3) 30 kHz (4) 10 kHz

6020. The holder of an Amateur Operator's Certificate with only the Basic Qualification may operate radiotelephone in the: (1) 7.000 - 7.300 MHz band (2) 14.100 - 14.350 MHz band (3) 50.000 - 54.000 MHz band (4) 21.000 -21.450 MHz band

6060. The bandwidth for a television transmission in the bands 430 to 450 MHz and 902 to 928 MHz shall not exceed: (1) 12 MHz (2) 6 MHz (3) 30 kHz (4) 20 kHz

6085. The maximum bandwidth of an amateur station's transmission allowed in the band 28 to 29.7 MHz is: (1) 6 kHz (2) 15 kHz (3) 20 kHz (4) 30 kHz

6086. Except for one band, the maximum bandwidth of an amateur station transmission allowed below 28 MHz is: (1) 6 kHz (2) 15 kHz (3) 20 kHz (4) 30 kHz

6087. The maximum bandwidth of an amateur station's transmission allowed in the band 144 to 148 MHz is: (1) 6 kHz (2) 15 kHz (3) 20 kHz (4) 30 kHz

6088. The maximum bandwidth of an amateur station's transmission allowed in the band 50 to 54 MHz is: (1) 6 kHz (2) 15 kHz (3) 20 kHz (4) 30 kHz

6089. The maximum bandwidth of an amateur station's transmission allowed in the bands 430 to 450 MHz and 902 to 928 MHz is: (1) 20 kHz (2) 30 kHz (3) 100 kHz (4) 12 MHz

6090. The maximum bandwidth of an amateur station's transmission allowed in the band 220 to 225 MHz is: (1) 20 kHz (2) 30 kHz (3) 100 kHz (4) 12 MHz

6091. Only one band of amateur frequencies has a maximum bandwidth of less than 6 kHz allowed. That band is: (1) 1,800 to 2,000 kHz (2) 10,100 to 10,150 kHz (3) 18,068 to 18,168 kHz (4) 24,890 to 24,990 kHz

6092. The 75/80 metre amateur band corresponds in frequency to: (1) 3.0 to 3.5 MHz (2) 3.5 to 4.0 MHz (3) 4.0 to 4.5 MHz (4) 4.5 to 5.0 MHz

6093. The 160 metre amateur band corresponds in frequency to: (1) 1.5 to 2.0 MHz (2) 1.8 to 2.0 MHz (3) 2.0 to 2.25 MHz (4) 2.25 to 2.5 MHz

6094. The 40 metre amateur band corresponds in frequency to: (1) 6.0 to 6.3 MHz (2) 6.5 to 6.8 MHz (3) 7.0 to 7.3 MHz (4) 7.7 to 8.0 MHz

6095. There is only one amateur band on which radiotelephone is not allowed, That amateur band is: (1) 7.000 to 7.300 MHz (2) 10.100 to 10.150 MHz (3) 18.068 to 18.168 MHz (4) 24.890 to 24.990 MHz

6096. The 20 metre amateur band corresponds in frequency to: (1) 13.500 to 14.000 MHz (2) 14.000 to 14.350 MHz (3) 15.000 to 15.750 MHz (4) 16.350 to 16.830 MHz

6097. The 12, 17 and 30 metre bands equate approximately to which of the following frequencies: (1) 10, 16 and 23 MHz (2) 10, 18 and 24 MHz (3) 12, 18 and 26 MHz (4) 15, 20 and 25 MHz

6098. The 15 metre amateur band corresponds in frequency to: (1) 14.000 to 14.350 MHz (2) 18,068 to 18,168 MHz (3) 21.000 to 21.450 MHz (4) 28.000 to 29.700 MHz

6099. The 10 metre amateur band corresponds in frequency to: (1) 21.000 to 21.450 MHz (2) 24.890 to 24.990 MHz (3) 28.000 to 29.700 MHz (4) 50.000 to 54.000

6100. Amateurs may use which of the following for operation of model control: (1) 50 to 54 MHz only (2) 50 to 54, 144 to 148 and 220 to 225 MHz only (3) all amateur frequency bands below 4 MHz (4) all amateur frequency bands above 30 MHz

6101. Amateur operation must not cause interference to other services operating in which of the following bands: (1) 7.0 to 7.1 MHz (2) 14.0 to 14.2 MHz (3) 144.0 to 148.0 MHz (4) 430.0 to 450.0 MHz

6102. Amateur operations are not protected from interference caused by another service operating in which of the following frequency bands? (1) 50 to 54 MHz (2) 144 to 148 MHz (3) 220 to 225 MHz (4) 902 to 928 MHz

Ic) Q SIGNALS

(For Answer Click On Image At Left)

Q 6022. The signal QRM signifies: (1) your signals are fading (2) I am troubled by static (3) I am being interfered with (4) is my transmission being interfered with?

6023. The signal QRN means: (1) I am busy (2) I am troubled by static (3) are you troubled by static? (4) I am being interfered with

6024. The “Q signal” abbreviation indicating that you want the other station to send slower is: (1) QRL (2) QRN (3) QRM (4) QRS

6025. “Who is calling me?” is denoted by the “Q” signal: (1) QRK? (2) QRM? (3) QRP? (4) QRZ?

6026. The signal QSL means: (1) are my signals fading (2) change to transmission on another frequency (3) I acknowledge receipt (4) I can communicate with

6027. The message “I can communicate with” is denoted by the Q code abbreviation: (1) QSO (2) QRT (3) QTH (4) QRM

6028. The signal QSO? indicates: (1) can you communicate with .... directly? (2) can you acknowledge receipt? (3) shall I stop sending? (4) have you anything for me?

6029. The signal “QRG?” indicates: (1) are you busy? (2) shall I send more slowly? (3) Are you ready? (4) will you tell me my exact frequency (or that of ...)?

6030. The “Q” signal which signifies “what is your position?”: (1) QTH? (2) QRP? (3) QRL? (4) QRK?

6031. The signal “QRH” indicates: (1) how many telegrams have you to send? (2) I am acknowledging receipt (3) your signals are fading (4) your frequency varies

6032. The signal “QRI3” indicates: (1) the intelligibility of your signals (or those of ...) is fair (2) the strength of your signals (or those of ...) is fairly good (3) your signals are fading (4) the tone of your emission is bad

6033. The “Q” signal which signifies “who is calling me” is: (1) QRS? (2) QRL? (3) QRZ? (4) QRO?

6034. The “Q” signal which signifies “the intelligibility of your signals is fair” is: (1) QRZ (2) QRM 4 (3) QRN 3 (4) QRK 3

6035. The “Q” signal which signifies “are you busy” is: (1) QRM? (2) QRL? (3) QRK? (4) QRZ?

6036. The “Q” signal which signifies “shall I decrease transmitter power?” is: (1) QRP? (2) QRZ? (3) QRN? (4) QRL?

6037. The “Q” signal which signifies “stop sending” is: (1) QRT (2) QRL (3) QRS (4) QRZ

6038. The “Q” signal which signifies “I will call you again” is: (1) QRX (2) QRZ (3) QRS (4) QRT

6039. The “Q” signal which signifies “Your signals are fading” is: (1) QRO (2) QSB (3) QRS (4) QRX

6040. The “Q” signal which signifies “Will you relay to?”: (1) QSB? (2) QRP? (3) QSP? (4) QSO?

6041. The signal “QRU?” signifies: (1) who is calling me? (2) shall I decrease transmitter power? (3) have you anything for me? (4) stop sending

6042. The “Q” signal “QSY?” signifies: (1) shall I change to transmission on another frequency? (2) shall I increase transmitter power? (3) shall I relay to ____? (4) is my signal fading?

6043. The “Q” signal which signifies “increase transmitter power” is: (1) QSL (2) QRN (3) QRO (4) QRQ

6044. The “Q” signal which signifies “send faster” is: (1) QRP (2) QRQ (3) QRS (4) QRN

6045. The signal “QSA5” indicates: (1) I am being interfered with extremely (2) the strength of your signals (or those of ...) is very good (3) I am troubled by static extremely (4) send faster (... words per minute).

6046. The signal “QRV” indicates: (1) I am acknowledging receipt (2) stop sending (3) I am ready (4) increase transmitter power

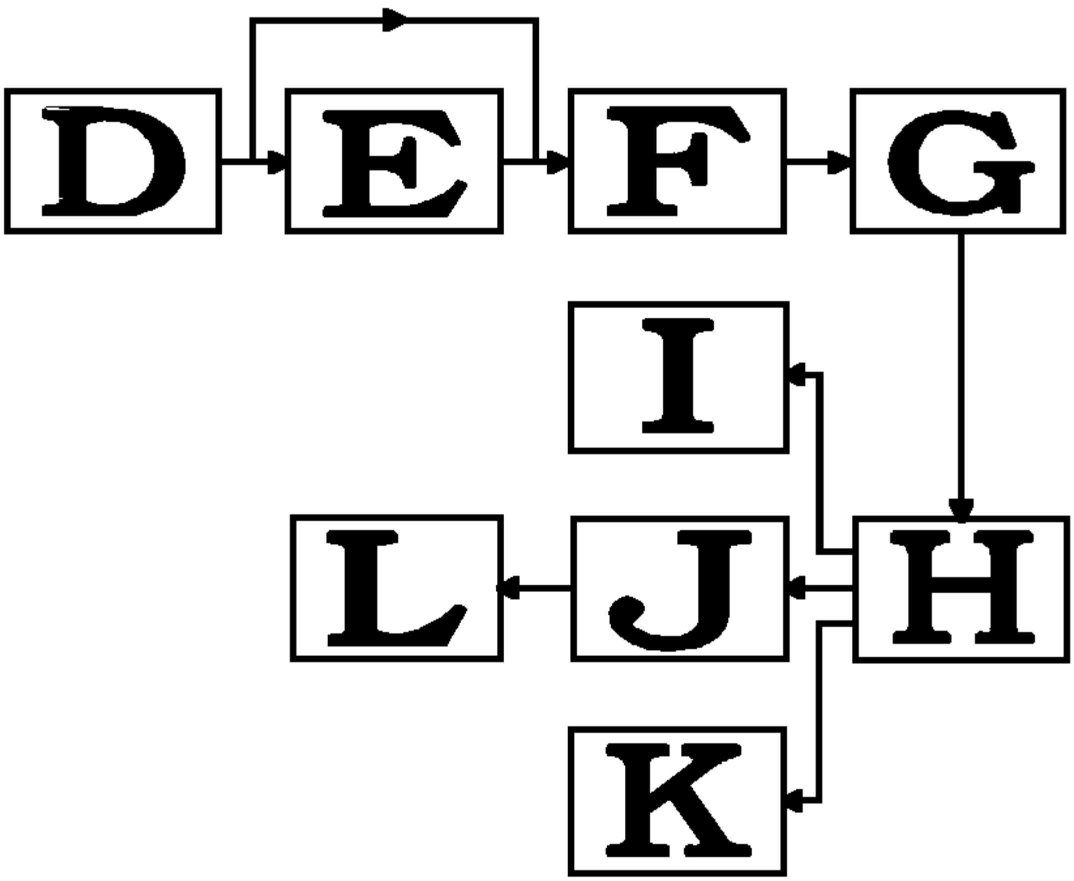
6047. The signal “QSK” indicates: (1) change to transmission on another frequency (2) I can hear you between my signals; break in on my transmission (3) the intelligibility of your signals is bad (4) your signals are fading

6048. The signal “QTC” indicates: (1) I am busy. Please do not interfere (2) I have ... telegrams for you (or for ...) (3) I will relay to ... free of charge. (4) I am ready

6049. The “Q” signal which signifies “What is the strength of my signals?” is: (1) QRM? (2) QSA? (3) QRN? (4) QRK?

6050. The “Q” signal which indicates that I am interfered with moderately is: (1) QRN3 (2) QRI3 (3) QRK3 (4) QRM3

IIa) PLACEMENT OF COMPONENTS BLOCK DIAGRAM



(For Answer Click On Image At Left)

1057. In the block diagram of the Placement of Components in a H.F. Station, the block designated with the letter D corresponds to the: (1) transceiver (2) linear amplifier (3) low pass filter (4) antenna tuner

1058. In the block diagram of the Placement of Components in a H.F. Station, the block designated with the letter E corresponds to the: (1) transceiver (2) linear amplifier (3) low pass filter (4) S.W.R.

bridge

1059. In the block diagram of the Placement of Components in a H.F. Station. the block designated with the letter F corresponds to the: (1) low pass filter (2) S.W.R. bridge (3) antenna tuner (4) antenna switch

1060. In the block diagram of the Placement of Components in a H.F. Station, the block designated with the letter G corresponds to the: (1) linear amplifier (2) antenna switch (3) S.W.R. bridge (4) most antenna when operating above 14 MHz.

1061. In the block diagram of the Placement of Components in a H.F. Station, the block designated with the letter H corresponds to the: (1) S.W.R. bridge (2) antenna switch (3) antenna tuner (4) dummy load

1062. In the block diagram of the Placement of Components in a H.F. Station, the block designed with the letter J corresponds to the: (1) antenna switch (2) antenna tuner (3) dummy load (4) transceiver

1063. In the block diagram of the Placement of Components in a H.F. Station, the block designated with the letter K corresponds to the: (1) antenna tuner (2) S.W.R. bridge (3) low pass filter (4) dummy load

1064. In the block diagram of the Placement of Components in a H.F. Station, the block designated with the letter I corresponds to the: (1) antenna switch (2) antenna tuner (3) dummy load (4) most antenna when operating above 14 MHz

1065. In the block diagram of the Placement of Components in a H.F. Station, the block designated with the letter L corresponds to the: (1) low pass filter (2) transceiver (3) dummy load (4) most antennas when operating below 14 MHz

IIb) METERS, MEASUREMENTS AND STATION COMPONENTS

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1075. Which of the following functions is not performed by the voice-operated relay (VOX) when it switches to transmit? (1) transmitter is turned on. (2) antenna is connected to the transmitter (3) receiver is muted (4) power to the receiver is disconnected

4006. A VSWR meter in the “reverse” switch position provides a indication of: (1) power output in watts (2) VSWR (3) relative forward power (4) reflected power in dB

4013. The purpose of a dummy antenna is to: (1) reduce the possibility of frequency instability (2) reduce the possibility of T.V.I. when working other stations within a 50 mi. radius (3) load a transmitter for testing without radiation of signals (4) be used in conjunction with a wavemeter for frequency measurements

4014. The correct instrument to measure plate current or collector current of a transmitter is a: (1) wattmeter (2) voltmeter (3) ammeter (4) ohmmeter

4032. An antenna changeover switch in a transmitter-receiver combination is necessary: (1) to prevent RF currents entering the receiver circuits (2) to change antennas for operation on other frequencies (3) so that one antenna can be used for transmitter and receiver (4) to allow more than one transmitter to be used

4033. When using an antenna changeover switch in a transmitter-receiver combination, it would also be necessary to provide a switch to turn off the: (1) VSWR meter (2) aerial rotator (3) filter bleeder resistors (4) transmitter

4081. Which of the following meters would you use to measure the power supply current drawn by a small hand-held transistorized receiver: (1) a power meter (2) an RF ammeter (3) a moving coil meter (4) an electrostatic voltmeter

4082. When measuring current drawn by a light bulb from a DC supply, it is true to say that the meter will act in circuit as: (1) an insulator (2) a low value resistance (3) a perfect conductor (4) an extra current drain

4083. When measuring the current drawn by a receiver from a power supply, the current meter should be placed: (1) in parallel with both receiver power supply leads (2) in parallel with one of the receiver power leads (3) in series with both receiver power leads (4) in series with one of the receiver power leads

4063. Which of the following components could be used as a microphone: (1) loudspeaker (2) capacitor (3) resistor (4) crystal earpiece

IIc) SAFETY

(For Answer Click On Image At Left)

1083. What is the quickest way to safely remove an unconscious person from a contact with a high voltage source? (1) remove the person by pulling an arm or a leg (2) wrap the person in a blanket and pull him to a safe area (3) call an electrician (4) turn off the high voltage switch and remove the person from contact with the source

3030. Before checking a fault in a mains operated power supply unit, it would be safest to first: (1) short out leads of filter capacitor (2) turn off the power and remove power plug (3) check action of capacitor bleeder resistance (4) remove and check fuse from power supply

3031. Wires carrying high voltages to vacuum tubes in an amateur transmitter should be well insulated to avoid: (1) short circuits (2) overheating (3) over modulation (4) SWR effects

3032. Fault finding on a power supply of an amateur transmitter while the supply is operating is not a recommended technique because of the risk of: (1) electric shock (2) damaging the transmitter (3) overmodulation (4) blowing the fuse

3034. On mains operated power supplies, the ground wire should be connected to the metal chassis of the power supply. This ensures, in case there is a fault in the power supply, that the chassis does: (1) not develop a high voltage with respect to ground (2) not become conductive to prevent electric shock (3) become conductive to prevent electric shock (4) develop a high voltage compared to the ground

4012. The purpose of using a three wire power cord and plug on amateur equipment is to: (1) make it inconvenient to use (2) prevent the chassis from becoming live in case of an internal short to the chassis (3) prevent the plug from being reversed in the wall outlet (4) prevent short circuits

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IIIa) ELECTRONICS FUNDAMENTALS

(For Answer Click On Image At Left)

3001. Silicon in its pure form is: (1) a conductor (2) an insulator (3) a superconductor (4) a semiconductor

3002. An element which falls somewhere between being an insulator and conductor is called a: (1) N-type conductor (2) intrinsic conductor (3) semi-conductor (4) P-type conductor

3003. In an atom: (1) the protons and the neutrons orbit the nucleus in opposite directions (2) the protons orbit around the neutrons (3) the electrons orbit the nucleus (4) the electrons and the neutrons orbit the nucleus.

3004. An atom that loses an electron becomes: (1) a positive ion (2) an isotope (3) a negative ion (4) a radioactive atom

3052. An electric current passing through a wire will produce around the conductor: (1) an electric field (2) a magnetic field (3) an electrostatic field (4) nothing

5011. A force of repulsion exists between two ________ magnetic poles: (1) unlike (2) like (3) positive (4) negative

5012. A permanent magnet would most likely be made from: (1) steel (2) copper (3) aluminum (4) soft iron

5039. The best conductor of the following is: (1) copper (2) carbon (3) silicon (4) aluminium

5040. The opposition to electron flow in a circuit would be called: (1) current (2) voltage (3) resistance (4) power

5041. The potential difference between two points in a circuit would be measured in: (1) amperes (2) volts (3) ohms (4) coulombs

5042. The instrument used for measuring the flow of electrical current is the: (1) wattmeter (2) voltmeter (3) ammeter (4) faradmeter

5043. The substance listed which will most readily allow an electric current to flow is called: (1) an insulator (2) a conductor (3) a resistor (4) a dielectric

5046. The plastic coating formed around wires is used as: (1) an insulator (2) a conductor (3) an inductor (4) a magnet

5047. The unit of current flow is the: (1) volt (2) ohm (3) ampere (4) farad

5052. A cell that can be repeatedly recharged by supplying it with electrical energy is known as a: (1) primary cell (2) storage cell (3) memory cell (4) low leakage cell

5053. Which of the following is a source of EMF: (1) lead acid battery (2) carbon resistor (3) germanium diode (4) P channel FET

5054. An important difference between a normal flashlight battery and a lead acid battery is that only the lead acid battery: (1) has two terminals (2) contains an electrolyte (3) can be repeatedly recharged (4) can be effectively discharged

IIIb) ALTERNATING CURRENT

(For Answer Click On Image At Left)

3055. Direct current (DC): (1) travels in one direction (2) never stops (3) changes direction continuously (4) never changes in intensity

5006. If the frequency of the waveform is 100 Hz, the time for one cycle is: (1) 1 second (2) 0.01 second (3) 0.0001 second (4) 10 seconds

5111. The frequency of a current is 60 hertz. This means: (1) a potential difference of 60 volts exists (2) the current flow is 60 amperes (3) the power dissipated is 60 watts (4) the current oscillates 60 times per second

5113. Current in an AC circuit goes through a complete cycle in 0.1 second. This means the AC has a frequency of: (1) 1 Hz (2) 10 Hz (3) 100 Hz (4) 1,000 Hz

5114. A signal is composed of a fundamental frequency of 2 kHz and another signal of 4 kHz. This 4 kHz signal is referred to as: (1) a fundamental of the 2 kHz signal (2) a harmonic of the 2 kHz signal (3) the DC component of the main signal (4) a dielectric signal of the main signal

5115. An equivalent of “one cycle per second” is one: (1) henry (2) volt (3) hertz (4) coulomb

5116. One megahertz is equal to: (1) 0.001 Hz (2) 100 kHz (3) 1,000 kHz (4) 10 Hz

IIIc) UNITS OF MEASUREMENT

(For Answer Click On Image At Left)

5022. The unit measure of impedance is the: (1) ampere (2) farad (3) henry (4) ohm

5036. “Z” is the abbreviation for: (1) impedance (2) reactance (3) electromotive force (4) inductance

5030. Potential difference is measured by means of a: (1) ammeter (2) voltmeter (3) ohmmeter (4) wattmeter

5031. Voltage drop means: (1) any point in a radio circuit which has zero voltage (2) voltage developed across the terminals of a component (3) difference in voltage at output terminals of a transformer (4) the voltage which is dissipated before useful work is accomplished

5048. A kilohm is: (1) 10 ohms (2) 0.1 ohms (3) 0.001 ohms (4) 1,000 ohms

5049. 6.6 kilovolts is equal to: (1) 66 volts (2) 660 volts (3) 6 600 volts (4) 66 000 volts

5050. A current of one quarter of ampere may be written as: (1) 250 microamperes (2) 0.5 amperes (3) 0.25 milliamperes (4) 250 milliamperes

5051. How many millivolts are equivalent to two volts: (1) 0.002 (2) 2,000 (3) 0.000002 (4) 2,000,000

5112. The letter “R” is the is the symbol for: (1) impedance (2) reactance (3) resistance (4) reluctance

5142. The unit “decibel” is used to indicate: (1) certain radio waves (2) single side band signal (3) oscilloscope wave forms (4) mathematical ratios

5143. The power output from a transmitter increases from 1 watt to 2 watts. This is a db increase of: (1) 1 dB (2) 3 dB (3) 6 dB (4) 30 dB

IIId) POWER CALCULATIONS

(For Answer Click On Image At Left)

4085. A transmitter power amplifier draws 30 mA of current, at a plate voltage of 300 volts. The DC input power is therefore: (1) 300 watts (2) 9 000 watts (3) 9 watts (4) 6 watts

4086. The DC input power of a transmitter operating at 12 volts and drawing 500 milliamps in the power would be: (1) 6 watts (2) 12 watts (3) 20 watts (4) 500 watts

5002. When two 500 ohm 1 watt resistors are connected in series, the maximum total power that can be dissipated by the resistors is: (1) 4 watts (2) 2 watts (3) 1 watt (4) 1/2 watt

5003. When two 500 ohm 1 watt resistors are connected in parallel, they can dissipate a maximum total power of: (1) 4 watts (2) 2 watts (3) 1 watt (4) 1/2 watt

5004. The current flowing in a circuit is 10 mA. How many watts of power is dissipated by a circuit resistance of 100 kilohms? (1) 1 watt (2) 10 watts (3) 100 watts (4) 10,000 watts

5025. If a current of 500 milliamps passes through a resistance of 1000 ohms, how many watts of power are dissipated? (1) 0.25 (2) 2.5 (3) 25 (4) 250

5027. A resistor of 20 ohms has a current of 0.25 amperes flowing through it. The heat dissipation in watts is: (1) 1.25 watts (2) 5 watts (3) 2.50 watts (4) 10 watts

5028. If 200 volts is applied to a 2000 ohm resistor, the resistor will dissipate: (1) 20 watts (2) 30 watts (3) 10 watts (4) 40 watts

5033. If the power is 500 watts and the antenna resistance is 20 ohms, the antenna current is: (1) 25 amps (2) 2.5 amps (3) 10 amps (4) 5 amps

5097. Power is expressed in: (1) ohms (2) watts (3) amperes (4) volts

5098. Which of the following two quantities should be multiplied together to find power: (1) resistance and capacitance (2) voltage and current (3) voltage and inductance (4) inductance and capacitance

5099. Which two electrical units multiplied together give the unit “watts”: (1) volts and amperes (2) volts and farads (3) farads and henrys (4) amperes and henrys

5104. The power dissipation of a resistor passing 10 mA with 10 volts across it would be: (1) 0.01 watt (2) 0.1 watt (3) 1 watt (4) 10 watt

5105. If two resistors each of 10 ohms are connected in series with a battery of 10 volts then the power consumption would be: (1) 5 watts (2) 10 watts (3) 20 watts (4) 100 watts

5106. Each of 9 resistors in a circuit is dissipating 4 watts. If the circuit operates from a 12 volt supply the total current flowing in the circuit is: (1) 48 amperes (2) 36 amperes (3) 9 amperes (4) 3 amperes

5107. Three 18 ohm resistors are connected in parallel across a 12 volt DC supply. The total power dissipation of the resistors is: (1) 3 watts (2) 18 watts (3) 24 watts (4) 36 watts

5108. One advantage in replacing a 50 ohm resistor with a parallel combination of two similarly rated 100 ohm resistors is that the parallel combination will have: (1) greater resistance and similar power rating (2) lesser resistance and similar power rating (3) the same resistance but greater power rating (4) the same resistance but lesser power rating

5109. Voltage and current readings are given for various resistors in a circuit. Which resistor will dissipate the most power: (1) 2 volts and 40 mA (2) 1 volt and 1 ampere (3) 250 mA and 250 mV (4) 500 mA and 3 volts

5110. A resistor of 10 kilohms has a current of 20 mA flowing through it. The power dissipated in the resistor is: (1) 2 watts (2) 4 watts (3) 20 watts (4) 40 watts

5100. A resistor in a circuit becomes very hot and starts to burn. This is because the resistor is dissipating too much: (1) current (2) voltage (3) resistance (4) power

5101. High power resistors are usually large with heavy leads. The size aids the operation of the resistor by: (1) allowing higher voltage to be handled (2) making it shock proof (3) increasing the effective resistance of the resistor (4) allowing heat to dissipate more readily

5102. The resistor that would dissipate the most heat would be marked: (1) 20 watts (2) 0.5 watts (3) 2 ohms (4) 10 ohms

IIIe) RESISTANCE

(For Answer Click On Image At Left)

5013. Total resistance in a parallel circuit: (1) is always less than the smallest resistance (2) depends upon the IR drop across each branch (3) could be equal to the resistance of one branch (4) depends upon the impressed voltage

5014. Two resistors are connected in parallel and are connected across a 40 volt battery. If each resistor is 1000 ohms, the total current is: (1) 40 amperes (2) 40 milliamperes (3) 80 amperes (4) 80 milliamperes

5015. The total current in a parallel circuit is equal to the: (1) current in any one of the parallel branches (2) sum of the currents through all the parallel branches (3) source voltage divided by the value of one of the resistive elements (4) source voltage divided by the sum of the resistive elements

5017. If the voltage applied to two resistors in series is doubled, how much will the total power change? (1) increase four times (2) decrease to half (3) double (4) no change

5001. A 6 volt battery is connected across three resistances of 10 ohms, 15 ohms and 20 ohms connected in parallel: (1) the voltage drop across the 20 ohm resistance is greater than the voltage across the 10 ohm resistance (2) the current flowing through the 10 ohm resistance is less than that flowing through the 20 ohm resistance (3) the voltage drop across each resistance added together equals 6 volts (4) the current through the separate resistances, when added together, equals the total current drawn from the battery

5064. The resistor which has the greatest opposition to current flow is: (1) 230 ohm (2) 1.2 kilohm (3) 1,600 ohm (4) 0.5 megohm

5088. One way of operating a 3 volt bulb from a 9 volt supply would be to: (1) operate it in series with the supply (2) operate it in parallel with the supply (3) operate it in series with a resistor (4) operate it in parallel with a resistor

5089. How many identical lamps each rated at 250 mA could be operated full current from a 5 A supply: (1) 50 lamps (2) 30 lamps (3) 20 lamps (4) 5 lamps

5092. If six identical bulbs each rated at 2 volts were connected in series, the supply voltage needed to cause the bulbs to light normally would be: (1) 12 V (2) 1.2 (3) 6 V (4) 2 V

5093. How many 12 volt bulbs should be arranged in series to form a string of lights to operate from a 240 volt power supply: (1) 12 x 240 (2) 240 + 12 (3) 240 - 12 (4) 240 / 12

5095. Three 10,000 ohm resistors are connected in series across a 90 volt DC power supply. The voltage drop across one of the resistors is: (1) 30 volts (2) 60 volts (3) 90 volts (4) 15.8 volts

5026. Two resistors are connected in parallel. R1 has a resistance of 75 ohms and R2 has a resistance of 50 ohms. The total resistance of this parallel circuit is: (1) 10 ohms (2) 70 ohms (3) 30 ohms (4) 40 ohms

5044. The ohm is the unit of: (1) supply voltage (2) electrical pressure (3) current flow (4) electrical resistance

5045. A length of metal is connected in a circuit and is found to conduct electricity very well. It would be best described as having a: (1) high resistance (2) low resistance (3) high wattage (4) low wattage

5055. A dry cell has an open circuit voltage of 1.5 volts. When supplying a great deal of current the voltage may drop to 1.2 volts. This is due to the cell's: (1) internal resistance (2) voltage capacity (3) electrolyte becoming dry (4) current capacity

5069. Headphones of 8 ohms connected in series present a load of: (1) 2 ohms (2) 4 ohms (3) 8 ohms (4) 16 ohms

5070. The total resistance of resistors connected in series is: (1) less than the resistance of any one resistor (2) greater than the resistance of any one resistor (3) equal to the highest resistance present (4) equal to the lowest resistance present

5071. Five 10 ohm resistors connected in series equals: (1) 1 ohm (2) 5 ohms (3) 10 ohms (4) 50 ohms

5072. Resistors of 10, 270, 3900, and 100 ohms are connected in series the total resistance would be: (1) 9 ohms (2) 3,900 ohms (3) 4,280 ohms (4) 10 ohms

5073. Which series combination of resistors would most nearly replace a single 120 ohm resistor: (1) five 24 ohm (2) six 22 ohm (3) two 62 ohm (4) five 100 ohm

5074. If two resistors of 0.22 megohm and 330 kilohm are arranged in series the total resistance is: (1) 55,000 ohms (2) 550 megohms (3) 55,000 kilohms (4) 550 kilohms

5075. If ten resistors of equal value were wired in parallel, the total resistance would be: (1) 10 x R (2) 10 R (3) 10/R (4) R/10

5076. The total resistance of four 68 ohm resistors wired in parallel is: (1) 12 ohms (2) 17 ohms (3) 34 ohms (4) 272 ohms

5077. Resistors of 68 ohms, 47 kilohms, 560 ohms and 10 ohms are connected in parallel. The total resistance is: (1) less than 10 ohms (2) between 68 and 560 ohms (3) between 560 ohms and 47 kilohms (4) greater than 47 kilohms

5078. Which of the following resistor combinations would most nearly replace a single 150 ohm resistor: (1) four 47 ohm resistors in parallel (2) five 33 ohm resistors in parallel (3) three 47 ohm resistors in series (4) five 33 ohm resistors in series

5079. Two 120 ohm resistors are arranged in parallel to replace a faulty resistor. The faulty resistor originally had a value of: (1) 15 ohms (2) 30 ohms (3) 60 ohms (4) 120 ohms

5080. Two resistors are in parallel. Resistor A carries twice the current of resistor B which means that: (1) A has half the resistance of B (2) B has half the resistance of A (3) the voltage across A is twice that across B (4) the voltage across B is twice that across A

5081. The least resistance that can be made with five 1 k ohm resistors is: (1) 50 ohms by arranging them in series (2) 50 ohms by arranging them in parallel (3) 200 ohms by arranging them in series (4) 200 ohms by arranging them in parallel

5082. Which of the following combinations of 28 ohm resistors would have a total resistance of 42 ohms: (1) three resistors in series (2) three resistors in parallel (3) two resistors in parallel in series with another (4) two resistors in parallel in series with another two in parallel

5083. Two 100 ohm resistors arranged in parallel are wired in series with a 10 ohm resistor. The total resistance is: (1) 60 ohms (2) 180 ohms (3) 190 ohms (4) 210 ohms

5094. Often in the small decorative lights used on Xmas trees, if one bulb is removed the rest will fail to light. This would indicate that: (1) removing one bulb causes the others to blow (2) only that bulb was satisfactory (3) the bulbs are arranged in parallel (4) the bulbs are arranged in series

5096. A 100 ohm resistor is connected across the terminals of a 3 volt battery. To double the current flowing in the circuit it is necessary to add a: (1) 100 ohm resistor in series (2) 50 ohm resistor in series (3) 100 ohm resistor in parallel (4) 50 ohm resistor in parallel

IIIf) OHM'S LAW CALCULATIONS

(For Answer Click On Image At Left)

5018. A current of 10 mA flows through a 500 ohm resistor. The voltage drop developed across the resistor is: (1) 5 volts (2) 50 volts (3) 500 volts (4) 5,000 volts

5019. Calculate the value of resistance necessary to drop 100 volts with current flow of 0.8 milliamperes: (1) 125 ohms (2) 125 kilohms (3) 1250 ohms (4) 1.25 kilohms

5020. What amount of power is consumed by a 100,000 ohm resistor when a current of 6 milliamperes flows through it? (1) 1.5 watts (2) 2.5 watts (3) 3.6 watts (4) 6.0 watts

5024. I = E/R is a mathematical equation describing: (1) Ohm's law (2) Thevenins theorem (3) Kirchoff's first law (4) Kirchoff's second law

5032. The voltage required to force a current of 4.4 amperes through a resistance of 50 ohms is: (1) 2220 volts (2) 220 volts (3) 22.0 volts (4) 0.220 volts

5034. An electric bell has a resistance of 30 ohms and a 6 volt battery is connected, the current flow will be: (1) 0.5 amperes (2) 2 amperes (3) 0.200 amperes (4) 0.005 amperes

5056. The voltage across a resistor carrying current be calculated using the formula E =: (1) I + R (2) I - R (3) I x R (4) I/R

5057. A current of 2 amperes flows through a resistance of 16 ohms. The applied voltage is: (1) 8 volts (2) 14 volts (3) 18 volts (4) 32 volts

5058. What voltage causes a current of 5 amperes to flow in a resistance of 50 ohms: (1) 20 volts (2) 45 volts (3) 55 volts (4) 250 volts

5059. What voltage would be needed to supply a current of 200 mA to operate an electric lamp which has a resistance of 25 ohms: (1) 5 volts (2) 8 volts (3) 175 volts (4) 225 volts

5060. A voltage of 6 volts causes a current of 0.5 amperes to flow through a resistance. To change the current to 0.25 amperes the voltage must be: (1) increased to 12 volts (2) reduced to 3 volts (3) held constant (4) reduced to zero

5061. The current flowing through a resistor can be calculated by using the formula I =: (1) E x R (2) E/R (3) E + R (4) E - R

5062. When an 8 ohm resistor is connected to a 12 volt supply the current flow in amperes is: (1) 12/8 (2) 8/12 (3) 12 - 8 (4) 12 + 8

5063. A circuit has a total resistance of 100 ohms. When a voltage of 50 volts is applied to the circuit, the current which will flow will be: (1) 50 mA (2) 500 mA (3) 2 amperes (4) 20 amperes

5065. The resistance of a circuit can be found by using one of the following: (1) R=I/E (2) R=E/I (3) R=E/R (4) R=EI

5066. A resistor with 10 volts across it and passing a current of a 1 mA has a value of: (1) 10 ohms (2) 100 ohms (3) 1 kilohm (4) 10 kilohm

5067. If a 3 volt battery supplies 300 mA to a circuit, the circuit resistance is: (1) 10 ohms (2) 9 ohms (3) 5 ohms (4) 3 ohms

5068. An EMF of 12 volts causes a current of 0.5 amperes to flow through a resistor. The value of the resistor is: (1) 6 ohms (2) 12.5 ohms (3) 17 ohms (4) 24 ohms

5084. A 5 ohm and a 10 ohm resistor are wired in series and connected to a 30 volt power supply. The current flow from the power supply is: (1) 0.5 ampere (2) 1 ampere (3) 2 amperes (4) 15 amperes

5085. Three 12 ohm resistors are wired in parallel and connected to an 8 volt supply. The total current flowing from the 8 volt supply is: (1) 1 ampere (2) 2 amperes (3) 3 amperes (4) 4.5 amperes

5086. Two 33 ohm resistors are connected in series with a power supply. If the current flow is 100 mA then the voltage across one resistor is: (1) 66 volts (2) 33 volts (3) 3.3 volts (4) 1 volt

5087. Three resistors of 3.3, 4.7 and 10 ohms are connected in series across a 36 volt battery. The current flowing through the 10 ohm resistor is: (1) 0.5 ampere (2) 1.0 ampere (3) 2.0 amperes (4) 3.6 amperes

5090. A set of three resistors each of 33 ohms wired in parallel is connected to a power supply. If each resistor is carrying 1 ampere the voltage of the power source is: (1) 99 volts (2) 33 volts (3) 11 volts (4) 1 volt

5091. If two resistors of 180 and 820 ohms are connected in series across a 15 volt DC supply the current flow in the circuit is: (1) 15 milliamperes (2) 30 milliamperes (3) 15 amperes (4) 30 amperes

5103. A 12 volt light bulb is rated at a power of 30 watts. The current drawn would be: (1) 360 amperes (2) 18 amperes (3) 30/12 amperes (4) 12/30 amperes

IIIg) CAPACITORS

(For Answer Click On Image At Left)

3056. A capacitor opposes any change in the: (1) current (2) voltage (3) resistance (4) impedance

5007. The ability to store electrical energy in an electrostatic field is called: (1) inductance (2) farads (3) capacitance (4) battery action

5008. The fixed plates in a variable capacitor are called the: (1) rotors (2) dielectric (3) switching plates (4) stators

5023. The total capacitance of two or more capacitors in series is: (1) always less than the smallest capacitor (2) always greater than the largest capacitor (3) found by adding each of the capacitors together (4) found by adding each of the capacitors together, and dividing by the total number of capacitors

5035. Filter capacitors are connected in series to: (1) withstand greater voltage input (2) increase capacity (3) reduce ripple voltage (4) resonate filter circuit

5117. A radio component would be identified as a capacitor if its value was measured in: (1) microvolts (2) millihenrys (3) megohms (4) picofarads

5118. A 0.01 mF capacitor is formed from two metal plates separated by air. The capacitor could be changed to 0.02 mF by: (1) bringing the metal plates closer together (2) making the plates smaller in size (3) charging the capacitor to a high voltage (4) touching the two plates together

5119. The material which separates the plates of a capacitor is called the: (1) dielectric (2) semiconductor (3) resistor (4) lamination

5120. Which of the following factors affects capacitance: (1) thickness of dielectric (2) surrounding magnetic field (3) capacitor working voltage (4) resistance between the plates

5121. Compared to an RF by-pass capacitor an AF by-pass capacitor will have a: (1) larger capacitance (2) smaller capacitance (3) larger inductance (4) smaller inductance

5129. Three 15 picofarad capacitors are wired in parallel. The capacitance of the combination is: (1) 45 picofarad (2) 18 picofarad (3) 12 picofarad (4) 5 picofarad

5130. Three 15 microfarad capacitors are wired in series. The total capacitance of this arrangement is: (1) 45 microfarads (2) 18 microfarads (3) 12 microfarads (4) 5 microfarads

5131. Which series combinations of capacitors would best replace a faulty 10 microfarad capacitor: (1) two 10 microfarad capacitors (2) ten 2 microfarad capacitors (3) two 20 microfarad capacitors (4) twenty 2 microfarad capacitors

5132. Both capacitors and inductors can oppose AC. This opposition to AC is referred to as: (1) resistance (2) resonance (3) conductance (4) reactance

5133. The reactance of capacitors increases as: (1) AC frequency increases (2) AC frequency decreases (3) applied voltage increases (4) applied voltage decreases

5134. An air spaced capacitor has a high reactance to an AC signal. This means that the: (1) capacitor will tend to pass the AC (2) capacitor will tend to block the AC (3) air will become conductive to the AC (4) air will act as an insulator to the AC

IIIh) INDUCTANCE

(For Answer Click On Image At Left)

5016. The effect of inductance in a coil is to: (1) oppose any change in the flow of current (2) oppose and change the value of resistance (3) prevent the current from dropping to zero (4) prevent the current from being short circuited

5021. The unit measure of inductance is the: (1) ampere (2) farad (3) henry (4) ohm

5037. The letter “L” in electronics is the symbol for: (1) capacitance (2) resistance (3) inductance (4) reluctance

5122. A choke is: (1) a carbon resistor (2) a capacitor (3) an inductor (4) a diode

5123. The unit used to indicate the value of inductance is the: (1) ohm (2) farad (3) volt (4) henry

5124. A changing magnetic field around a wire coil will cause: (1) A.F. by-passing (2) R.F. by-passing (3) an induced emf (4) an induced capacitance

5125. An inductance of 10,000 microhenries may be stated correctly as: (1) 10 henrys (2) 100 millihenrys (3) 10 millihenrys (4) 1,000 henrys

5126. The total inductance of four 12 microhenry chokes wired in series is: (1) 3 microhenrys (2) 4 microhenrys (3) 12 microhenrys (4) 48 microhenrys

5127. Two 12 millihenry chokes are wired in parallel. The total inductance is: (1) 3 millihenry (2) 6 millihenry (3) 12 millihenry (4) 24 millihenry

5128. To replace a faulty 10 millihenry choke you could use two: (1) two 5 millihenry chokes in series (2) two 5 millihenry chokes in parallel (3) two 20 millihenry chokes in series (4) two 30 millihenry chokes in parallel

5135. An audio frequency choke is different from a radio frequency choke in that the audio frequency choke has: (1) few iron laminations or cores (2) many iron laminations or cores (3) a great thickness of dielectric (4) a thin layer of dielectric

5136. A coiled length of wire may readily pass DC yet may oppose AC. This is due to the wire acting as a: (1) capacitor (2) inductor (3) resistor (4) transistor

5137. In inductances, AC may be opposed by both resistance of winding wire and reactance due to inductive effect. The term which includes resistance and reactance is: (1) resonance (2) capacitance (3) inductance (4) impedance

IIIi) RESONANCE

(For Answer Click On Image At Left)

5005. Resonance is the condition that exists when: (1) inductive reactance is the only opposition in the circuit (2) inductive reactance and capacitance reactance are equal (3) the circuit contains no resistance (4) resistance is equal to the reactance

5029. Resonance is an electrical property used to describe: (1) an inductor (2) the frequency characteristic of a coil and capacitor circuit (3) a set of parallel inductors (4) the results of tuning a varicap

5038. Parallel tuned circuits offer: (1) very high impedance at resonance (2) low impedance at resonance (3) zero impedance at resonance (4) an impedance equal to resistance of the circuit

IIIj) AMPLIFIERS

(For Answer Click On Image At Left)

3015. A circuit designed to increase the level of its input signal is called: (1) a receiver (2) a modulator (3) an oscillator (4) an amplifier

3016. If an amplifier becomes non-linear, the output signal would: (1) be saturated (2) become distorted (3) cause oscillations (4) overload the power supply

3017. To increase the level of very weak radio signals from an antenna, you would use: (1) an audio amplifier (2) an RF amplifier (3) an audio oscillator (4) an RF oscillator

3018. An RF oscillator should be electrically and mechanically stable. This is to ensure that the oscillator does not: (1) cause undue distortion (2) drift in frequency (3) generate key clicks (4) become over modulated

IIIk) TRANSFORMERS

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5009. If the primary of a 110 volt power transformer consists of 1100 turns, then a secondary winding supplying filament power for a 5 volt filament tube drawing 0.3 amps would be: (1) 20 turns (2) 70 turns (3) 50 turns (4) 7 turns

5010. Transformers are not normally connected to a source of: (1) radio frequency current (2) alternating current (3) pulsating direct current (4) pure direct current

5138. The primary winding of a 110 V mains operated transformer has 550 turns. The secondary number of turns needed for a 10 volt output is: (1) 20 (2) 50 (3) 240 (4) 720

5139. A transformer operates a 6.3 volt 2 ampere light bulb from its secondary winding. The power consumed by the primary is approximately: (1) 3 watts (2) 6 watts (3) 8 watts (4) 13 watts

5140. A transformer has a 240 volt primary that draws a current of 250 mA from the mains supply. Assuming no losses, what current would be available from a 12 volt secondary: (1) 215 amperes (2) 5 amperes (3) 25 amperes (4) 50 amperes

5141. On a mains power transformer the primary winding has 250 turns and the secondary has 500. If the input voltage is 110 volts the likely secondary voltage is: (1) 24 (2) 220 (3) 440 (4) 560

IIIl) TRANSISTOR AND TUBE DIAGRAMS

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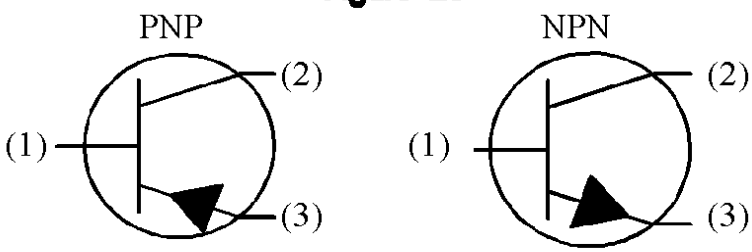
3042. In diagram 20 (bipolar transistor) 1 represents the: (1) base (2) collector (3) emitter (4) source

3043. In diagram 20 (bipolar transistor) 2 represents the: (1) base (2) collector (3) emitter (4) gate

3044. In diagram 20 (bipolar transistor) 3 represents the: (1) base (2) collector (3) emitter (4) drain

Diagram 20

Figure 20

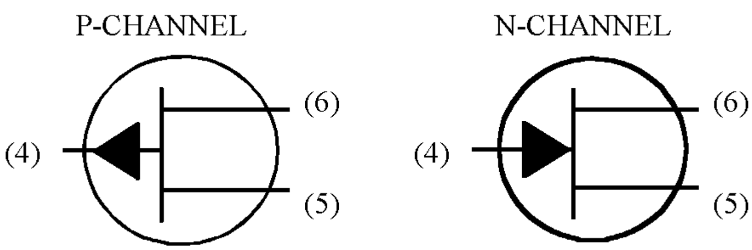


3045. In diagram 21 (field effect transistor) 4 represents the: (1) drain (2) gate (3) source (4) collector

3046. In diagram 21 (field effect transistor) 5 represents the: (1) drain (2) gate (3) source (4) emitter

3047. In diagram 21 (field effect transistor) 6 represents the: (1) drain (2) gate (3) source (4) collector

Diagram 21



3048. In diagram 22 (vacuum tube) 7 represents the: (1) plate (2) grid (3) filament (4) cathode

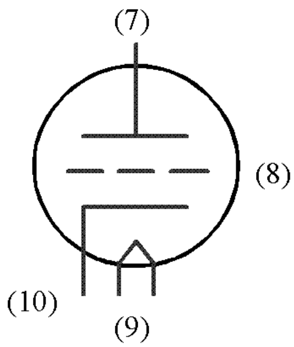
3049. In diagram 22 (vacuum tube) 8 represents the: (1) plate (2) grid (3) filament (4) cathode

3050. In diagram 22 (vacuum tube) 9 represents the: (1) plate (2) grid (3) filament (4) cathode

3051. In diagram 22 (vacuum tube) 10 represents the: (1) plate (2) grid (3) filament (4) cathode

Diagram 22

VACUUM TUBE



IIIm) SEMICONDUCTORS AND TRANSISTORS

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3005. The process of taking a part of the output and applying it back to the input of a circuit is called: (1) duplexing (2) cascading (3) shunting (4) feedback

3006. Zener diodes are used as: (1) R.F. detectors (2) A.F. detectors (3) current regulators (4) voltage regulators

3007. The basic semiconductor amplifying device is: (1) diode (2) transistor (3) P-N junction (4) tube

3008. A bipolar transistor has three terminals named: (1) base, emitter and drain (2) collector, base and source (3) drain, source and gate (4) emitter, base and collector

3009. The three leads from a PNP transistor are named the: (1) collector, source, drain (2) gate, source, drain (3) drain, base, source (4) collector, emitter, base

3010. If a low level signal is placed at the input to a transistor circuit, a higher level of signal is provided at the output lead. This effect is know as: (1) amplification (2) detection (3) modulation (4) rectification

3011. The type of rectifier now being used almost exclusively in power supplies designed for amateur and commercial use is: (1) lithium (2) germanium (3) silicon (4) copper-oxide

3012. One important application for diodes is recovering information from transmitted signals. This is referred to as: (1) biasing (2) rejuvenation (3) ionization (4) demodulation

3013. The primary purpose of a Zener diode is to: (1) provide a voltage phase shift (2) provide a path through which current can flow (3) regulate or maintain a constant voltage (4) to boost the power supply voltage

3019. Which of the following materials is considered to be a semiconductor: (1) copper (2) sulphur (3) silicon (4) tantalum

3020. Substances such as silicon in a pure state are usually good: (1) insulators (2) conductors (3) tuned circuits (4) inductors

3021. A semiconductor is said to be doped when it has added to it small quantities of: (1) electrons (2) protons (3) ions (4) impurities

3022. The connections to a semiconductor diode are known as: (1) cathode and drain (2) anode and cathode (3) gate and source (4) collector and base

3023. Bipolar transistors usually have: (1) 4 leads (2) 3 leads (3) 2 leads (4) 1 lead

3024. A semiconductor is described as “general purpose audio NPN device.” This would be a: (1) triode (2) silicon diode (3) bipolar transistor (4) field effect transistor

3025. The two basic types of bipolar transistors are: (1) P and N channel types (2) NPN and PNP types (3) diode and triode types (4) varicap and zener types

3026. A transistor can be destroyed in a circuit by: (1) excessive light (2) excessive heat (3) saturation (4) cut-off

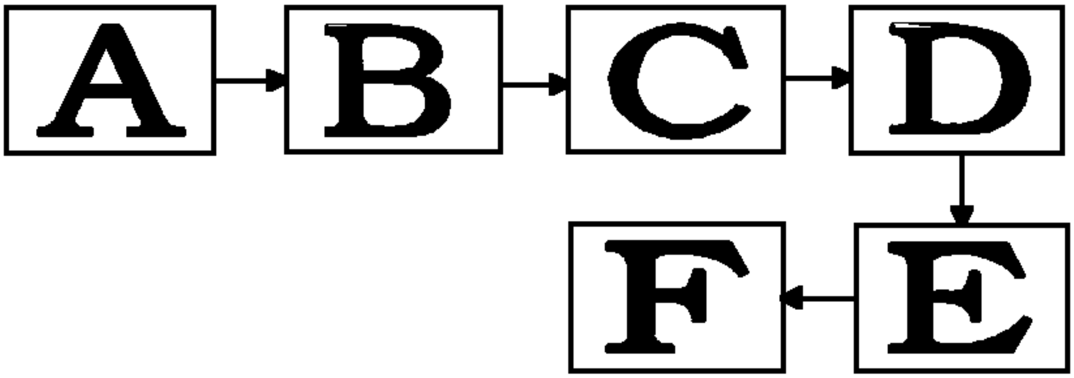
3027. A feature common to tubes and transistors is that both: (1) convert electrical energy to radio waves (2) use heat to cause electron movement (3) have electrons drifting through a vacuum (4) can amplify signals

3028. The two basic types of field effect transistors (FET) are: (1) N and P channel (2) NPN and PNP (3) germanium and silicon (4) inductive and capacitive

3029. A semiconductor having its leads labelled gate, drain and source is best described as a: (1) bipolar transistor (2) silicon diode (3) gated transistor (4) field-effect transistor

IIIn) REGULATED POWER SUPPLY BLOCK DIAGRAM

Regulated Power Supply



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1051. In the block diagram of the Regulated Power Supply, the block designated with the letter A corresponds to the: (1) input (2) transformer (3) rectifier (4) filter

1052. In the block diagram of the Regulated Power Supply, the block designated with the letter B corresponds to the: (1) transformer (2) rectifier (3) regulator (4) filter

1053. In the block diagram of the Regulated Power Supply, the block designated with the letter C corresponds to the: (1) transformer (2) rectifier (3) filter (4) regulator

1054. In the block diagram of the Regulated Power Supply, the block designated with the letter D corresponds to the: (1) transformer (2) rectifier (3) filter (4) regulator

1055. In the block diagram of the Regulated Power Supply, the block designated with the letter E corresponds to the: (1) rectifier (2) filter (3) regulator (4) output

1056. In the block diagram of the Regulated Power Supply, the block designated with the letter F corresponds to the: (1) regulator (2) output (3) input (4) transformer

IIIo) POWER SUPPLIES

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3014. The action of changing alternating current to direct current is called: (1) amplification (2) detection (3) rectification (4) transformer action

3033. The mains frequency is: (1) 60 Hz (2) 100 Hz (3) 110 Hz (4) 240 Hz

3035. A power supply is to supply DC at 12 volts at 5 amperes. The power transformer should be rated higher than: (1) 3 watts (2) 17 watts (3) 60 watts (4) 6 kilowatts

3036. In AC to DC power supply, the action of changing the AC voltage to a suitable level is achieved by the: (1) transformer (2) rectifier (3) filter (4) fuse

3037. In an AC to DC power supply to operate a radio, the three essential sections are: (1) transformer - rectifier - filter (2) transformer - resonant circuit - diode (3) rectifier - voltage divider - filter (4) voltage divider - diode rectifier resonant circuit

3038. In an AC operated DC power supply, the rectifier should be connected between: (1) AC power supply and transformer (2) filter and pilot light (3) transformer and filter (4) filter and output terminals

3039. In an AC to DC power supply, the component that most determines the final voltage of the supply is the: (1) filter capacitance (2) transformer (3) inductance of the choke (4) peak inverse ratings of the diodes

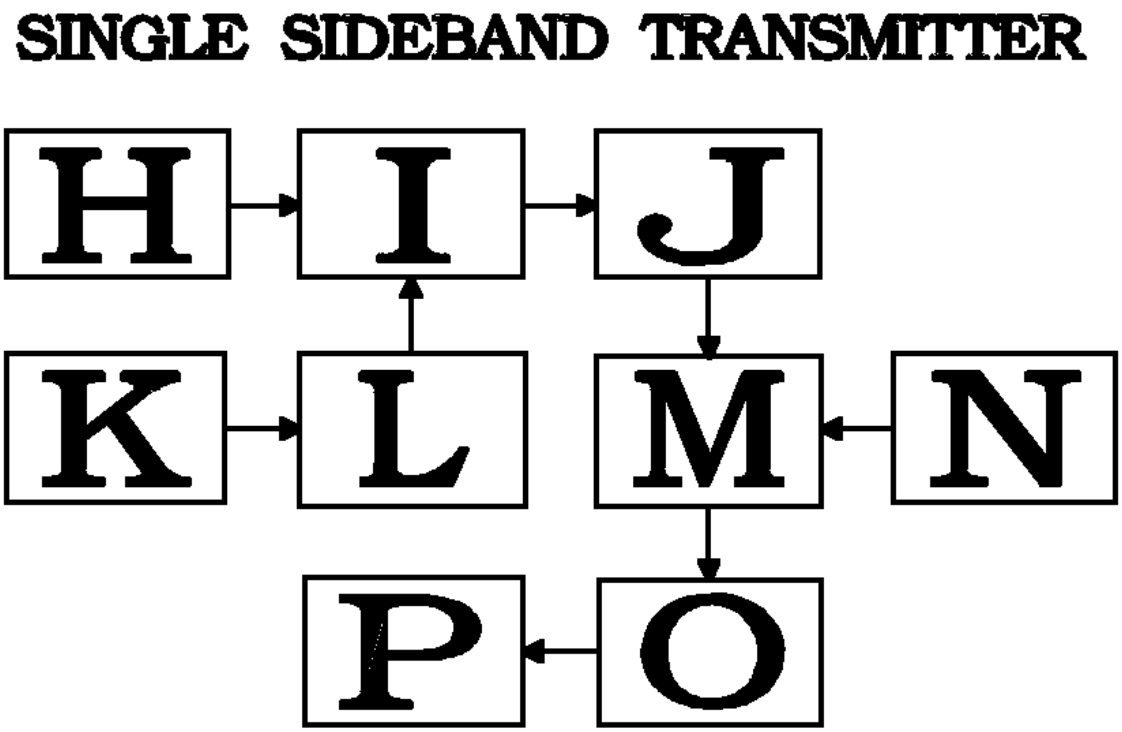
3040. An important part of a simple power supply is the diode used in the rectifier. It can convert AC to DC since it: (1) allows electrons to flow in only one direction from anode to cathode (2) allows electrons to flow in only one direction from cathode to anode (3) has a high resistance to AC but not to DC (4) has a high resistance to DC but not to AC

3041. To convert AC to pulsating DC you could use a: (1) resistor (2) diode (3) capacitor (4) transformer

IIIp) TRANSMITTER BLOCK DIAGRAMS

1) SSB Transmitter

Single Sideband Transmitter



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1001. In the block diagram of the single sideband transmitter the block designated with the letter H corresponds to the: (1) radio frequency oscillator (2) balanced modulator (3) microphone (4) mixer

1002. In the block diagram of the single sideband transmitter the block designated with the letter I corresponds to the: (1) radio frequency oscillator (2) balanced modulator (3) microphone (4) mixer

1003. In the block diagram of the single sideband transmitter the block designated with the letter J corresponds to the: (1) speech amplifier (2) antenna (3) filter (4) mixer

1004. In the block diagram of a single sideband transmitter the block designated with the letter K corresponds to the: (1) radio frequency oscillator (2) microphone (3) antenna (4) mixer

1005. In the block diagram of the single sideband transmitter the block designated with the letter L corresponds to the: (1) variable frequency oscillator (2) balanced modulator (3) speech amplifier (4) filter

1006. In the block diagram of the single sideband transmitter the block designated with the letter M corresponds to the: (1) linear amplifier (2) antenna (3) filter (4) mixer

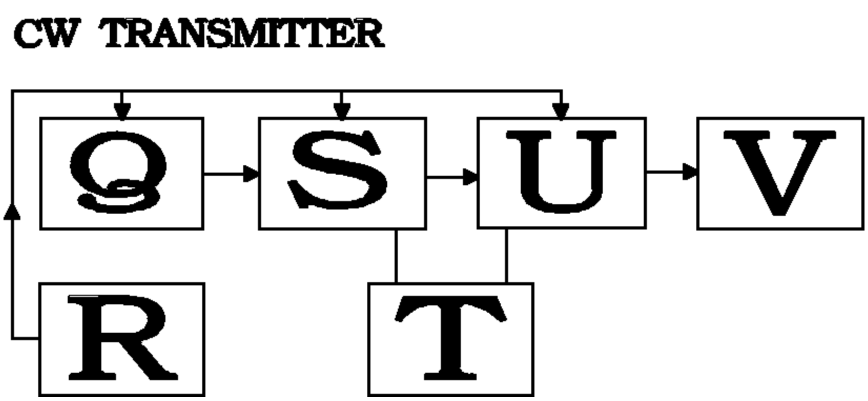
1007. In the block diagram of the single sideband transmitter the block designated with the letter N corresponds to the: (1) variable frequency oscillator (2) radio frequency oscillator (3) linear amplifier (4) antenna

1008. In the block diagram of the single sideband transmitter the block designated with the letter O corresponds to the: (1) variable frequency oscillator (2) radio frequency oscillator (3) linear amplifier (4) antenna

1009. In the block diagram of the single sideband transmitter the block designated with the letter P corresponds to the: (1) filter (2) antenna (3) linear amplifier (4) speech amplifier

2) CW Transmitter

CW Transmitter



1020. In the block diagram of the CW transmitter, the block designated with the letter Q corresponds to the: (1) master oscillator (2) power supply (3) driver/buffer (4). power amplifier

1021. In the block diagram of the CW transmitter, the block designated with the letter R corresponds to the: (1) master oscillator (2) power supply (3) driver/buffer (4) telegraph key

1022. In the block diagram of the CW transmitter, the block designated with the letter S corresponds to the: (1) power supply (2) telegraph key (3) power amplifier (4) driver/buffer

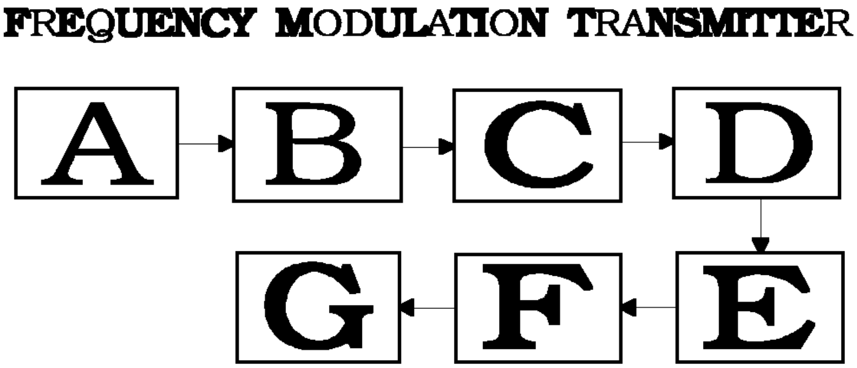
1023. In the block diagram of the CW transmitter, the block designated with the letter T corresponds to the: (1) telegraph key (2) power amplifier (3) driver/buffer (4) antenna

1024. In the block diagram of the CW transmitter, the block designated with the letter U corresponds to the: (1) power supply (2) driver/buffer (3) power amplifier (4) antenna

1025. In the block diagram of the CW transmitter, the block designated with the letter V corresponds to the: (1) power supply (2) driver/buffer (3) power supply (4) antenna

3) FM transmitter

Frequency Modulation Transmitter



1026. In the block diagram of the frequency modulation transmitter, the block designated with the letter A corresponds to the: (1) microphone (2) speech amplifier (3) antenna (4) frequency multiplier

1027. In the block diagram of the frequency modulation transmitter, the block designated with the letter B corresponds to the: (1) microphone (2) antenna (3) power amplifier (4) speech amplifier

1028. In the block diagram of the frequency modulation transmitter, the block designated with the letter C corresponds to the: (1) antenna (2) modulator (3) speech amplifier (4) frequency multiplier

1029. In the block diagram of the frequency modulation transmitter, the block designated with the letter D corresponds to the: (1) antenna (2) oscillator (3) modulator (4) power amplifier

1030. In the block diagram of the frequency modulation transmitter, the block designated with the letter E corresponds to the: (1) Modulator (2) microphone (3) power amplifier (4) frequency multiplier

1031. In the block diagram of the frequency modulation transmitter, the block designated with the letter F corresponds to the: (1) antenna (2) oscillator (3) power amplifier (4) speech amplifier

1032. In the block diagram of the frequency modulation transmitter, the block designated with the letter G corresponds to the: (1) antenna (2 modulator (3) power amplifier (4) frequency multiplier

IIIq) TRANSMITTERS

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1067. SSB means: (1) single sideband (2) synchronized serial bit (3) stereo sound broadcast (4) slow scan background

1070. Morse code is usually transmitted by radio as: (1) an interrupted carrier (2) a voice modulated carrier (3) a continuous carrier (4) a series of clicks

1068. SSB transmissions: (1) occupy twice the bandwidth of AM transmissions (2) contains more information than AM transmissions (3) occupy 1/2 bandwidth of AM transmissions (4) are compatible to FM transmissions

1069. The purpose of a balanced modulator in a SSB transmitter is to: (1) make sure that the carrier and both sidebands are in phase (2) make sure that the carrier and both sidebands are 180% out of phase (3) ensure that the percentage of modulation is kept constant (4) suppress the carrier and pass on the two sidebands

1074. You are transmitting on 2 metres using FM. Several stations advise you that your transmission is distorted. A quick check with a frequency counter tells you that the transmitter is on the proper frequency. Which of the following is the most probable cause of the distortion? (1) the frequency counter is giving an incorrect reading and you are indeed off frequency (2) the power supply output voltage is low (3) the repeater is reversing your sidebands (4) the frequency deviation of your transmitter is set too high

4003. The input power to the final stage of your transmitter is 200 watts and the output is 125 watts. What has happened to the remaining power? (1) it has been dissipated as heat loss (2) it has been used to provide greater efficiency in the final stage (3) it has been used to provide negative feedback (4) it has been used to provide positive feedback

4010. One of the principal causes of TVI from VHF transmitters operating on 50 MHz is: (1) co-channel interference (2) cross modulation (3) second harmonics (4) adjacent-channel interference on channels 2 and 3

4030. The driver stage of a transmitter is located: (1) before the power amplifier (2) between oscillator and buffer (3) with the frequency multiplier (4) offer the output tank circuit

4031. The purpose of the final amplifier in a transmitter is to: (1) increase the frequency of a signal (2) isolate the multiplier and later stages (3) produce a stable radio frequency (4) increase the power fed to an antenna

4084. The difference between DC input power and RF output power of a transmitter RF amplifier: (1) radiates from the antenna (2) appears as heat dissipation (3) is lost in the feedline (4) is due to oscillating current

IIIr) KEY CLICKS

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4001. When transmitting C.W., sparking at the key contacts, key clicks, etc. is prevented by a: (1) resistor in series with the key and a choke across the contacts (2) choke in series with the key and a capacitor across its contacts (3) choke across the key contacts and a capacitor in series with it (4) capacitor and choke in series with the key contacts

4005. In Morse code transmission, local RF interference (R.F. clicks) is produced by: (1) poor waveshaping caused by a poor voltage regulator (2) frequency shifting caused by poor voltage regulation (3) the power amplifier and is caused by high frequency parasitics (4) the making and breaking of the circuit at the Morse key

4011. Sparking may be reduced at the contacts of a Morse code key used with a radiotelegraph transmitter by: (1) buffing the key contact surfaces with light sandpaper (2) use of a good grade cleaning fluid (3) ensuring that the code key is properly grounded (4) use of a capacitor and resistor in parallel with the telegraph key

4018. Key clicks heard from a Morse code transmitter at a distant receiver, are the result of: (1) sparks emitting RF from the key contacts (2) changes in oscillator frequency on keying (3) power supply hum modulating the carrier (4) too sharp rise and decay times of the carrier

4019. In a Morse code transmission, local RF interference (RF clicks) is produced by: (1) poor shaping of the waveform (2) shift in frequency when keying the transmitter (3) sparking at the key contacts (4) sudden movement in the receiver loudspeaker

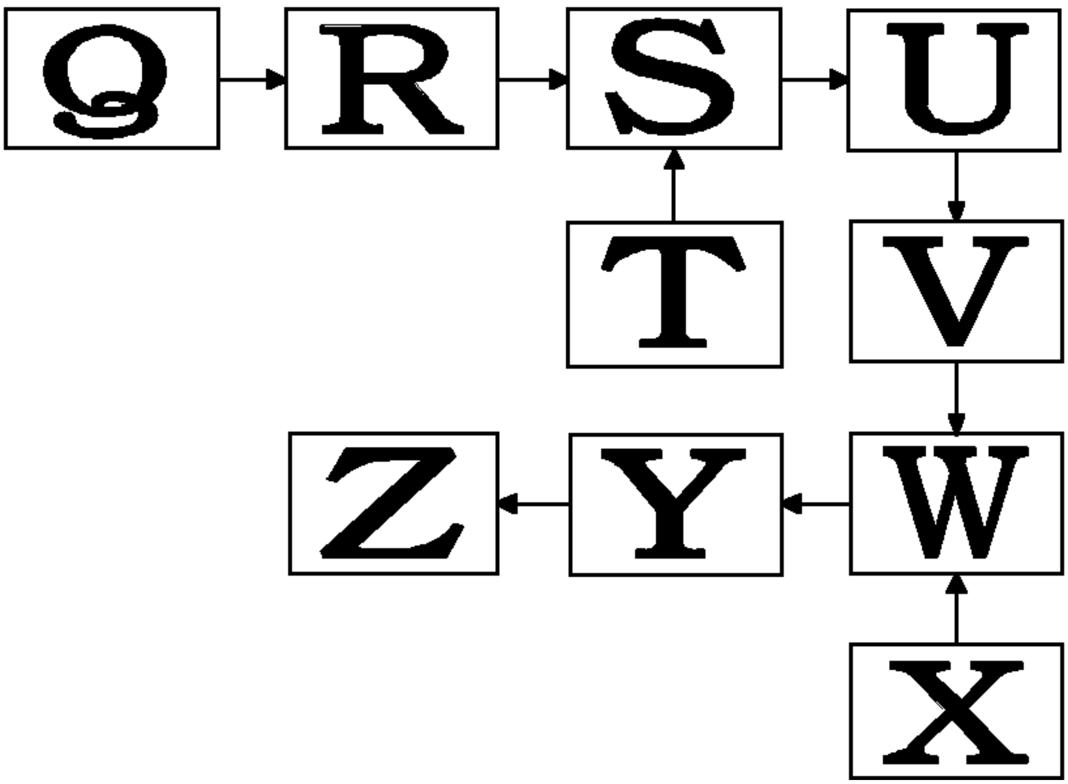
4020. RF clicks can be suppressed by: (1) turning the receiver down (2) inserting a choke and a capacitor at the key (3) regulating the oscillator supply voltage (4) using a choke in the RF power output

IIIs) RECEIVER BLOCK DIAGRAMS

1) SSB and CW Receiver

Single Sideband and CW Receiver

SINGLE SIDEBAND AND CW RECEIVER



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1010. in the block diagram of the single sideband and CW receiver, the block designated with the letter Q corresponds to the: (1) antenna (2) product detector (3) radio frequency amplifier (4) speaker and/or headphones

1011. In the block diagram of the single sideband and CW receiver the block designated with the letter R corresponds to the: (1) mixer (2) filter (3) radio frequency amplifier (4) audio frequency amplifier

1012. In the block diagram of the single sideband and CW receiver, the block designated with the letter S corresponds to the: (1) mixer (2) filter (3) product detector (4) beat frequency oscillator

1013. In the block diagram of the single sideband and CW receiver, the block designated with the letter T corresponds to the: (1) intermediate frequency amplifier (2) radio frequency amplifier (3) high frequency oscillator (4) beat frequency oscillator

1014. In the block diagram of the single sideband and CW receiver, the block designated with the letter U corresponds to the: (1) mixer (2) filter (3) antenna (4) product detector

1015. In the block diagram of the single sideband and CW receiver, the block designated with the letter V corresponds to the: (1) antenna (2) audio frequency amplifier (3) beat frequency oscillator (4) intermediate frequency amplifier

1016. In the block diagram of the single sideband and CW receiver, the block designated with the letter W corresponds to the: (1) filter (2) product detector (3) beat frequency oscillator (4) audio frequency amplifier

1017. In the block diagram of the single sideband and CW receiver, the block designated with the letter X corresponds to the: (1) mixer (2) audio frequency amplifier (3) beat frequency oscillator (4) intermediate frequency amplifier

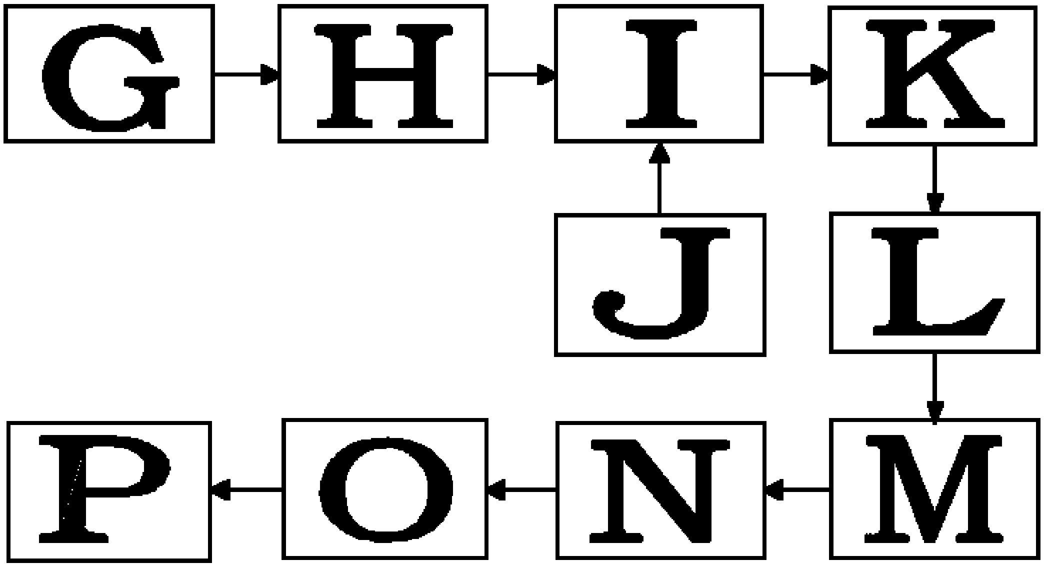
1018. In the block diagram of the single sideband and CW receiver, the block designated with the letter Y corresponds to the: (1) radio frequency amplifier (2) audio frequency amplifier (3) speaker and/or headphones (4) beat frequency oscillator

1019. In the block diagram of the single sideband and CW receiver, the block designated with the letter Z corresponds to the: (1) radio frequency amplifier (2) audio frequency amplifier (3) speaker and/or headphones (4) beat frequency oscillator

2) FM Receiver

Frequency Modulated (FM) Receiver

FREQUENCY MODULATED (FM) RECEIVER



1033. In the block diagram of the frequency modulation receiver, the block designated with the letter G corresponds to the: (1) antenna (2) limiter (3) frequency discriminator (4) radio frequency amplifier

1034. In the block diagram of the frequency modulation receiver, the block designated with the letter H corresponds to the: (1) radio frequency amplifier (2) audio frequency amplifier (3) high frequency oscillator (4) intermediate frequency amplifier

1035. In the block diagram of the frequency modulation receiver, the block designated with the letter I corresponds to the: (1) mixer (2) filter (3) limiter (4) antenna

1036. In the block diagram of the frequency modulation receiver, the block designated with the letter J corresponds to the: (1) frequency discriminator (2) high frequency oscillator (3) radio frequency amplifier (4) speaker and/or headphones

1037. In the block diagram of the frequency modulation receiver, the block designated with the letter K corresponds to the: (1) mixer (2) filter (3) frequency discriminator (4) high frequency oscillator

1038. In the block diagram of the frequency modulation receiver, the block designated with the letter L corresponds to the: (1) intermediate frequency amplifier (2) radio frequency amplifier (3) high frequency oscillator (4) limiter

1039. In the block diagram of the frequency modulation receiver, the block designated with the letter

M corresponds to the: (1) Intermediate frequency amplifier (2) radio frequency amplifier (3) high frequency oscillator (4) limiter

1040. In the block diagram of the frequency modulation receiver, the block designated with the letter N corresponds to the: (1) frequency discriminator (2) audio frequency amplifier (3) speaker and/or headphones (4) high frequency oscillator

1041. In the block diagram of the frequency modulation receiver, the block designated with the letter O corresponds to the: (1) frequency discriminator (2) audio frequency amplifier (3) speaker and/or headphones (4) radio frequency amplifier

1042. In the block diagram of the frequency modulation receiver, the block designated with the letter P corresponds to the: (1) frequency discriminator (2) audio frequency amplifier (3) speaker and/or headphones (4) radio frequency amplifier

IIIt) RECEIVERS

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4007. An amateur station is being heard across the entire dial of a broadcast receiver. The receiver is most probably suffering from: (1) poor image rejection (2) splatter from the transmitter (3) harmonics interference from the transmitter (4) cross modulation or audio rectification in the receiver

4034. A receiver’s sensitivity is its: (1) ability to pick up and make weak signals audible (2) ability to separate signals close in frequency (3) method of detection of received signals (4) measured power of the audio amplifier

4035. Of two receivers the one capable of receiving the weakest signal would have: (1) an RF gain control (2) the least internally generated noise (3) the loudest audio output (4) the greatest tuning range

4036. The figure in a receiver’s specifications which indicates its sensitivity is the: (1) band width of the IF in kilohertz (2) audio output in watts (3) signal plus noise to noise ratio (4) number of RF amplifiers

4037. If two receivers of different sensitivity are compared, the less sensitive receiver will produce: (1) more than one signal (2) more signal and less noise (3) less signal and more noise (4) a steady oscillator drift

4038. When the internal noise generated by a receiver is increased: (1) it has greater selectivity (2) the detector operates more efficiently (3) the sensitivity is reduced (4) it can be decreased by the tone control

4039. The ability of a receiver to separate signals close in frequency is called its: (1) noise figure (2) sensitivity (3) bandwidth (4) selectivity

4040. A receiver with high selectivity has: wide bandwidth (2) wide tuning range (3) narrow bandwidth (4) narrow tuning range

4041. The beat frequency oscillator of a superheterodyne receiver operates on a frequency nearest to that of the: (1) RF amplifier (2) audio amplifier (3) first oscillator (4) IF stage

4042. To receive Morse code signals, a BFO is employed on employed in a superhet receiver in order to: (1) produce intermediate frequency signals (2) beat with the local oscillator signal to produce sidebands (3) produce an audio tone to beat with the IF signal (4) beat with the IF signal to produce an audio tone

4043. Which of the following modes of transmission is usually detected with a product detector: (1) pulse modulation (2) double sideband full carrier (3) frequency modulation (4) single sideband suppressed carrier

4044. A superhet receiver designed for SSB reception must have a BFO (beat frequency oscillator) because: (1) the suppressed carrier must be replaced for detection (2) it phases out the unwanted sideband signal (3) it reduces the passband of the IF stages it beats with the received carrier to produce the other sideband

4045. Which stage of a receiver has its input and output circuits tuned to the received frequency: (1) the RF amplifier (2) the local oscillator (3) the audio frequency amplifier (4) the detector

4046. Adding an RF stage ahead of the mixer stage in a superheterodyne receiver: (1) enables the receiver to tune a greater frequency range (2) means no BFO stage is needed (3) makes it possible to receive SSB signals (4) increases the sensitivity of the receiver

4047. Which two stages in a superhet receiver have input tuned circuits tuned to the same frequency: (1) RF and IF (2) IF and local oscillator (3) RF and first mixer (4) RF and local oscillator

4048. Which stage of a superheterodyne receiver has a tuneable input stage and a fixed tuned output stage: (1) radio frequency amplifier (2) mixer stage (3) intermediate frequency amplifier (4) local oscillator

4049. The mixer stage of a superheterodyne receiver: produces spurious signals (2) produces an intermediate frequency (3) acts as a buffer stage (4) demodulates SSB signals

4050. If a 7 MHz signal frequency and a 16 MHz oscillator frequency are applied to the input of a mixer stage of a superhet receiver, the output will contain the input frequencies and frequencies of: (1) 8 and 9 MHz (2) 7 and 9 MHz (3) 9 and 23 MHz (4) 3.5 and 9 MHz

4051. Selectivity in a superhet communications receiver is achieved primarily in the: (1) RF amplifier (2) mixer (3) IF amplifier (4) audio stage

4052. The abbreviation AGC means: (1) attenuating gain capacitor (2) automatic gain control (3) anode-grid capacitor (4) amplified grid conductance

4053. The AGC circuit in a receiver is usually applied to: (1) the audio stage (2) the mixer stage (3) the power supply (4) RF and IF stages

4054. The frequency selection control of a superhet receiver (with no RF amplifier) changes the tuned frequency of: (1) the aerial input only (2) the intermediate frequency amplifier coils (3) the oscillator and aerial input (4) the input to the detector

4055. A single conversion superhet receiver whose is 9 MHz is tuned to receive a of 13 MHz. The is most likely to be: (1) 4 MHz (2) 9 MHz (3) 13 MHz (4) 18 MHz

4056. An audio amplifier is necessary in a communications receiver because: (1) signals leaving the detector are too weak (2) the carrier frequency must be replaced (3) the signal requires demodulation (4) RF vibrations are not heard by the human ear

4057. The audio output transformer of a receiver is required to: (1) step up the audio gain (2) protect the loudspeaker from high currents (3) improve the audio tone (4) match the impedance of the amplifier to the speaker

4058. If the BFO is counted, then a single conversion tunable superheterodyne receiver has: (1) one oscillator (2) two oscillators (3) three oscillators (4) four oscillators

4059. A single conversion superheterodyne receiver with a 9 MHz IF has an oscillator operating at 16 MHz. The frequency it is tuned to is: (1) 18 MHz (2) 16 MHz (3) 7 MHz (4) 9 MHz

4060. A superheterodyne receiver receives an incoming signal of 3540 kHz and the local oscillator produces a signal of 3995 kHz. To which frequency should the IF be tuned: (1) 455 kHz (2) 3540 kHz (3) 3995 kHz (4) 7435 kHz

4061. A double conversion receiver designed for SSB reception has a beat frequency oscillator and: (1) one IF stage and one local oscillator (2) two IF stages and one local oscillator (3) two IF stages and two local oscillators (4) two IF stages and three local oscillators

4062. The advantage of a double conversion receiver a single conversion is that it: (1) does not drift off frequency (2) produces a louder audio signal (3) suffers less from image interference (4) is a more sensitive receiver

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<< PREVIOUS | **INDEX** | **CONTINUE >>**

VE2DM HOME PAGE

Comments, Suggestions To: J. P. Sweeney

IVa) INTERFERENCE

(For Answer Click On Image At Left)

4015. Cross modulation is usually caused by: (1) rectification of strong signals (2) harmonics generated at the transmitter (3) improper filtering in the transmitter (4) lack of receiver sensitivity and selectivity

4016. Unwanted signals, transmitted by a radio transmitter causing harmful interference to other users, are known as: (1) rectified signals (2) reradiation signals (3) reflected signals (4) harmonic and spurious signals

4069. When the signal from a transmitter overloads the audio stages of a broadcast receiver, the transmitted signal: (1) can appear wherever the receiver is tuned (2) appears only when a station is tuned (3) is distorted on voice peaks (4) appears only on one frequency

4070. Cross-modulation of a broadcast receiver by a nearby transmitter would be noticed in the receiver as: (1) interference continuously across the dial (2) the undesired signal in the background of the desired signal (3) interference only when a broadcast signal is tuned (4) distortion on transmitted voice peaks

IVb) HARMONICS

(For Answer Click On Image At Left)

4002. Your amateur radio transmitter appears to be creating interference to the television on channel 3 (60-66 MHz) when operating on 15 metres. Other channels are not affected. The most likely cause is: (1) front end overload of the T.V. (2) harmonic radiation from the transmitter (3) a bad ground at the transmitter (4) no highpass filter on the T.V.

4004. In order to reduce the harmonic output of a high frequency transmitter, which of the following filters be installed at the transmitter? (1) band pass (2) low pass (3) high pass (4) rejection

4008. To reduce harmonic output from a transmitter you would put a _______________ in the transmission line as close to the transmitter as possible: (1) wave trap (2) low pass filter (3) high pass filter (4) band reject filter

4025. A harmonic of a signal transmitted at 3525 kHz would be expected to occur at: (1) 3573 kHz (2) 7050 kHz (3) 14025 kHz (4) 21050 kHz

4026. One possible cause of TV interference by harmonics from an SSB transmitter is from “flat topping” - driving the final into non-linear operation. The most appropriate remedy for this is to: (1) reduce microphone gain (2) reduce oscillator output (3) use another antenna (4) retune transmitter output

4027. In a transmitter, excessive harmonics are produced by: (1) a linear amplifier (2) low SWR (3) resonant circuits (4) overdriven stages

4028. Harmonics may be produced in the RF power amplifier of a transmitter (1) the output tank circuit is not correctly tuned (2) excessive modulation is applied to it (3) the oscillator frequency is unstable (4) modulation is applied to more than one stage

4029. Harmonics produced in an early stage of a transmitter may be reduced in a later stage by: (1) greater input to the final (2) transistors instead of tubes (3) tuned circuit coupling between stages (4) larger value coupling capacitors

4065. Harmonics are produced when: (1) a resonant circuit is detuned (2) negative feedback is applied to a amplifier (3) a transistor is biased for class A operation (4) a sine wave is distorted

4066. An interfering signal from a transmitter is found to have a frequency of 57 MHz (TV Ch 2 is 54 - 60 MHz). This signal could be: (1) seventh harmonic of an 80 metre transmission (2) third harmonic of a 15 metre transmission (3) second harmonic of a 10 metre transmission (4) crystal oscillator operating on its fundamental

4075. A low-pass filter would be used in the antenna arrangement of an amateur transmitter: (1) to reduce key clicks developed in a CW transmitter (2) to increase harmonic radiation (3) to eliminate chirp in CW transmissions (4) to reduce radiation of harmonics

4077. Television interference caused by harmonics radiated from an amateur transmitter could be eliminated by fitting: (1) a low pass filter in the TV receiver antenna input (2) a high pass filter in the transmitter output (3) a low pass filter in the transmitter output (4) a band-pass filter to the speech amplifier

IVc) PARASITIC OSCILLATIONS

(For Answer Click On Image At Left)

4021. A parasitic oscillation: (1) is an unwanted self-signal oscillating signal developed in a transmitter (2) is generated by parasitic elements of a Yagi beam (3) does not cause any radio interference (4) is produced in a transmitter oscillator stage

4022. Parasitic oscillations in an RF power amplifier may be caused by: (1) lack of neutralization (2) excessive harmonic production (3) unintended tuned circuits (4) overdriven stages

4023. Parasitic oscillations in the RF power amplifier stage of a transmitter may be found: (1) at low frequencies only (2) on harmonic frequencies (3) at high frequencies only (4) at high or low frequencies

4024. Parasitic oscillations are usually generated due to: (1) a mismatch between PA and feeder (2) accidental resonant frequencies in the PA circuitry (3) excessive drive or excitation to the PA stage (4) harmonics from some earlier multiplier stage

4067. Transmitter RF amplifiers can generate parasitic oscillations: (1) on the transmitter fundamental frequency (2) on harmonics of the transmitter frequency (3) on either side of the transmitter frequency (4) on VHF frequencies only

4068. Parasitic oscillations would tend to occur mostly in: (1) high voltage rectifiers (2) high gain audio output stages (3) in radio frequency power output stages (4) high gain voltage amplifiers

IVd) FILTERS

(For Answer Click On Image At Left)

4004. In order to reduce the harmonic output of a high frequency transmitter, which of the following filters be installed at the transmitter? (1) band pass (2) low pass (3) high pass (4) rejection

4008. To reduce harmonic output from a transmitter you would put a _______________ in the transmission line as close to the transmitter as possible: (1) wave trap (2) low pass filter (3) high pass filter (4) band reject filter

4009. To reduce energy from a H.F. transmitter getting into a television set, you would place a _______________ as close to the T.V. as possible: (1) wave trap (2) low pass filter (3) high pass filter (4) band reject filter

4017. A low-pass filter is used to eliminate unwanted signals and is connected to the: (1) output of the balanced modulator (2) output of the amateur transmitter (3) input of the stereo system (4) input of the mixer stage of your SSB transmitter

4071. A band pass filter will: (1) pass frequencies each side of a band (2) stop frequencies in a certain band (3) only allow certain frequencies through (4) attenuate high frequencies but not low

4072. A band stop filter will: (1) pass frequencies each side of a band (2) stop frequencies each side of a band (3) only allow certain frequencies through (4) pass frequencies below 100 MHz

4073. A low pass filter for a high frequency transmitter would: (1) attenuate frequencies above 30 MHz (2) pass audio frequencies below 3 kHz (3) attenuate frequencies below 30 MHz (4) pass audio frequencies above 3 kHz

4074. Installing a low pass filter between transmitter and transmission line will: (1) permit higher frequency signals to pass to the antenna (2) ensure an SWR not exceeding 2:1 (3) reduce the power output back to the legal maximum (4) permit lower frequency signals to pass to the antenna

4076. A low pass filter may be used in an amateur radio installation: (1) to attenuate signals lower in frequency than the transmission (2) to attenuate signals higher in frequency than the transmission (3) to boost the output power of the lower frequency transmissions (4) to boost the power of higher frequency transmissions

4077. Television interference caused by harmonics radiated from an amateur transmitter could be eliminated by fitting: (1) a low pass filter in the TV receiver antenna input (2) a high pass filter in the transmitter output (3) a low pass filter in the transmitter output (4) a band-pass filter to the speech amplifier

4078. A high pass filter is designed to: (1) prevent interference to AM broadcast reception (2) prevent overmodulation in a transmitter (3) prevent interference to TV reception (4) pass a band of speech frequencies in a modulator

4079. A high pass filter would normally be fitted: (1) between transmitter output and feedline (2) at the antenna terminals of the TV receiver (3) at the Morse key or keying relay in a transmitter (4) between microphone and speech amplifier

4080. A high pass filter attenuates: (1) a band of frequencies in the VHF region (2) low frequencies but not high frequencies (3) all except a band of VHF frequencies (4) high frequencies but not low frequencies

Va) PROPAGATION

(For Answer Click On Image At Left)

2006. Skip zone is: (1) the distance between the antenna and the return of the first refracted wave (2) the distance between the end of the ground wave and the point where the first refracted wave returns to earth (3) the distance between any two refracted waves (4) a zone of silence caused by lost sky waves

2016. The medium which reflects high frequency radio waves back to the earth's surface is called the: (1) biosphere (2) stratosphere (3) ionosphere (4) troposphere

2017. The highest frequency that will be reflected back to the earth at any given time is known as the: (1) UHF (2) MUF (3) OWF (4) LUF

2020. All communications frequencies throughout the spectrum are affected in varying degrees by the: (1) atmospheric conditions (2) ionosphere (3) aurora borealis (4) sun

2021. Solar cycles have an average length of: (1) 1 year (2) 3 years (3) 6 years (4) 11 years

2022. The skywave is another name for the: (1) ionospheric wave (2) tropospheric wave (3) ground wave (4) inverted wave

2023. That portion of the radiation kept close to the earth's surface due to bending in the atmosphere is called the: (1) ionospheric wave (2) tropospheric wave (3) ground wave (4) inverted wave

2024. That portion of the radiation which is directly affected by the surface of the earth is called: (1) ionospheric wave (2) tropospheric wave (3) ground wave (4) inverted wave

2025. Wave energy produced on frequencies below 4 MHz during daylight hours is almost completely absorbed by the ____________ layer: (1) C (2) D (3) E (4) F

2026. Normally, because of high absorption levels at frequencies below 4 MHz during daylight hours, only high angle signals are reflected back. The layer that reflects the signal is the ___________ layer: (1) C (2) D (3) E (4) F

2027. Scattered patches of high ionization can develop seasonally at the height of one of the layers. This type of ionization is called: (1) sporadic E (2) patchy D (3) pieball F (4) trans-equatorial ionization

2028. For long distance propagation, the radiation angle of the energy from the antenna should be: (1) less than 30 degrees (2) more than 30 degrees but less than forty-five (3) more than 45 degrees but less than ninety (4) 90 degrees

2029. The distance to Europe from your location is approximately 5000 km. What sort of propagation is the most likely to be involved? (1) sporadic “E” (2) tropospheric scatter (3) back scatter (4) multihop

2030. Two or more parts of the radio wave may follow different paths during propagation and this may result in phase differences at the receiver. This “change” at the receiver is called: (1) absorption (2) baffling (3) fading (4) skip

2031. The distance between the transmitter and the receiver when the ionosphere is used in propagation medium is called: (1) skip distance (2) radiation angle (3) skip angle (4) skip zone

2033. Upon which of the following is long distance High Frequency propagation most dependent: (1) ionospheric reflection (2) tropospheric reflection (3) ground reflection (4) inverted reflection

2034. The region of the ionosphere mainly responsible for long distance communications is the _____________layer: (1) C (2) D (3) E (4) F

2035. The ionization of the ionosphere reaches its minimum: (1) just after sunset (2) just before sunrise (3) at noon (4) at midnight

2036. During the day, one of the ionospheric layers splits into two parts. These layers are called: (1) A & B (2) D1 & D2 (3) E1 & E2 (4) F1 & F2

2037. What is the only medium frequency band available for amateur operation? (1) 160 metres (2) 80 metres (3) 40 metres (4) 20 metres

2038. One of the following statements in regards to 80 metres is true: (1) it is a very good band for DX in the summer during periods of high sunspot activity (2) during daylight hours absorption is not significant (3) during the winter months the band is only good for short distances (200 miles) (4) atmospheric and manmade noises tend to be high

2039. The skip distance of radio signals is determined by the: (1) type of transmitting antenna used

(2) power fed to the final amplifier of the transmitter (3) angle of radiation (4) height of the ionosphere and the angle of radiation

2048. There are three recognized layers of the ionosphere that affect radio propagation. They are called: (1) A, E, F (2) B, D, E (3) C, E, F (4) D, E, F

2049. During the summer daylight hours, propagation on 80 metres is limited to relatively short distances. This is caused because of high absorption in the: (1) D layer (2) E layer (3) F layer (4) T layer

2050. The distance from the transmitter to the nearest point where the sky wave returns to the earth is called the: (1) angle of radiation (2) maximum usable frequency (3) skip distance (4) skip zone

2051. A change or variation in signal strength at the antenna caused by differences in path lengths is called: (1) absorption (2) fading (3) fluctuation (4) path loss

2053. Greater distance can be covered with multiple-hop transmissions by decreasing the: (1) length of the antenna (2) vertical radiation angle of the antenna (3) power applied to the antenna (4) main height of the antenna

2054. The “critical frequency” is defined as the: (1) highest frequency to which your transmitter can be tuned (2) lowest frequency which is reflected back to earth (3) minimum usable frequency (4) highest frequency which will be reflected back to earth

2056. The speed of a radio wave: (1) varies indirectly to the frequency (2) is the same as the speed of light (3) is infinite in space (4) is always less than half speed of light

2057. Skip is caused by: (1) terrestrial heating and ducting (2) ionized atmospheric layers (3) a high power transmitter (4) aiming for the ionosphere

2058. Skip distance is the: (1) maximum distance reached by a signal after one reflection by the ionosphere (2) the minimum distance reached by a signal after one reflection by the ionosphere (3) the minimum distance reached by a ground wave signal (4) the maximum distance a signal will travel by both a ground wave and reflected wave

2059. The sidebands of an AM transmission may fade at different rates and depths, and so cause distortion. This is known as: (1) absorption fading (2) selective fading (3) polarization fading (4) skip fading

2060. Skip distance is a term associated with signals from the ionosphere. Skip effects are due to: (1) reflection and refraction from the ionosphere (2) selective fading of local signals (3) high gain antennas being used (4) local cloud cover

2061. The type of atmospheric layers which will best return signals to earth are: (1) oxidized layers (2) heavy cloud layers (3) ionized layers (4) sun spot layers

2062. The ionosphere: (1) is a magnetized belt around the earth (2) consists of magnetized particles around the earth (3) is formed from layers of ionized gases around the earth (4) is a spherical belt around the earth

2063. The skip distance of a sky wave will be greatest when the: (1) ionosphere is most densely ionized (2) signal given out is strongest (3) angle between ground and radiation is smallest (4) polarization is vertical

2064. If the height of the reflecting layer of the ionosphere increases, the skip distance of a high frequency transmission: (1) stays the same (2) decreases (3) varies regularly (4) becomes greater

2065. If we transmit a signal, the frequency of which is so high we no longer receive a reflection from the ionosphere, the signal frequency is above the: (1) speed of light (2) sun spot frequency (3) skip distance (4) maximum usable frequency

2066. A line of sight transmission between two stations uses mainly the: (1) ionosphere (2) troposphere (3) sky wave (4) ground wave

2067. The distance travelled by ground waves in air: (1) is the same for all frequencies (2) is less at higher frequencies (3) is more at higher frequencies (4) depends on the maximum usable frequency

2068. The radio wave which follows a path from the transmitter to the ionosphere and back to earth is known correctly as the: (1) sky wave (2) skip wave (3) surface wave (4) F layer

2069. Reception of high frequency radio waves beyond 4 000 km is generally possible by: (1) skip wave (2) surface wave (3) ground wave (4) sky wave

2070. 28 MHz radio signals are more likely to be heard over great distances: (1) if the transmitter power is reduced (2) during daylight hours (3) only during the night (4) at full moon

2071. The number of high frequency bands open to long distance communication at any time depends on: (1) the frequency at which reflection stops occurring (2) the number of frequencies the receiver can tune (3) the power being radiated by the transmitting station (4) the height of the transmitting antenna

2072. If sky wave communication between stations is possible on a frequency of 21 MHz then it should also be possible to communicate on: (1) 14 MHz (2) 28 MHz (3) 52 MHz (4) 144 MHz

2073. When a transmitted radio signal reaches a station by a one-hop and two-hop skip path, the small changes in the ionosphere can cause: (1) consistently stronger signals (2) a change in the ground wave signal (3) variations in signal strength (4) consistent fading of received signal

2074. The usual effect of ionospheric storms is to: (1) increase the maximum usable frequency (2) cause a fade-out of sky-wave signals (3) produce extreme weather changes (4) prevent communications by ground wave

2075. Changes of intensity in sky wave radio called: (1) ground wave losses (2) modulation losses (3) fading (4) sunspots

2076. Although high frequency signals may be received from a distant station by sky wave at a certain time, it may not be possible to hear them an hour later. This may be due to: (1) changes in the ionosphere (2) shading of the earth by clouds (3) changes in atmospheric temperature (4) absorption of the ground wave signal

2077. The ability of the ionosphere to reflect high frequency radio signals depends on: (1) upper atmosphere weather conditions (2) the power of the transmitted signal (3) the receiver sensitivity (4) the amount of solar radiation

2078. Regular changes in the ionosphere occur approximately every 11: (1) days (2) months (3) years (4) centuries

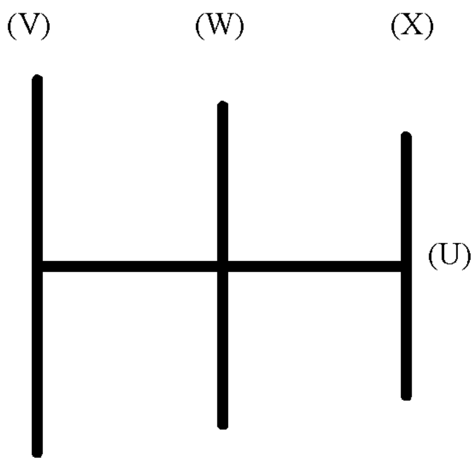
2079. Communication on the 80 metre amateur band is generally most difficult during: (1) evening in summer (2) evening in winter (3) daytime in summer (4) daytime in winter

2120. At night on the AM broadcast band a distant station is heard quite loudly, but the modulation is severely distorted. A local station on a nearby frequency is not affected. The probable cause of this distortion is: (1) transmitter malfunction (2) selective fading (3) a sudden ionospheric disturbance (4) front end overload

2122. The position of the E layer in the ionosphere is: (1) above the F layer (2) below the F layer (3) below the D layer (4) sporadic

Vb) ANTENNA BLOCK DIAGRAM

Antenna



3 ELEMENT DIRECTIONAL ANTENNA

(For Answer Click On Image At Left)

1047. In the block diagram of the Yagi-Uda 3 Element Directional Antenna, the block designated with the letter U corresponds to the: (1) boom (2) reflector (3) driven element (4) director

1048. In the block diagram of the Yagi-Uda 3 Element Directional Antenna, the block designated with the letter V corresponds to the: (1) boom (2) reflector (3) driven element (4) director

1049. in the block diagram of the Yagi-Uda 3 Element Directional Antenna, the block designated with the letter W corresponds to the: (1) boom (2) driven element (3) reflector (4.)director

1050. In the block diagram of the Yagi-Uda 3 Element Directional Antenna, the block designated with the letter X corresponds to the: (1) boom (2) reflector (3) director (4) driven element

Vc) ANTENNAS

(For Answer Click On Image At Left)

2001. The approximate physical length of a half-wave antenna for a frequency of 1000 kHz is: (1) 300 metres (2) 600 metres (3) 150 metres (4) 30 metres

2002. The wavelength for a frequency of 25 MHz is: (1) 15 metres (2) 32 metres (3) 4 metres (4) 12 metres

2003. An important requirement in obtaining efficient power transmission from a transmitter to an antenna is: (1) matching of impedances (2) inductive impedance (3) low ohmic resistance (4) high load impedance

2004. Magnetic and Electric fields about a radiating conductor are: (1) parallel to each other (2) determined by the type of antenna used (3) perpendicular to each other (4) none of the answers are correct

2005. The velocity of propagation of radio frequency energy in free space is: (1) 186 kilometres per second (2) 3,000,000 metres per second (3) 186,000 metres per second (4) 300,000 kilometres per second

2007. Polarization is determined by the: (1) magnetic field (2) electric field (3) position of the antenna (4) type of antenna

2008. A half wave dipole antenna is normally fed at the point of: (1) maximum voltage (2) maximum current (3) maximum resistance (4) resonance

2009. An important factor to consider when high angle radiation is desired from a horizontal half-wave antenna is the: (1) size of the antenna wire (2) time of the year (3) height of the antenna (4) mode of propagation

2010. An antenna which is able to transmit equally well in all directions is a: (1) dipole with a reflector only (2) quarterwave grounded vertical antenna (3) dipole with director only (4) halfwave horizontal dipole

2011. A Yagi antenna is a: (1) broadside array (2) end fire array (3) collinear array (4) parasitic array

2012. Any length of transmission line may be made to appear as an infinitely long line by: (1) shorting the line at the end (2) leaving the line open at the end (3) terminating the line in its characteristic impedance (4) increasing the standing wave ratio above unity

2013. The characteristic impedance of a transmission line is determined by the: (1) length of the line (2) load placed on the line (3) physical dimensions and relative positions of the conductors (4) frequency at which the line is operated

2014. The characteristic impedance of a 20 ft piece of transmission line is 52 ohms. If 10 ft were cut off, the impedance would be: (1) 13 ohms (2) 26 ohms (3) 39 ohms (4) 52 ohms

2015. The impedance in ohms at the feed point of the dipole and folded dipole is: (1) 73 and 300 (2) 73 and 150 (3) 52 and 200 (4) 52 and 100

2018. Which of the following will give the best match to the base of a quarter wave ground plane antenna? (1) 300 ohms balanced feedline (2) 50 ohms coaxial cable (3) 75 ohms balanced feedline (4) 300 ohms coaxial cable

2019. Maximum radiation from an antenna takes place when: (1) the transmission line is the same impedance as the transmitter (2) the transmission line is the same impedance as the antenna (3) the output impedance of the transmitter is the same as the impedance of the antenna (4) when the antenna is impedance matched to the transmitter

2032. The centre impedance of a “half wave” dipole in “free space” is: (1) 52 ohms (2) 73 ohms (3) 305 ohms (4) 598 ohms

2040. The effect of adding a series inductance to an antenna would: (1) increase the resonant frequency (2) have no change on the resonant frequency (3) have little effect (4) decrease the resonant frequency

2041. In a transmitting antenna system, the purpose of a balun is to: (1) reduce harmonic radiation (2) reduce standing waves (3) protect the antenna system from lightning strikes (4) match impedances

2042. A dummy antenna: (1) attenuates the signal generator to a desirable level (2) provides more selectivity when transmitter is being tuned (3) matches R.F. generator to the receiver (4) duplicates the electrical characteristics of a transmitting antenna without radiating radio waves

2043. In most modern transmitters and transceivers the output/input impedance for the antenna is nominally: (1) 25 ohms (2) 50 ohms (3) 75 ohms (4) 100 ohms

2044. A half wave antenna which is resonant at 7100 kHz would have an approximate overall length of: (1) 20 metres (2) 40 metres (3) 80 metres (4) 160 metres

2045. If a half-wave antenna is approximately 20 metres (65 feet) each side of the centre insulator, its resonant frequency will be approximately: (1) 3600 kHz (2) 3900 kHz (3) 7050 kHz (4) 7200 kHz

2046. A forty metre half wave antenna (7 MHz) can be used on another band without additional antenna tuning. That band is: (1) 10 metres (2) 15 metres (3) 20 metres (4) 80 metres

2047. The property of an antenna, which defines the range of frequencies to which it will respond is called its: (1) bandwidth (2) front to back ratio (3) impedance (4) polarization

2052. To obtain efficient transfer of power from a transmitter to an antenna, it is important that there is a: (1) high load impedances (2) low ohmic resistance (3) matching of impedance (4) proper method of balance

2055. The resonant frequency of an antenna may be increased by: (1) shortening the radiating element (2) lengthening the radiating element (3) increasing the height of the radiating element (4) lowering the radiating element

2080. If a pure resistance of 50 ohms is placed at the end of a length of 50 ohms transmission line: (1) all power is reflected back along the line (2) the resistance will absorb all RF power reaching it (3) standing waves will appear on the line (4) the impedance of the line will change to 25 ohms

2081. If an antenna is correctly matched to a transmitter, the length of the transmission line: (1) should be an even number of half waves (2) should be a full wavelength long (3) should be an odd number of quarter wave (4) will have no effect on the matching

2082. The impedance of a coaxial transmission line: (1) is correct for only one size of line (2) changes with the frequency of RF it carries (3) can be the same for different diameter line (4) is greater for larger diameter line

2083. Coaxial feedline contains: (1) only one conductor (2) two parallel conductors separated by spacers (3) braid and insulation around a central conductor (4) four or more conductors running parallel

2084. A balanced transmission line: (1) has one conductor inside the other (2) is made of two parallel wires (3) carries RF current on one wire only (4) is made of one conductor only

2085. The reason that an RF transmission line should be matched at the transmitter end is to: (1) prevent frequency drift (2) overcome fading of the transmitted signal (3) ensure that the radiated signal has the intended polarization (4) transfer the maximum amount of power to the antenna

2086. Damage to an antenna or feedline fed from the power amplifier of a transistor transmitter presents an incorrect load to the transmitter. The result is: (1) the driver stage will not deliver power to the final (2) the output tank circuit breaks down (3) excessive heat produced in the final transistor (4) loss of modulation in the transmitted signal

2087. One result of a slight mismatch between the power amplifier of a transmitter and the antenna would be: (1) reduced antenna radiation (2) radiation of key clicks (3) lower modulation percentage (4) smaller DC current drain

2088. Losses occurring on a transmission line between transmitter and antenna results in: (1) less RF power being radiated (2) a SWR of 1:1 (3) reflections occurring in the line (4) the wire radiating RF energy

2089. If the characteristic impedance of the feedline does not match the antenna input impedance then: (1) standing waves are produced in the feedline (2) heat is produced at the junction (3) the SWR drops to 1:1 (4) the antenna will not radiate any signal

2090. The result of the presence of standing waves on a transmission line is: (1) maximum transfer of energy to the antenna from the transmitter (2) perfect impedance match between transmitter and feedline (3) reduced transfer of RF energy to the antenna (4) lack of radiation from the transmission line

2091. When switching from receive to transmit: (1) the receiver should be muted (2) the transmit oscillator (3) the antenna should be connected (4) the power supply should be off

2092. A switching system to enable the use of one antenna for a transmitter and receiver should also: (1) disable the unit not being used (2) disconnect the antenna tuner (3) ground the antenna on receive (4) switch between meters

2093. If a dipole transmitting antenna is placed so that the ends are pointing North/South, the greatest radiation will occur: (1) to the South (2) to the South and North (3) to the East and West (4) equally in all directions

2094. At the end of suspended antenna wires, insulators are used. These act to: (1) increase the effective antenna length (2) limit the electrical length of the antenna (3) allow the antenna to be more easily held vertically (4) prevent any loss of radio waves by the antenna

2095. To lower the resonant length of an antenna, the operator should: (1) lengthen it (2) centre feed it with TV ribbon (3) shorten it (4) ground one end

2096. A half-wave antenna is often called a: (1) bi-polar (2) yagi (3) dipole (4) beam

2097. The resonant frequency of a dipole antenna is mainly determined by: (1) its height above the ground (2) its length (3) the output power of the transmitter used (4) the length of the transmission line

2098. A suitable 28 MHz transmitting antenna for mounting on the fender of a car would be a: (1) vertical long wire (2) quarter wave vertical (3) horizontal dipole (4) full wave centre fed horizontal

2099. For a particular frequency, which of the following antennas would occupy the least space: (1) quarter wave (2) dipole (3) long wire (4) full wave vertical

2100. An effective vertical antenna which utilizes a conductive surface at its base is the: (1) vertical dipole (2) quarter wave ground plane (3) aerial tuner (4) long wire

2101. The main characteristic of a vertical antenna is that it will: (1) require few insulators (2) be very sensitive to signals coming from horizontal aerials (3) receive signals from all points around it equally well (4) easy to feed with TV ribbon feeder

2102. At the ends of a half-wave dipole: (1) voltage and current are both high (2) voltage is high and current is low (3) voltage and current are both low (4) voltage low and current is high

2103. The impedance of a half wave antenna at its centre is low because at this point: (1) voltage and current are both high (2) voltage is high and current is low (3) voltage and current are both low (4) voltage is low and current is high

2104. A half-wave dipole is best fed at: (1) the ends with 75 ohms feedline (2) the centre with 300 ohms feedline (3) one end with 300 ohms feedline (4) the centre with 75 ohms feedline

2105. The impedance at the centre of a dipole antenna more than 3 wavelengths above ground would be nearest to: (1) 25 ohms (2) 75 ohms (3) 300 ohms (4) 600 ohms

2106. Essentially, a dummy load is a: (1) power absorbing tube (2) lossy tuned circuit (3) kind of resistor (4) non radiating antenna

2107. An instrument which is useful in checking whether RF power in the transmission line is being transferred to the antenna is: (1) a standing wave ratio meter (2) an antenna tuner (3) a dummy load (4) a keying monitor

2108. A SWR meter measures the degree of match between transmission line and antenna by: (1) measuring radiated RF energy (2) comparing forward and reflected voltage (3) measuring the conductor temperature (4) inserting a diode in the feedline

2109. A SWR meter gives an indication of: (1) the match between transmitter and feedline (2) the radiation pattern of the antenna (3) the gain of the antenna (4) the match between the transmission line and antenna

2110. A Yagi antenna is said to have a power gain over a dipole antenna for the same frequency band because: (1) it radiates more power than a dipole (2) more powerful transmitters can be used with it (3) it concentrates the radiation in one direction (4) it can be used for more than one band

2111. In a three element Yagi antenna, the maximum radiation is: (1) in the direction of the reflector end of the beam (2) in the direction of the director end of the beam (3) at right angles to the beam (4) parallel to the line of the co-ax feeder

2112. In a three element Yagi antenna, the reflector and director(s) are called: (1) oscillators (2) tuning stubs (3) parasitic elements (4) matching units

2113. An Isotropic antenna is a: (1) half wave reference dipole (2) infinitely long piece of wire (3) dummy load (4) hypothetical point source

2114. What is the main reason why so many VHF base and mobile antennas in the Amateur service are 5/8 of a wavelength: (1) It’s easy to match the antenna to the transmitter (2) It’s a convenient length on VHF (3) the angle of radiation is high giving excellent local coverage (4) most of the energy is radiated at a low angle

2115. The most important consideration when deciding upon an antenna for contacting stations at great distances (DX) is: (1) sunspot activity (2) angle of radiation (3) impedance (4) bandwidth

2116. On VHF, UHF and above polarization of the receiving antenna is very important in relation to the transmitting antenna, yet on HF it becomes relatively unimportant. Why is that so? (1) the ionosphere can change the polarization of the signal from moment to moment (2) the ground wave and the sky wave continually shift the polarization (3) anomalies in the earth's magnetic field produce a profound effect on H.F. polarization, but not on VHF and above (4) greater selectivity is possible with HF receivers making changes in polarization redundant

2117. What commonly available antenna feedline can be buried directly in the ground for some distance without adverse effects? (1) 75 ohm twinlead (2) 300 ohm twinlead (3) 600 ohm open-wire (4) coaxial cable

2118. When antenna feedlines must be placed near grounded metal objects, which of the following feedlines should be utilized? (1) 75 ohm twinlead (2) 300 ohm twinlead (3) 600 ohm open-wire (4) coaxial cable

2119. TV twinlead feedline may be used for a feedline in an amateur station. The impedance of this line is approximately: (1) 50 ohms (2) 70 ohms (3) 300 ohms (4) 600 ohms

2121. A 75 ohm transmission line could be matched to a 300 ohm feedpoint of an antenna: (1) with an extra 250 ohm resistor (2) inserting a diode in one leg of the antenna (3) using a 4 to 1 balun (4) using a 4 to 1 trigatron in one leg of the antenna

4064. In a three element Yagi antenna, the transmission line would be connected to the: (1) driven element (2) director (3) beam (4) reflector element

VIa) OPERATING PROCEDURES

(For Answer Click On Image At Left)

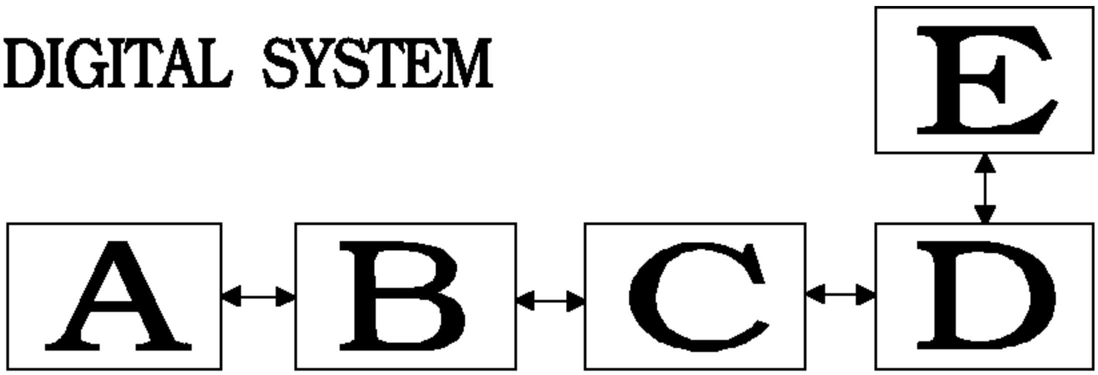
1072. Before transmitting, the first thing you should do is: (1) decrease your receiver's volume (2) ask if the frequency is occupied (3) make an announcement on the frequency indicating that you intend to make a call (4) listen carefully so as not to interrupt communications already in progress.

1076. The general call when requesting a contact on Morse telegraphy is: (1) QRW (2) AR (3) QSN? (4) CQ

1081. FM repeater operations on VHF uses one frequency for transmission and one for reception. The difference in frequency between the transmit and receive channel is normally: (1) 400 kHz (2) 600 kHz (3) 800 kHz (4) 1000 kHz

1082. When operating CW you should: (1) listen to the frequency to make sure that it is not in use before transmitting (2) tune the transmitter using the operating antenna (3) always give stations a good readability report (4) save time by leaving out spaces between words

VIb) DIGITAL SYSTEM BLOCK DIAGRAM



(For Answer Click On Image At Left)

1043. In the block diagram of the Digital System, the block designated with the letter A corresponds to the: (1) input/output (2) computer (3) modem (4) transceiver

1044. In the block diagram of the Digital System, the block designated with the letter B corresponds to the: (1) computer (2) modem (3) transceiver (4) antenna

1045. In the block diagram of the Digital System, the block designated with the letter C corresponds to the: (1) computer (2) modem (3) transceiver (4) antenna

1046. In the block diagram of the Digital System, the block designated with the letter D corresponds to the: (1) input/output (2) antenna (3) transceiver (4) computer

VIc) DIGITAL COMMUNICATIONS

(For Answer Click On Image At Left)

1066. What are the names given to the two states of the teleprinter codes in most common use by amateur stations: (1) dot and dash (2) mark and space (3) baudot and ASCII (4) packet and AMTOR

1071. Which of the following is not a digital transmission mode: (1) AMTOR (2) ASCII (3) Packet (4) ACSB

1077. Three of the following items are used to prepare and transmit packet. (Choose the least correct answer) (1) Terminal Node Controller (TNC) (2) AX.25 (3) ASCII (4) Baudot

1078. One of the following is not a common transmission speed for radioteletype (RTTY): (1) 45 WPM (2) 60 WPM (3) 75 WPM (4) 100 WPM

1079. The frequency difference between the mark and the space on radioteletype (RTTY) as used on High Frequency is normally: (1) 100 Hz (2) 170 Hz (3) 256 Hz (4) 900 Hz

1080. When using AMTOR transmissions there are two modes that may be utilized. Mode A uses Automatic Repeat Request (ARQ) protocol and is normally used: (1) when making a general call (2) for communications after contact has been established (3) only when communications have been completed (4) At all times. Mode B is for test purposes only.

Good luck on the exam!

<< PREVIOUS **INDEX**

VE2DM HOME PAGE

Comments, Suggestions To: J.P. Sweeney

3

Back

1

Back

2

Back

4

Back