

Asst. Prof. in Civil Engineering.

APCE/21

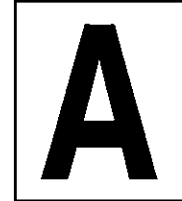
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PRELIMINARY SCREENING

TEST BOOKLET

TEST BOOKLET SERIES

Civil Engineering



Time allowed : $1\frac{1}{2}$ hours

Full marks : 100

Answer *all* the questions.

Questions are of equal value.

Serial No. **0469**

Roll No.:

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INSTRUCTIONS

Candidates should read the following instructions carefully before answering the questions:

1. This booklet consists of 12 pages including this front page, containing 100 questions. **Verify the Page Nos. and Test Booklet series on each page and bring at once to the Invigilator's notice any discrepancy.**
2. Answers will have to be given in the OMR Sheet supplied for the purpose.
3. Before you proceed to mark in the OMR Sheet in response to various items in the Test Booklet, you have to fill in some particulars in the OMR Sheet. **Do not fold the OMR Sheet as this will result in error in your marks.**
4. All questions are of multiple-choice answer-type. You will find **four** probable answers (A), (B), (C) and (D) against each question. Find out which of the four answers appears to you to be correct or the best. Now darken the circle corresponding to the letter of the selected answer in the OMR Sheet with **Black Ball Point Pen**.
5. One and only one circle is to be fully blackened for answer. Any spot in any other circle (multiple circle) or in wrong circle will be considered as wrong answer. If more than one circle is encoded for a particular answer, it will be treated as a wrong answer. Use of whitener is strictly prohibite(D)
6. **There will be negative marking of $\frac{1}{3}$ mark for each wrong answer.**
7. **There is a blank page at the end of this Booklet for Rough Work.**
8. **The OMR Sheet should be handed over to the Invigilator before leaving the Examination Hall. You are permitted to take away the used Test Booklet after completion of the examination.**

1. Density index for a natural soil is used to express

- (A) Percentage Voids
- (B) Relative Compactness
- (C) Shear Strength of Clays
- (D) Specific Gravity

2. Euler's equation for steady flow of an ideal fluid along a stream line is based on Newton's

- (A) First Law of Forces
- (B) Second Law of Forces
- (C) Third Law
- (D) Law of Friction

3. Negative skin friction on piles

- (A) is caused due to relative settlement of the soil.
- (B) is caused in soft clays.
- (C) decreases the pile capacity.
- (D) All of the above

4. Identify the part of the sentence that is grammatically incorrect:

She went to the gym despite of her illness.

- (A) the
- (B) gym
- (C) of
- (D) her

5. Choose the correct option:

Our teacher teaches History _____ English.

- (A) across
- (B) besides
- (C) beside
- (D) both

6. In a freely supported RCC beam, the effective span shall be least of the distance between centre of supports or the clear distance between supports

- (A) plus the effective depth of the RCC beam.
- (B) plus the width of the RCC beam.
- (C) plus the effective depth and width of the RCC beam.
- (D) minus half of the depth of the beam.

7. Flow at constant rate through a tapering pipe is

- (A) Steady and Uniform Flow
- (B) Steady and Non-Uniform Flow
- (C) Unsteady and Uniform Flow
- (D) Unsteady and Non-Uniform Flow

8. A sample of saturated soil has a water content of 29.6%. If the specific gravity of solids is 2.7, the dry unit weight (in gr/cm^3) of the soil is equal to

- (A) 1.5
- (B) 2.0
- (C) 1.0
- (D) 0.5

9. The set of forces, whose resultant is zero, are known as

- (A) equilibrium forces
- (B) collinear forces
- (C) coplanar forces
- (D) concurrent forces

10. The modulus of rupture of concrete gives

- (A) the direct tensile strength of the concrete.
- (B) the direct compressive strength of the concrete.
- (C) the tensile strength of the concrete under bending.
- (D) bond strength of the concrete.

11. Cost of a property minus the accumulated depreciation is known as

- (A) Scrap value
- (B) Salvation value
- (C) Junk value
- (D) Book value

12. The errors which are variable in sign (plus error tending to be as frequent as minus errors) and tends to balance out in the final results are called as

- (A) Cumulative errors
- (B) Compensating errors
- (C) Neutral errors
- (D) Instrumental errors

13. The Torsional stiffness of a member can be defined as

- (A) Torque for unit Moment.
- (B) Torque for unit Twist.
- (C) Moment for unit Twist.
- (D) Torsion for unit Twist.

14. As per Indian Standard Soil Classification system, a sample of Silty Clay with liquid limit of 40% and Plasticity index of 28% is classified as

- (A) CH
- (B) CI
- (C) CL
- (D) CL-ML

15. The drag coefficient is reduced when

- (A) the surface is smooth.
- (B) the character of boundary layer flow changes from laminar to turbulent.
- (C) the surface roughness is increased.
- (D) Reynold's no. is low.

16. Replace the underlined idiomatic expression proverb with correct alternative:

I stumbled upon some interesting old letters in my father's desk.

- (A) fell
- (B) jumped
- (C) surveyed
- (D) discovered by chance

17. If L denotes latitude and D denotes departure, then the direction of closing error is given by

- (A) $\tan^{-1}(\Sigma D/\Sigma L)$
- (B) $\tan^{-1}(\Sigma L/\Sigma D)$
- (C) $\sin^{-1}(\Sigma D/\Sigma L)$
- (D) $\sin^{-1}(\Sigma L/\Sigma D)$

18. For no tension to develop in the gravity dam the resultant of all the external forces should always lie

- (A) with the u/s third portion.
- (B) within the d/s third portion.
- (C) within the middle third portion of the base.
- (D) at the centre of the base.

19. If the fore bearing of a line is observed to be $12^{\circ}24'$ the back bearing of line AB should be

- (A) $77^{\circ}36'$
- (B) $97^{\circ}36'$
- (C) $167^{\circ}36'$
- (D) $192^{\circ}24'$

20. In a hydraulic jump occurring in a rectangular horizontal channel, the depth before and after jump are 0.5m and 1.0m respectively, then the head loss due to the jump will be

- (A) $\frac{1}{2}$ m.
- (B) $\frac{1}{8}$ m.
- (C) $\frac{1}{16}$ m.
- (D) $\frac{1}{32}$ m.

Please Turn Over

21. Ratio of Young's modulus to Modulus of Rigidity for a material having Poisson's ratio 0.2 is

- (A) $\frac{12}{5}$
 (B) $\frac{5}{12}$
 (C) $\frac{5}{14}$
 (D) $\frac{3}{14}$

22. Fill in the blank with correct option:

"Where's the _____ Post Office please?"

- (A) near
 (B) most near
 (C) more near
 (D) nearest

23. The forces, whose lines of action are parallel to each other and act in the same directions, are known as

- (A) coplanar concurrent forces.
 (B) coplanar non-concurrent forces.
 (C) like parallel forces.
 (D) unlike parallel forces.

24. What is the average rate of loss such that the volume of rainfall in excess of that rate will be equal to direct run-off ?

- (A) Run-off coefficient
 (B) Infiltration index
 (C) Infiltration capacity
 (D) Surface retention

25. Replace the underlined words with the correct option given below:

They thought that the young man would simply give up on the matter if he came to know that it would be a long legal case. Now they realise, they have caught a tartar!

- (A) an expert
 (B) dealing with a troublesome person
 (C) forced to leave
 (D) take risk

26. Where has India's First Moss Garden been inaugurated?

- (A) Kevadia, Gujarat
 (B) Nainital, Uttarakhand
 (C) Mandi, Himachal Pradesh
 (D) Subansiri, Arunachal Pradesh

27. Choose the synonym of the given word:

Parochial

- (A) Stagnant
 (B) Observer
 (C) Inability
 (D) Conservative

28. Closed contours with lower value inside represent a

- (A) Depression
 (B) Hill
 (C) Plain surface
 (D) None of these

29. Which among the following is the ratio between inertia force and gravity force?

- (A) Weber's number
 (B) Reynold's number
 (C) Froude's number
 (D) Euler's number

30. The percentage of steel as per IS recommendation in compression should not exceed

- (A) 0.15%
 (B) 1.5%
 (C) 4.0%
 (D) 2.5%

31. Which of the following is not an instrumental error in a theodolite?
- (A) Error due to eccentricity of inner and outer axis.
 - (B) Error due to imperfect graduations.
 - (C) Inaccurate bisection of points observed.
 - (D) Error due to line of collimation not being perpendicular to the horizontal axis.
32. In PERT analysis the actual performance of task is known as
- (A) Activity
 - (B) Event
 - (C) Task
 - (D) Work
33. Choose the synonym of the given word:
Abstract
- (A) Notional
 - (B) Valuable
 - (C) Attractive
 - (D) Jewel
34. Find out which part of the sentence has an error. If there is no mistake, the answer is 'No error'.
- (A) Now that he is living alone in his house
 - (B) he cooks twice a week
 - (C) cleans thrice a week.
 - (D) No error
35. Where has been India's first solar-based Integrated Multi-Village Water Supply Project (IMVWSP) inaugurated?
- (A) Gujarat
 - (B) Assam
 - (C) Sikkim
 - (D) Arunachal Pradesh
36. The soil transported by wind is called
- (A) Aeolian Soil
 - (B) Marine Soil
 - (C) Alluvial Soil
 - (D) Lacustrine Soil
37. Replace with correct tense forms of verbs given in bracket/s from the given options:
When Shyam reached the station, the train (leave).
- (A) left
 - (B) had left
 - (C) had had left
 - (D) have left
38. Which is the first Indian documentary to win an Oscar award?
- (A) Stranger at the Gate
 - (B) How do you Measure a Year?
 - (C) The Elephant Whisperers
 - (D) All that Breathes
39. The maximum bending stress induced in a steel wire of modulus of elasticity 200kN/mm^2 and diameter 1.0m is approximately equal to
- (A) 50kN/mm^2
 - (B) 100kN/mm^2
 - (C) 200kN/mm^2
 - (D) 400kN/mm^2
40. An ideal horizontal transition curve is a
- (A) Parabola
 - (B) Circle
 - (C) Clothoid Spiral
 - (D) Hyperbola

Please Turn Over

41. All other conditions and parameters remaining the same, water hammer pressure can be reduced by
- (A) using pipe of greater diameter.
 - (B) using pipe of greater wall thickness.
 - (C) using a more elastic pipe.
 - (D) increasing the velocity of pressure wave.
42. Name the first country to launch the world's first 6G satellite named "UESTC" satellite (Star Era-12) to test communications from space.
- (A) China
 - (B) United States (US)
 - (C) Japan
 - (D) France
43. The ultimate bearing capacity of a soil, is
- (A) load at which soil consolidates.
 - (B) total load on the bearing area.
 - (C) safe load on the bearing area.
 - (D) load at which soil fails.
44. Which among the following is a temporary dam constructed for facilitating construction works?
- (A) Buttress dam
 - (B) Detention dam
 - (C) Cofferdam
 - (D) Debris dam
45. The Power of a telescope to form clear and distinct images of objects separated by smaller angular distances is called
- (A) Sensitivity
 - (B) Aperture
 - (C) Resolving Power
 - (D) Definition
46. The Lai Haraoba festival is observed in
- (A) Mizoram
 - (B) Sikkim
 - (C) Nagaland
 - (D) Manipur
47. The 'surcharge storage' in a dam reservoir is the volume of water stored between
- (A) minimum and maximum reservoir levels.
 - (B) minimum and normal reservoir levels.
 - (C) normal and maximum reservoir levels.
 - (D) None of the above
48. When was UN's International Day of Older Persons observed annually?
- (A) October 2
 - (B) September 29
 - (C) October 1
 - (D) September 30
49. Which one of the following is taken into consideration for computing Traffic capacity per lane of the highway?
- (A) Passenger Cars and Light Vehicles
 - (B) Trucks and Buses
 - (C) Two Wheelers
 - (D) Equivalent of Passenger Cars
50. The centroid of the immersed part of a floating body is known as
- (A) Metacentre
 - (B) Centre of Pressure
 - (C) Centre of Buoyancy
 - (D) Centre of Gravity

51. The Neutral axis of the Reinforced Concrete Beam passes through
- (A) Centre of Gravity of Concrete Section.
 - (B) Meta Centre of the Concrete Section.
 - (C) Centroid of the transformed Concrete Section.
 - (D) Centroid of the Concrete Section.
52. An ideal fluid is
- (A) one which obeys Newton's law of viscosity.
 - (B) Frictionless and Incompressible.
 - (C) Very Viscous.
 - (D) Frictionless and Compressible.
53. In concrete roads, the course which can be omitted is
- (A) Subgrade
 - (B) Base Course
 - (C) Base Coat
 - (D) Wearing Course
54. Assuming the safe stopping sight distance to be 80m on a flat highway section and with a set back distance of 10m. What would be the radius of the negotiable horizontal curve?
- (A) 800m
 - (B) 160m
 - (C) 80m
 - (D) 120m
55. A test used to measure the strength of waste water is called
- (A) Detention Period
 - (B) pH
 - (C) BOD
 - (D) Surface Settling Rate
56. Reynold number is the ratio of initial force and
- (A) Viscosity
 - (B) Elasticity
 - (C) Gravitational Force
 - (D) Surface Tension
57. Plaster of Paris is obtained by calcination of
- (A) Gypsum
 - (B) Kankar
 - (C) Lime Stone
 - (D) Sand Stone
58. Considerable loss of shear strength due to shock or disturbance is exhibited by
- (A) Under Consolidated Clays
 - (B) Normally Consolidated Clay
 - (C) Over Consolidated Clays
 - (D) Organic Soil
59. Distribution mains in water supply is designed for
- (A) Maximum daily demand.
 - (B) Peak hourly demand.
 - (C) Average daily demand.
 - (D) Maximum hourly demand on maximum consumption day.
60. Compaction by Vibratory Rollers is the best method of compaction in case of
- (A) Moist Silty Sand
 - (B) Well Graded Dry Sand
 - (C) Clay of Medium Compressibility
 - (D) Silt of High Compressibility

Please Turn Over

61. Stress produced by a rectangular column subjected to an eccentric load is always compressive, if the load is in
- Outer $\frac{1}{3}$ rd portion
 - Middle $\frac{1}{3}$ rd portion
 - Outer $\frac{1}{4}$ th portion
 - Middle $\frac{1}{4}$ th portion
62. Foundation failure may occur due to
- Unequal Settlement
 - Shrinkage of Soil Bed
 - Lateral Escape of Soil
 - All of the above
63. Shear span is defined as the zone where
- Bending Moment is zero.
 - Shear Force is zero.
 - Shear Force is constant.
 - Bending Moment is constant.
64. Choose the correct option:
The students in our school are _____ in other school.
- as good as
 - good
 - bad
 - dance
65. The single channel section, used as Tension member have
- low rigidity in the direction of web and high rigidity in the direction of flange.
 - high rigidity in the direction of web and high rigidity in the direction of flange.
 - equal rigidity in the direction of web and flange both.
 - None of the above
66. In MLT system, the dimensions of SPECIFIC VOLUME would be
- L^3
 - ML^3
 - ML^{-3}
 - $M^{-1}L^3$
67. An error in observations of either fore or back bearing or both may be due to
- Inclination
 - Local attraction
 - Dip
 - Magnetic declination
68. In a restrained rectangular slab subjected to uniformly distributed load, the yield lines form first
- along the shorter span on the loaded face of slab.
 - along the longer span on the loaded face of slab.
 - at the intersection of shorter and longer side.
 - along the centre of the unloaded face of slab.
69. One word substitute of the given words 'one who possesses many talents' is
- Versatile
 - Wisdom
 - Clever
 - Draw
70. The longitudinal shearing stresses acting on the surface between the Steel and Concrete are called
- Compressive Stress
 - Tensile Stress
 - Bond Stress
 - None of the above

71. Rainfall hydrograph shows the variation of
 (A) cumulative rainfall with time.
 (B) rainfall intensity with time.
 (C) rainfall depth over an area.
 (D) rainfall intensity with the cumulative rainfall.
72. Fill in the blank with correct option:
 "I don't like coffee." "_____ do it."
 (A) So
 (B) Neither
 (C) Either
 (D) No
73. Greatest stress to which a material can be subjected with any permanent deformation is said to be
 (A) Limit of Proportionality
 (B) Limit of Elasticity
 (C) Yield Stress
 (D) Limit of Plasticity
74. Pick up the item of work not included in the plinth area estimate.
 (A) Wall thickness
 (B) Verandah area
 (C) W.C. area
 (D) Courtyard area
75. On which river is the Ratle Hydropower project located?
 (A) Beas
 (B) Ravi
 (C) Chenub
 (D) Sutlej
76. When a canal is carried over a natural drainage, the structure provided, is known as
 (A) Syphon
 (B) Aqueduct
 (C) Super passage
 (D) Syphon-aqueduct
77. Choose the correct preposition:
 Looking at the old photograph, he took a walk _____ the memory lane.
 (A) on
 (B) to
 (C) down
 (D) off
78. In a automatic welding system, the Electrodes used for welding are
 (A) coated wires.
 (B) simple wires without coating and surrounded with inert gases or powdered flux.
 (C) coated wires surrounded with inert gases.
 (D) coated wires surrounded with powdered flux.
79. Total settlement of a compressible soil stratum of 2m deep and having co-efficient of volume compressibility of $0.02\text{cm}^2/\text{kg}$ under a pressure increment of 2 kg/cm^2 will be
 (A) 2 cm
 (B) 4 cm
 (C) 8 cm
 (D) 10 cm
80. Change the voice:
 Who stole your cycle?
 (A) Your cycle was stolen by him?
 (B) The cycle was stolen.
 (C) By whom was your cycle stolen?
 (D) Did someone steal the cycle?

Please Turn Over

81. Replace the underlined idiomatic expression proverb with correct alternative:

The teachers were completely in the dark concerning the student's plans.

- (A) afraid
- (B) ignorant about
- (C) happy
- (D) sad

82. Refraction Correction is

- (A) Negative Correction and $\frac{1}{6}$ of Curvature correction.
- (B) Negative Correction and $\frac{1}{7}$ of Curvature correction.
- (C) Positive Correction and $\frac{1}{6}$ of Curvature correction.
- (D) Positive Correction and $\frac{1}{7}$ of Curvature correction.

83. The shear stress on a beam section is maximum

- (A) at the centroid of the section.
- (B) on the extreme free surface fibres.
- (C) at the free edges.
- (D) at the neutral axis but not at the centroid of the section.

84. Choose the correct option:

Please, come _____ the classroom.

- (A) out of
- (B) over
- (C) on
- (D) in

85. Which Tiger Reserve received TX2 Tiger Conservation Awards 2020 for doubling the number of tigers in 4 years ahead of the target of 10 years?

- (A) Nagarjunsagar-Srisailem Tiger Reserve, Andhra Pradesh
- (B) Bor Tiger Reserve, Maharashtra
- (C) Amrabad Tiger Reserve, Hyderabad
- (D) Pilibhit Tiger Reserve, Uttar Pradesh

86. Carbon dioxide, one of the gases given off by the decomposition of sludge, is not poisonous, but it may cause

- (A) Combustion
- (B) Corrosion
- (C) Burns
- (D) Asphyxiation

87. The size of the theodolite specified by the

- (A) length of telescope.
- (B) diameter of upper plate.
- (C) diameter of lower plate.
- (D) diameter of vertical circle.

88. Change the voice:

Never disobey your elders.

- (A) You are ordered not to disobey your elders.
- (B) You are asked not to disobey your elders.
- (C) It is good to obey your parents.
- (D) You cannot disobey your parents.

89. A beam strongest in flexure is one which has

- (A) Maximum Section Modulus
- (B) Maximum Bending Stress
- (C) Maximum Moment of Inertia
- (D) All of the above

90. Total float for any activity is defined as the difference between

- (A) its latest finish time and earliest start time for its successor activity.
- (B) its latest start time and earliest start time.
- (C) its latest start time and earliest finish time.
- (D) its earliest finish time and earliest start time for its successor activity.

91. Where is the world's largest care and cure centre for elephants being set up in India?

- (A) Kerala
- (B) Meghalaya
- (C) Chhattisgarh
- (D) Odisha

92. Replace the underlined words with the correct option given below:

The owner of the house tried every trick in the book to sell the flat to my father, but failed.

- (A) ready to bargain
- (B) try every possible way
- (C) stop talking
- (D) judging someone

93. United Nations' (UN's) World Science Day for Peace and Development is observed on which date?

- (A) November 7
- (B) November 10
- (C) November 8
- (D) November 9

94. In a Plane Table Survey, the method used for locating details is

- (A) Resection
- (B) Radiation
- (C) Intersection
- (D) (A) or (B) above

95. Natural mineral contaminant in water is

- (A) Calcium
- (B) Fluorine
- (C) Sodium
- (D) Iron

96. In a Two way Slab construction, main reinforcement is provided—

- (A) Width of the Slab
- (B) Length of the Slab
- (C) Diagonal of the Slab
- (D) Length and Width of the Slab

97. Find out which part of the sentence has an error. If there is no mistake, the answer is 'No error'.

- (A) The road
- (B) to house
- (C) passes through a forest.
- (D) No error

98. Correct the given sentence grammatically:
Adesh, who he is my best friend, is a dancer.

- (A) Adesh, who is my best friend, is a dancer.
- (B) A dancer Adesh will be my friend.
- (C) Adesh who is my best friend who is a dancer.
- (D) My friend Adesh is reportedly a dancer.

99. A statically indeterminate structure is the one which

- (A) can not be analyzed at all.
- (B) can be analyzed using equations of statics only.
- (C) can be analyzed using equation of Statics and Compatibility equations.
- (D) can be analyzed using equations of compatibility.

100. In the limit state design of concrete structure, the strain distribution is assumed to be

- (A) Linear
- (B) Parabolic
- (C) Non Linear
- (D) Parabolic and Rectangular