

026/2023

Maximum : 100 marks

Time : 1 hour and 30 minutes

1. 10 Gunter's Chain = _____ Furlong.
(A) 2 (B) 1
(C) 1.5 (D) 3
2. On testing, if a chain is found to be too long it can be adjusted by :
(A) closing the joints of the rings if opened out
(B) reshaping the elongated rings
(C) adjusting the links at ends
(D) all the above
3. The lines which run in the field to check the accuracy of the work :
(A) Check line (B) Tie line
(C) Base line (D) All the above
4. Which of the following is TRUE about Surveyors compass?
(A) The graduations are engraved and inverted
(B) The graduations are having 0° at South end and 180° at North
(C) The needle acts as the index
(D) The graduated card ring is attached with the needle
5. Inaccurate centring of compass is a :
(A) Natural error (B) Personal error
(C) Instrumental error (D) All of the above
6. The sensitiveness of bubble tube can be increased by :
(A) Increasing the internal radius of the tube
(B) Increasing the roughness of the walls
(C) Increasing the viscosity of liquid
(D) Decreasing the length of the tube
7. The vertical distance between two consecutive contours is called:
(A) contour interval (B) horizontal equivalent
(C) vertical control (D) horizontal control

8. The process of putting the plane-table into some fixed direction so that the line representing a certain direction on plan is parallel to that direction on the ground :
- (A) levelling (B) centring
(C) orientation (D) all of the above
9. Each metre of a folding levelling staff is subdivided into _____ divisions.
- (A) 100 (B) 150
(C) 180 (D) 200
10. The absence of Spherical aberration is called :
- (A) Achromatism (B) Definition
(C) Aplanation (D) Magnification
11. In placing the concrete the process of entrapped air reduces the strength of concrete by :
- (A) 20% (B) 30%
(C) 40% (D) 50%
12. The horizontal surface like slabs and floors held by stagnating water to a height of 25 to 50 mm by providing temporary bunds with mortar is called :
- (A) segregation (B) bleeding
(C) ponding (D) curing
13. What is the IS code for Specification of Ordinary Portland Cement?
- (A) IS 269-1989 (B) IS 455-1989
(C) IS 516-1959 (D) IS 1123-1975
14. For soundness test using Le-Chatelier apparatus the water required for creating a cement paste is :
- (A) 0.8 times the water required for consistency
(B) 0.85 times the water required for consistency
(C) 0.78 times the water required for consistency
(D) 0.7 times the water required for consistency
15. Fungi and minute microscopic plant organism grow in wood if the moisture content is greater than :
- (A) 25°C (B) 20°C
(C) 30°C (D) 35°C
16. The process of forming white patches in bricks while soaked in water for 24 hours is due to the presence of :
- (A) Alumina (B) Silica
(C) Undesirable alkalies (D) Oxide of iron

17. The process of removing moisture from pores of stone is called :
(A) seasoning (B) dressing
(C) quarrying (D) weathering
18. The alternate courses of headers and stretchers are found in :
(A) Flemish bond (B) English bond
(C) Header bond (D) Stretcher bond
19. Pitched roof should have slope more than atleast :
(A) 60° (B) 10°
(C) 15° (D) 40°
20. The window that projects outside the external wall of the room is called :
(A) Corner Window (B) Dormer Window
(C) Bay Window (D) Clerestorey Window
21. In estimation of masonry, deduction is not made for :
(A) Openings upto 0.2 sq.m (B) Openings upto 0.3 sq.m
(C) Openings upto 0.25 sq.m (D) Openings upto 0.1 sq.m
22. DPC is provided at :
(A) foundation to plinth level (B) flooring
(C) plinth level (D) foundation only
23. In plastering, deduction is made on one face of wall for openings :
(A) upto 0.5 sq.m (B) 0.5 sq.m to 3 sq.m
(C) greater than 3 sq.m (D) None of the above
24. The contingencies expenses of an estimate is :
(A) 2% to 4% of estimated cost (B) 4% to 6% of estimated cost
(C) 1% to 2% of estimated cost (D) 3% to 5% of estimated cost
25. The centage charge charged to meet the estimation is :
(A) 10% to 15% of estimated cost
(B) 15% to 20% of estimated cost
(C) 20% to 25% of estimated cost
(D) 25% to 30% of estimated cost

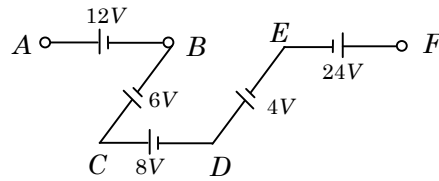
26. Vertical circulation area is :
- (A) 3% to 5% of plinth area (B) 1% to 3% of plinth area
(C) 4% to 5% of plinth area (D) 10% to 15% of plinth area
27. The decrease or loss in the value of property due to structural deterioration use, life wear and tear, decay and obsolescence is called :
- (A) scrap value (B) salvage value
(C) obsolescence (D) depreciation
28. The mortgage value of property is taken as :
- (A) 1/2 to 2/3 of the capitalised value (B) 1/3 to 1/2 of the capitalised value
(C) 1/4 to 1/2 of the capitalised value (D) None of the above
29. The person who enjoys easement over a property is called :
- (A) Dominant owner (B) Servient owner
(C) Both (A) and (B) (D) Lease holder
30. The total capital cost of the construction of the building including water supply, sanitary, electric and fittings is called :
- (A) rateable value (B) outgoings
(C) annuity (D) valuation
31. The irrigation in which water is directly diverted to canal without storing water is called :
- (A) Perennial irrigation (B) Inundation irrigation
(C) Direct irrigation (D) Tank irrigation
32. The moisture between field capacity and optimum moisture content is called :
- (A) moisture equivalent
(B) readily available moisture
(C) saturation capacity
(D) permanent wilting point
33. The area in which crop is grown at a particular time is called :
- (A) Gross Commanded Area
(B) Culturable Commanded Area
(C) Culturable Cultivated Area
(D) Culturable Uncultivated Area

34. The first watering before sowing of crop :
- (A) Paleo (B) Kor watering
(C) Outlet factor (D) Cumec day
35. The efficiency that evaluates the loss of water by deep percolation and by excessive surface evaporation following an irrigation is :
- (A) Water Surface efficiency
(B) Water Application efficiency
(C) Water Use efficiency
(D) Consumptive Use efficiency
36. The hydrological cycle is expressed by the equation :
- (A) Precipitation = Evaporation + Transpiration
(B) Precipitation = Evaporation + Runoff
(C) Precipitation = Evaporation – Runoff
(D) Precipitation = Evaporation – Transpiration
37. The form of precipitation when the size of water droplets is less than 0.5 mm and intensity is less than 0.1 mm/hour is :
- (A) Drizzle (B) Rain
(C) Sleet (D) Glaze
38. The maximum rate at which water will enter the soil in a given condition :
- (A) Runoff (B) Infiltration capacity
(C) Infiltration index (D) Depression storage
39. The solid obstruction constructed across the river to raise the water level and divert water into cannal operated by gates is called :
- (A) Weir (B) Barrage
(C) Spillway (D) Tank Sluice
40. The most common spillway used in gravity dams :
- (A) Ogee Spillway (B) Straight drop Spillway
(C) Siphon Spillway (D) Conduit Spillway
41. For series RLC circuit under resonance condition, which of the following statement is / are true :
- (A) circuit is purely resistive
(B) current is maximum
(C) both (A) and (B)
(D) none of the above

42. It is required to extend the range of an ammeter having an internal resistance of $90\ \Omega$ from 0-2 A to 0-20 A, then the value of shunt multiplier resistance is :
- (A) $1\ \Omega$ (B) $9\ \Omega$
 (C) $100\ \Omega$ (D) $10\ \Omega$
43. The leakage current across a pn junction is due to :
- (A) minority carriers (B) majority carriers
 (C) stray capacitance (D) none of the above
44. The power factor of an RL circuit will be _____ in nature.
- (A) unity (B) lagging
 (C) leading (D) zero
45. The value of inductive reactance if the value of inductance is 0.07 H at a frequency of 50 Hz is :
- (A) 22 Ohms (B) 11 Ohms
 (C) 44 Ohms (D) None of the above
46. Which of the following is NOT true for a PMMC instrument?
- (A) Scale is uniform (B) Power consumption is low
 (C) Only DC measurement (D) $\theta \propto I^2$
47. A zener diode is used as :
- (A) amplifier (B) rectifier
 (C) multivibrator (D) voltage regulator
48. Under resonance condition the power factor of a series RLC circuit is :
- (A) unity (B) zero
 (C) leading (D) lagging
49. For a simplex wave wound generator, the number of parallel paths is :
- (A) 1 (B) 4
 (C) 2 (D) 6
50. Unit of Magnetic flux is :
- (A) Weber (B) Coulomb
 (C) Tesla (D) Ampere-Turn

51. The deflection of a MI instrument for 4A current is 45° , then the deflection for a current of 2A is :
- (A) 22.5° (B) 60°
(C) 90° (D) None of the above
52. The current gain is maximum in which of the following configurations?
- (A) common base (B) common emitter
(C) common collector (D) none of the above
53. The load in an AC circuit is $4+4j$, then the voltage leads the current by :
- (A) 45° (B) 30°
(C) 90° (D) 60°
54. A generator has constant loss at 40W and armature resistance of 0.4Ω , then the current at maximum efficiency is :
- (A) 10A (B) 5A
(C) 16A (D) 2A
55. A capacitor that stores a charge of 0.1 C at 10 volts has a capacitance of _____ farad.
- (A) 1 (B) 0.01
(C) 0.1 (D) 10
56. The input capacitor of an amplifier is _____ capacitor.
- (A) Coupling (B) Leakage
(C) Bypass (D) None of the above
57. A sinusoidal waveform with time period 10 milli seconds, the frequency is :
- (A) 50 Hz (B) 60 Hz
(C) 25 Hz (D) 100 Hz
58. Which of the following is NOT a method for improving commutation?
- (A) Resistance commutation (B) Interpoles
(C) EMF commutation (D) Parallel operation
59. A transformer is having negative voltage regulation then the operating power factor is :
- (A) unity (B) zero
(C) leading (D) lagging

60. Find the voltage V_{EA} :



- (A) 18
(B) 6
(C) -18
(D) -6

61. Under constant load conditions, the speed of a DC motor is affected by :

- (A) Field flux
(B) Back emf
(C) Armature Current
(D) Both (B) and (C)

62. Transformers are rated in kVA and not in kW because :

- (A) Load power factor is unknown
(B) Loss do not depend on power factor
(C) kW depends on load
(D) None of the above

63. In a 3-phase induction motor, the relative speed of stator flux with respect to rotor flux is :

- (A) Stator speed
(B) Zero
(C) Rotor speed
(D) Slip speed

64. The power factor of a squirrel-cage induction motor is low at :

- (A) Light load only
(B) Heavy load only
(C) Both (A) and (B)
(D) Rated load only

65. The two's complement of the number $(100101)_2$ is :

- (A) $(011010)_2$
(B) $(011011)_2$
(C) $(010010)_2$
(D) $(010011)_2$

66. An 8085 microprocessor has _____ Number of hardware interrupts.

- (A) 2
(B) 4
(C) 3
(D) 5

67. The seventh bit of the flag register of an 8085 microprocessor is :

- (A) Sign
(B) Auxillary carry
(C) Carry
(D) Parity

68. The armature torque versus armature current graph of a series motor is :
(A) parabola upto full load (B) straight line at overloads
(C) straight line upto full load (D) both (A) and (B)
69. The decimal equivalent of the number $(100101)_2$ is :
(A) 37 (B) 32
(C) 36 (D) 38
70. If an energy meter disc makes 10 revolutions in 100 seconds when a load of 360 W is connected to it, the meter constant (in rev/kWh) :
(A) 100 (B) 1
(C) 1000 (D) 800
71. The unit of weight density in SI unit is :
(A) N/m^3 (B) m^3/kg
(C) kg/m^2 (D) kg/m^3
72. A Venturimeter is a device used for measuring the :
(A) Pressure developed inside the pipe
(B) Head loss in a piping system
(C) Rate of flow of fluid flowing through a pipe
(D) Friction loss in a pipe system
73. Which of the following is a formula for the friction factor of circular pipes?
(A) $\text{Re}/64$ (B) $64/\text{Re}$
(C) $16/\text{Re}$ (D) $\text{Re}/16$
74. For the stability of a floating body :
(A) Centre of buoyancy must coincide with the centre of gravity
(B) Centre of buoyancy must be above the centre of gravity
(C) Centre of gravity must be above the centre of buoyancy
(D) Metacentre must be above the centre of gravity
75. Water hammer in pipes is due to :
(A) Excessive leakage of flowing fluid
(B) Bursting of pipe under high pressure
(C) Sudden stoppage of flow by the closure of a valve
(D) Hitting of pipe with hammer

76. Braking jet in an impulse turbine is used to :
- (A) Break the jet of water
 - (B) To bring the runner to rest in a short time
 - (C) Change the direction of runner
 - (D) None of these
77. The movement of ships and boats in water is due to :
- (A) Jet propulsion
 - (B) Water currents
 - (C) Mass flow rate
 - (D) Volumetric changes
78. A Kaplan turbine is an example of :
- (A) Mixed flow turbine
 - (B) Radial flow turbine
 - (C) Tangential flow turbine
 - (D) Axial flow turbine
79. Reciprocating pump is suited for :
- (A) Low pressure
 - (B) Medium pressure
 - (C) High pressure
 - (D) None of these
80. The specific speed of a turbine is the speed of a geometrically similar turbine which would :
- (A) Produce unit power (1kW) under unit head (1m)
 - (B) Produce unit discharge (1lps) under unit head (1m)
 - (C) Produce unit discharge (1lps) with unit power (1kW)
 - (D) Produce unit head (1m) with unit power (1kW)
81. Which element should remain constant, if Charle's law is applied to a gas sample?
- (A) Temperature only
 - (B) Volume only
 - (C) Pressure only
 - (D) Density only
82. Which one of the properties given below is an extensive property of the system?
- (A) Pressure
 - (B) Temperature
 - (C) Density
 - (D) Volume
83. The law which provides the basis of temperature measurement is :
- (A) Zeroth law of thermodynamics
 - (B) First law of thermodynamics
 - (C) Second law of thermodynamics
 - (D) Third law of thermodynamics

84. The working fluid used for Carnot cycle is :
(A) Real gas (B) Ideal gas
(C) Natural gas (D) None of these
85. The SI unit of Calorific value is :
(A) kJ/kg (B) Calorie
(C) kJ/kg K (D) J/kg K
86. Bomb calorimeter is an apparatus to measure the :
(A) Calorific value of gaseous fuel
(B) Calorific value of solid and gaseous fuel
(C) Calorific value of a solid or liquid fuel
(D) Calorimetric composition of any solid bomb material
87. Rankine cycle efficiency of a good powerplant is in the range of :
(A) 20-25 % (B) 35-45%
(C) 60-70% (D) 10-20%
88. The compounding of turbines is done in order to :
(A) Reduce speed of rotor (B) Improve efficiency
(C) Reduce exit losses (D) All of these
89. The point through which the whole weight of the body acts is called :
(A) Centre of gravity (B) Centroid
(C) Central point (D) Inertial point
90. Where in the stress strain curve, the Hooke's law is valid?
(A) Strain hardening region (B) Neckling region
(C) Elastic range (D) Valid everywhere
91. A cantilever beam is a beam whose :
(A) Both ends are supported either on rollers or hinges
(B) Both ends are fixed
(C) Whose both or one of the end has overhang
(D) One end is fixed and other end is free
92. For a given material, the modulus of rigidity is 100 GPa and the Poisson's ratio is 0.3. The value of modulus of elasticity is :
(A) 160 GPa (B) 260 GPa
(C) 130 GPa (D) 230 GPa

93. Horizontal diameter of Mohr's circle is :
- (A) Sum of Principal stresses
 (B) Difference of Principal stresses
 (C) Sum of maximum principal and maximum shear stresses
 (D) None of these
94. The following hammer is used for striking as well as for pulling the nails from the wood :
- (A) Claw hammer (B) Cross peen hammer
 (C) Mallet (D) Ball peen hammer
95. Lathe is primarily used for producing :
- (A) Flat surfaces (B) Curved surfaces
 (C) Taper surfaces (D) Cylindrical surfaces
96. A plane is parallel to a base of regular cones and cuts in the middle. The cross section is :
- (A) Parabola (B) Hyperbola
 (C) Circle (D) Ellipse
97. The longitudinal joint in boilers is used to get :
- (A) Length of boiler
 (B) Length and diameter of boiler
 (C) Efficiency of boiler
 (D) Diameter of boiler
98. In a flat belt drive, the belt can be subjected to a maximum tension (T) and centrifugal tension (T_C). The condition for transmission of maximum power is given by
- (A) $T = T_C$ (B) $T = 3 T_C$
 (C) $T = 2 T_C$ (D) $T = 4 T_C$
99. For a practical petrol engine working on Otto cycle, the compression ratio usually lies in the range :
- (A) 3 – 5 (B) 5 – 8
 (C) 10 – 15 (D) 15 – 22
100. Which of the following is a water tube boiler?
- (A) Babcock-Wilcock boiler (B) Lancashire boiler
 (C) Locomotive boiler (D) Cochran boiler

SPACE FOR ROUGH WORK

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