



श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकीसंस्थान, तिरुवनंतपुरम्-11
SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES & TECHNOLOGY
THIRUVANANTHAPURAM—695 011

ENTRANCE EXAMINATION - ACADEMIC SESSION JANUARY 2019

PROGRAM: DIPLOMA IN OPERATION THEATRE TECHNOLOGY.....

Time:90 Minutes

Max.Marks: 100

(Select the most appropriate answer)
(There are no negative marks for wrong answers)

Q1. Most commonly used semiconductor material is

- a) Germanium b) Silicon c) Both a and b d) None of these

Q2. The separation between conduction and valence bands on the energy level diagram is called

- a) Insulation band b) Forbidden band c) Dielectric band d) None of these

Q3. The valence and conduction bands in a conductor

- a) Have large forbidden energy gap b) Overlap
c) Have small forbidden energy gap d) None of these

Q4. The valence and conduction bands in a semiconductor

- a) Have large forbidden energy gap b) Overlap
c) Have small forbidden energy gap d) None of these

Q5. The valence and conduction bands in an insulator

- a) Have large forbidden energy gap b) Overlap
c) Have small forbidden energy gap d) None of these

Q6. Extremely pure form of semiconductor is called

- a) Doped semiconductor b) Extrinsic semiconductor
c) Intrinsic semiconductor d) None of these

Q7. Addition of impurities to a pure semiconductor is called

- a) Bonding b) Doping c) Diffusion d) Fabrication

Q8. Which among the following is an N type semiconductor?

- a) Phosphorous b) Indium c) Gallium d) Boron

Q9. Zener diode in forward biased condition operates similar to

- a) Photodiode b) Rectifier diode c) Power supply d) Transformer

Q10. Which among the following operates as photo voltaic cell?

- a) LED b) Solar Cell c) LCD d) Thermistor

Q11. The value of resistor with colour code Brown, Black, Red

- a) 3K b) 2K c) 4K d) 1K

Q12. Which among the following is an active circuit element?

- a) Resistor b) Capacitor c) Transistor d) Inductor

Q13. Which among the following is a three terminal device?

- a) Silicon controlled rectifier b) Varactor diode c) Schottky diode d) LED

Q14. Which among the following is a power transistor?

- a) 1N4007 b) BC107 c) 2N3055 d) None of these

Q15. What is the decimal equivalent of 1100?

- a) 10 b) 12 c) 14 d) 13

Q16. ASCII stands for

- a) American Server Code for Information Interchange
b) Asian Standard Code for Interchanging Information
c) American Standard Code for Information Integration
d) American Standard Code for Information Interchange

Q17. Which among the following is used in triggering circuits of SCR?

- a) UJT b) BJT c) MOSFET d) JFET

Q18. MOSFET consists of a metal oxide semiconductor layer made of

- a) MgO b) SiO₂ c) CaO d) Na₂O

Q19. For a BJT to work as an amplifier it must operate in

- a) Saturation region b) Cut off region c) Active region d) None of these

Q20. Which among the following bridges is used for measurement of frequency?

- a) Wheatstone's bridge b) Schering Bridge c) Hay Bridge d) Wien Bridge

Q21. Mercury thermometer is a _____ order system.

- A Zeroth b) First c) Second d) Third

Q22. Most preferred manometric fluid is

- a) Water b) Mercury c) Alcohol d) Benzene

Q23. Sensitivity of the manometer _____ with density of externally applied fluid.

- a) Remains same b) Decreases c) Increases d) None of these

Q24. Instrument used to measure atmospheric pressure is called

- a) Barometer b) Manometer c) Thermometer d) Thermistor

Q25. Pressure less than 1 atm is called

- a) Atmospheric pressure b) Static pressure c) Gauge pressure d) Vacuum pressure

Q26. Reynolds number increases with increase in

- a) Charge b) Potential c) Velocity d) Magnetic Flux

Q27. High kinetic energy is associated with _____ flow.

- a) Laminar flow b) Turbulent flow c) Doesn't depend on nature of flow d) None of these

Q28. Which among the following is used for finding velocity of aeroplane?

- a) Pirani gauge b) Bourdon tube c) Barometer d) Pitot tube

Q29. Which of the following flowmeters is based on gravity balance principle?

- a) Orifice flowmeters b) Venturi flowmeters c) Rotameters d) Pitot tube

Q30. The meter which is suitable for flow totalisation is

- a) Venturimeter b) Orifice meter c) Ultrasonic flowmeter d) Turbine flowmeter

Q31. Which technique is suited for level measurement of closed tanks?

- a) Differential pressure transmitter b) Capacitive transducer c) LVDT d) Thermopile

Q32. Resistance temperature detector has

- a) Negative temperature coefficient of resistance
- b) Positive temperature coefficient of resistance
- c) Zero temperature coefficient of resistance
- d) None of these

Q33. Which among the following operates on seebeck effect?

- a) Barometer
- b) Manometer
- c) Thermocouple
- d) Diode

Q34. Which is used to measure very high temperature?

- a) Barometer
- b) Manometer
- c) Pyrometer
- d) Flowmeter

Q35. Strain gauge works on the principle of

- a) Piezo electric effect
- b) Piezo resistive effect
- c) Inverse piezo electric effect
- d) Thermo resistive effect

Q36. The principle of LVDT operation is:

- a) Resistance
- b) Mutual inductance
- c) Capacitance
- d) None of these

Q37. Fluids which have constant viscosity irrespective of shear stress or tensile stress applied is called

- a) Newtonian fluid
- b) Capillary fluid
- c) Manometric fluid
- d) None of these

Q38. Humidity is measured as

- a) Absolute humidity
- b) Relative humidity
- c) Dew point temperature
- d) All the above

Q39. When the reading of the pH meter changes from 5 to 7, the hydrogen ion concentration of the solution is _____

- a) Halved
- b) Doubled
- c) Increased 100 times
- d) Decreased 100 times

Q40. Transformer works on the principle of

- a) Capacitance
- b) Resistance
- c) Mutual induction
- d) None of these

Q41. Which among the following is not a circuit protective device?

- a) Fuse
- b) MCB
- c) GFCI
- d) Thermopile

Q42. The opposition offered to the magnetic field lines of force in a magnetic circuit is called

- a) Resistance
- b) Reluctance
- c) Capacitance
- d) Resistivity

Q43. The law that states that the magnitude of the induced emf is equal to the rate of change of magnetic flux linking with the circuit is

- a) Coulomb's law b) Newton's law c) Flemming's law d) Faraday's law

Q44. The peak inverse voltage of a bridge rectifier with maximum voltage V_m is

- a) $2V_m$ b) $3V_m$ c) V_m d) $4V_m$

Q45. In doubling the mass and acceleration of the mass, the force acting on the mass with respect to the previous value

- a) Decreases to half b) Remains unchanged c) Increases two times d) Increases four times

Q46. A man pushes a wall and fails to displace it. He does

- a) Negative work b) Positive but not maximum work c) No work at all d) Maximum work

Q47. The work done against gravity in taking 100Kg mass at 1m height in 1 second will be

- a) 490J b) 980J c) 196J d) None of these

Q48. The heat supplied to a substance which changes it from liquid to vapour state at its boiling point and 1 atm pressure is called

- a) Latent heat of fusion b) Latent heat of ice
c) Latent heat of vapourisation d) None of these

Q49. When vapour condenses to liquid

- a) It absorbs heat b) It liberates heat
c) Its temperature increases d) Its temperature decreases

Q50. The process of transfer of heat from one place to another place without heating the intervening medium is called

- a) Conduction b) Convection c) Radiation d) None of these

Q51. Which among the following is an amphoteric metal?

- a) Sodium b) Zinc c) Calcium d) Argon

Q52. Which among the following is not a *f*-block element?

- a) Europium b) Californium c) Einsteinium d) Technetium

Q53. All the lanthanides and actinides belong to _____ group of periodic table.

- a) 3 b) 4 c) 5 d) 6

Q54. An organic substance from its aqueous solution can be separated by

- a) Distillation b) Steam distillation c) Solvent extraction d) Fractional distillation

Q55. Which of the following pairs contain metalloids in the periodic table?

- a) Na and K b) As and Si c) F and Cl d) Ca and Mg

Q56. The temperature at which the vapour pressure of a liquid becomes equal to the external pressure (atmospheric pressure)

- a) Freezing point b) Melting point c) Boiling point d) None of these

Q57. The unit of viscosity

- a) Erg b) Toricelli c) Poise d) None of these

Q58. In which among the following law states that "At constant temperature, volume of a given mass of gas is inversely proportional to its pressure"

- a) Charles's law b) Boyle's law c) Avogadro's law d) Gay-Lussac's law

Q59. The temperature at which the volume of gas is zero is

- a) 0°C b) 0K c) 0°F d) None of these

Q60. How does the surface tension of a liquid vary with increase in temperature?

- a) Remains same b) Decreases c) Increases d) No regular pattern is followed

Q61. The sum of three numbers is 98. If the ratio between first and second be 2:3 and that between second and third be 5:8, then the second number is

- a) 30 b) 20 c) 58 d) 48

Q62. The ratio of two numbers is 3:4 and their sum is 420. The greatest of the two numbers is

- a) 360 b) 240 c) 180 d) None of these

Q63. Of the three numbers first is twice the second and the second is thrice the third. If the average of the three numbers is 10, the numbers are

- a) 18,3,9 b) 9,3,18 c) 3,9,18 d) 18,9,3

Q64. Aman and pranjal enter into a partnership investing Rs. 50,000 and Rs. 40,000 respectively. They agree to share profits in the ratio of their capitals. Find the share of A man in a profit of Rs.22500 after one year

- a) Rs. 12500 b) Rs. 9500 c) Rs.10500 d) None of these

Q65. What is 20% of 50% of 75% of 70 ?

- a) 5.25 b) 6.75 c) 7.25 d) 2.5

Q66. A student has to secure 40% marks to pass. He gets 178 marks and fails by 22 marks. The maximum marks are

- a) 200 b) 500 c) 800 d) 1000

Q67. Find a single discount equivalent to the discount series of 20%, 10%, and 5%

- a) 30% b) 31.6% c) 68.4% d) 35%

Q68. If the cost price of 30 articles is equal to the selling price of 20 articles, find the profit percent.

- a) 33.33% b) 40% c) 50% d) 60%

Q69. Rajdhani Express travels 650 km in 5 hour and another 940 km in 10 hour. What is the average speed of train?

- a) 1590 km/hr b) 63 km/hr c) 106 km/hr d) 126 km/hr

Q70. X and Y are two stations 600 km apart. A train starts from X and moves toward Y at the rate of 25 km/hr. Another train starts from Y at the rate of 35 km/hr. How far from X they will cross each other?

- a) 250 km b) 300 km c) 450 km d) 475 km

Q71. A man goes downstream at x km/hr. The speed of boat in still water is

- a) $0.5(x+y)$ b) $0.5(x-y)$ c) $x+y$ d) $x-y$

Q72. Ramesh crosses a street 600 m long in 5 minutes. His speed in km/hr is

- a) 8.2 b) 7.2 c) 9.2 d) None of these

Q73. A train 50 m long passes a platform 100 m long in 10 seconds. The speed of the train in m/s is

- a) 25 b) 15 c) 35 d) None of these

Q74. The value of $(\sqrt{8})^{1/3}$ is

- a) 2 b) 4 c) $\sqrt{2}$ d) 8

Q75. How many terms are there in the Arithmetic Progression 20, 25, 30130

- a) 22 b) 23 c) 21 d) 24

Q76. In how many ways can a person send invitation cards to 6 of his friends if he has four servants to distribute the cards?

- a) 6^4 b) 4^6 c) 24 d) None of these

Q77. How many straight lines can be formed from 8 non-collinear points on the X-Y plane?

- a) 28 b) 56 c) 18 d) 19860

Q78. If the area of a triangle is 150m^2 and the base: height ratio is 3:4. Find its height.

- a) 25m b) 35m c) 20m d) None of these

Q79. A rope by which a calf is tied is increased from 12 m to 23 m. How much additional grassy ground shall it graze?

- a) 1120m^2 b) 1250m^2 c) 1210m^2 d) 1200m^2

Q80. A rectangular carpet has an area of 120m^2 and a perimeter of 46m. the length of its diagonal is

- a) 15m b) 16m c) 17m d) 20m

Q81. Which among the following is non – ionising radiation?

- a) Gamma rays b) X rays c) Both a and b d) IR

Q82. In clinical and research MRI, which atoms are most often used to generate a detectable RF signal?

- a) Helium b) Hydrogen c) Nitrogen d) Oxygen

Q83. Which substance is used to cool down superconductive magnetic coils in MRI?

- a) Liquid oxygen b) Liquid nitrogen c) Liquid helium d) None of these

Q84. PET works on the principle of

- a) Inverse square law b) Photoelectric effect c) Positron annihilation d) All the above

Q85. SPECT uses which type of electromagnetic radiation?

- a) Alpha rays b) Beta rays c) Gamma rays d) All the above

Q86. The most important component on a defibrillator circuit is

- a) Capacitor b) SCR c) Transformer d) Both b and c

Q87. The neuroimaging technique that maps brain activity by recording magnetic fields produced by electric current occurring in the brain is

- a) Magnetic Resonance Imaging
- b) Magnetoencephalography
- c) Electroencephalography
- d) All the above

Q88. During which among the electrosurgery techniques does an electric arc discharge develops during the procedure?

- a) Coagulation
- b) Dessication
- c) Fulguration
- d) Both a and b

Q89. Which among the following interactions produce X rays?

- a) Inner shell interaction producing characteristic radiation
- b) Nucleus field interaction producing bremsstrahlung radiation
- c) Both a and b
- d) None of these

Q90. Anode of X ray tube is made up of

- a) Plutonium
- b) Tungsten
- c) Both a and b
- d) None of these

Q91. Which among the following therapeutic techniques use ultrasound?

- a) Lithotripter
- b) LASIK
- c) IR therapy device
- d) None of these

Q92. A medical device that delivers fluids, such as nutrients and medications into a patient's body in controlled amounts is called

- a) Suction pump
- b) Infusion pump
- c) Vacuum pump
- d) None of these

Q93. The medical imaging technique used to visualise the inside of blood vessels and organs of the body especially arteries, veins and heart chambers is called

- a) Haemography
- b) Retinography
- c) Angiography
- d) Encephalography

Q94. The method of recording the magnitude and direction of electrical forces that are generated by the heart is called

- a) Magnetoencephalography
- b) Electroencephalography
- c) Vector cardiography
- d) None of these

Q95. Which among the following is internationally accepted EEG montage system?

- a) 20-30 electrode system
- b) 10-20 electrode system
- c) 30-40 electrode system
- d) None of these

Q96. SI unit of illuminance is

- a) Lux
- b) Candela
- c) Lumen
- d) Stilb

Q97. Which among the following techniques is not used on heart?

- a) TMT test b) Holter monitoring c) VCG d) None of these

Q98. The international standard to transmit, retrieve, print, process and display medical imaging information is

- a) PNG b) JPEG c) DICOM d) PDF

Q99. Which among the following is the unit of magnetic field strength?

- a) Tesla b) Webber per square meter c) Both a and b d) None of these

Q100. SI unit of radioactivity

- a) Curie b) Gray c) Becquerel d) Roentgen