

GOVERNMENT OF INDIA  
MINISTRY OF COMMUNICATIONS & IT  
DEPARTMENT OF TELECOMMUNICATIONS  
W. P. C. WING

Amateur Station Operators Licence [General / Restricted] Examination

Name ..... Roll No. .... Grade:- 

Restricted
General

Marks obtained in Section A = .....

Marks obtained in Section B = .....

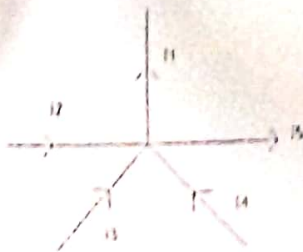
Result
Passed / Failed

Note :

1. All questions are of Multiple Choice type.
2. Maximum Marks 100.
3. Restricted grade candidates have to answer the first 25 questions (each question carries Two marks) from each section and the time allotted for it is One hour.
4. General grade candidates have to answer all the 50 questions (each question carries One mark) from each section and the time allotted for it is Two hours.

SECTION - A  
(Radio Theory and Practice)

1. Resistance of a wire is  $r$  ohms. The wire is stretched to double its length, then its resistance in Ohms is  
(a)  $r/2$       (b)  $4r$       (c)  $2r$       (d)  $r/4$       [   ]
2. The condition for the validity under Ohm's law is [   ]  
(A) Temperature at positive end should be more than the temperature at negative end  
(B) Current should be proportional to the size of resistance  
(C) Resistance must be wire wound type  
(D) Resistance must be uniform
3. Conductance is expressed in terms of [   ]  
(A) Ohm / m      (B) m / ohm      (C) mho / m      (D) mho
4. What instrument is used to measure Electromotive Force (EMF) between two points such as the poles of a battery? [   ]  
a) Magnetometer  
b) Voltmeter  
c) Ammeter  
d) Ohmmeter
5. What is an effect of inter-turn capacitance in an inductor? [   ]  
a) The magnetic field may become inverted  
b) The inductor may become self resonant at some frequencies  
c) The permeability will increase  
d) The voltage rating may be exceeded
6. Relation between currents according to KCL is:



- a)  $i_1 = i_2 = i_3 = i_4$
- b)  $i_1 + i_2 = i_3 + i_4$
- c)  $i_1 + i_3 = i_2 + i_4$
- d)  $i_1 + i_2 = i_3 + i_4$

7. The algebraic sum of voltages around any closed path in a network is equal to

- a) Infinity
- b) 1
- c) 0
- d) Negative Polarity

8. Ohm's law is not applicable to

- (a) DC circuits (b) high currents (c) small resistors (d) semi-conductors

9. How does the total current relate to the individual currents in each branch of a parallel circuit?

- a) It equals the average of each branch current
- b) It decreases as more parallel branches are added to the circuit
- c) It equals the sum of the currents through each branch (Kirchhoff's Current Law)
- d) It is the sum of the reciprocal of each individual voltage drop

10. In an RLC circuit, the power factor is always

- (a) Positive (b) Negative (c) Depends on the circuit (d) Zero

11. If the output of a logic gate is '1' when all its input are at logic '0' the gate is either :

- (a) NAND or NOR
- (b) AND or EX-NOR
- (c) OR or a NAND
- (d) EX-OR or an EX-NOR

12. At absolute zero, Si acts as?

- (a) non-metal (b) metal (c) insulator (d) none of these

13. In case of Short Circuit, \_\_\_\_\_ Current will flow in the circuit,

- (a) Zero
- (b) Very low
- (c) Normal
- (d) Infinite

14. If a full wave rectifier circuit is operating from 50 Hz mains, the fundamental frequency in the ripple will be

- (a) 100Hz (b) 25Hz (c) 50Hz (d) 70.7 Hz

15. Barrier potential of a p-n junction diode does not depend on?

- (a) doping density
- (b) diode design
- (c) temperature
- (d) forward bias

16. Sometimes computers are connected to a UPS system. What does UPS mean?

- a) United Parcel Service
- b) Uniform Product Support
- c) Under Paneling Storage
- d) Uninterruptible Power Supply

17. Two capacitors of  $5\mu\text{F}$  connected in parallel, what will be the equivalent capacitance

- (a)  $10\mu\text{F}$
- (b)  $5\mu\text{F}$
- (c)  $20\mu\text{F}$
- (d)  $2.5\mu\text{F}$

18. CE configuration of transistor is called

- (a) Common Emitter
- (b) Common Emission
- (c) Critical Emission
- (d) Controlled Emission

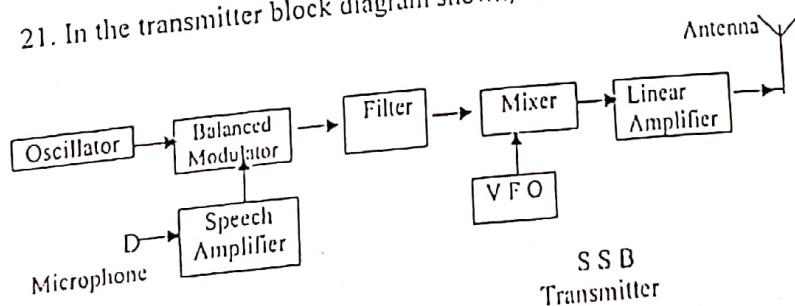
19. Which diode is used for voltage stabilization?

- (a) PIN diode
- (b) Laser diode
- (c) Zener diode
- (d) Varactor diode

20. The pure semiconductors without any impurity are called as:

- (a) Intrinsic semiconductors
- (b) Extrinsic semiconductors
- (c) Normal semiconductors
- (d) None of the above

21. In the transmitter block diagram shown, the "mixer":



- a) Adds the correct proportion of carrier of the SSB signal
- b) Mixes the audio and RF signals in the correct proportions
- c) Translates the SSB signal to the required frequency
- d) Mixes the two sidebands in the correct proportions

22. The application where one would most likely find a crystal oscillator is .....

- (a) Radio Receiver
- (b) Radio Transmitter
- (c) AF sweep generator
- (d) None of the above

23. In which kind of waveform is the phase velocity defined?

- (a) Sinusoidal
- (b) Triangular
- (c) Square
- (d) Rectangular

24. Which of the following electrical equipments cannot convert ac into dc?

- (a) Diode
- (b) Converter
- (c) Transformer
- (d) Mercury arc rectifier

25. Steradian is a measurement unit of .....

- (a) Point Angle
- (b) Linear Angle
- (c) Plane Angle
- (d) Solid Angle

26. Full form of PSK is:

- a) Phase shift Keying
- b) Phase shift Keying
- c) Phase shift Keyboard
- d) None of these

27. An example of an analog signal

- (a) Sine wave
- (b) Impulse signal
- (c) Sample signal
- (d) None of these

28. Telephone Traffic is measured in

- (a) in terms of GOS
- (b) erlang
- (c) with echo cancellers
- (d) none

29. What is main carrier of current in PNP transistor

- (a) electron
- (b) Hole
- (c) Both Electron and hole
- (d) None of the above

30. The purpose of a balun in a transmitting antenna system is to :

- a) Balance harmonic radiation
- b) Reduce unbalanced standing waves
- c) Protect the antenna system from lightning strikes
- d) Match unbalanced and balanced transmission lines

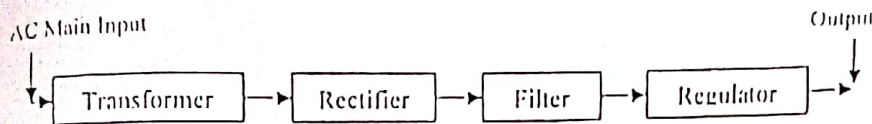
31. Which of the following is an advantage of a Class C amplifier?

- a) High efficiency
- b) Linear operation
- c) No need for tuned circuits
- d) All of these answers are correct



32. Primary component of uplink section of satellite is  
 (a) transformer  
 (b) Transistor  
 (c) Earth station transmitter  
 (d) Power station transmitter

33. The block marked 'Regulator' in the diagram is to :



Regulated Power Supply

- a) Regulate the incoming mains voltage to a constant value  
 b) Ensure that the output voltage never exceeds a dangerous value  
 c) Keep the incoming frequency constant at 50 Hz  
 d) Keep the output voltage at a constant value
34. The frequency range of 1 GHz to 30 GHz are referred as  
 (a) Sound waves (b) Micro waves (c) Mini waves (d) None of these
35. What is the relationship between resistivity  $r$  and conductivity  $s$ ?  
 (a)  $r = s^2$   
 (b)  $r = s^{0.5}$   
 (c)  $r = s^3$   
 (d)  $r = s^{-1}$
36. What is the output waveform of an unfiltered full-wave rectifier connected to a resistive load?  
 a) A series of DC pulses at twice the frequency of the AC input  
 b) A series of DC pulses at the same frequency as the AC input  
 c) A sine wave at half the frequency of the AC input  
 d) A steady DC voltage
37. A superhetrodyne receiver is tuned to 555 KHz and its local oscillator at 1010 KHz. The image frequency will be:  
 a) 1565 KHz  
 b) 455 KHz  
 c) 1465 KHz  
 d) none of these
38. An inductor stores energy in  
 (a) Electrostatic field  
 (b) Electromagnetic field  
 (c) Magnetic field  
 (d) Core
39. Which among the following are used for studying the structure of solids at atomic level?  
 (a) Ultraviolet rays  
 (b) X-rays  
 (c) Gamma rays  
 (d) Infra Red rays

40. The ability of a magnetic material to conduct magnetic flux through it is known as:

- (a) Permittivity
- (b) Retention
- (c) Permeability
- (d) Hysteresis

41. What type of component is a thermistor?

- a) A resistor that is resistant to changes in value with temperature variations
- b) A device having a controlled change in resistance with temperature variations
- c) A special type of transistor for use at very cold temperatures
- d) A capacitor that changes value with temperature

42. Envelope detector is used in:

- (a) Modulation (b) Demodulation (c) both (d) None.

43. A power ratio 100 is equivalent to .....(in dB)

- a) 10 b) 20 c) 40 d) 100

44. A cascade connection of low pass filter and high pass filter is called as.....

- (a) Band pass filter
- (b) Band elimination filter
- (c) Neither (a) nor (b)
- (d) Both a and b

45. In Colour codes blue refers to

- (a) 5
- (b) 6
- (c) 7
- (d) 8

46. The length of Dipole antenna for a signal frequency of 30 MHz is

- (a) 0.1 m (b) 5 m (c) 10 m (d) 15 m

47. Rhombic antenna is :

- a) Unidirectional
- b) Bidirectional
- c) Omnidirectional
- d) None of these

48. The wavelength of a signal of frequency 100 MHz is

- (a) 3 m (b) 1.5 m (c) 0.01m (d) 7 m

49. The turn ratio in isolation transformer is

- a) 1:1 b) No ratio c) Infinity d) None of these

50. The batteries are rated in :

- a) Volt-Amp (VA)
- b) Amp-Hour (AH)
- c) Watts
- d) Coulombs.

1. An Amateur Stat

a) Oper  
the an  
b)  
c)



SECTION - B  
(Radio Regulations)

1. An Amateur Station is one which is [   ]
  - a) Operated by the holder of a General Amateur Operator certificate of Competency on the amateur radio bands
  - b) Owned and operated by a person who is not engaged professionally in radio communications
  - c) Used exclusively to provide two-way communication in connection with activities of amateur sporting organisation
  - d) Used primarily for emergency communications during floods, earthquakes and similar disasters
2. What is the speed of Morse Code exam for General Grade ASOC exam? [   ]
  - a) 20 WPM   b) 12 WPM   c) 8 WPM   d) 5 WPM
3. By what name in general are the Amateur Radio Satellites known as: [   ]
  - a) INSAT
  - b) INTELSAT
  - c) IRIDIUM
  - d) OSCAR
4. Squelch control is used to eliminate [   ]
  - a) static interference
  - b) electrical disturbance
  - c) receiver noise
  - d) unwanted carrier
5. Where is the head office of ITU? [   ]
  - a) Geneva
  - b) England
  - c) U.S.A
  - d) India
6. Rating (QSA) 3 indicates: [   ]
  - (a) Signal is good
  - (b) Signal is fairly good
  - (c) Signal is very good
  - (d) Signal is poor
7. SECURTE is an [   ]
  - (a) Urgency signal
  - (b) Safety signal
  - (c) Test signal
  - (d) Acknowledgement signal
8. What are the frequency limits of the 40-meter amateur band? [   ]
  - a) 7.0-7.3Mhz   b) 7.0-7.4Mhz   c) 7.0-7.2Mhz   d) 7.0-7.1Mhz
9. Give the phonetic of H in radio telephony. [   ]
  - a) hostel   b) hall   c)hound   d) hotel
10. The organization responsible for the International Radio Regulations is

- a) European Radio communications Office  
b) United Nations c) International Telecommunication Union  
d) European Telecommunication Standards Institute

11. The Q Code for 'Should I decrease my sending speed?' is:  
a) QRM b) QRL c) QRS d) QRN

12. Which type of signal has the highest priority?

- a) Urgent Signal b) Test Signal  
c) Distress Signal d) Weather Warning

13. FM Broadcasting station emission is

- a) A1E  
b) A3E  
c) J3E  
d) F3E

14. Indian Amateur VHF band is

- (a) 1.44-1.46 GHz  
(b) 1.46-1.48 MHz  
(c) 1.44-1.46 MHz  
(d) 1.46-1.48 GHz

15. Identification of a station primarily can be done by:

- a) Preamble b) Call sign c) Frequency d) RST

16. Which one of the following is also known as Decimetre band?

- (a) VHF (b) UHF (c) HF (d) RF

17. Indian amateurs can communicate with other amateurs in

- a) All countries  
b) Countries permitted by ITU  
c) Countries permitted by Indian Government  
d) Countries permitted by Indian Amateur society

18. The Amateur Service may be briefly defined as

- a) a private radio service for personal gain and public benefit  
b) a public radio service used for public service Communications  
c) a radio communication service for the purpose of self training, intercommunication and technical investigation  
d) a private radio service intended only for emergency communications

19. Which frequency falls in range of HF?

- a) 15 MHz  
b) 40 MHz  
c) 100 MHz  
d) 200 MHz

What is the normal prefix for identification?  
a) VU2 b) VU3 c) VU5 d) VU7

21. 4th harmonic of 3.5 MHz is  
a) 10 MHz  
b) 15 MHz  
c) 8 MHz  
d) 7.5 MHz

22. What is the period of a 10 MHz signal?  
(a) 8 ns  
(b) 10 ns  
(c) 12 ns  
(d) 15 ns

23. C



20. What is the normal prefix for Restricted Grade Amateur Radio License in India?

- a) VU12 b) VU11 c) VU15 d) VU19

21. 4th harmonic of 2.5 MHz is

- a) 10 MHz  
b) 15 MHz  
c) 8 MHz  
d) 7.5 MHz

22. What is the period of maximum transmission after which call sign must be repeated?

- (a) 8 minutes  
(b) 9 minutes  
(c) 10 minutes  
(d) 11 minutes

23. Give the phonetic of 'Q' in Radio telephony:

- (a) Quebec  
(b) Quesne  
(c) Quedae  
(d) Quesie

24. All timings in logbook should be in

- a) IST  
b) GMT  
c) UTC  
d) Local time

25. What is the suffix to call sign if Amateur station is portable or mobile?

- a) MO  
b) MP  
c) MS  
d) MD

26. What is the suffix to call sign if Amateur station is deployed on the ship?

- a) MO  
b) MP  
c) MS  
d) MD

27. The Morse code signal SOS is sent by a station

- a) with an urgent message  
b) in grave and imminent danger and requiring immediate assistance  
c) making a report about a shipping hazard  
d) sending important weather information

28. How long must a log book be preserved?

- a) One year  
b) One year from date of last entry  
c) Two years

d) Permanently

29. In India the standard time signal is broadcast by

- a) ISRO
- b) WPC
- c) OCS
- d) NPL

30. Signal Strength 9 means:

- a) Strong Signal
- b) Weak Signal
- c) Insignificant Signal
- d) No Signal

31. What should you do if you hear a newly licensed operator that is having trouble with their station?

- a) Tell them to get off the air until they learn how operate properly
- b) Report them to the WPC H.O.
- c) Contact them and offer to help with the problem
- d) Move to another frequency

32. What is considered to be proper repeater operating practice?

- a) Monitor before transmitting and keep transmissions short
- b) Identify legally
- c) Use the minimum amount of transmitter power necessary
- d) All of these answers are correct

33. What is meant by the Morse code "CQ"

- (a) Closed
- (b) General call
- (c) Check
- (d) See you later

34. The urgency signal transmitted by a ship can be addressed to

- (a) a specific station
- (b) many stations
- (c) only two stations
- (d) None of the above

35. What is the minimum age to get General grade license

- (a) 12
- (b) 14
- (c) 16
- (d) 18

36. By how many years the lifelong license of Amateur can be extended by

- (a) 10
- (b) 15
- (c) 20
- (d) 25

37. Test signal cannot be continued for more than-

- (a) 1 min
- (b) 15 min
- (c) 15 sec
- (d) 30 sec

By what name in general are the Amateur Radio Satellites known as?

- a) INSAT
- b) INTELSAT
- c) IRIIDIUM
- d) OSCAR

39. The amateur license is renewed by

- a) P & T
- b) Ministry of communication
- c) Monitoring stations
- d) None of these

40. Line of sight propagation is the mode of communication in

- a) LF
- b) HF
- c) MF
- d) VHF

41. The broadcast of music is allowed in amateur service

- a) on request
- b) when channel is free
- c) never
- d) only for testing

42. In radio communication the term SNR stands for

- (a) Signal to Noise ratio
- (b) Silence to Noise ratio
- (c) Signal to Number ratio
- (d) None of the above

43. Relative velocity of geosynchronous satellite w.r.t earth is

- (a) Zero
- (b) Higher
- (c) Lower
- (d) None

44. SACFA stands for

- (a) Standing Advisory Committee on Radio frequency allocation
- (b) Social Action Council for frequency allotment
- (c) Secondary Advisory Council for frequency allocation
- (d) None of the above

45. Term MUF means-

- (a) Minimum Usable Frequency
- (b) Maximum Usable Frequency
- (c) Most Usable Frequency
- (d) Multi Usable Frequency

46. What does abbreviation ETA means

- (a) Extra time for arrival
- (b) Estimated time of arrival
- (c) Extended time of Approach
- (d) Estimated time of Approach



47. The figure of merit of a satellite is given by:  
(a)  $G/T$  ratio (b)  $G/T$  ratio  
(c)  $G/K$  ratio (d)  $A/C$  ratio

48. Which form of I.F. corresponds to its metric sub division

- (a) Kilometric waves
- (b) Hectometric waves
- (c) Decimetric waves
- (d) Centimetric waves

49. Lady amateurs are known as

- a) XL
- b) XYL
- c) VL
- d) LY

50. The D layer of ionosphere ranges from

- (a) 40 KM to 90 KM
- (b) 90 KM to 150 KM
- (c) 150 KM to 240 KM
- (d) None of the above

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