

# **ENGINEERING ACADEMY DEHRADUN**

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**MOB: 08449597123, 09411340612**

**prep: Mr. SUNNY SINGH**

**THDCIL  
JUNIOR ENGINEER(CIVIL)  
SAMPLE PAPER-III**

1. The angle of internal friction of clays is usually

- a)  $0^\circ$  to  $5^\circ$       b)  $5^\circ$  to  $20^\circ$   
c)  $20^\circ$  to  $30^\circ$     d)  $30^\circ$  to  $45^\circ$

2. The active earth pressure of a soil is proportional to

- a)  $\tan(45^\circ - \phi)/2$     b)  $\tan^2(45^\circ + \phi)/2$   
c)  $\tan^2(45^\circ - \phi)/2$     d)  $\tan(45^\circ + \phi)/2$

3. Number of piles required to support a column, is

- a) 1                      b) 2  
c) 3                      d) 4

4. If water content of a soil is 40% , G is 2.72 and void ratio is 1.35, the degree of saturation is

- a) 70%                  b) 75%  
c) 80%                  d) 85%  
e) 90%

5. The specific gravity of quartz is

- a) 2.65                  b) 2.72  
c) 2.85                  d) 2.90

6. The soil formed by wind erosion is

- a) Loess                b) Talus  
c) Residual            d) Marl

7. Vicat's apparatus is used for

- a) fineness test  
b) consistency test  
c) compressive strength test  
d) soundness test

8. The grade of concrete not recommended by I.S: 456, is

- a) M 100                b) M 200  
c) M 300                d) M 400  
e) M 500

9. Ordinary concrete is not used for concrete grade

- a) M 100                b) M 150  
c) M 200                d) M 250  
e) M 400

10. Addition of pozzolana to ordinary port land cement, causes

- a) Decrease in early strength  
b) Reduction in chemical action with sulphates

- c) Increase in shrinkage  
d) Reduction bleeding  
e) All the above

11. The Le Chatlier test is done for cement to ascertain

- a) initial setting time    b) final setting time  
c) soundness              d) normal consistency

12. If diameter of a reinforcement bar is d, the anchorage value of the hook is

- a) 4d                      b) 8d  
c) 12d                     d) 16d

13. Minimum spacing between horizontal parallel reinforcement of different sizes, should not be less than

- a) One diameter of thinner bar  
b) One diameter of thicker bar  
c) Sum of the diameters of thinner and thicker bars  
d) None of these

14. Though the effective depth of a T-beam is the distance between the top compression edge to the centre of the tensile reinforcement, for heavy loads, it is taken as

- a)  $\frac{1}{8}$  th of span    b)  $\frac{1}{10}$  th of span  
c)  $\frac{1}{12}$  th of span    d)  $\frac{1}{16}$  th of span  
e)  $\frac{1}{20}$  th of the span

15. The maximum ratio of span to depth of a slab simply supported and spanning in two directions is

- a) 25                      b) 30  
c) 35                      d) 20  
e) 15

16. If the effective length of a 32 cm diameter R.C.C.column is 4.40 m, its slenderness ratio is

- a) 40                      b) 45  
c) 50                      d) 55  
e) 60

17. Compression failure of simply reinforced beam occurs in

- a) balanced reinforced beam  
b) under reinforced beam  
c) over reinforced beam  
d) none of these

18. Transverse reinforcement in columns

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- a) Contributes the strength  
b) Does not contribute to strength  
c) Neither (a) nor (b)  
d) Both (a) and (b)
19. Factor of safety is the ratio of  
a) Yield stress to working stress  
b) Tensile stress to working stress  
c) Compressive stress to working stress  
d) Bearing stress to working stress  
e) Bearing stress to yield stress
20. The gross diameter of a rivet is the diameter of  
a) cold rivet before driving  
b) rivet after driving  
c) rivet hole  
d) none of these
21. Effective length of a column effectively held in position and restrained in direction at one end but neither held in position nor restrained in direction at the other end is  
a) L  
b) 0.67 L  
c) 0.85 L  
d) 1.5 L  
e) 2 L
22. The slenderness ratio of a column is zero when its length  
a) is zero  
b) is equal to its radius of gyration  
c) is supported on all sides throughout its length  
d) is between the points of zero moments
23. If P is the allowable bending stress in a slab, whose greater and lesser projections from the column faces, are A and B the thickness (t) of the slab base is  
a)  $t = \sqrt{\frac{3w}{p} \left( A^2 + \frac{B^2}{4} \right)}$   
b)  $t = \sqrt{\frac{3}{p} \left( A^2 + \frac{B^2}{4} \right)}$   
c)  $t = \sqrt{\frac{3w}{p} \left( A^2 - \frac{B^2}{4} \right)}$   
d)  $t = \sqrt{\frac{p}{3} \left( A^2 - \frac{B^2}{4} \right)}$
24. Web crippling generally occurs at the point where  
a) bending moment is maximum  
b) shearing force is minimum  
c) concentrated loads act  
d) deflection is maximum  
e) all the above
25. A major beam in a building structural member subjected to  
a) a girder  
b) a floor beam  
c) a main beam  
d) all the above
26. If  $\Delta$  is the depth of water in meters, B is the number of days of base period and D is the duty in hectare / cumec, the relationship which holds good is  
a)  $D = \Delta \frac{8.64D}{B}$   
b)  $B = \Delta \frac{8.64D}{D}$   
c)  $D = \frac{8.64\Delta}{B}$   
d)  $\Delta = \frac{8.64B}{D}$   
e) none of these
27. The optimum depth of kor watering for a rice crop, is  
a) 23.0 cm  
b) 19.0 cm  
c) 17.5 cm  
d) 13.5 cm  
e) 12.0 cm
28. The depth of rice root zone is  
a) 50 cm  
b) 60 cm  
c) 70 cm  
d) 80 cm  
e) 90 cm
29. The scour depth D of a river during flood may be calculated from the Lacey's equation  
a)  $D = 0.47 \left( \frac{Q}{f} \right)$   
b)  $D = 0.47 \left( \frac{Q}{f} \right)^{1/2}$   
c)  $D = 0.47 \left( \frac{Q}{f} \right)^{1/3}$   
d)  $D = 0.47 \left( \frac{Q}{f} \right)^{1/5}$
30. A land is said to be water logged if its soil pores within  
a) a depth of 40 cm are saturated  
b) a depth of 50 cm are saturated  
c) root zone of the crops are saturated  
d) all the above
31. The main function of a diversion head works of a canal from a river is  
a) to remove silt  
b) to control floods  
c) to store water  
d) to raise water level  
e) all the above

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32. In India the modes of transportation, in the order of their importance are
- air transport, shipping, roads, railways
  - shipping, roads, railways, air transport
  - roads, railways, air transport, shipping
  - railways, roads, shipping, air transport
  - shipping, railways, roads, air transport
33. On concrete roads, the camber generally provided will, is
- 1 in 20 to 1 in 24
  - 1 in 30 to 1 in 48
  - 1 in 36 to 1 in 48
  - 1 in 10 to 1 in 15
  - 1 in 60 to 1 in 72
34. The advantage of providing super-elevation on roads, is
- higher speed of vehicles
  - increased volume of traffic
  - reduced maintenance cost of the roads
  - draining off rain water quickly
  - all the above
35. The type of curves generally provided on highways, is
- critical curve
  - transition curve
  - vertical curve
  - all of above
36. If  $V$  is the design speed of vehicles in km/hour, the change of radial acceleration in meters/sec<sup>3</sup>, is
- $\frac{65}{70+V}$
  - $\frac{60}{70+V}$
  - $\frac{70}{65+V}$
  - $\frac{70}{60+V}$
  - $\frac{75}{65+V}$
37. Maximum super-elevation on hill roads should not exceed
- 5%
  - 7%
  - 8%
  - 10%
  - 15%
38. Bull headed rails are generally provided on
- points and crossing
  - straight tangents
  - curved tracks
  - meter gauge tracks
  - none of these
39. On Indian Railways standard length of rails for B.G. track is
- 33 ft (10.06 m)
  - 36 ft (10.97 m)
  - 39 ft (11.89 m)
  - 42 ft (12.8 m)
40. Coning of wheels is provided
- to check lateral movement of wheels
  - to avoid damage to inner faces or rails
  - to avoid discomfort to passengers
  - all the above
41. If  $n$  is length of a rail in meters, the number of sleepers per rail length generally varies from
- $n$  to  $(n + 2)$
  - $(n + 2)$  to  $(n + 4)$
  - $(n + 2)$  to  $(n + 7)$
  - $(n + 4)$  to  $(n + 5)$
42. The standard width of ballast for B.G track in Indian Railways, is kept
- 3.35 m
  - 3.53 m
  - 2.30 m
  - 2.50 m
  - none of these
43. The ratio of the section modulus of a circular section of side  $D$  and that of a square section of diameter  $D$ , is
- $\frac{2\pi}{15}$
  - $\frac{3\pi}{16}$
  - $\frac{3\pi}{8}$
  - $\frac{\pi}{16}$
44. In plastic analysis, the shape factor for rectangular
- 1.4
  - 1.5
  - 1.6
  - 1.7
45. The measurement is made in square meter in case of
- Cement concrete in foundation
  - R.C.C. structure
  - Hollow concrete block wall
  - Concrete fencing posts
  - None of these
46. Anti-siphon age pipe is connected to
- Main soil pipe
  - Bottom of P trap W.C
  - Top of P trap W.C
  - Side of water closet
47. Bitumen completely dissolves in
- carbon bisulphide
  - chloroform
  - benzol
  - coaltar
  - all of these
48. The form work from the slabs excluding props, can be removed only after
- 1 day
  - 7 days
  - 14 days
  - 21 days
49. When two walls meet at an angle other than right angle, the junction is called
- a quoin
  - a squint quoin
  - an acute corner
  - None of these
50. Ranging is an operation of



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66. The average weight of a group of 15 boys was calculated to be 60 kg and it was later discovered that one weight was misread as 24 kg instead of the correct one of 42 kg. The correct average weight is?  
a) 60.2 kg      b) 61.2 kg  
c) 62 kg      d) 61 kg
67. The population of a town increased by 20% during the first year, by 25% during the next year and by 44% during the third year. Find the average rate of increase during 3 years.  
a) 36.87%      b) 37.68%  
c) 38.67%      d) 34.67%
68. Ten years ago Mohan was thrice as old as Ram was but 10 years hence, he will be only twice as old as Ram. Find Mohan's present age.  
a) 72 years      b) 70 years  
c) 30 years      d) Cannot be determined
69. The sum of the age of a vineet and a roshan is 56 years. Also, 4 years ago, the roshan age was 3 times the age of the vinnet. The present ages of the vineet :  
a) 15      b) 16  
c) 17      d) 18
70. In a certain store, the profit is 320% of the cost price. If the cost increases by 25% but the selling price remains constant, approximately what percentage of the selling price is the profit?  
a) 30%      b) 70%  
c) 100%      d) 250%
71. A vendor bought toffees at 6 for a rupee. How many for a rupee must he sell to gain 20%?  
a) 3      b) 4      c) 5      d) 6
72. The percentage profit earned by selling an article for Rs. 1920 is equal to the percentage loss incurred by selling the same article for Rs. 1280. At what price should the article be sold to make 25% profit?  
a) Rs. 2000      b) Rs. 2200  
c) Rs. 2400      d) Rs. 3400
73. A person incurs a loss of 5% by selling a watch for Rs. 1140. At what price should the watch be sold to earn 5% profit.  
a) Rs.1200      b) Rs.1230  
c) Rs.1260      d) Rs.1290
74. The relative speed of a train in respect of a car is 90 km/h when train and car are moving opposite to each other. Find the actual speed of train, if car is moving with a speed of 15 km/h.  
a) 80 km/h      b) 105 km/h  
c) 75 km/h      d) 100 km/h
75. A sum of money amounts to Rs. 5200 in 5 years and to Rs. 5680 in 7 years at simple interest. The rate of interest per annum is:  
a) 3%      b) 4%      c) 5%      d) 6%
76. Simple interest on a certain sum at a certain annual rate of interest is  $\frac{25}{16}$  of the sum. If the rate percent per annum and time in years be equal, then rate percent per annum is:  
a) 8%      b)  $11\frac{1}{2}\%$   
c)  $12\frac{1}{2}\%$       d)  $12\frac{1}{4}\%$
77. A certain sum of money becomes three times of itself in 20 years at simple interest. In how many years does it become double of itself at the same rate?  
a) 8 years      b) 10 years  
c) 12 years      d) 14 years
78. The sum of two numbers is 528 and their H.C.F is 33. What is the number of pairs of such numbers?  
a) 4      b) 12      c) 8      d) 6
79. Indian Railways set to launch its first \_\_\_\_\_ Express train with Wi-Fi, entertainment screens, and vending machines for passengers.  
a) Howrah Express  
b) Tanjore Express  
c) Tejas Express  
d) Delhi Express
80. The central government has informed the Supreme Court to provide unique identification number for which animal?  
a) Cow      b) Goat  
c) Horse      d) Dog
81. Who wrote 'War and Peace'?  
a) Leo Tolstoy  
b) Mahatma Gandhi  
c) Charles Dickens  
d) Kipling
82. Garampani sanctuary is located at  
a) Junagarh, Gujarat  
b) Diphu, Assam  
c) Kohima, Nagaland  
d) Gangtok, Sikkim

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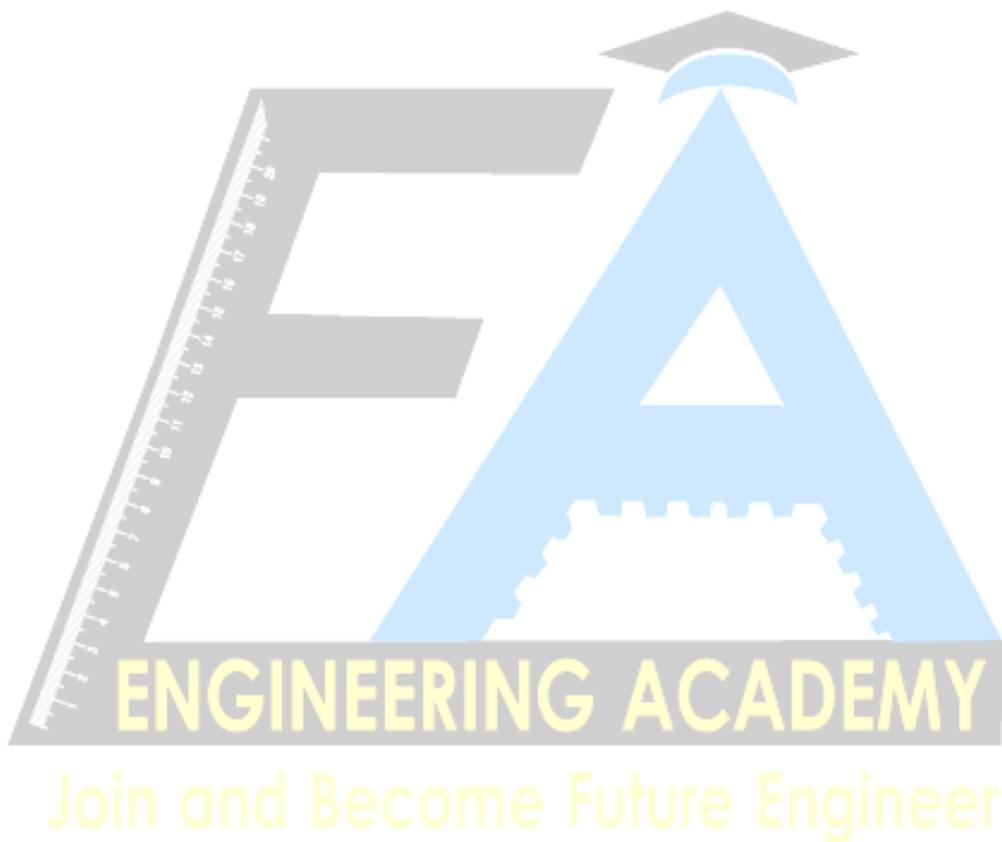
83. Brass gets discoloured in air because of the presence of which of the following gases in air?  
a) Oxygen  
b) Hydrogen sulphide  
c) Carbon dioxide  
d) Nitrogen
84. Which of the following is a non metal that remains liquid at room temperature?  
a) Phosphorous  
b) Bromine  
c) Chlorine  
d) Helium
85. Chlorophyll is a naturally occurring chelate compound in which central metal is  
a) copper  
b) magnesium  
c) iron  
d) calcium
86. Fathom is the unit of  
a) sound  
b) depth  
c) frequency  
d) distance
87. The president addresses both the Houses of Parliament assembled together  
a) during emergency session summoned for the purpose  
b) every session  
c) first session after each general election and the first session of each year  
d) any session
88. The president can dissolve the Lok Sabha on  
a) advice of the prime minister  
b) advice of the chief justice of India  
c) recommendation of Lok Sabha  
d) recommendation of the Rajya Sabha
89. Who was the first Indian to win the World Amateur Billiards title?  
a) Geet Sethi  
b) Wilson Jones  
c) Michael Ferreira  
d) Manoj Kothari
90. Who was the 1st ODI captain for India?  
a) Ajit Wadekar  
b) Bishen Singh Bedi  
c) Nawab Pataudi  
d) Vinoo Mankad
91. Which of the following dances is a solo dance?  
a) Ottan Thullal  
b) Kuchipudi  
c) Yakshagana  
d) Odissi
92. The National Anthem was first sung in the year  
a) 1911  
b) 1913
- c) 1936  
d) 1935
93. Find the greatest number that will divide 43, 91 and 183 so as to leave the same remainder in each case.  
a) 4  
b) 7  
c) 9  
d) 13
94. The H.C.F. of two numbers is 23 and the other two factors of their L.C.M. are 13 and 14. The larger of the two numbers is:  
a) 276  
b) 299  
c) 322  
d) 345
95. Six bells commence tolling together and toll at intervals of 2, 4, 6, 8, 10 and 12 seconds respectively. In 30 minutes, how many times do they toll together?  
a) 4  
b) 10  
c) 15  
d) 16
96. Find the odd man out.  
396, 462, 572, 427, 671, 264  
a) 396  
b) 427  
c) 671  
d) 264
97. The angle of elevation of a ladder leaning against a wall is  $60^\circ$  and the foot of the ladder is 4.6 m away from the wall. The length of the ladder is:  
a) 2.3 m  
b) 4.6 m  
c) 7.8 m  
d) 9.2 m
98. Siphon will fail to work if  
a) the densities of the liquid in the two vessels are equal  
b) the level of the liquid in the two vessels are at the same height  
c) both its limbs are of unequal length  
d) the temperature of the liquids in the two vessels are the same
99. Nuclear sizes are expressed in a unit named  
a) Fermi  
b) angstrom  
c) newton  
d) tesla
100. Radio telescopes are better than optical telescopes because  
a) they can detect faint galaxies which no optical telescope can  
b) they can work even in cloudy conditions  
c) they can work during the day and night  
d) All of the above

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