

# CG Vyapam 

Sub Engineer
Civil Engineering
Mega Mock Test
(May 5th - May 6th 2022)

## Questions \& Answer Key

1. Consider the following statements about the assumption of plane stress condition.
1) Geometry of a component in such a way that one dimension should be very small in comparison to the other two dimensions.
2) Loading should be in such a way that stresses developed in smaller dimension direction should be smaller in magnitude in comparison to stresses developed in other two larger dimensions direction.

Choose the correct statements
A. 1 only
B. 2 only
C. 1 and 2 both
D. Neither 1 nor 2

Ans. C
2. What is the range of Poisson's ratio value for concrete?
A. 0.1 to 0.2
B. 0.5
C. 0.25 to 0.33
D. Zero

Ans. A
3. In three mutually perpendicular dimensional stress systems $\left[\sigma_{x}+\sigma_{y}+\sigma_{z}\right]$

The change in the volume of the body will be zero.

1) If Poisson's ratio of material is zero.
2) If the sum of the normal stresses in three mutually perpendicular directions is zero. Choose the correct statements
A. 1 only
B. 2 only
C. 1 and 2 both
D. Neither 1 nor 2

Ans. B
4. A prismatic bar that is made up of the same material. When the bar is under pure bending it bends in the form of
A. Straight line
B. Circular arc
C. Parabola
D. Cubic Parabola

Ans. B
5. What is the axial rigidity of a cross-section [symbols have usual meanings]
A. EI
B. AE
C. GJ
D. None

Ans. B
6. The ratio larger diameter to lesser diameter of a uniformly tapered bar is two. A twisting moment ' $T$ ' is applied at free end as shown. The ratio of maximum shearstress to minimum shear stress is

A. 8
B. 4
C. 16
D. 64

Ans. A
7. For Given loading of stepped bar
$\mathrm{T}=$ Twisting moment
find the angle twist of bar at free end?

A. $\frac{32 T L}{G \pi d^{4}}$
B. $\frac{544 T L}{G \pi d^{4}}$
C. $\frac{16 T L}{G \pi d^{4}}$
D. $\frac{512 T L}{G \pi d^{4}}$

Ans. B
8. ' $T$ ' is Twisting moment, find the angle of twist at free end of stepped bar?

A. $\frac{256 \mathrm{TL}}{\mathrm{G} \pi \mathrm{d}^{4}}$
B. $\frac{16 \mathrm{TL}}{G \pi d^{4}}$
C. $\frac{32 \mathrm{TL}}{\mathrm{G} \pi \mathrm{d}^{4}}$
D. None

Ans. C
9. The outside diameter of hollow shaft is equal to diameter of solid shaft. Both shafts are made up of same material. Which shafts can sustain more twisting moment?
A. Hollow shaft
B. Solid Shaft
C. Both Shaft can sustain equal twisting moment
D. Insufficient Data

Ans. B
10. Dead weight of waist slab of a stair case spanning longitudinally is calculated as:
A. $25 D \sqrt{1+\left(\frac{R}{T}\right)^{2}}$
B. $25 d \sqrt{1+\left(\frac{R}{T}\right)^{2}}$
C. $25 D \sqrt{1+\left(\frac{T}{R}\right)^{2}}$
D. $25 d \sqrt{1+\left(\frac{T}{R}\right)^{2}}$

Ans. A
11. A vertical wall of a circular bunker is subjected to horizontal pressure due to coal stored therein. The wall of the bunker is designed for
A. Axial tension
B. Hoop tension and shear force
C. Hoop tension and bending moment
D. All are correct

## Ans. C

12. A reinforced concrete ( RC ) column with slenderness ratio greater than 12 is classified as
A. short column
B. long column
C. axially loaded column
D. stub column

Ans. B
13. The minimum tension reinforcement required in the concrete beam should not be less than (here, width of the beam = $b$; depth of the beam = $d$; and yield strength of steel $=f_{y}$ )
A. 0.04 b.d
B. $\frac{0.12 \text { b.d }}{100}$
C. $\frac{0.85 \mathrm{~b} . \mathrm{d}}{f_{y}}$
D. $\frac{0.87 \text { b.d }}{f_{y}}$

Ans. C
14. Focusing 'material efficiency', which of the following is the correct sequence?
A. T-beam > Rectangular beam > Two-way slab
B. T-beam < Rectangular beam
C. Two-way slab > T-beam > Rectangular beam
D. Two-way slab < T-beam < Rectangular beam

## Ans. B

15. In a square of column section of size $400 \times 400 \mathrm{~mm}^{2}$ is reinforced with 4 bar of 25 mm and 4 bar of 16 mm diameter, then the transverse steel should be -
A. 6 mm dia @ $250 \mathrm{~mm} \mathrm{C/C}$
B. 6 mm dia @ $300 \mathrm{~mm} \mathrm{C/C}$
C. 8 mm dia @ $250 \mathrm{~mm} \mathrm{C/C}$
D. 8 mm dia @ $300 \mathrm{~mm} \mathrm{C/C}$

Ans. C
16. A reinforced concrete beam of span 3 m , has a cross-section of $150 \mathrm{~mm} \times 500 \mathrm{~mm}$. If checked for deflection, the beam will
A. fail in deflection
B. pass in deflection
C. cannot say
D. None of these

Ans. B
17. A number of independent and interacting factor influence the magnitude of creep. In general creep increases when-
a. Cement content is high
b. Water-content ratio is Iow
c. Relative humidity is low

Select the correct answer using the code given below :
A. a and b
B. a and c
C. b and c
D. All of the above

## Ans. B

18. Steel beam theory is used for-
A. Design of simple steel beam
B. Steel beam in cased in concrete
C. Doubly reinforced beam ignoring compressive stress in concrete
D. Beam if shear exceed 4 times allowed shear stress

Ans. C
19. In a square column of side 600 mm the unsupported length of column in the direction is considered to be 5 m . The minimum eccentricity for the design of column is
A. 25
B. 30
C. 35
D. 40

Ans. B
20. In a RC frame structures, square columns are provided of side 500 mm . Percentage of reinforcement of grade Fe415 is 4\%. For M20 grade of concrete, factored axial load that a single column can resist is
A. 441 kN
B. 44100 N
C. 4700.5 kN
D. 441 N

Ans. C
21. Which of the following statements is true?
A. The self-weight of the footing is not considered for calculating the upward pressure on footing
B. The self-weight of the footing is also considered for calculating the upward pressure on footing
C. The self-weight of the footing is not considered for calculating the area of the footing
D. None of these

Ans. A
22. Find the value of reduction factor $\mathrm{R}_{2}$ if F (rise to span ratio in inches) is given to be 5 .
A. 0.95
B. 0.96
C. 0.97
D. 0.98

Ans. A
23. The anchorage value of a hook is assumed sixteen times the diameter of the bar if the angle of the bend is
A. $30^{\circ}$
B. $40^{\circ}$
C. $45^{\circ}$
D. All option are correct

Ans. D
24. Deep beams are designed for $\qquad$ _.
A. Shear force only
B. Bending moment only
C. Both shear force and bending moment
D. Bearing

Ans. B
25. The loss of pre-stress due to shrinkage of concrete is the product of $\qquad$ .
A. Modular ratio and percentage of steel
B. Modulus of elasticity of concrete and shrinkage of concrete
C. Modulus of elasticity of steel and shrinkage of concrete
D. Modular ratio and modulus of elasticity of steel

Ans. C
26. The final deflection due to all loads including the effects of temperature, creep and shrinkage and measured from as cast level of supports of floors, roofs and all other horizontal members should not exceed $\qquad$ .
A. Span/350
B. Span/300
C. Span/250
D. Span/200

Ans. C
27. The effective span of a simply supported slab is
A. distance between the centres of the bearings
B. clear distance between the inner faces of the walls plus twice the thickness of the wall
C. clear span plus effective depth of the slab
D. none of these

Ans. C
28. Torsion in a reinforced concrete member gives rise to:
A. Diagonal cracks
B. Vertical cracks
C. Inclined cracks
D. Spiral cracks

Ans. D
29. In construction project, the cost-slop of an activity is an indication of
A. Extra-time needed
B. Extra cost needed
C. Reduction of duration of critical activity
D. Crashing of an activity

Ans. B
30. Which of the following quantity is measured using a Planimeter?
A. Area
B. Bar diameter
C. Volume
D. Weight

Ans. A
31. A relatively fixed point of known elevation above datum is called $\qquad$ .
A. datum point
B. benchmark
C. reduced level
D. reference point

Ans. B
32. The method of leveling used to carry out reconnaissance of area is :
A. Check leveling
B. Fly leveling
C. Profile leveling
D. Simple leveling

Ans. B
33. In a closed traverse $\qquad$ .
A. difference between fore-bearing and back-bearing should be $90^{\circ}$
B. sum of included angles should be ( $2 \mathrm{~N}-4$ ) times right angle, where N represents the number of sides
C. sum of included angles should be ( $2 \mathrm{~N}-1$ ) times right angle, where N is the number of sides
D. None of these

Ans. B
34. In compass surveying, magnetic bearing of a survey line is $\mathrm{S} 25^{\circ} 20^{\prime} \mathrm{E}$. What is the true bearing if the magnetic declination is $5^{\circ} 40^{\prime} \mathrm{W}$.
A. $S 19^{\circ} 0^{\prime} \mathrm{E}$
B. $S 19^{\circ} 40^{\prime} \mathrm{E}$
C. $S 31^{\circ} 0^{\prime} E$
D. $\mathrm{S} 29^{\circ} 0^{\prime} \mathrm{E}$

## Ans. C

35. In levelling, the correction due to refraction may be taken as.
A. $\frac{1}{2} \mathrm{C}_{\mathrm{c}}$
B. $\frac{1}{3} \mathrm{C}_{\mathrm{c}}$
C. $\frac{1}{5} C_{c}$
D. $\frac{1}{7} \mathrm{C}_{\mathrm{c}}$

Ans.
36. The horizontal distance between two points on two consecutive contours is known as:
A. Contour elevation
B. Horizontal equivalent
C. Horizontal equivalent and Contour interval both
D. Contour interval

Ans. B
37. Lane capacity of a road having saturation head way as 2.7 sec and the cycle time as 60 sec is (green time $=27 \mathrm{sec}$, amber time $=5 \mathrm{sec}$, startup lost time $=4 \mathrm{sec}$, clearance lost time $=1 \mathrm{sec}$ )
A. $480 \mathrm{veh} / \mathrm{hr}$
B. $600 \mathrm{veh} / \mathrm{hr}$
C. $540 \mathrm{veh} / \mathrm{hr}$
D. $584 \mathrm{veh} / \mathrm{hr}$

Ans. B
38. The section of the tunnel adopted perfectly in lieu of construction and maintenance in hard rock tunnels, where the risk of roof failure or collapse caused by external pressure from water, or from loose or unstable soil conditions on tunnel lining is perfectly non-existent is
A. Circular section
B. Segmental roof section
C. Horse-shoe section
D. Egg-shaped section

## Ans. A

39. Calculate the safe stopping sight distance for a design speed of $60 \mathrm{~km} / \mathrm{h}$ hour two way traffic on a single lane road. The reaction time of driver is 2.5 sec .
A. 82.21
B. 136.23
C. 164.42
D. 674.24

Ans. C
40. From the sieve analysis of a soil, following results are obtained.

Percentage passing through 4.75 mm sieve $=45 \%$
Percentage passing through 75 micron sieve $=4 \%$
Coefficient of uniformity $=5.43$
Coefficient of curvature $=2.56$
From the above results it can be concluded that
(i) It is a coarse grained soil.
(ii) The soil is well graded.

Which of the above statements are true?
A. i and ii both
B. i only
C. ii only
D. neither i nor ii

Ans. A
41. Most suitable equipment for compacting clayey soil is a:-
A. Smooth wheeled roller
B. Pneumatic tyred roller
C. Sheep foot roller
D. Vibrator

Ans. C
42. Consider the following statements:

1. When a soil sample is dried beyond its shrinkage limt, the volume of the soil slowly decreases.
2. Plastic limit is always lower than the liquid limit for any type of soil
3. At the liquid limit, the soil behaves like a liquid and possesses no shear strength at all
4. When subjected to drying, the volume of the soil remains unchanged once the water content of the soil goes below its shrinkage limit.
Which of the above statements are correct?
A. 1 and 3 only
B. 1 and 4 only
C. 2 and 3 only
D. 2 and 4 only

Ans. D
43. A flow net of a cofferdam foundation has 6 flow channels and 18 equipotential drops. The head loss during seepage is 6 m . If the coefficient of permeability of soil is $4 \times 10^{-5} \mathrm{~m} / \mathrm{min}$ then the seepage loss in $\mathrm{m}^{3} /$ day will be?
A. 72
B. 8
C. 0.115
D. 1.037

Ans. C
44. A soil has discharge velocity of $6 \times 10^{-7} \mathrm{~m} / \mathrm{sec}$ and porosity of $1 / 3$, then its seepage velocity will be.
A. $18 \times 10^{-7} \mathrm{~m} / \mathrm{sec}$
B. $12 \times 10^{-7} \mathrm{~m} / \mathrm{sec}$
C. $6 \times 10^{-7} \mathrm{~m} / \mathrm{sec}$
D. $3 \times 10^{-7} \mathrm{~m} / \mathrm{sec}$

Ans. A
45. Coulomb's theory of earth pressure is based on:
A. The theory of elasticity
B. The theory of plasticity
C. Empirical Rules
D. Wedge theory

Ans. D
46. A foundation is said to be a shallow foundation if
A. depth is less than half the width of footing
B. depth is less than the width of footing
C. depth is less than 1.5 times the width of footing
D. depth is less than twice the width of footing

Ans. B
47. What will be the ratio of ultimate bearing capacity of a square footing to circular footing resting on a cohesionless soil if the diameter of the circular footing is 1.5 times the size of the square footing?
A. 0.68
B. 0.88
C. 1.14
D. 1.25

Ans. B
48. Carbon monoxide is dangerous for human health because,
A. It reduces oxygen capacity in blood
B. It is carcinogenic in nature.
C. It cause conjunctivitis
D. None of these

Ans. A
49. Calculate the total 5 days BOD of sewage in kg per day, if the average sewage from the city is $100 \times 10^{6}$ litre per day and the average 5 day is $300 \mathrm{mg} / \mathrm{litre}$.
A. $30000 \mathrm{~kg} /$ day
B. $15000 \mathrm{~kg} /$ day
C. $7500 \mathrm{~kg} /$ day
D. $60000 \mathrm{~kg} /$ day

Ans. A
50. Activated sludge is the:
A. Resultant sludge removable from the aeration unit
B. Sludge settled in the humus tank
C. Sludge in the secondary tank post aeration, rich in microbial mass
D. Sludge in the secondary tank post aeration, rich in nutrients

## Ans. C

51. Determine the maximum upper limit of BOD of a glucose solution of concentration 540 $\mathrm{mg} / \mathrm{l}$.
$\frac{\mathrm{C}_{6} \mathrm{H}_{12} \mathrm{O}_{6}}{180 \mathrm{gm}}+\frac{6 \mathrm{O}_{2}}{192 \mathrm{gm}} \rightarrow 6 \mathrm{CO}_{2}+6 \mathrm{H}_{2} \mathrm{O}+$ Energy
A. $360 \mathrm{mg} / \mathrm{l}$
B. $384 \mathrm{mg} / \mathrm{l}$
C. $576 \mathrm{mg} / \mathrm{l}$
D. $192 \mathrm{mg} / \mathrm{l}$

Ans. C
52. If allowable percentage error in the estimate of basic rainfall is ' $E$ ' and coefficient of variation of rainfall is ' $\mathrm{C}_{v}$ ' then optimum number of rain gauge is given by.
A. $\sqrt{\frac{c_{v}}{R}}$
B. $\frac{c_{v}}{E}$
C. $\left(\frac{c_{v}}{E}\right)^{1.5}$
D. $\left(\frac{c_{v}}{E}\right)^{2}$

Ans. D
53. If pan evaporation is denoted $E_{p}$ and actual evaporation by $E$, then
A. $E_{p}>E$
B. $E>E_{p}$
C. $\mathrm{E}=\mathrm{E}_{\mathrm{p}}$
D. $E \geqslant E_{p}$

Ans. A
54. Evapotranspiration is confined to day light hours only.
A. Day light hours
B. Night time only
C. Fallow land surface only
D. None of the above

Ans. A
55. The graphical representation of average rainfall and rainfall excess (i.e., rainfall minus infiltration) rates over specified areas during successive unit time intervals during a storm is known as:
A. Hydrograph
B. Unit hydrograph
C. Hyetograph
D. None of the above

Ans. C
56. Identify the INCORRECT statement among the below mentioned statements
A. The specified duration of unit hydrograph is called unit duration.
B. The rain during specirfied duration is called unit storm
C. The number of unit hydrographs for a given basin is theoretically infinite.
D. The time required by rain water to reach the outlet of drainage basin is generally called as time of overland flow.

Ans.
57. A 4-hr UH is used to derive an S-hydrograph. The coordinates of 4-hr UH are given below

| Time (hr) | 0 | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 4-hr UH <br> ordinates $\left(\mathrm{m}^{3} / \mathrm{s}\right)$ | 0 | 20 | 80 | 130 | 150 | 130 | 90 | 52 | 27 | 15 | 5 | 0 |

The equilibrium discharge (in $\mathrm{m}^{3} / \mathrm{s}$ ) and its time of occurrence (in hour) for the derived Shydrograph are
A. 150 and 16
B. 380 and 16
C. 699 and 40
D. 699 and 44

Ans. C
58. A 6 hours strom has 6 cm of rainfall and the resulting runoff was 3 cm . if $\varphi$-index remains at the same value, which one of the following is the runoff due to 12 cm of rainfall in 9 hours in the catchment?
A. 4.5 cm
B. 6.0 cm
C. 7.5 cm
D. 9.0 cm

Ans. C
59. The probability that a 100 yr flood is equalled or exceeded at once in 100 yr is
A. 0.99
B. 0.64
C. 0.36
D. 0.1

Ans. C
60. Canal outlet helps in:
A. To Connect Head with a Minor Channel
B. To Avoid Leakage
C. To Avoid Exit Gradient
D. All of the above

Ans. A
61. A canal irrigates a portion of a culturable command area to grow sugarcane and wheat. The average discharge required to grow sugarcane and wheat are 1 cumec and 0.6 cumec respectively. The time factor is 0.8 . The required design capacity of the canal is
A. 0.5 cumec
B. 1 cumec
C. 1.5 cumec
D. 2 cumec

Ans. D
62. If the net irrigation requirement is 8 cm and water application efficiency is $80 \%$, then water depth required to be applied in the field will be
A. 8 cm
B. 10 cm
C. 12 cm
D. 16 cm

Ans. B
63. An outlet irrigates an area of 20 hectares. The discharge (in cumec) required at this outlet to meet the evapotranspiration required of 86.40 mm occurring uniformly in 20 days neglecting other field losses is.
A. 0.01
B. 1
C. 10
D. 100

## Ans. A

64. In regime channel the discharge is $16 \mathrm{~m}^{3} / \mathrm{s}$ if depth of flow is 1 m then according to Lacey's theory width of the trapezoidal channel for side slope $1 \mathrm{H}: 1 \mathrm{~V}$ is
A. 14 m
B. 16.17 m
C. 18 m
D. 20 m

Ans. B
65. What will be the frequency of irrigation, if allowable depletion depth between irrigation is 15 mm and the daily water used by crop is $3 \mathrm{~mm} /$ day?
A. 10 days
B. 5 days
C. 2.5 days
D. 15 days

Ans. B
66. A watercourse irrigates an irrigated area of 1000 hectares. If the extra depth of water required to be supplemented by irrigation is 40 cm and the transplantation period is 20 days. Find the duty (in ha/cumec, nearest integer) of irrigation water from the crop of the field during transplantation, at the head of the watercourse assuming losses of water to be 20\% in the watercourse.
A. 184
B. 204
C. 540
D. 324

## Ans. C

67. For a culturable command area of 800 hectare with intensity of $75 \%$, the duty on the field for a certain crop is 1000 hectare/cumec. The design discharge of water course required will be.
A. 0.4 cumec
B. 0.6 cumec
C. 0.8 cumec
D. 1.25 cumec

Ans. B
68. The state of the soil when plants fail to extract sufficient water for their requirements is
$\qquad$ .
A. maximum saturated point
B. permanent wilting point
C. ultimate utilization point
D. None of these

Ans. B
69. The depth of moisture in root zone at field capacity and permanent wilting point per meter length of soil are $0.5 \mathrm{~m} / \mathrm{m}$ and $0.2 \mathrm{~m} / \mathrm{m}$ respectively. If the dry weight of soil is 14.715 $\mathrm{kN} / \mathrm{m}^{3}$, then permanent wilting point will be
A. 1.33
B. 2.66
C. 3.33
D. 4.33

Ans. A
70. A launching apron is to be designed at downstream weir for discharge intensity of 8 cumec/meter. For the design of launching aprons the scour depth is taken two times of lacey scour depth. The silt factor of bed material is unity. If the tail water depth is 4.8 m , the length of launching apron in the launched position is
A. 12 m
B. 6 m
C. 3 m
D. 1.5 m

Ans. B
71. Acidic soils are reclaimed by
A. Leaching of the soil
B. Using limestone as a soil amendment
C. Using gypsum as a soil amendment
D. Provision of drainage

Ans. B
72. For the augment supplies in canal water through a hydraulic structure is joined by the drainage water, this system is known as
A. Canal outlet
B. Canal inlet
C. Module
D. Level crossing

Ans. B
73. A longitudinal rectangular surface is hanged into the water such that its top and bottom points are at depth of 1.5 m and 6.0 m respectively. The depth of center of pressure ( m ) from the top surface is $\qquad$ .
A. 3.8
B. 4.2
C. 4.6
D. 4.8

Ans. B
74. Which of the following expression represent the simplified form of Colebrook equation use to calculate the friction factor, if variable have their standard meanings?
A. $\frac{1}{\sqrt{f}}=1.14+2 \log \left(\frac{k_{s}}{D}+\frac{9.35}{\operatorname{Re} \sqrt{f}}\right)$
B. $\frac{1}{\sqrt{f}}=1.14-2 \log \left(\frac{k_{5}}{D}+\frac{9.35}{\operatorname{Re} \sqrt{f}}\right)$
C. $\frac{1}{\sqrt{f}}=1.14-2 \log \left(\frac{k_{5}}{D}+\frac{9.35}{D \sqrt{f}}\right)$
D. $\frac{1}{\sqrt{f}}=1.14-2 \log \left(\frac{k_{s}}{\operatorname{Re}}+\frac{18.7}{D \sqrt{f}}\right)$

Ans. B
75. In a two-dimensional flow of fluid, if a velocity potential function $\varphi$ exists which satisfies the relation $\frac{\partial^{2} \phi}{\partial x^{2}}+\frac{\partial^{2} \phi}{\partial y^{2}}=0$, then the flow is
A. steady incompressible
B. steady laminar and incompressible
C. irrotational and incompressible
D. turbulent and incompressible

Ans. C
76. Poise is the unit of
A. mass density
B. kinematic viscosity
C. viscosity
D. velocity gradient

Ans. C
77. Which of the following statements is incorrect?
A. The reaction turbines are used for low head and high discharge
B. The angle of taper on draft tube is less than 8
C. A Francis turbine is an impulse turbine
D. None of these

Ans. C
78. Which of the following conditions indicates the separation of flow in a boundary layer?
A. $\frac{d v}{d y}<0$
B. $\frac{d v}{d y}=0$
C. $\frac{d v}{d y}>0$
D. $\frac{d v}{d y}=1$

Ans. A
79. Apart from inertial force, which of the following forces is most important in motion of submarines under water?
A. viscous force
B. gravity force
C. compressive force
D. surface tension force

Ans. A
80. A hydraulic jump occurs in a channel
A. when the flow changes supercritical from to sub critical
B. if the flow is controlled by a sluice gate
C. if the bed slope changes from mild to steep
D. if the bed slope changes from steep to steeper

Ans. A
81. Which one of the following statement is CORRECT about the center of buoyancy?
A. It is the point where buoyant force act.
B. It coincides with the centroid of volume of water displaced
C. It is the point where buoyant force act. and It c oincides with the centroid of volume of water displaced
D. It acts outside the body.

## Ans. C

82. A sphere of diameter 30 cm is moving with a uniform velocity of $4 \mathrm{~m} / \mathrm{s}$. The dynamic viscosity and specific gravity of the liquid is given as 0.8 poises and 0.9 respectively. What is the value of Reynolds number?
A. 135
B. 10000
C. 13500
D. 15000

Ans. C
83. Barometer is used to measure $\qquad$ _.
A. pressure in pipes, channels etc.
B. atmospheric pressure
C. very low pressure
D. difference of pressure between two points

## Ans. B

84. For a gauge pressure of $A$ of -10.89 kPa , what is the specific gravity of the gauge liquid $B$ in the figure below?

A. 1
B. 2
C. 3
D. None of these

Ans. A
85. Which of the following bogus compound considered harmful ingredients of the cement?
A. $\mathrm{C}_{3} \mathrm{~A}$
B. $\mathrm{C}_{2} \mathrm{~S}$
C. $\mathrm{C}_{3} \mathrm{~S}$
D. $\mathrm{C}_{4} \mathrm{AF}$

Ans. A
86. Which of the following bouges compound has maximum rate of hydration.
A. $\mathrm{C}_{3} \mathrm{~A}$
B. $\mathrm{C}_{4} \mathrm{AF}$
C. $\mathrm{C}_{3} \mathrm{~S}$
D. $\mathrm{C}_{2} \mathrm{~S}$

Ans. B
87. The heat of hydration of OPC at the age of 7 days is approximately?
A. $50 \mathrm{cal} / \mathrm{gm}$
B. $90 \mathrm{cal} / \mathrm{gm}$
C. $100 \mathrm{cal} / \mathrm{gm}$
D. None

Ans. B
88. The strength of ' $\mathrm{H}_{1}$ ', Category mortar is?
A. $\geq 10 \mathrm{~N} / \mathrm{mm}^{2}$
B. $6-7.5$
C. 3-6
D. $2-3 \mathrm{~N} / \mathrm{mm}^{2}$

Ans. A
89. Proportion of cement: sand used for general RCC work such as column, wall lintel etc
A. 1: 3
B. 1: 6
C. 1:7
D. $1: 1$

Ans. A
90. What is the permissible velocity of water in cement concrete lined canal as per IS 10430: 2000
A. $2.7 \mathrm{~m} / \mathrm{sec}$.
B. $1.8 \mathrm{~m} / \mathrm{sec}$.
C. $3.1 \mathrm{~m} / \mathrm{sec}$.
D. $1.5 \mathrm{~m} / \mathrm{sec}$.

Ans. A
91. For centring of R.C .C . structures the bricks used should be
A. Ist Class
B. IInd class
C. IIIrd class
D. IVth class

Ans. B
92. The minimum thickness of the wall where single Flemish bond is used
A. One brick thick
B. One and a half brick thick
C. Two and a half brick thick
D. None of the above

Ans. B
93. Hot bitumen is used for damp-proofing course in the building. It can be applied with a minimum thickness of
A. 2 mm
B. 3 mm
C. 5 mm
D. 6 mm

Ans. B
94. Which of the following is NOT a drier in paints?
A. Leatharge
B. Lead oxide
C. Red lead
D. Copper sulphate

Ans. C
95. After casting, an ordinary cement concrete on drying:
A. expands
B. mix
C. shrinks
D. None of these.

Ans. C
96. Permissible compressive strength of M 30 concrete grade (in $\mathrm{kg} / \mathrm{cm}^{2}$ ) is
A. 100
B. 150
C. 200
D. 300

Ans. D
97. Proper proportioning of concrete, ensures $\qquad$ .
A. desired strength and workability
B. desired durability
C. water tightness of the structure
D. All options are correct

Ans.
98. The abnormal growth, in which peculiar curved swelling found on the body of a tree is known as,
A. Shake
B. Upset
C. Knot
D. Ring galls

Ans. D
99. Bulb filled pile at the lower end is known as,
A. Colum pile
B. Raymond pile
C. Mac-Arthur pile
D. Franki pile

Ans. C
100. The maximum permissible deflection of timber supports a roof, is
A. $\frac{\mathrm{L}}{360}$
B. $\frac{\mathrm{L}}{260}$
C. $\frac{\mathrm{L}}{150}$
D. $\frac{\mathrm{L}}{100}$

Ans. A
101. India has agreed to provide grant to which country to implement 'Unitary Digital Identity framework', apparently modelled on Aadhaar card?
A. Nepal
B. Bangladesh
C. Sri Lanka
D. Maldives
E. Myanmar

Ans. C
102. The flagship scheme 'Pradhan Mantri Kisan Sampada Yojana (PMKSY)' has been extended till March 2026 with an allocation of $\qquad$ .
A. Rs 3,600 crore
B. Rs 4,600 crore
C. Rs 5,600 crore
D. Rs 6,600 crore
E. Rs 7,600 crore

Ans. B
103. Which organization has organized Exclusive International Business Expo titled as 'India Telecom 2022?
A. Telecom Equipment and Services Export Promotion Council
B. Broadcast Audience Research Council
C. Telecom Regulatory Authority of India
D. News Broadcasters Association
E. None of the above

Ans. A
104. Which operation has been launched by the Railway Protection Force (RPF) to curb human trafficking?
A. Operation SHAELI
B. Operation AAHT
C. Operation Thirst
D. Operation Dhanush
E. None of the above

Ans. B
105. By defeating which country India has won the record fifth time ICC Under-19 Cricket World Cup title?
A. Sri Lanka
B. England
C. Australia
D. New Zealand
E. South Africa

Ans. B
106. Which organization publishes the India State of Forest Report biennially?
A. Bombay Natural History Society (BNHS)
B. Indian Council of Forestry Research and Education
C. Forest Survey of India (FSI)
D. Centre for Science and Environment
E. The World Forest Organization

## Ans. C

107. According to the biennial India State of Forest Report (ISFR) 2021, what percent of geographical area of the country is under forest and tree cover?
A. $21.62 \%$
B. $22.62 \%$
C. 23 .62\%
D. 24 . $62 \%$
E. 25.62\%

Ans. D
108. Who has been appointed as the captain of 18 -member Indian squad at the Women's Hockey Asia Cup 2022 to be held in Muscat, Oman?
A. Rani Rampal
B. Savita Punia
C. Deep Grace Ekka
D. Sunita Lakra
E. Gurjit Kaur

Ans. B
109. In Indian constitution, the method of election of President has been taken from which country?
A. Britain
B. USA
C. Ireland
D. Australia

Ans. C
110. The total no. of ministers in council of ministers shall not exceed $\qquad$ \% of the strength of Legislative assembly?
A. 10
B. 15
C. 20
D. 25

Ans. B
111. Who was appointed as the first British Superintendent of the state of Chhattisgarh?
A. Captain Edmund
B. Agnews
C. Captain Hunter
D. Sandis

Ans. A
112. As per census 2011, the sex ratio of Chhattisgarh is
A. 940
B. 991
C. 945
D. 1030

Ans. B
113. Who was given the title "Lokpriya" by the people?
A. Pt. Ramdayal Tiwari
B. Yati Yatanlal
C. Pt. Waman Rao Lakhe
D. Pt Lochan Prasad Pandey

## Ans. C

114. Which of the following City of Chhattisgarh has observed the highest temperature?
A. Raipur
B. Bilaspur
C. Champa
D. Kawardha

Ans. C
115. Which of the following is the largest in terms of area?
A. Indravati National Park
B. Guru Ghasidas National Park
C. Kanger Valley National Park
D. Udanti Wildlife Sanctuary

Ans. B
116. Match the following in column I (Rivers) with column II (Meeting place):

Column I Column II
1). Alaknanda-Dhauliganga a. Rudraprayag
2). Alaknanda-Mandakini b. Devprayag
3). Bhagirathi-Alaknanda c. Vishnuprayag
4). Alaknanda-Pinder d. Karnaprayag

Code:
A. 1-c, 2-a, 3-b, 4-d
B. 1-b, 2-a, 3-d, 4-c
C. 1-b, 2-d, 3-c, 4-a
D. 1-c, 2-d, 3-a, 4-b

Ans. A
117. Which among the following dams is/are correctly matched with rivers on which they are built?

1. Chamera I Dam - River Satluj
2. Bhakra Dam - River Ravi
3. Dulhasti Dam - River Chenab
4. Bargi Dam - River Narmada

Select the correct answer from the given below:
A. 1 and 3 only
B. 2 and 4 only
C. 3 and 4 only
D. 1 and 2 only

Ans. C
118. Satluj river enters India through which of the following passes?
A. Shipki La
B. Niti La
C. Nathu La
D. Mana La

Ans. A
119. In which state is Hutti gold mine situated?
A. Kerala
B. Karnataka
C. Jharkhand
D. Tamilanadu

Ans. B
120. The collection of linked information residing on computers which is available through internet is called
A. Web Server
B. Web Store
C. World Wide Web
D. Web Information

## Ans. C

121. MS window is which type of software?
A. GUI
B. MUI
C. LUI
D. CUI

Ans. A
122. Junk e-mail is also called as $\qquad$ .
A. cookie crumbs
B. Spoof
C. Spam
D. sniffer script
E. Garbage

Ans. C
123. The Founder of Instagram is $\qquad$ .
A. Kevin Systrom \& Mike Krieger
B. Louis Harold Gray \& Nikola Tesla
C. James Prescott Joule \& Wilhelm Eduard Weber
D. John Napier \& Alexander Graham Bell

Ans. A
124. Which of the following is not an Impact Printer?
A. Dot Matrix Printer
B. Daisy Wheel Printer
C. Line Printer
D. Ink Jet Printer

Ans. D
125. The domain name of the E -mail address mark.sttol@ITdesk.info is
A. Mark.sttol
B. sttol
C. ITdesk.info
D. info

Ans. C
126. In Microsoft World, which short key is used to insert a hyperlink?
A. Ctrl + I
B. Ctrl + J
C. $\mathrm{Ctrl}+\mathrm{K}$
D. $\mathrm{Ctrl}+\mathrm{L}$

Ans. C
127. What will do Ctrl $+Z$ ?
A. Undo the last Action
B. Redo the last Action
C. Add the new page
D. Paste the contents from clipboard
E. None of these

Ans. A
128. Ctrl-R can be used for
A. Re-Open the last closed document
B. Re- Print the last printed page
C. Re-Apply the last paragraph formatting
D. Right align the selected paragraph

Ans.
D
129. Which academic institute recently developed India's first indigenous microprocessor 'SHAKTI'?
A. IIT Madras
B. IIT Kanpur
C. IIT Delhi
D. IIT Roorkee

Ans. A
130. If $9 * 2 * 5=23$ and $1 * 4 * 8=29$, then
$1 * 6 * 3=$ ?
A. 19
B. 21
C. 31
D. 39

Ans. A
131. A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.
$19,11,13,16,15,17,13,19,21$ ?
A. 10
B. 11
C. 12
D. 15

Ans. A
132. Select the combination of letters that when sequentially placed in the gaps of the given letter series will complete the series.
$\mathrm{kb} \__{-} \mathrm{fg}$ _ $\mathrm{K}_{-} \mathrm{df}$ _ tkbd _ gtkbdf _ t
A. $d, t, g, f, b, g$
B. $d, t, b, g, f, g$
C. $t, d, b, g, f, g$
D. $t, d, g, b, g, f$

Ans. B
133. Rahul walked 30 m towards south, he then turned to his right and walked 15 m . He then turned to his right and walked 30 m . He again turned to his left and walked 10 m . At what distance is he from the starting point and in which direction?
A. 25 Meters West
B. 35 Meters East
C. 10 Meters North
D. None of these

Ans. A
134. Consider the given statement/s to be true and decide which of the given conclusions/assumptions can definitely be drawn from the given statement. Statement:

1) All elephants are men.
2) All men are socks.

## Conclusion :

I: Some socks are elephants.
II: All elephants are socks.
A. Only Conclusion I follows
B. Only Conclusion II follows
C. Both Conclusions I and II follows
D. Neither conclusion I nor II follows

Ans. C
135. Select the letter-cluster that can replace the question mark (?) in the following series.

DAC, GWH, JSM, MOR, ?
A. PJV
B. QKV
C. PKW
D. QJW

Ans. C
136. What is the angle turned by hour hand at $5: 30 \mathrm{pm}$ from the vertical that is 12 noon?
A. $150^{\circ}$
B. $155^{\circ}$
C. $160^{\circ}$
D. $165^{\circ}$
E. None of the above/More than one of the above

Ans. D
137. If Moeen Ali is taller than Milind Kumar and Prakash Jha but smaller than Himmat Singh, Prakash Jha is taller than Colin Ingram and smaller than Robin Uthappa. Prakash Jha is not as tall as Milind Kumar. Milind Kumar and Robin Uthappa are equal in height, then who is the smallest among them?
A. Moeen Ali
B. Colin Ingram
C. Prakash Jha
D. Robin Uthappa

Ans. B
138. Three views of the same cube are given. All the faces of the cube are symbols are $1, \Psi, \omega, \varepsilon, \dagger$ and $\beta$. Select one figure which will result when the cube is unfolded

(i)

(ii)

(iii)
A.

B.

C.

D.


Ans. D
139. Select the correct mirror image of the given figure when the mirror is placed to the right of the figure.

A.

B.

C.

D.


Ans. B
140. Suresh's sister is the wife of Ram. Ram is Rani's brother. Ram's father is Madhur. Sheetal is Ram's grandmother. Rema is Sheetal's daughter-in-law. Rohit is Rani's brother's son. How is Rohit related to Suresh?
A. Brother-in-law
B. Son
C. Brother
D. Nephew

Ans. D
141. A man is 3 years older than his wife and four times as old as his son. If the son becomes 15 years old after 3 years. Then what is the present age of the wife?
A. 60 years
B. 51 years
C. 48 years
D. 45 years

Ans. D
142. From the given options, select the figure which is embedded in the following figure (rotation is NOT allowed).
A.

B.

C.

D.


Ans. C
143. Which type of drainage system will collect the rainwater?
A. Primary
B. Secondary
C. Tertiary
D. Primary and tertiary

Ans. A
144. Bulking of sand occurs in the moisture content of $\qquad$ -.
A. $3 \%$
B. $5 \%$
C. $10 \%$
D. $12 \%$

Ans. B
145. Curing $\qquad$ .
A. reduces the shrinkage of concrete
B. preserves the properties of concrete
C. prevents the loss of water by evaporation
D. All options are correct

Ans.
146. The method of irrigation adopted at places where there exists acute scarcity of irrigation water is:
A. Sprinkler irrigation method
B. furrow irrigation method
C. drip irrigation method
D. basin flooding

Ans. C
147. Specific gravity of soil is $\qquad$ .
A. same for clays and sands
B. determined by hydrometer
C. less than 2 for most soils
D. more than 2.5 for most soils

Ans.

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148. The main constituents of fly ash are:
A. Silica
B. Aluminium oxide
C. Ferrous oxide
D. All of the above

Ans.
149. If the pores of a soil are completely full of air only, the soil is said to be $\qquad$ .
A. wet soil
B. fully saturated soil
C. dry soil
D. partly saturated soil

Ans. C
150. Which of the following represents the normal consistency of ordinary Portland cement?
A. 0.15
B. 0.3
C. 0.45
D. 0.55

Ans. B

