# WBMSC
# SAE

## Previous Year Paper
## (Civil)
## 25 June, 2023

**1.** Which of the following is not a major contribution to greenhouse effect?

(A) Methane
(B) Carbon monoxide
(C) CFCs
(D) Carbon dioxide

**2.** Lime is mixed with brick earth to

(A) prevent shrinkage
(B) impart plasticity
(C) increase permeability
(D) increase durability

**3.** The lines joining points of equal dip is called

(A) aclinic lines
(B) isogonic lines
(C) isoclinic lines
(D) agonic lines

**4.** The ratio of lateral strain to linear strain is called

(A) Bulk modulus
(B) Modulus of elasticity
(C) Poisson's ratio
(D) Modulus of rigidity

**5.** The unit of co-efficient of consolidation is

(A) gm $cm^2$/sec
(B) $cm^2$/gm
(C) gm cm/sec
(D) $cm^2$/sec

**6.** Activated Carbon is mostly used for

(A) removing hardness
(B) disinfection
(C) removing corrosiveness
(D) removing odours

**7.** Original cost of property minus depreciation is

(A) Scrap value
(B) Book value
(C) Market value
(D) Salvage value

**8.** The main constituent of cement, responsible for initial setting of cement is

(A) dicalcium silicate
(B) tricalcium silicate
(C) All of these
(D) tricalcium aluminate

**9.** The slump test of concrete is used to measure its

(A) Impact value
(B) Consistency
(C) Homogeneity
(D) Tensile and compressive strength

**10.** The amount of oxygen consumed by sewage from an oxidizing agent like potassium dichromate is termed as

(A) Relative stability
(B) BOD
(C) None of these
(D) COD

**11.** Co-efficient of friction is less, when the pavement surface is

(A) smooth and dry
(B) rough
(C) smooth and wet
(D) dry

**12.** For drawing the isometric view of a three dimensional object, the value of the angle with the horizontal is usually

(A) 35°
(B) 15°
(C) None of these
(D) 25°

13. The partial safety factor for the material of bolts is

(A) 1.50
(B) 1.15
(C) 1.00
(D) 1.25

14. The type of window provided on the sloping side of a pitched roof is called

(A) lantern
(B) gable window
(C) narrower
(D) dormer window

15. In brick masonry, for good bonding

(A) vertical joints in alternate courses should fall in plumb.
(B) all bricks need not be uniform in size.
(C) cement mortar used must have surkhi as additive.
(D) bats must be used in alternate courses only.

16. A venturimeter is preferable to an orifice-meter, because

(A) energy loss is less
(B) it is cheaper
(C) it is easy to assemble
(D) it is more convenient to use

17. Which of the following soils has more Plasticity Index?

(A) Clay
(B) Sand
(C) Silty Sand
(D) Silt

18. When the path travelled along the road surface is more than the circumferential movement of the wheel due to rotation, then it results in

(A) Turning
(B) Slipping
(C) Revolving
(D) Skidding

19. Which one of the following is the water content of the mixed soil made from 1kg of soil (say A) with water content of 100% and 1kg of soil (say B) with water content of 50%?

(A) 75%
(B) 66%
(C) 82%
(D) 71%

20. Acid rain is mainly caused by

(A) Sulphur dioxide
(B) Methane
(C) Ammonia
(D) Carbon dioxide

21. A mercury water manometer has a gauge difference of 0.8m. The difference in pressure measured in meters of water is

(A) 10.05
(B) 0.8
(C) 8.02
(D) 1.06

22. Four vertical columns of same material, height, weight and have the same end conditions. The buckling load will be the largest for a column having the cross-section of

(A) thin hollow circle
(B) solid square
(C) I-section
(D) solid circle

23. The center of gravity of trapezium of height $h$ and parallel sides $a$ and $b$, measured from the side $b$ is at a distance of

(A) $\frac{h}{3}\left(\frac{b+2a}{b-a}\right)$
(B) $\frac{h}{3}\left(\frac{b+2a}{b+a}\right)$
(C) $\frac{h}{3}\left(\frac{b-2a}{b-a}\right)$
(D) $\frac{h}{3}\left(\frac{b-2a}{b+a}\right)$

**24.** Two shafts of same length and material are joined in series. If the ratio of their diameter is 2, then the ratio of their angles of twist will be

(A) 8
(B) 2
(C) 16
(D) 4

**25.** Degree of consolidation is

(A) directly proportional to drainage path and inversely proportional to time.
(B) directly proportional to time and inversely proportional to drainage path.
(C) directly proportional to square of drainage path and inversely proportional to time.
(D) directly proportional to time and inversely proportional to square of drainage path.

**26.** Glazing is used to make earthenware

(A) porus
(B) hard
(C) impervious
(D) soft

**27.** The standard penetration resistance value obtained in a deep deposit of sand at a depth of 6.0m was 28. The unit weight of sand is 18.0 kN/m$^3$. What is the corrected value of number of blows for overburden pressure?

(A) 59
(B) 60
(C) 55
(D) 57

**28.** A pycnometer is used to determine

(A) Water content and specific gravity
(B) Water content and void ratio
(C) Void ratio and dry density
(D) Specific gravity and dry density

**29.** According to IS 2180:1988, what is the maximum water content allowed in heavy duty burnt clay bricks as per 5 hour boiling test?

(A) 15%
(B) 5%
(C) 20%
(D) 10%

**30.** Lime stabilization is very effective in treating

(A) Non-plastic soil
(B) Sandy soil
(C) Plastic clayey soil
(D) Silty soil

**31.** Standard EDTA solution is used to determine the

(A) dissolved oxygen in water
(B) turbidity in water
(C) residual chlorine in water
(D) hardness in water

**32.** A simple supported beam carries two concentrated loads W at distances $\frac{l}{3}$ from either support. The value of maximum bending moment anywhere in the section will be

(A) $\frac{Wl}{4}$
(B) $\frac{Wl}{2}$
(C) $\frac{Wl}{8}$
(D) $\frac{Wl}{3}$

**33.** A sewer which receives storm water, surface run-off and sewage is called a

(A) Branch sewer
(B) Common sewer
(C) Outfall sewer
(D) Combined sewer

**34.** Uniformity Co-efficient of a soil is
(A) equal to or less than one.
(B) always less than one.
(C) equal to or greater than one.
(D) always equal to one.

**35.** Overturning of vehicles on a curve can be avoided by using
(A) Compound curve
(B) Transition curve
(C) Reverse curve
(D) Vertical curve

**36.** The angle that Coulomb's failure envelope makes with the horizontal is called
(A) Both (B) and (D)
(B) angle of internal friction
(C) None of these
(D) angle of repose

**37.** The maximum amount of compression reinforcement in a doubly reinforced beam is
(A) 0·03 bD
(B) 0·05 bD
(C) 0·04 bD
(D) 0·06 bD

**38.** A slow sand filter is suitable where
(A) high filtration rate is necessary.
(B) land is available at reasonable rate.
(C) the municipality is very large.
(D) land is costly.

**39.** Which of the following chemical compounds can be used for dechlorination of water?
(A) Chloramines
(B) Carbon dioxide
(C) Sulphur dioxide
(D) Bleaching powder

**40.** A discharge of 100 litres/sec flows along a rectangular channel of 1·5m wide. The critical depth in the channel is
(A) 0·576m
(B) 0·356m
(C) None of these
(D) 0·466m

**41.** In Lime soda process
(A) lime reduces carbonate hardness and soda ash removes non-carbonate hardness.
(B) only carbonate hardness is removed.
(C) lime reduces non-carbonate hardness and soda ash removes carbonate hardness.
(D) only non-carbonate hardness is removed.

**42.** Due to change in price level a revised estimate is prepared if the sanctioned estimate exceeds
(A) 4.0%
(B) 2.0%
(C) 5.0%
(D) 2.5%

**43.** Dog legged stairs are
(A) straight stairs
(B) half turn stairs
(C) three quarter turn stairs
(D) quarter turn stairs

**44.** Two beams carrying identical loads, simply supported, are having same depth but beam A has double the width as compared to beam B. The ratio of the strength of beam A to that of beam B is
(A) 2
(B) 4
(C) 6
(D) 1

**45.** The standard Symon's type rain gauge has a collecting diameter

(A) 25.4 cm
(B) 10 cm
(C) 32.8 cm
(D) 12.7 cm

**46.** Gypsum consists of

(A) CaO and $H_2O$
(B) $CaSO_4$ and $H_2O$
(C) $CO_2$ and Ca
(D) $H_2S$ and $CO_2$

**47.** The timber extracted from felled trees is classified based on the position of the tree as per IS 399 belongs to

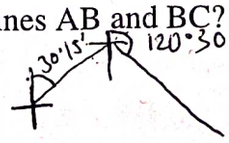
(A) dead timber
(B) standing timber
(C) rough timber
(D) living timber

**48.** Critical path in a network system

(A) may be longest.
(B) is always longest.
(C) may be shortest.
(D) is always shortest.

**49.** The Whole Circle Bearings of line AB and BC are 30° 15′ and 120° 30′. What is the included angle ABC between the lines AB and BC?

(A) 269° 45′
(B) 229° 45′
(C) 90° 15′
(D) 89° 45′




**50.** A temporary rigid structure having platforms to enable masons to work at different stages of a building is known as

(A) Racking shore
(B) Scaffolding
(C) Underpinning
(D) Dead shore

**51.** A fixed beam of span $l$ is carrying a point load $P$ at its mid span. If the moment of inertia of the middle half-length is two times that of the remaining length then the fixed end moments will be

(A) $\frac{3Pl}{32}$
(B) $\frac{Pl}{32}$
(C) $\frac{5Pl}{32}$
(D) $\frac{5Pl}{48}$

**52.** The liquid binder obtained by blending a bituminous material with a volatile solvent is known as

(A) tar
(B) cutbacks
(C) emulsion
(D) asphalt

**53.** The neutral axis of balanced section is called as

(A) Balanced neutral axis
(B) Normal neutral axis
(C) Critical neutral axis
(D) Actual neutral axis

**54.** Quick lime is

(A) Calcium hydroxide
(B) Calcium carbonate
(C) None of these
(D) Calcium oxide

**55.** The maximum pitch of the bolts for a compression member should not exceed

(A) 12t or 200 mm whichever is less, where t is the minimum thickness of the plate

(B) 2·5 times diameter of the bolt

(C) 16t or 200 mm whichever is less, where t is the minimum thickness of the plate

(D) 2·5 times diameter of the hole

**56.** Removal of parallax may be achieved by

(A) refocussing the eyepiece and objective

(B) refocussing the eyepiece

(C) None of these

(D) refocussing the objective

**57.** What is the maximum permissible slenderness ratio of a major compression member which undergoes reversal of stress due to wind load?

(A) 300

(B) 180

(C) 400

(D) 250

**58.** In an experiment it is found that bulk modulus of a material is equal to its shear modulus. Then Poisson's ratio will be

(A) 0·375

(B) 0·125

(C) 0·500

(D) 0·25

**59.** The shape factor for a solid circular section of diameter D is equal to

(A) 16/(3Π)

(B) D/(2Π)

(C) 3 D/(2Π)

(D) 15/(2Π)

**60.** In Simpson's rule the line joining the top of the ordinates is assumed

(A) Parabolic

(B) Circular

(C) Straight

(D) Elliptical

**61.** The igneous rock composed mainly of quartz and feldspar mixed with particles of mica is

(A) laterite

(B) gneiss

(C) slate

(D) granite

**62.** A soil has a bulk density of 22kN/m$^3$ and water content 10%. The dry density of soil is

(A) 22.0 kN/m$^3$

(B) 18.6 kN/m$^3$

(C) 23.2 kN/m$^3$

(D) 20.0 kN/m$^3$

**63.** The Continuity equation is based on the principle of conservation of

(A) momentum

(B) mass

(C) None of these

(D) energy

**64.** A circular beam of dia 200 mm is subjected to a shear force 30 kN. Then maximum shear stress in the section in N/mm$^2$ is

(A) $\frac{3}{\pi}$

(B) $\frac{1}{\pi}$

(C) $\frac{4}{\pi}$

(D) $\frac{2}{\pi}$

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65. Force is a
(A) vector quantity
(B) scalar quantity
(C) non-measurable quantity
(D) linear quantity

66. The pressure of a liquid measured with the help of a piezometer tube is
(A) absolute pressure
(B) vacuum pressure
(C) atmospheric pressure
(D) gauge pressure

67. A projecting stone which is usually provided to serve as support for joist is called _____.
(A) Gable
(B) Reveals
(C) Coping
(D) Corbel

68. In a rectangular column with width $b$ loaded eccentrically, there is no tension if the eccentricity $e$ is less than
(A) $\frac{b}{3}$
(B) $\frac{b}{6}$
(C) $\frac{b}{4}$
(D) $\frac{b}{2}$

69. The slenderness ratio of lacing bars should not exceed
(A) 145
(B) 100
(C) 180
(D) 120

70. Compressibility of sandy soils is
(A) much less than that of clayey soils.
(B) almost equal to that of clayey soils.
(C) None of these
(D) much greater than that of clayey soils.

71. Which of the following methods is most suitable for the determination of permeability of clayey soil?
(A) Horizontal permeability test
(B) Constant head method
(C) None of these
(D) Falling head method

72. A steel column in a multi-storeyed building carries an axial load of 125 N. It is built up of 2 ISMC 350 channels connected by lacing. The lacing carries a load of
(A) 3.125 N
(B) 125 N
(C) Zero
(D) 12.5 N

73. Allowable bearing pressure for a foundation depends upon
(A) both allowable settlement and ultimate bearing capacity of soil.
(B) allowable settlement only.
(C) None of these
(D) ultimate bearing capacity of soil only.

74. The frog of the brick in a brick masonry is generally kept on
(A) Shorter side
(B) Bottom face
(C) Longer side
(D) Top face

**75.** The characteristics of fresh and septic sewage respectively are

(A) alkaline and acidic
(B) both acidic
(C) acidic and alkaline
(D) both alkaline

**76.** In a barrage the crest level is kept

(A) low with no gates
(B) low with large gates
(C) high with no gates
(D) high with large gates

**77.** Which one of the following is a scalar quantity?

(A) Torque
(B) Momentum
(C) Impulse
(D) Energy

**78.** The brickwork is not measured in cubic meter in case of

(A) reinforced brickwork
(B) one or more than one brick wall
(C) half brick wall
(D) brickwork in arches

**79.** Slope at the end of a simple supported beam of span $l$ with uniformly distributed load $w$/unit length over the entire span is given by

(A) $\frac{wl^3}{24EI}$
(B) $\frac{wl^2}{16EI}$
(C) $\frac{wl^2}{24EI}$
(D) $\frac{wl^3}{16EI}$

**80.** In CBR test the value of CBR is calculated at

(A) Both 2.5 mm and 5.0 mm penetration
(B) 2.5 mm penetration only
(C) 7.5 mm penetration only
(D) 5.0 mm penetration only

**81.** The suitable contour interval for a map with a scale of 1 : 1000 is

(A) 10 m
(B) 2 m
(C) 20 m
(D) 5 m

**82.** In septic tank the decomposition of organic matter is done by

(A) Pathogenic bacteria
(B) Aerobic bacteria
(C) Facutative bacteria
(D) Anaerobic bacteria

**83.** The maximum central deflection for a simple supported beam of length $l$ loaded with uniformly distributed load $w$ is

(A) $\frac{wl^4}{48EI}$
(B) $\frac{5}{584}\frac{wl^4}{EI}$
(C) $\frac{5}{48}\frac{wl^4}{EI}$
(D) $\frac{5}{384}\frac{wl^4}{EI}$

**84.** Reynold's number is defined as the

(A) ratio of viscous force to elastic force
(B) ratio of inertia force to gravity force
(C) ratio of inertia force to viscous force
(D) ratio of gravity force to viscous force

**85.** The slabs which directly rest on columns without the aid of any beam are known as

(A) ribbed slab
(B) two way slab
(C) one way slab
(D) flat slab

**86.** Subtense bar is used for

(A) measurement of horizontal and vertical distance in undulated areas.
(B) levelling.
(C) measurement of angles.
(D) measurement of horizontal and vertical distances in flat areas.

**87.** Determining points of strategic importance are called

(A) City surveying
(B) Traverse surveying
(C) Topographic surveying
(D) Military surveying

**88.** The ratio of total elongation of a bar of uniform cross-section produced under its own weight to the elongation produced by an external load equal to the weight of the bar is

(A) $\frac{1}{4}$
(B) 1
(C) $\frac{1}{2}$
(D) 2

**89.** Disinfection of water removes

(A) Bacteria
(B) Hardness
(C) Odour
(D) Turbidity

**90.** The correction of curvature for a distance of 1000m is

(A) 67·3m
(B) 0·0673m
(C) 78·5m
(D) 0·0785m

**91.** Undisturbed soil samples are required for

(A) Shrinkage limit test
(B) Specific gravity test
(C) Consolidation test
(D) Hydrometer test

**92.** Moving with simple harmonic motion the maximum displacement of a body from its mean position is called

(A) beat
(B) amplitude
(C) None of these
(D) oscillation

**93.** The main function of a fish plate is

(A) to allow rail to expand and contract freely
(B) to join the two rails together
(C) None of these
(D) to join rails with the sleeper

**94.** The process of making the background rough, before plastering is called

(A) Blistering
(B) Dubbing
(C) Peeling
(D) Hacking

**95.** The purpose of an anallatic lens in a tacheometer is to

(A) eliminate multiplying constant.
(B) increase magnification.
(C) make staff intercept proportional to its distance from tacheometer.
(D) reduce effective length of telescope.

**96.** A hollow circular section has an external diameter of 8cm and an internal diameter of 6cm. The moment of inertia about the horizontal axis passing through its centre is

(A) 150 $cm^4$
(B) 100 $cm^4$
(C) 200 $cm^4$
(D) 137·5 $cm^4$

**97.** If the shearing stress is zero on two planes, then the angle between the two planes is

(A) 135°
(B) 45°
(C) 180°
(D) 90°

**98.** Soil transported and depositing by running water is called

(A) Alluvial deposit
(B) Lacustrine deposit
(C) None of these
(D) Aeoline deposit

**99.** The resultant of two forces P and Q is R. If Q is doubled, the new resultant is perpendicular to P. Then,

(A) P = Q
(B) P = R
(C) None of these
(D) Q = R

**100.** Due to rise in temperature, the viscosity and unit weight of a fluid percolating through a soil mass, are reduced to 80% and 90% respectively. If other factors remain unaltered, the coefficient of permeability

(A) increases by 28%
(B) increases by 12.5%
(C) decreases by 28%
(D) decreases by 12.5%