

TECHNICAL SKILL TEST

Objective Type Multiple Choice Test

(With Answers)

1. In M.K.S system, the unit of temperature is
 - (a) Degree Centigrade
 - (b) Degree Kelvin
 - (c) Degree Celsius
 - (d) Degree Fahrenheit
2. In M.K.S. System, the unit of force is
 - (a) Dyne
 - (b) Watt
 - (c) Poundal
 - (d) Newton
3. The unit of energy is
 - (a) J/sec
 - (b) Kilowatt
 - (c) Watt-day
 - (d) $g \text{ cm/s}^2$
4. A cube has numerically equal volume and surface area. The volume of such a cube will be ... cubic units.
 - (a) 216
 - (b) 440
 - (c) 2400
 - (d) 3000
5. The density of a cube is measure by measuring its mass and the length of its side. If the maximum errors in the measurement of mass and length are 3% and 2% respectively, the maximum error in the measurement of the density is :
 - (a) 11%
 - (b) 10%
 - (c) 9%
 - (d) 7%
6. What is the dimensional formula for impulse?
 - (a) MLT^{-2}
 - (b) MLT^{-1}
 - (c) ML^2T^{-1}
 - (d) M^2LT^{-2}
7. The dimensional formula for latent heat is
 - (a) $M^0L^2T^{-2}$
 - (b) ML^2T^{-1}
 - (c) MLT^{-2}
 - (d) ML^2T^{-1}
8. The dimensional formula for surface tension is
 - (a) $M^0L^2T^{-2}$
 - (b) ML^2T^{-1}
 - (c) MT^{-2}
 - (d) ML^2T^{-1}
9. What is the dimensional formula for Young's Modulus of Elasticity?
 - (a) $M^0L^2T^{-2}$
 - (b) $ML^{-1}T^{-2}$
 - (c) MLT^{-2}
 - (d) ML^2T^{-1}
10. Which of the following statements is dimensionally correct, regarding pressure?
 - (a) Pressure is energy per unit area.
 - (b) Pressure is force per unit length.
 - (c) Pressure is force per unit volume.
 - (d) Pressure is energy per unit volume.
11. One watt-hour is equal to :
 - (a) 3.6×10^2 joule
 - (b) 3.6×10^3 joule
 - (c) 1 H.P.
 - (d) 4.2 joule
12. Two beakers, one containing salt water, and the other containing pure water, are placed under an air tight cover. If the air pressure under the cover is reduced by a pump, the amount of water in the beaker containing salt water after one hour, when compared with the other beaker,
 - (a) will be less
 - (b) will be more
 - (c) will remain the same
 - (d) None of these
13. The main scale of a spectrometer is divided into 720 divisions in all. If the Vernier scale consists of 30 divisions, what will be the least count of the instrument?
 - (a) 1"
 - (b) 1'
 - (c) $0.1''$
 - (d) $0.2''$
14. The number of wavelengths in the visible region of the spectrum are :
 - (a) 4000
 - (b) 6000
 - (c) 8000
 - (d) Infinite
15. In tuning a piano string, a fork of frequency 250 vib/sec is used. As the wire is progressively tightened, the number of beats decreases until the value is 4/sec. What will be the present frequency of the string?
 - (a) 246 vib/sec
 - (b) 250 vib/sec
 - (c) 254 vib/sec
 - (d) 260 vib/sec
16. A line passing through places having zero value of magnetic dip is called :
 - (a) Aclinic line
 - (b) Achronic line
 - (c) Isoclinic line
 - (d) Isogonic line
17. The refrangibility of red-light is :
 - (a) least
 - (b) medium
 - (c) most
 - (d) nil
18. Photocell is a device which converts :
 - (a) chemical energy into electrical energy.
 - (b) magnetic energy into electrical energy.
 - (c) light energy into electrical energy.
 - (d) electrical energy into light energy.

19. The infra-red spectrum can be studied with the help of
 (a) quartz
 (b) flint glass prisms
 (c) crown glass prisms
 (d) rock-salt prisms
20. The atomic power plants generate electricity, based on the principle of :
 (a) Fission
 (b) Fusion
 (c) Nuclear dissipation
 (d) Thermal combustion
21. If a satellite is to be placed in a circular orbit at a pre-determined altitude, the satellite :
 (a) must be raised to right altitude and must be given the right speed and direction.
 (b) must be raised to the right altitude and given the right speed.
 (c) need only to be raised to that altitude.
 (d) None of these
22. Three capacitors 2.0, 3.0 and 6.0 *microfarads* are connected in series to a 10 volt source. What will be the charge on the middle one?
 (a) 5 micro coulomb
 (b) 10 micro coulomb
 (c) 11 micro coulomb
 (d) 15 micro coulomb
23. Two circuits have a *coefficient of mutual inductance* of 0.09 henry. What average *e.m.f.* is introduced in the secondary by a change from 0 to 20 amperes in 0.006 seconds in the primary?
 (a) 300 volts (b) 230 volts
 (c) 190 volts (d) 100 volts
24. If a 10 ampere current loses 20,000 J of energy in 20 seconds, the potential difference will be
 (a) 20000 volts
 (b) 2000 volts
 (c) 1000 volts
 (d) 100 volts
25. A man carries a 20 kg. orbit up a 5 m ladder in 10 secs. The work he does is
 (a) *approximately* 10 joules
 (b) *approximately* 100 joules
 (c) *approximately* 200 joules
 (d) *approximately* 1000 joules
26. Heat is transmitted from higher to lower temperature through *molecular collisions*
 (a) in conduction
 (b) in convection
 (c) in radiation
 (d) in all the three
27. Under steady state the temperature of a body
 (a) decreases with time
 (b) increases with time
 (c) does not change with time and is same at all the points of the body
 (d) does not change with time but can be different at different points of the body
28. Which one of the following substances has no melting point?
 (a) Oxygen
 (b) Aluminium
 (c) Glass
 (d) Mercury
29. A device which is employed to convert heat energy into mechanical energy is called
 (a) heat generator
 (b) dynamo
 (c) heat engine
 (d) None of these
30. Which one of the following statements is wrong?
 (a) Light travels faster in vacuum than air
 (b) Wavelength of light is longer than wavelength of sound
 (c) In one second, sound travels nearly 330 m
 (d) Speed of sound is Mach 1
31. The plate resistance of a triode is 3×10^3 ohms and its mutual conductance is 1.5×10^{-3} amp/volt. What will be the amplification factor of the triode?
 (a) 5×10^{-5} (b) 4.5
 (c) 45 (d) 2×10^5
32. Energy generation in stars is mainly due to
 (a) chemical reaction
 (b) fusion of light nuclei
 (c) fission of heavy nuclei
 (d) fusion of heavy nuclei
33. Three equal resistors connected in series across a source of *e.m.f.* together dissipate 10 w ts of power. What would be the power dissipated if the same resistors are connected in parallel across the same source of *e.m.f.*?
 (a) 900 watt (b) 90 watt
 (c) 9 watt (d) 0.9 watt
34. Beta rays emitted by a radioactive material
 (a) are neutral particles
 (b) are positive charged
 (c) are charged particles emitted by the nucleus
 (d) are the electrons orbiting around the nucleus
35. Ball point pen functions on the principle of
 (a) viscosity
 (b) surface tension
 (c) capillary
 (d) gravitational force

40. A p-type semi conductor is
 (a) a silicon crystal with arsenic impurity
 (b) a germanium crystal with boron impurity
 (c) a boron crystal with aluminium impurity
 (d) a germanium crystal with phosphorus impurity
41. The introduction of a grid in a triode valve affects plate current by
 (a) increasing plate potential
 (b) helps in the increase of electrons from the plate
 (c) helping emission of electrons at low temperature
 (d) neutralising space charge
42. A diode valve can be used as
 (a) oscillator (b) rectifier
 (c) amplifier (d) recorder
43. Cut off grid potential of a triode valve depends on
 (a) plate potential
 (b) grid potential
 (c) the shape of the grid
 (d) plate resistance
44. Which clutch should be used for positive slipless drive?
 (a) Cone friction clutch
 (b) Friction clutch
 (c) Safety clutch
 (d) Claw clutch
45. In which type of gear, can we have a better, smooth and noiseless drive?
 (a) Bevel gear
 (b) Rack and pinion
 (c) Spiral gear
 (d) Spur gear
46. The axial distance between corresponding points on two adjacent threads is called
 (a) angles (b) boring
 (c) forging (d) pitch
47. After . . . operation, normalising is essential
 (a) angles (b) boring
 (c) forging (d) pitch
48. With ten $1/10 \Omega$ resistors, maximum how much resistance can be made?
 (a) 10Ω (b) 5Ω
 (c) 2Ω (d) 1Ω
49. When a soap bubble is given a charge, it will
 (a) burst
 (b) decrease in size
 (c) increase in size
 (d) not have any effect
50. Who invented cyclotron?
 (a) Neils Bhor
 (b) John Lutherford
 (c) Lawrence
 (d) J. J. Thompson
51. In M.K.S. System, the unit of energy is
 (a) Ergs (b) Calorie
 (c) Joule (d) Electron volt
52. In M.K.S. System, the unit of pressure is
 (a) Atmosphere
 (b) Pascal
 (c) Dynes per square cm
 (d) mm of mercury
53. The unit of power is
 (a) Kilowatt
 (b) Dynes
 (c) Joule
 (d) Kilowatt hour
54. A student, doing an experiment, takes 100 readings. If he repeats the same experiment and takes 400 readings, the probable error
 (a) remains the same
 (b) is halved
 (c) is doubled
 (d) is reduced by 25%
55. The dimensional formula for the coefficient of viscosity
 (a) $[\eta] = ML^0T^{-2}$
 (b) $[\eta] = ML^{-1}T^{-2}$
 (c) $[\eta] = MLT^{-2}$
 (d) $[\eta] = ML^{-1}T^{-1}$
56. The dimensional formula for angular momentum is
 (a) ML^2T^{-2} (b) $ML^{-1}T^2$
 (c) MLT^{-1} (d) $ML^{-2}T^{-1}$
57. If L and R denote inductance and resistance respectively, then the dimension of L/R is
 (a) $M^0L^0T^{-1}$ (b) M^0L^0T
 (c) $M^2L^0T^2$ (d) MLT^2
58. The dimensional formula for gravitational constant is
 (a) $M^{-1}L^2T^{-2}$ (b) ML^2T^{-1}
 (c) MLT^{-2} (d) ML^2T^{-1}
59. A volume of 10 cubic metres is equal to :
 (a) 10^3 cm^3 (b) 10^4 cm^3
 (c) 10^6 cm^3 (d) 10^8 cm^3
60. 1 calorie is enough heat to :
 (a) melt 1 gm of ice.
 (b) vaporise 1 gm of water.
 (c) warm 1 gm of ice from -2°C to 0°C .
 (d) cool 1 gm of steam from 102°C to 101°C .
61. A metal rod ($Y = 2 \times 10^{12}$ dynes/cm²) of coefficient of linear expansion $1.6 \times 10^{-5}/^\circ \text{C}$ has its temperature raised by 20°C . What will be the linear compressive stress to prevent the expansion of rod?
 (a) 2.4×10^8 dynes/cm²
 (b) 3.2×10^8 dynes/cm²
 (c) 6.4×10^8 dynes/cm²
 (d) 7.8×10^8 dynes/cm²
62. The hot water pipes of a furnace are coated with a black paint having emittance of 0.81 and the heat loss is 33,000 B.Th.U day. If the pipes were coated with aluminium paint of thermal emittance 0.27, the heat loss will be
 (a) 22,000 B. Th. U./day
 (b) 18,910 B. Th. U./day
 (c) 11,000 B. Th. U./day
 (d) 10,960 B. Th. U./day

63. A box is released from an airplane moving horizontally at a height of 1600 ft. How far will the box move horizontally while falling just before striking against the Earth?
 (a) 400 ft (b) 4000 ft
 (c) 5800 ft (d) 6400 ft
64. The intensity level of sound A is 2 dB greater than that of B. How many times more intense is the sound A than sound B?
 (a) 2 (b) 10
 (c) 16 (d) 64
65. A magnet makes 5 oscillations per minute in earth's magnetic field ($H = 0.3$ Gauss). By what amount the field should be increased, so that the magnet may make 10 oscillations per minute?
 (a) 3.6 Gauss (b) 1.2 Gauss
 (c) 0.9 Gauss (d) 0.3 Gauss
66. A cylinder fitted with a piston contains a gas at 40°C for which the critical temperature is 31°C . The increase of pressure by 100 atmos will
 (a) liquify the gas
 (b) not liquify the gas
 (c) burst the cylinder
 (d) freeze the gas
67. An airplane is fitted with a camera containing a lens of 5 cm. focal length. To take a snap of a 1 km stretch of land on a 5 cm film strip, the plane would fly at an approximate height of:
 (a) 1000 m. (b) 2000 m.
 (c) 3000 m. (d) 4000 m.
68. Radio waves from an antenna travel with the velocity of:
 (a) sound
 (b) light
 (c) ultrasonics
 (d) infra red rays
69. The sun radiates energy at the rate of 3.6×10^{33} ergs/sec. which is equivalent to an annihilation of mass at the rate of:
 (a) 12×10^{10} kg/sec.
 (b) 6.3×10^{23} gm/sec.
 (c) 4×10^{12} gm/sec.
 (d) 2.43×10^4 lbs/sec.
70. Alpha rays emitted from a radioactive substance are:
 (a) negatively charged particles
 (b) ionised hydrogen nuclei
 (c) doubly ionised helium atoms
 (d) uncharged particles having the mass equal to proton
71. The Mariner's Compass is provided with Gimbals arrangement so as to:
 (a) keep the needle always pointing at east
 (b) keep the needle always horizontal
 (c) give a direct value of dip
 (d) give a direct reading of declination
72. A 60 watt incandescent lamp operates at 120 volts. How many electrons pass through the filament in every second?
 (a) 3.1×10^{18} (b) 1.6×10^{19}
 (c) 8400 (d) 7600
73. As you back away from a vertical plane mirror, the size of your image will
 (a) increase
 (b) decrease
 (c) remains constant
 (d) appear to remain constant but actually decrease
74. If an astronaut travels from the earth to the moon
 (a) his mass and weight will both change
 (b) neither his mass nor his weight will change
 (c) only his mass will change
 (d) only his weight will change
75. A young boy on a parachute is falling at a constant speed. What sort of energy change takes place?
 (a) Gravitational to internal
 (b) Kinetic to gravitational
 (c) Gravitational to kinetic
 (d) Heat to kinetic
76. The quantity of heat which crosses unit area of a metal plate during conduction depends upon the
 (a) specific gravity of the metal plate
 (b) temperature gradient perpendicular to the area
 (c) temperature to which the metal is heated
 (d) density of the metal plate
77. Two blocks of ice when pressed together, join to form one block, because
 (a) of cold produced during pressure
 (b) of heat produced during pressure
 (c) melting point of ice decreases with increase in pressure
 (d) melting point of ice increases with increase in pressure

78. Some quantity of tap water is placed in an open pan and allowed to evaporate. After sometime the temperature of the water will
 (a) decrease slightly
 (b) increase slightly
 (c) remain the same
 (d) increase considerably
79. How many dead centres are there in one complete cycle of an external combustion engine (*steam engine*)?
 (a) One (b) Two
 (c) Three (d) Four
80. The process of regulating the temperature, the humidity, purity and circulation of air is called
 (a) condensation
 (b) refrigeration
 (c) evaporation
 (d) air conditioning
81. The ratio of the refractive index of red light to violet light is
 (a) less than unity
 (b) equal to unity
 (c) greater than unity
 (d) dependent on the experimental arrangement
82. If a machine is lubricated with oil
 (a) its *mechanical advantage* increases
 (b) its *efficiency* increases
 (c) its *mechanical advantage* and *efficiency* increase
 (d) its *efficiency* increases but its *mechanical advantage* decreases
83. When 4 identical wires of copper, iron, gold and silver are stretched by a tension of 4 kgm, velocity of the transverse waves in them is
 (a) same (b) different
 (c) infinite (d) zero
84. An electric bulb illuminates a plane surface. The *intensity of illumination* on the surface at a point 2 m. away from the bulb is 5×10^{-6} Photon. The line joining the bulb to the point makes an angle of 60° with the normal to the surface. The intensity of the bulb will be
 (a) $40\sqrt{3}$ candela
 (b) 40 candela
 (c) 20 candela
 (d) 40×10^4 candela
85. The main source of energy in the Sun is
 (a) the fusion of uranium present in the Sun
 (b) the burning of hydrogen in oxygen
 (c) the energy liberated in fusion of protons during the synthesis of heavier nuclei
 (d) gravitational contraction
86. Which one of the following rays has greatest value of wavelength?
 (a) Infra red ray
 (b) Ultra violet
 (c) Yellow ray
 (d) Red ray
87. Two coils A and B made of the same material are connected in parallel across the mains. If length and diameter of the coil A is double that of the coil B, which one will produce more heat?
 (a) Coil A
 (b) Coil B
 (c) Both the coils will produce the same amount of heat
 (d) Cannot say
87. Ampere seconds stands for the unit of
 (a) power (b) energy
 (c) e.m.f. (d) charge
89. What will be the ratio of *gravitational force* (F_g) and *electrostatic force* (F_e) between two electrons situated at a distance of 10 cm?
 (a) 10^{43} (b) 10^{36}
 (c) 10^{-43} (d) 10^{-36}
90. To use triode as an amplifier, it is operated in the
 (a) curved portion of the characteristics curve
 (b) straight portion of the characteristics curve
 (c) bottom portion of the curve
 (d) top portion of the curve
91. A directly heated diode gives
 (a) delayed response
 (b) immediate response
 (c) no response
 (d) A and B are true
92. Tungsten is used in a filament because
 (a) it emits large quantities of electrons when heated
 (b) it has considerably low thermal conductivity
 (c) it has a good thermal conductivity
 (d) it has the least melting point
93. A transistor is preferable to a triode valve when used in amplifier because
 (a) it can withstand large changes in temperature
 (b) it can handle larger power
 (c) it has a higher input impedance
 (d) it does not require a heater

94. Which type of thread is used where power is transmitted in one direction?

- (a) Acme threads
- (b) Buttress threads
- (c) Knuckle threads
- (d) Square threads

95. Which one of the following is the connecting gear in the simple change gear system?

- (a) Idler gear
- (b) Driving gear
- (c) Rotatable arm gear
- (d) Middle gear

96. Sine bar used for measuring

- (a) angles
- (b) boring
- (c) forging
- (d) pitch

97. How many different combinations can be made with three given resistors?

- (a) Nine
- (b) Six
- (c) Four
- (d) Three

98. What is the equivalent of one million electron volt?

- (a) 10^6 eV
- (b) 10^5 eV
- (c) 10^4 eV
- (d) 10^3 eV

99. Which of the following is true of a choke coil?

(a) high inductance and high resistance

(b) high inductance and low resistance

(c) low inductance and high resistance

(d) low inductance and low resistance

100. What is increased in a step down transformer?

(a) Wattage

(b) Voltage

(c) Resistance

(d) Current

A N S W E R S

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|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| 1. b | 2. d | 3. c | 4. a | 5. c | 6. b | 7. a | 8. c | 9. b | 10. b |
| 11. b | 12. b | 13. b | 14. d | 15. a | 16. a | 17. a | 18. c | 19. d | 20. d |
| 21. a | 22. b | 23. a | 24. d | 25. d | 26. c | 27. d | 28. c | 29. c | 30. c |
| 31. a | 32. b | 33. b | 34. b | 35. c | 36. c | 37. a | 38. a | 39. b | 40. a |
| 41. c | 42. a | 43. a | 44. d | 45. c | 46. d | 47. c | 48. d | 49. c | 50. c |
| 51. d | 52. b | 53. a | 54. d | 55. d | 56. b | 57. b | 58. a | 59. c | 60. c |
| 61. c | 62. c | 63. b | 64. b | 65. c | 66. b | 67. a | 68. b | 69. c | 70. c |
| 71. b | 72. a | 73. c | 74. d | 75. c | 76. b | 77. c | 78. a | 79. b | 80. d |
| 81. a | 82. c | 83. b | 84. d | 85. d | 86. b | 87. c | 88. b | 89. d | 90. b |
| 91. c | 92. b | 93. d | 94. b | 95. a | 96. a | 97. c | 98. b | 99. a | 100. d |