ENGINEERING KNOWLEDGE TEST (EKT)
ELECTRICAL & ELECTRONICS STREAM

BOOKLET SERIES 'G' **TIME ALLOTTED: 45 MINUTES**

INSTRUCTIONS FOR CANDIDATES

1. **Total number of Questions 50. Each Question is of three marks.**
2. **One mark will be deducted for every wrong answer.**
3. **No marks will be deducted for un-attempted questions.**

Q1. The value of Sin θ +Cos θ will be greatest when θ =
(a) 30 (b) 45 (c) 60 (d) 90

Q2. Out of the following, which is not emitted by radioactive substance?
(a) Electrons (b) Electromagnetic Radiations
(c) Alpha Particles (d) Neutrons

Q3. Railway tracks are banked on curves
(a) so that necessary centrifugal force may be obtained from the horizontal component & weight of the train
(b) to avoid frictional force between the tracks and wheels
(c) so that necessary centripetal force may be obtained from the horizontal component & weight of the train
(d) so that the train may not fly off in the opposite direction

Q4. Sound produced at a point is heard by a person after 5 second, while the same sound is heard by another person after 7 seconds. If the speed of sound is 300 m/s, what could be the maximum and minimum distances between the two persons?
(a) 1.8 km, 0.15 km (b) 2.2 km, 0.20 km
(c) 2.8 km, 0.25 km (d) 3.6 km, 0.60 km

Q5. The most abundant rare gas in the atmosphere is
(a) He (b) Ne
(c) Ar (d) Xe

Q6. Quantizing noise occurs in
(a) PCM (b) Time - division - multiplexer
(c) FDM (d) PPM

Q7. Which of the following antennas is best exited from a waveguide
(a) Biconical (b) Horn
(c) Helical (d) Discone

Q8. The peak transmitted power in a radar system is increased by a factor of 16 the maximum range will be increased by a factor of
(a) 2 (b) 4
(c) 8 (d) 16

Q9. In a Communication system if modulating frequency is doubled, the modulation index is also doubling, the system is
(a) FM (b) AM
(c) PM (d) Both FM and AM

Q10. The bandwidth requirement of a telephone channel is
(a) 3 KHz (b) 5 KHz (c) 10 KHz (d) 15 KHz

Q11. In class A operation of an amplifier the current flows through the active device for
(a) Whole of the input cycle
(b) Half of the input cycle
(c) More than half of the input cycle
(d) More than three fourth of the input cycle

Q12. P Type Semiconductor material as a whole is
(a) Positively charged (b) Negatively charged
(c) Electrically neutral (d) Dipole

Q13. The target cross section is changing, the best system for accurate tracking is
(a) Monopulse (b) Conical scanning
(c) Sequential locking (d) lobe swithing

Q14. Waveguides are not used for frequencies below
(a) 1GHz (b) 10 GHz
(c) 100 GHz (d) 500 MHz

Q15. Schmitt trigger can be used as a
(a) Comparator (b) square wave generator
(c) Flip flop (d) all of these

Q16. Subtracting 0101 from 1110 in binary terms, we get
(a) 0110 (b) 1010
(c) 1001 (d) 0011

Q17. The universal gate is
(a) AND (b) NOT
(c) OR (d) NAND

Q18. The TWT is sometimes preferred to the magnetron as a radar transmitter output tube because it is
(a) Capable of a longer duty cycle (b) A more efficient amplifier
(c) More broadband (d) Less noisy

Q19. Modulation system used for video modulation in TV transmission is
(a) DSB (b) DSBSC
(c) SSB (d) SSBSC

Q20. A Yagi antenna produces
(a) Figure of eight pattern (b) Broadside pattern
(c) End fire array (d) Helical pattern

Q21. Medium frequency waves travel mainly as
(a) Sky waves (b) Surface waves
(c) Space waves (d) Ground wave

Q22. In a two cavity klystron, the input cavity resonator is also known as
(a) Velocity modulator (b) Catcher cavity
(c) Buncher cavity (d) Accelerator

Q23. Which of the following can measure pressure directly?
(a) LVDT (b) Strain gauge
(c) Rotameter tube (d) Bourdon tube

Q24. _____ is an active filter
(a) RC filter (b) Notch filter
(c) Butterworth filter (d) Band pass filter

Q25. If the area of the square is increased by 69% the side of the square increases by
(a) 13 % (b) 30 %
(c) 39 % (d) 130 %

Q26. In 8085 microprocessor _____ is the highest priority interrupt
(a) INTR (b) RST5.5
(c) RST (d) Trap

Q27. Crossover distortion occurs in _____ Amplifiers
(a) Push-pull (b) Class-A
(c) Class-B (d) Class-AB

Q28. Voltmeter is used in _____
(a) Series with the circuit (b) Parallel to the circuit
(c) Either of the two combination (d) none

Q29. One Coulomb passing a point in one second is one _____
(a) Ohm (b) Charge
(c) Ampere (d) Volt

Q30. Which part of an atom has no electrical charge?
(a) Electron (b) Neutron
(c) Proton (d) Positron

Q31. If Current in a circuit is 0 Ampere, it is likely that
(a) Circuit is open (b) Circuit is closed
(c) Resistance is too low (d) Voltage is too high

Q32. Voltage source which converts chemical energy to electrical energy is called
(a) Solar cell (b) Electrical power supply
(c) Electrical generator (d) Battery

Q33. Piezoelectric effect is carried out in
(a) Composite filter (b) Constant K prototype filter
(c) Crystal filter (d) Ceramic filters

Q34. The most common modulation system used for telegraphy is
(a) FSK (b) Two tone modulation
(c) PCM (d) Single tone modulation

Q35. Logic gates required to built up a half adder circuit are,
(a) Ex-OR gate and NOR gate (b) Ex-OR gate and OR gate
(c) Ex-OR gate and AND gate (d) Ex-NOR gate and NAND gate

Q36. The breakdown that occurs in reverse bias conditions in a narrow junction diode is known as
(a) Zener breakdown (b) The avalanche breakdown
(c) Either of the above (d) Reverse breakdowns

Q37. In case of satellite communication
(a) Uplink frequency> Downlink frequency
(b) Downlink frequency>Uplink frequency
(c) Downlink frequency=Uplink frequency
(d) None of the above

Q38. Change in value of an analog signal to digital, during conversion process produces
(a) Quantisation error (b) Nyquist error
(c) Resolution error (d) Sampling error

Q39. If a signal is passing through a Logic gate is inhibited by sending a low into one the input and the output is HIGH, the gate is
(a) OR (b) NAND (c) NOR (d) AND

Q40. The Logic gate that will have HIGH or "1" at its output when one of its inputs is high is
(a) NOT
(b) OR
(c) NOR
(d) AND

Q41. In frequency modulation
(a) Frequency of the carrier remains constant
(b) Carrier frequency varies in accordance with the modulating signal amplitude
(c) Carrier frequency varies in accordance with the modulated signal frequency
(d) None of the above

Q42. Close loop control system is better than the open loop system due to
(a) Highest levels of amplification
(b) Feedback control
(c) Robust design features
(d) Easy to manufacture

Q43. A high PRF would
(a) Increase the maximum range
(b) Decrease the maximum range
(c) Affect range ambiguity
(d) Increase the efficiency of radar

Q44. The general characteristic of semi conductors is
(a) Linear device
(b) Non linear device
(c) Parabolic characteristic devices
(d) None of the above.

Q45. The function of Schmitt trigger is
(a) To divide frequency
(b) To control frequency
(c) To shape a wave
(d) To give out a saw tooth wave

Q46. The disadvantage of two cavity klystron is
(a) its efficiency is low
(b) output power is 1000
(c) It can be used at only one operating frequency
(d) None of the above

Q47. Use of RADAR for Military and civil application is to,
(a) Find the velocity of moving target
(b) Detection of far off object in air
(c) Surveillance of aircrafts/UAV
(d) All of the above

Q48. Stars appears to move from east to west because
(a) All stars move from east to west
(b) The earth rotates from west to east
(c) The earth rotates from east to west
(d) The background of the stars moves from west to east

Q49. The most malleable metal is
(a) Platinum
(b) silver
(c) Iron
(d) gold

Q50. Which layer of the atmosphere is used the most for communication
(a) Troposphere
(b) Ionosphere
(c) Mesosphere
(d) Troposphere