JET-2022 Electrical Sample Construct

- ## Domain

1. A hole in a semiconductor is defined as _____
   a) A free-electron
   b) The incomplete part of an electron pair bond
   c) A free proton
   d) A free neutron

2. As the doping to a pure semiconductor increase, the bulk resistance of the semiconductor _____
   a) Remains the same
   b) Increases
   c) Decreases
   d) None of the above

3. A transistor is a _____ operated device
   a) current
   b) voltage
   c) both voltage and current
   d) None of the above

4. In a transistor, the base current is about _____ of emitter current
   a) 0.25
   b) 0.2
   c) 0.2
   d) 0.05

5. The output Q of a J-K flip flop is zero. It is changed to 1 when a clock pulse is applied. The input J and K are respectively
   a) 1 and X
   b) 0 and X
   c) X and 0
   d) X and 1

6. A hole and electron in close proximity would tend to _____
   a) Repel each other
   b) Attract each other
   c) Have no effect on each other
   d) None of the above

7. A 4-bit synchronous counter uses a flip flop with a propagation delay time of 25 ns each. The maximum possible time required for change of state will be
   a) 25ns
   b) 50ns
   c) 75ns
   d) 100ns

8. A 4-bit ripple counter and a 4-bit synchronous counter are made by flip-flops having a propagation delay of 10 ns each. If worst-case delay in the ripple counter and the synchronous counter by R and S respectively, then
   a) R =10 ns, S = 40ns
   b) R= 40ns, S =10ns
   c) R= 10ns, S =30ns
   d) R= 30ns, S= 10ns

9. A Digital multiplexer is a combinational logic circuit to perform the operation
   a) AND -AND
   b) OR-OR
   c) AND -OR
   d) OR-AND

10. During which time does maximum conduction spreading take place in the thyristor during turn ON?
    a) delay time
    b) spread time
    c) rise time
    d) same for every case

11. During the gate recovery time
    a) charge carriers of J2 junction recombined.
    b) charge carriers of J2 junction are swept out.
    c) charge carrier of J1 junction removed.
    d) charge carriers of J3 junction are removed.

12. Thermal voltage VT can be given by
    a) Kq/T.
    b) KT/q.
    c) qT/K.
    d) $(K2/q)(T + 1/T - 1)$.

12. Power MOSFET device can be used in application up to power range of
    a) 1 KVA
    b) 2 KVA
    c) 500VA
    d) 100KVA

13. The number of hardware interrupts (which require an external signal to interrupt) present in an 8085 microprocessor are -

a) 1   c) 5

b) 4   d) 13

14. In the 8085 microprocessors, the RST6 instruction transfers the program execution to the following location -

a) 30 H   c) 48 H

b) 24 H   d) 60 H

15. In an intel 8085A, which is the first machine cycle of an instruction?

a) An op-code fetch cycle   c) A memory read cycle

b) A memory read cycle   d) An I/O read cycle

16. Both the ALU and control section of CPU employ which special-purpose storage location?

a) Buffers   c) Accumulators

b) Decoders   d) Registers

17. The material used for filaments of Incandescent lamps is

a) Manganin   c) Tungsten

b) Eureka   d) Tungsten

18. The thermocouple is used to measure

a) resistance   c) current

b) magnetic flux   d) temperature

19. A certain circuit is composed of two parallel resistors. The total resistance is 1403 Ω one of the resistors is 2 KΩ the other resistance value is

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21. A 6 V battery output is divided down to obtain two output voltages. Three 2.2 KΩ resistors are used to provide the two taps. The two output voltages are

a) 2 V, 4 V   c) 2 V, 6 V

b) 2 V, 2 V   d) 4 V, 6 V

22. Prime Mover converts Steam Energy to:

a) Chemical Energy   c) Thermal Energy

b) Mechanical Energy   d) Magnetic Energy

23. A 100 MW thermal power plant will consume nearly how many tonnes of coal in one hour?

a) 50 tonnes   c) 1500 tonnes

b) 150 tonnes   d) 15000 tonnes

24. The velocity of thermal (slow) neutrons triggering nuclear fission reaction (having energy equal to 0.025 eV) is about _____ metres/second.

a) 1100   c) 3300

b) 2200   d) 4400

25. A 100 MW steam station uses coal of a calorific value of 5780 kcal/kg. The thermal efficiency is about 30% and the electrical efficiency is 93%. What would be the coal consumption per hour, when the station is delivering its full rated output?

a) 48672 kg   c) 71876 kg

b) 53330 kg   d) 31826 kg

26. For transmission of power over a distance of 500 km, the transmission voltage should be in the range
    a) 150 to 220 kV   c) 60 to 100 kV
    b) 100 to 120 kV   d) 20 to 50 kV

27. The conductor of a 15 km long, single-phase two wirelines is separated by a distance of 1.5 m. The diameter of each conductor is 1 cm. If the conductors are of copper, the inductance of the circuit is
    a) 23.81 mH   c) 32.81 mH
    b) 35.72 mH   d) 53.72 mH

28. What is the value of the C parameter by using a nominal T method for a 3-phase balanced load of 30 MW which is supplied by 132 kV, 50 Hz, and 0.85 pf lagging? The series impedance of a single conductor is $(20 + j52)$ Ω and the total phase to neutral admittance is $315 * 10^{-6}$ Siemen.
    a) $0.000315 \angle 90$ c) $0.004125 \angle 90$
    b) $0.000251 \angle 90$ d) $0.000289 \angle 90$

29. The ABCD parameter of a 3-phase transmission line is given as follows:
$A= D = 0.8 \angle 1°$, $B = 170 \angle 85°$ Ω, and $C = 0.002 \angle 90.4°$ ℧ the sending end voltage is 400 kV. What is the receiving end voltage under no-load conditions?
    a) 400 kV   c) 320 kV
    b) 500 kV   d) 417 kV

30. If an autotransformer having a transformation ratio equal to 0.6 is supplying a load of 8kw then its power transferred from primary to secondary is given by
    a) 3 kW   c) 3.4 kW
    b) 3.2 kW   d) 3.5 kW

31. A transformer when connected to a 230V, 50Hz supply, under no load draws a current of 4A at a power factor of 0.2 lagging. The magnetizing current (I_m) and core loss (P_c) is equal to
    a) 3.919A, 184W   c) 39.19A, 184W
    b) 1.84A, 391.9W   d) 3A, 180W

32. A 500 kVA single-phase transformer has 90% efficiency at both half load and full load at unity power factor. Then iron losses will be
    a) 12.55 KW   c) 16.55 kW
    b) 13.55 kW   d) 18.55 KW

33. In a 20 kVA, 2200 / 220 volts transformer iron and copper losses are 300 and 400 watts respectively. Its efficiency at half load and unity power factor is
    a) 0.9511   c) 0.9777
    b) 0.9615   d) 0.98

34. A 3-phase induction motor is running at 2% slip. If the input to the rotor is 1000 W, then mechanical power developed by the motor is
    a) 200 W   c) 980 W
    b) 20 W   d) 500 W

35. A 3-phase, 50 Hz, 6-pole induction motor has a shaft output of 10kW at 930 rpm. Friction and windage losses are 1% of the output. Total stator losses is 600W. The rotor input is
    a) 10860 W   c) 11460 W
    b) 10100 W   d) 11000 W

36. A center ammeter connected to the rotor end circuit of a 6-pole,50 Hz, induction motor makes 45 complete oscillations in a minute. Then the rotor speed and the speed of stator field w.r.t. rotor is
    a) 985, 15   c) 985, 985
    b) 970, 1000   d) 985, 970

37. A 3-phase induction motor taking a line current of 200 A, is started by direct switching. If an autotransformer of with 50% tapping is made to be used, the motor line current and supply line current will be respectively
    a) 100, 50   c) 50, 200
    b) 50, 100   d) 50*1.73, 200

38. What is the full form of EOCR?

a) Electronic Overcurrent Relay

c) Electrical Overcurrent Relay

b) Earth Overcurrent Relay

d) None of these

39. The maximum rated secondary voltage of a PT is _____.

a) 100 V

c) 120 V

b) 110 V

d) 220 V

40. The objective of earthing or grounding is:

a) to provide a low resistance path to the ground

c) to provide a flow of positive, negative, and zero sequence currents

b) to provide a high resistance path to the ground

d) None of the above

41. Which device is the most commonly used for protection against dangerous high voltage?

a) Thyrite Lightning Arrester

c) Horn Gap Arrester

b) Expulsion Type Lightning Arrester

d) Rod Gap Arrester

42. With the increases in _____, The efficiency obeys the 'straight-line law'

a) Pressure

c) volume

b) Temperature

d) All of the above

- **IoT:**

43. How quality can be quantified

a) performance + expectations

c) performance – expectations

b) performance x expectations

d) performance / expectations

44. Daily management is used to?

a) To enhance Process Capability

c) Achieve process stability

b) To enhance Process Capability

d) Improve the Quality

45. A Machine Learning technique that helps in detecting the outliers in data.

a) Clustering

c) Anomaly Detection

b) Classification

d) All of the above

46. Which of these is also called 'Market Basket Analysis'?

a) Anomaly Detection

c) Clustering Analysis

b) Association Analysis

d) Classification Analysis

47. What if the full-form of RPA?

a) Robotic Product Automation

c) Robust Performance Automation

b) Robotic Process Automation

d) Robotic Process Augmentation

48. What is the objective for industry 4.0?

a) Increase efficiency

c) Enabled self-controlling

b) Reduce complexity

d) All of the above

49. What does BLE stand for?

a) Bluetooth Low Energy

c) Both (a) and (b)

b) Bluetooth Level energy

d) None of the above

50. What are the issues related to the lack of standardization in IIoT?

a) Device interoperability

c) Security and privacy

b) Semantic interoperability

d) All of the above

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