

109/23

Question Booklet Alpha Code

A

Question Booklet Sl. No.

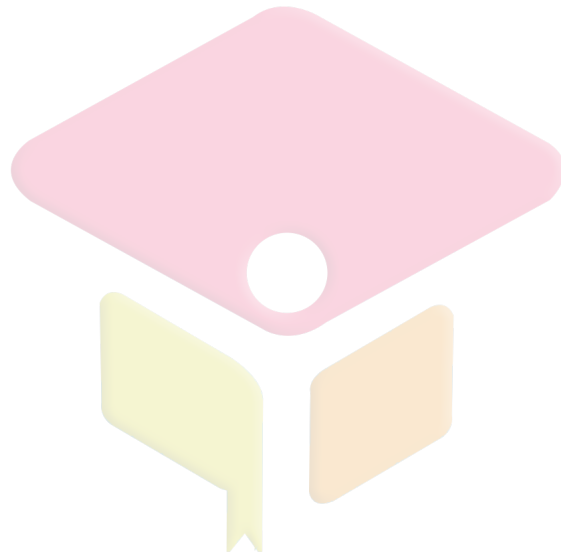
Total Number of Questions : 100

Time : 90 Minutes

Maximum Marks : 100

INSTRUCTIONS TO CANDIDATES

1. The Question Paper will be given in the form of a Question Booklet. There will be four versions of Question Booklets with Question Booklet Alpha Code viz. **A, B, C & D**.
2. The Question Booklet Alpha Code will be printed on the top left margin of the facing sheet of the Question Booklet.
3. The Question Booklet Alpha Code allotted to you will be noted in your seating position in the Examination Hall.
4. If you get a Question Booklet where the alpha code does not match to the allotted alpha code in the seating position, please draw the attention of the Invigilator IMMEDIATELY.
5. The Question Booklet Serial Number is printed on the top right margin of the facing sheet. If your Question Booklet is un-numbered, please get it replaced by new Question Booklet with same alpha code.
6. The Question Booklet will be sealed at the middle of the right margin. Candidate should not open the Question Booklet, until the indication is given to start answering.
7. Immediately after the commencement of the examination, the candidate should check that the Question Booklet supplied to him/her contains all the 100 questions in serial order. The Question Booklet does not have unprinted or torn or missing pages and if so he/she should bring it to the notice of the Invigilator and get it replaced by a complete booklet with same alpha code. This is most important.
8. A blank sheet of paper is attached to the Question Booklet. This may be used for rough work.
9. **Please read carefully all the instructions on the reverse of the Answer Sheet before marking your answers.**
10. Each question is provided with four choices **(A), (B), (C)** and **(D)** having one correct answer. Choose the correct answer and darken the bubble corresponding to the question number using Blue or Black Ball Point Pen in the OMR Answer Sheet.
11. **Each correct answer carries 1 mark and for each wrong answer 1/3 mark will be deducted. No negative mark for unattended questions.**
12. No candidate will be allowed to leave the examination hall till the end of the session and without handing over his/her Answer Sheet to the Invigilator. Candidates should ensure that the Invigilator has verified all the entries in the Register Number Coding Sheet and that the Invigilator has affixed his/her signature in the space provided.
13. Strict compliance of instructions is essential. Any malpractice or attempt to commit any kind of malpractice in the Examination will result in the disqualification of the candidate.



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S I N C E 2 0 1 2

1. A 200 mm long steel bar is tested in tension, so that the change in the length is 0.1 mm. If modulus of elasticity is 200 GPa, what is the stress developed in the bar ?
A) 200 MPa B) 50 MPa C) 0.1 MPa D) 100 MPa
2. The point of contraflexure in a beam is a point where
A) Shear force is maximum B) Bending moment is maximum
C) Bending moment changes sign D) Shear force is zero
3. The breadth of a beam of rectangular section is half its depth. If it is subjected to bending moment of 28.8 Nm and the maximum stress developed is 200 MPa, compute the breadth of the section.
A) 6 mm B) 18 mm C) 12 mm D) 24 mm
4. A simply supported beam of span length 6 m carries 9 kN central load. If the flexural rigidity is 2700 kN/m², what is the deflection at the centre ?
A) 20 mm B) 15 mm C) 10 mm D) 1 mm
5. Euler's buckling theory is applicable for
A) Short columns B) Long columns
C) Both short and long columns D) None of the above
6. A circular plate of radius R is immersed vertically in water such that the topmost point is just at the water surface. Determine the depth of centre pressure of the plate below the water surface.
A) 5R/4 B) 11R/8 C) 3R/2 D) 4R/3
7. A turbine develops 480 kW power under a net head of 30 m. If the overall efficiency of the turbine is 80%, determine the discharge through the (in m³/s) turbine. Take specific weight of water in the turbine as 10 kN/m³.
A) 20 B) 2.0 C) 1.51 D) 1.41
8. In which of the following flow profiles, the flow will be in supercritical state ?
A) M₃, S₃ and M₁ B) M₂, S₃ and S₂ C) S₃, S₂ and M₃ D) S₁, S₂ and S₃
9. Find the delta for a crop, if the duty for a base period of 120 days is 1200 hectares/cumecs.
A) 86.4 cm B) 0.864 cm C) 10 cm D) 1 cm
10. The radius of influence of a well is the
A) Radius of the well
B) Distance from the centre of well to the point of zero drawdown
C) Distance from the wall of well to the point of zero drawdown
D) None of the above

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11. The horizontal angle between the true meridian and a survey line, is known as
A) Dip
B) Declination
C) Magnetic Bearing
D) Azimuth
12. A level is set up and the following reading are obtained :
Reduced level of the floor is 100.000 m; staff reading on the floor is 1.295 m :
reading on the staff held inverted against the underside of the tee-beam is 2.895 m.
Determine the height of the beam above the floor level.
A) 4.190 m B) 3.895 m C) 2.895 m D) 1.295 m
13. A series of offsets in metres were taken from the chain line to a curved boundary line at intervals of 10 m in the following order :
0, 2.80, 3.98, 6.40, 8.63, 8.95, 5.20, 0
Compute the area between the chain line, the curved boundary line and the end offsets by Trapezoidal rule.
A) 400 m² B) 359.6 m² C) 350 m² D) 361 m²
14. The item of work not included in plinth area is
A) Area of walls at the floor
B) Area of cantilevered porch
C) Verandah area
D) Room area
15. For estimation using the long and short wall method, the length of long wall is the centre to centre distance between walls and
A) One fourth breadth of wall on each side
B) Breadth of the wall
C) Half breadth of wall on each side
D) None of the above
16. Seasoning of timber is done for
A) Increasing moisture content
B) Increasing strength of timber
C) Reducing roughness of timber
D) Decreasing moisture content
17. The percentage of nickel in invar is
A) 24 B) 36 C) 12 D) 40
18. When a brick is cut along its length, making it two equal halves, then it is called
A) King closer B) Bevelled closer C) Half brick D) Queen closer
19. The foundation which consists of a thick reinforced cement concrete slab covering the whole area in the form of a mat is called
A) Grillage foundation B) Raft foundation
C) Combined footing D) Strap footing

A

20. The member which is placed horizontally to support common rafter of a sloping roof, is
 A) Purlin B) Strut C) Batten D) Cleat
21. The activities of a project, are shown on bar charts by
 A) Vertical lines B) Dots C) Crosses D) Horizontal lines
22. The performance of a specific task in Critical Path Method is known as
 A) Contract B) Activity C) Dummy D) Event
23. The principle involved in collection and sampling of particulate matter in which the particles are drawn through a device by deflecting them from their original paths is called
 A) Electrostatic Precipitation B) Scattering
 C) Gravitational Settling D) Filtration
24. Consider the following statements.
 1. Specific storage is specific capacity per unit depth of the aquifer.
 2. Specific capacity is storage coefficient per unit aquifer depth.
 3. Specific capacity is a constant for a given well.
 Which of the statement are correct ?
 A) 2 and 3 B) 2 and 1 C) 2 only D) 3 only
25. A circular primary clarifier processes an average flow of 7000 m³/d of municipal wastewater. The overflow rate is 70 m³/d. The diameter of the clarifier is
 A) 3.59 B) 11.28 C) 14.00 D) 5.64
26. A waste treatment plant is designed to treat 5 m³ of raw water. It has 15 sand filters. The surface area of each filter is 100 m². What is the loading rate (in m³/daym²) with three filters out of service for routine backwashing ?
 A) 144 B) 72 C) 360 D) 720
27. Match the following :

Sl. No. **List – A**

i. Zone of Degradation

ii. Zone of Recovery

iii. Zone of Active Decomposition

iv. Zone of Cleaner Water

List – B

a. Algae reappears while fungi decreases

b. Unfavourable to the development of aquatic life

c. Appearance of usual aquatic life

d. Bacteria and flora flourishes

i ii iii iv

A) a b c d

B) b d c a

C) b d a c

D) a b d c

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28. How much bleaching powder is needed to chlorinate 10000 litres of water whose chlorine demand is 2 mg/l, assuming that the bleaching powder has 25% available chlorine ?

- A) 40 g B) 80 g C) 0.0125 g D) 0.025 g

29. Which one of the following is the purpose of providing a surge tank in a pipeline carrying water ?

- A) To store water
B) To increase the pressure throughout the pipeline
C) To store overflowing water
D) To protect the pipeline against water hammer

30. The main reinforcement of a RC slab consists of 16 mm bars at 100 mm spacing. It is desired to replace the 16 mm bars by 12 mm bars, then the spacing of 12 mm bars should be

- A) 60 mm B) 100 mm C) 180 mm D) 90 mm

31. Match the following :

Sl. No. List – A

- i. IS 3370
ii. IS 875 – 4

iii. IS 1343
iv. IS 875 – 5

List – B

- a. Code of Practice for Design Loads – Snow Load
b. Code of Practice for Design Loads – Special Loads and Load Combinations
c. Concrete Structures of Storage of Liquids
d. Code of Practice for Prestressed Concrete

- | i | ii | iii | iv |
|----------|-----------|------------|-----------|
| A) c | a | d | b |
| B) a | b | c | d |
| C) a | c | b | d |
| D) c | a | b | d |

32. Maximum permissible slenderness ratio of a member subjected to compressive load due to wind/earthquake

- A) 180 B) 250 C) 350 D) 400

33. The losses in prestress in pre-tensioning system are due to Elastic deformation of concrete

1. Friction
2. Shrinkage and Creep of concrete
3. Shrinkage and Elastic deformation

Select the correct answer using the codes given :

- A) 1, 2 and 3 B) 2 only C) 1 and 2 D) 3 only

A

34. Design of Pins is primarily governed by
 A) Shear B) Bearing C) Flexure D) All of them
35. Which of the following are the general requirements of retaining wall ?
 1. The factor of safety against sliding should be at least 1.5.
 2. The bearing pressure at toe should be less than the bearing capacity of the soil.
 3. The resultant of the weight of the wall and the pressure exerted by the retained earth should have an eccentricity not more than one sixth of the base width.
 A) 1 and 3 B) 1, 2 and 3 C) 1 only D) 1 and 2
36. The development length in compression for a 25 mm diameter deformed bar of grade Fe415 embedded in concrete of grade M30 whose design bond stress is 1.50 N/mm^2 is
 A) 1505 mm B) 940 mm C) 755 mm D) 590 mm
37. The time required for 50% consolidation of a 3 cm thick clay layer (drained at both top and bottom) in the laboratory is 1 minute. Time required for a 3-m-thick clay layer of the same clay, sandwiched between sand layers in the field, under the same pressure increment to reach 25% consolidation
 A) 15000 minutes B) 2500 minutes C) 10000 minutes D) 5000 minutes
38. Determine the theoretical maximum dry density in g/ml for a soil sample having specific gravity of 2.50 and optimum moisture content of 10%.
 A) 2.00 B) 1.50 C) 2.50 D) 1.75
39. A fine-grained soil with liquid limit 70% and plastic limit 60% is classified as
 A) No plastic B) Low plastic C) Medium plastic D) High plastic
40. Consider the following statements :
 1. The standard penetration test is used for determining the relative density of cohesionless soils.
 2. For two soils having the same relative density, SPT N-value will be lower for the soil having higher confining pressure.
 3. For SPT N values, dilatancy correction is applied first before the overburden correction.
 Which of these statements is/are correct ?
 A) 1 only B) 1 and 2 C) 2 and 3 D) 1, 2 and 3

41. Match Column – I and Column – II and choose the correct option :

Column – I

- a. Rankine's theory
- b. Boussinesq's formula
- c. Coulomb's theory
- d. Friction circle method

Column – II

- i. Total stress analysis
- ii. Plastic equilibrium
- iii. Elastic continuum
- iv. Sliding wedge

A) a – ii, b – i, c – iv, d – iii

B) a – iv, b – i, c – ii, d – iii

C) a – iv, b – iii, c – ii, d – i

D) a – ii, b – iii, c – iv, d – i

42. The ultimate bearing capacity of a strip footing resting on sand is reduced by half when the water level rises to

A) base of footing

B) ground surface

C) 1.5 times width of foundation

D) 1.5 times depth of foundation

43. A pile is driven into homogeneous consolidated clay deposit with unconfined compression strength of 50 kN/m^2 , then ultimate tip resistance of the pile will be

A) 235 kN/m^2

B) 220 kN/m^2

C) 225 kN/m^2

D) 215 kN/m^2

44. A vertical summit curve is formed by two gradients of +4.6% and –5.0% and the corresponding overtaking sight distance is 110 m. The length of the curve length which is greater than overtaking sight distance to be provided is

A) 130 m

B) 120 m

C) 125 m

D) 121 m

45. Consider the following statements :

1. In rotary intersection, conflict points are reduced by merging and diverging of vehicles.
2. Traffic rotary is an intersection at grade type.
3. Rotary intersection is suitable if there are more than seven intersecting roads.

Which of these statements is/are correct ?

A) 1 only

B) 1 and 2

C) 2 and 3

D) 1, 2 and 3

46. The typical pavement failure observed in bituminous overlays provided over existing cement concrete pavements is

A) Reflection cracking

B) Alligator cracking

C) Shear failure cracking

D) Longitudinal cracking

47. If the ruling gradient is 1 in 100 for a metre gauged railway track, the allowable ruling gradient in percentage for a 5° curve in the track will be

A) 0.90

B) 0.80

C) 0.85

D) 0.75

48. The maximum harbour depth below lowest low water for a loaded draft of 10 m and rock bottom condition, is
 A) 10.20 m B) 11.80 m C) 10.80 m D) 11.20 m
49. The main disadvantage of nose in parking configuration of aircraft is
 A) Jet blast towards terminal B) Higher noise level
 C) Larger gate size D) Gate delays
50. The town development stage which indicates physical decay of most portions of the town is
 A) Juvenile B) Infantile C) Senile D) Mature
51. In many states, recommended cross sectional area of the contour bunding consisting of 30 cm depth of impounding and provision of 30 cm depth of flow over waste weir and also considering practical aspects of maintaining under low rainfall conditions would be
 A) 0.25 sq.m B) 1.0 sq.m C) 1.5 sq.m D) 2.0 sq.m
52. While designing of bench terracing followed by execution of its earth work which of the statement is False ?
 A) Width of terracing (w) is directly proportional to land slope, S(%)
 B) Area lost due to bench terracing is directly proportional to the land slope S(%)
 C) Width of terracing (w) is directly proportional to depth of soil, d(m)
 D) Quantity of earth work per hectare is directly proportional to land slope S(%)
53. The function of the outlet as a component of a spillway is to discharge the excess water into the channel below at safer velocity. Which of its structural component does not function as outlet ?
 A) Ogee B) SAF C) Baffle D) Stilling basin
54. While analysing structural stability of a hydraulic structure, there is a requirement to check its stability against failure. What would be not correct assessment in the context of structural stability analysis ?
 A) Horizontal pressure (P) due to water or earth pressure never to be exceeded than maximum frictional resistance (μw)
 B) The overturning moments should never be exceeded the limiting balance moments
 C) The maximum compressive stress acting normal to the base (f_{max}) must be less than permissible compressive stress
 D) To avoid tension within the structure, the eccentricity (e) should not be more than b/4 on either side of middle of the base

55. The slope of a mass of loose dug earth thrown upon horizontal plane gradually slips until it finally attains slope of equilibrium (angle of repose,) whose value changes with nature of soil and its wetness. In which of following given ranges (both dry and wet conditions) angle of repose is applicable to clay soil (in degree) ?
- A) 26 (wet) and 34 (dry) B) 45 (wet) and 29 (dry)
C) 45-49 (wet) and 29 (dry) D) None of the above
56. The plotting position method is employed to calculate maximum expected rainfall among the set of data available. The plotting position method namely, $P = (((2m - 1)/(2n)) * 100)$ is referred as _____ method.
- A) California method B) Weibull method
C) Foster method D) Exceedance method
57. The basin lag or time to peak of synthetic hydrograph could be estimated using equation $t_p = (C_t * (L * L_{ca})^{0.3})$ wherein C_t refers to empirical constant, A as catchment area (km^2), L as length of longest water course (km) and L_{ca} as length along main stream from the outlet to centroid of the basin. Who has proposed the equation ?
- A) Linsley B) Snyder C) Sherman D) Clark
58. The shape of the drainage basin or watershed which can be expressed as the coefficient or ratio using its area (A) and axial length of the same basin or the watershed (L) is termed as
- A) Compactness coefficient B) Form factor
C) Elongation ratio D) Circulatory ratio
59. The Dupuit's parabolic equation that yields seepage discharge per unit width through any vertical section of earthen dam which specifies parabolic free surface does have taken into account of
- A) Entrance and exit conditions of line of seepage
B) Case of absence of tail water
C) Dependency of slopes of earthen dam on seepage free surface
D) Hydraulic gradient between upstream and downstream (tail water) of the earthen dam
60. Among the three types of movements envisaged through mechanism of wind erosion which of the following is responsible for transporting the maximum portion of the soil along the surface of the ground ?
- A) Saltation B) Suspension
C) Surface creep D) Both saltation and suspension combinedly
61. The constructed bench terraces are expected to absorb most of the rainfall coming over the area by the soil and very little to go as surface drainage. How do you define such terraces ?
- A) Hill slope bench terraces B) Irrigated bench terraces
C) Water conservation terraces D) Either of A) or C)

62. The Symon's rain gauge consists of a funnel and glass bottle as receiver. The collected quantity is measured in special measuring glass graduated in special measuring glass jar graduated in millimetre. When the jar is full, it can measure _____ cm of rain.
 A) 1.00 B) 1.25 C) 1.50 D) 2.00
63. In the Universal soil loss equation, while estimating the effects of slope length factor (L) as per the recommendations (Wishmeier and Smith, 1965) value of the exponent (m) for the slope for more than 5.0 per cent would be
 A) 0.5 B) 0.4 C) 0.6 D) 0.3
64. In the expression of Rational method for estimating peak rate of runoff, intensity (mm per hour) for design recurrence interval would be for a duration equal to
 A) Time to peak B) Time of concentration
 C) Duration of rainfall D) None of the above
65. Estimates of runoff volume from large areas are made by use of infiltration indices. The relation between ϕ -Index, f_{ave} -Index and W-Index is given by
 A) $W < \Phi$ B) $\Phi < W$ C) $f_{ave} < \phi$ D) $f_{ave} > \phi$
66. The water that could be remained in the soil after reaching to permanent wilting point being unavailable to the plant is known as
 A) Capillary water B) Hygroscopic water
 C) Wilting water D) Gravity water
67. The relation between bulk density (γ_b) and dry density (γ_d) and soil water (w) of the soil sample is defined by
 A) $\gamma_b = \gamma_d(1 + w)$ B) $\gamma_b = \gamma_d(1 - w)$ C) $\gamma_d = \gamma_b(1 - w)$ D) $\gamma_d = \gamma_b(1 + w)$
68. While assessing the reservoir storage capacity at a given location using mass curve drawn between cumulative annual inflow and cumulative annual demand line, the capacity of the reservoir is determined wherein
 A) Their departure between them is maximum
 B) Their departure between them is minimum
 C) Average of the A) and B)
 D) None of the above
69. While undertaking the land levelling operations, the cut-fill ratio is kept at greater than 1.0. Which of the following soil-water relation factor would be affecting the extent of cut-fill ratio ?
 A) Shrinkage limit B) Liquid limit C) Plastic limit D) All of the above
70. The albedo (α) being the fraction of incoming solar radiation that gets reflected by earth's surface, its value for freshly fallen snow would be
 A) Less than 0.05 B) 0.2 to 0.5 C) As high as 0.95 D) 0.6 to 0.8

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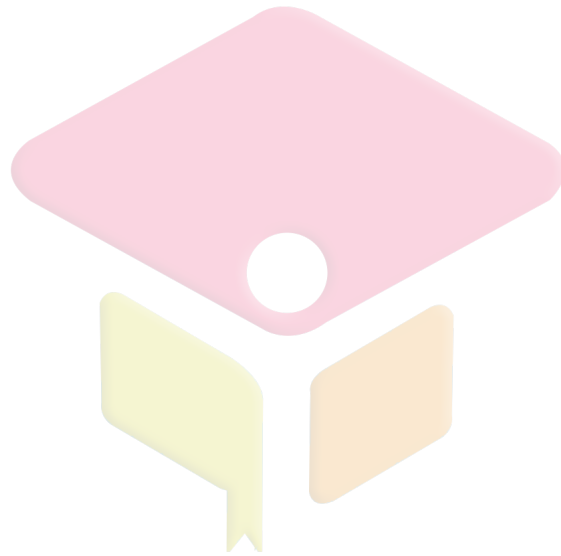
71. Which of the statement is not true in case of soil moisture movement ?
- A) Darcy's law is applicable to saturated soil
 - B) Unsaturated soil-water movement can be called as capillary rise
 - C) Unsaturated flow ceases in clay textured soil relatively at lower tension than sandy soil
 - D) Capillary conductivity would be relatively low at water content lesser than field capacity
72. Which of the following soil texture along with sub soil would be considered as good to excellent suitability for irrigation ?
- A) Clay loam
 - B) Loam
 - C) Clay
 - D) Sandy loam
73. In a field test of border strip irrigation method with given size of stream and strip length, the advance and recession curves have been derived. If these two curves are found to be mutually parallel, the unique interpretation or indication of the data would be
- A) Time of ponding
 - B) Uniform distribution
 - C) Recession flow
 - D) Elapsed time
74. In case of estimation of reference crop evapotranspiration using FAO-Penman-Monteith method, the term psychrometric constant (γ) does directly proportional to the following factor
- A) Ratio of molecular weight of water vapour/dry air
 - B) Latent heat of vaporisation
 - C) Both A) and B)
 - D) Specific heat at constant pressure and atmospheric pressure
75. The velocity profile of the flow through open channel indicates the variability of velocity along the depth. In order to determine the mean velocity of the channel (<1 m depth) using current meter, it would be good estimate if measurement be taken at _____ depth (d) with respect to water surface.
- A) 0.5 d
 - B) 0.2 d and 0.5 d
 - C) 0.2 d and 0.8 d
 - D) 0.5 d and 0.8 d
76. When a soil is dried in an oven at 105°C for at least 12 hours, soil sample reaches to a stage where no water is left and that point would be corresponding roughly with a value of potential force (p^F) in the soil
- A) $p^F - 7$
 - B) $p^F - 14$
 - C) $p^F - 1$
 - D) None of the above
77. With equal total head loss, the allowable maximum discharge in a non-uniform drain pipe is higher by a factor of _____ than for uniformly flowing transport pipe.
- A) Square root of 3
 - B) 1/3
 - C) 1/(square root of 3)
 - D) 3

A

78. In a drip irrigation system, organic matter or algae can be removed by using the
- A) Sand media filter B) Screen filter
C) Centrifugal separator D) Disc filter
79. The soil sample of a field when tested shows EC of saturation extract with value greater than 4.0 milli mhos/cm at 25°C, ESP value greater than 15 and pH of saturated paste exceeds 8.5. Hence, soil is classified as
- A) Alkali soil B) Saline soil
C) Saline-alkali soil D) Non saline soil
80. A centrifugal pump discharges 0.02 cubic metre of water per second against total head of 40 m when the speed is 1450 rpm. The specific speed (rpm) of the pump is
- A) 12.89 B) 12.19 C) 47.05 D) None of the above
81. Hydraulic resistance (days) is a characteristic of an semi confined aquifer representing upward or downward leakage. If the value of hydraulic resistance attains Zero or near to zero it would indicate as
- A) Impervious layer B) Aquifer
C) Semi permeable aquifer D) None of the above
82. The most economical or the most efficient rectangular channel section can be achieved subjected to condition that
- A) Depth of flow (d) is half the bottom width
B) Its hydraulic radius is equal to half the depth of flow
C) Both A) and B)
D) Its hydraulic radius is equal to half the bottom width
83. In case of Theis Recovery method, the drawdowns in the pumped or nearby observation well are measured at different time intervals during and after the pumping is stopped. While estimating transmissivity (T) and storage coefficient (S) which of the following statement is not valid ?
- A) Storage coefficient (S) can be determined from the value of drawdown at the time of pump stopped
B) Residual drawdown (s') pertains to time elapsed for recovery
C) Residual drawdown (s') pertains to time elapsed for both drawdown and recovery
D) Transmissivity (T) is directly proportional to drawdown difference per log cycle of ratio of total time for both drawdown and recovery to recovery

84. In case of canal flow system, a sudden and turbulent but controlled passage of water at a reach through appropriate functional arrangement is called as hydraulic jump. In this context, which of the following statement is incorrect ?
- Flow at the location is classified as rapidly varied flow
 - Passage of water is from subcritical to supercritical state
 - Considerable dissipation of energy is realised
 - Water flow transforms from shallow to relatively larger depth
85. An area of 20 ha needs to be irrigated by a pump working for 12 hours per day. The available moisture holding capacity of the soil is 16 cm/m of soil and depth of root zone is 1.0 m. The irrigation needs to be done when 50 per cent of available soil moisture in the root zone is depleted. The peak rate of moisture use by the crop is 4.0 mm. Water application efficiency is 70 cent. The depth of irrigation period is
- 20.0 days
 - 11.4 days
 - 26.4 days
 - None of the above
86. Diesel cycle efficiency is maximum when the cut-off is
- Increased
 - Decreased
 - Zero
 - One
87. 3-bottom tractor drawn mounted MB plough will have
- Landside in front bottom only
 - Landside in the middle bottom only
 - Landside in rear bottom only
 - Landside in all the bottoms
88. In order to obtain minimum untilled soil the disks of the rear gangs in a tandem disk harrow in comparison to discs of front gangs are mounted
- In the same track of front gang
 - In the middle of two front consecutive gangs
 - At a lesser gang angle than of front gang
 - None of the above
89. The ratio of drawbar horsepower to the power of input to the final drive axle is
- Mechanical efficiency
 - Traction coefficient
 - Power ratio
 - Tractive efficiency
90. In badly lodged crop situations, the reel index should be _____ when compared to upright crops.
- Less
 - More
 - Equal
 - None of the above
91. The clearance between knife section and ledger plate is
- 0.1 – 0.2 mm
 - 0.2 – 0.3 mm
 - 0.3 – 0.5 mm
 - 0.5 – 1.0 mm
92. _____ type of nozzle produces spray pattern of 30° forward and 30° backward.
- Flat fan nozzle
 - Even flat fan nozzle
 - Off-centre fan nozzle
 - Twin-orifice fan nozzle

93. Beyond the break-even point, operating larger size of equipment will be _____ as compared to a small size equipment.
- A) Less economical
 - B) More economical
 - C) Equally economical
 - D) None of the above
94. The seed rate for a particular type of seed is adjusted by
- A) Varying the exposure length of flutes
 - B) Reducing or increasing the peripheral speed of roller
 - C) Reducing or increasing the number of flutes
 - D) All of the above
95. _____ type furrow opener is more suitable for shallow and medium depth seeding.
- A) Shovel type
 - B) Hoe type
 - C) Single disc type
 - D) Double disc type
96. The property of material related to the ability to conduct heat and to store heat energy is
- A) Specific heat
 - B) Thermal diffusivity
 - C) Thermal conductivity
 - D) Enthalpy
97. In vertical silos, to achieve reliable mass flow, the hopper slope angle should be
- A) $40^\circ - 45^\circ$
 - B) $50^\circ - 60^\circ$
 - C) $60^\circ - 70^\circ$
 - D) $75^\circ - 80^\circ$
98. In Ultra-High-Temperature sterilization, the food is sterilized at
- A) 100°C for 3 – 4 sec
 - B) 120°C for 1 – 2 sec
 - C) 150°C for 1 – 2 sec
 - D) 180°C for 3 – 4 sec
99. Which of the size reduction machinery not used in food industry ?
- A) Ball mill
 - B) Disc mill
 - C) Jaw crushers
 - D) Hammer mill
100. Pasteurization of fluid milk will need about _____ kg of steam per kilogram of milk pasteurized in HTST pasteurizer.
- A) 0.20
 - B) 1.80
 - C) 3.40
 - D) 5.00



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