JET-2022 Electronics Sample Construct

- **Domain**

1. An electronic circuit wire of conductivity 5.8 × 107 mho-m is subjected to an electric field of 40 mV/m. What will be its current density?
   a) 2.32×106 A/m^2
   b) 1.16×106 A/m^2
   c) 4.64×106 A/m^2
   d) 4.30×106 A/m^2

2. Which of the following type of transistors is preferred in digital and analog electronic circuits?
   a) BJT
   b) JFET
   c) MOSFET
   d) FET

3. The thermal equilibrium concentration of the electrons in the conduction band and the holes in the valence band depends upon? Effective density of states
   a) Effective density of states
   b) Fermi energy level
   c) Both A and B
   d) Neither A nor B

4. In which of the following semiconductor, the concentration of the holes and electrons is equal?
   a) Intrinsic
   b) Extrinsic
   c) Compound
   d) Elemental

5. For a Voltage divider circuit having R_C=R1=R2=R_E=1KΩ, if V_{CC}=20V, find IC when V_{ce} = V_{CC}?
   a) 1mA
   b) 2mA
   c) 20mA
   d) 0

6. The base current for a BJT remains constant at 5mA, the collector current changes from 0.2mA to 0.3 mA and beta was changed from 100 to 110, then calculate the value of S.
   a) 0.01m
   b) 1m
   c) 100m
   d) 25m

7. Why do we need collector-emitter feedback bias?
   a) To provide a non–linear output
   b) To maintain transistor in the active region
   c) To maintain transistor in the saturation region
   d) To maintain transistor is cut – off region

8. What is the function of R_E in the collector-emitter feedback circuit?
   a) To improve stability and decrease positive feedback
   b) To improve stability and increase positive feedback
   c) To improve stability and decrease negative feedback
   d) To improve stability and increase negative feedback

9. If an instrument has a cramped scale for larger values, then it follows
   a) Square law
   b) Logarithmic law
   c) Uniform law
   d) None of the above

10. Alternating current is measured by
    a) Induction ammeter
    b) Permanent magnet type ammeter
    c) Electrostatic ammeter
    d) Moving iron repulsion type voltmeter

11. A sensitive galvanometer produces large deflection for a
    a) Small value of current
    b) Large value of current
    c) Large value of power
    d) Large value of voltage

12. In an energy meter braking torque is produced to
    a) Safe guard it against creep
    b) Brake the instrument
    c) Bring energy meter to stand still
    d) Maintain steady speed and equal to driving torque

13. A UJT is sometimes called a _____ diode.
    a) double-based
    b) single-based
    c) a rectifier
    d) a switching diode

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14. AC power in a load can be controlled by connecting

a) two SCRs in series
b) two SCRs in parallel
c) two SCRs in parallel opposition
d) two SCRs in series opposition

15. SCR is a rectifier constructed of silicon material. Silicon is chosen because

a) it is the most abundant material
b) of its strength and ruggedness
c) it is much cheaper than any other material
d) of its high temperature and power capabilities

16. The gate of an SCR is _____ with respect to its cathode.

a) positive
b) at zero potential
c) negative
d) at infinite potential

17. Equations of phage velocity of a transmission lines is

a) V=LC
b) V=1/√LC
c) V=√LC
d) V=1/LC

18. For a transmission line Zoc=20 ohm and Zsc=5 OHM then Zo will be

a) 15 ohm
b) 10 ohm
c) 100 ohm
d) 1000 ohm

19. In a co axial line with inner and outer diameters of 0.0645 and 0.0215 inches and a Teflon di electric with $\in r=2.2$. The highest usable frequency before the TE11 waveguide mode starts to propagate is:

a) 16.8 GHz
b) 117.7 GHz
c) 15.3 GHz
d) 8.4 GHz

20. The commercially used co axial cable and connectors used has a characteristic impedance is:

a) 50Ω
b) 100Ω
c) 33.34Ω
d) 66.6Ω

21. The _____ directive instructs the assembler to begin memory allocation for a segment/block/code from the stated address.

a) GROUP
b) OFFSET
c) ORG
d) LABEL

22. Which of the following is not a property of TRAP interrupt in microprocessor?

a) It is a non-mask able interrupt
b) It is of highest priority
c) It uses edge-triggered signal
d) It is a vectored interrupt

23. Which of the following is true?

a) Every instruction has two parts i.e. opcode and operands
b) MOV B, C is a two-byte instruction
c) MVI A, 90H is a three-byte instruction
d) Maximum number of T-states possible for the execution of an instruction is 16

24. What is stored in the H & L general-purpose register?

a) Opcode
b) Address of memory
c) Address of next instruction
d) Temporary data

25. For a lossless line, which of the following is true?

a) $\gamma=j\beta$
b) $\gamma=\alpha$
c) $\gamma=\alpha+j\beta$
d) $\gamma=\alpha*j\beta$

26. Expression for phase constant β is:

a) √LC
b) ω √LC
c) 1/ (ω √LC)
d) None of the mentioned

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27. The input impedance of an open-circuited transmission line is represented using this trigonometric function:

a) sine function
b) cosine function
c) cotangent function
d) tangent function

28. The relation between nepers and decibels is:

a) 1 Np= 8.686 dB
b) 1 dB=8.868 dB
c) Np≥dB
d) dB≥Np

29. Which of the following is not a TDMA standard of 2.5G network?

a) GPRS
b) GSM
c) HSCSD
d) EDGE

30. Which of the following specifies a set of media access control (MAC) and physical layer specifications for implementing WLANs?

a) IEEE 802.11
b) IEEE 802.16
c) IEEE 802.15
d) IEEE 802.3

31. Which of the following is not a property of MSK?

a) Self-synchronizing capability
b) Variable envelope
c) Spectral efficiency
d) Good BER performance

32. Which of the following is specified by a specific number of bit errors occurring in a given transmission?

a) Equally likely event
b) Exhaustive events
c) Bit error rate
d) Outage event

33. When optical fibers are to be installed in a working environment, the most important parameter to be considered is?

a) Transmission property of the fiber
b) Mechanical property of the fiber
c) Core cladding ratio of the fiber
d) Numerical aperture of the fiber

34. Optical fibers for communication use are mostly fabricated from _____

a) Plastic
b) Silica or multicomponent glass
c) Ceramics
d) Copper

35. The cable is normally covered with an outer plastic sheath to reduce _____

a) Abrasion
b) Armor
c) Friction
d) Dispersion

36. A measure of amount of optical fiber emitted from source that can be coupled into a fiber is termed as _____

a) Radiance
b) Angular power distribution
c) Angular power distribution
d) Power-launching

37. The rounding of the fiber ends with a low energy discharge before pressing the fibers together and fusing with a stronger arc is called as _____

a) Pre-fusion
b) Diffusion
c) Crystallization
d) Alignment

38. _____ is caused by surface tension effects between the two fiber ends during fusing.

a) Pre-fusion
b) Diffusion
c) Self-alignment
d) Splicing

39. How does the negative feedback help a collector emitter feedback circuit?

a) Helps make it more predictable
b) Provides opposing change in base voltage
c) Helps make it more predictable, provides opposing change in base voltage
d) It doesn't affect

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40. What is the function of a bias circuit?

a) To simplify the circuit
b) To provide a non–linear output
c) To optimize the power
d) To provide steady current or voltage

41. What is /are the purpose/s of adopting stabilization and compensation techniques?

a) To provide maximum bias
b) To provide thermal stabilization
c) To provide maximum bias & thermal stabilization
d) To provide minimum bias

42. Thermal runaway is_____

a) uncontrolled positive feedback
b) controlled positive feedback
c) uncontrolled negative feedback
d) controlled negative feedback

- **IoT**

43. American quality guru who took the message of quality to Japan

a) Genichi Taguchi
b) Masaaki Imai
c) Shigeo Shingo
d) W. Edwards Deming

44. Daily management activities are done for?

a) Changing the business
b) Getting breakthrough improvement
c) Running the business
d) Improving the profit

45. What is the most significant phase in a genetic algorithm?

a) Selection
b) Mutation
c) Crossover
d) Fitness function

46. Which of these is/are the most common implementations of clustering?

a) Density-Based Spatial Clustering of Applications with Noise (DBSCAN)
b) Self-organizing maps (SOM)
c) k-means clustering
d) All of these

47. The core technology behind the working of Crypto-Currency is

a) Blockchain
b) Social Media
c) Analytics
d) Mobility

48. Is Decentralization one of the design principles for Industry 4.0?

a) Yes
b) Depending on the volume
c) No
d) Cannot be certain

49. In which year, did Google announce a fully autonomous car?

a) 2012
b) 2010
c) 2015
d) 2011

50 What is/are the configurations of a smart sensor?

a) Analog detection unit
b) Digital signal conditioning unit
c) Transmitting unit
d) Both (a) and (b)

Disclaimer: The sample paper is for illustrative purposes alone. The actual jet exam may contain different numbers of total questions or duration.