DO NOT BREAK THE SEAL OF THE BOOKLET UNTIL YOU ARE TOLD TO DO SO

QUESTION BOOKLET

SERIES I

Subjects : General English, General Knowledge & Civil Engineering

BOOKLET SERIAL NO. 100173

Marks : 350

Time : 3 (three) hours

Read the following instructions carefully before you begin to answer the questions.

INSTRUCTIONS TO CANDIDATES

1. This booklet contains **200 questions** to be answered in a separate OMR Answer Sheet using Black Ball Pen in following three parts:

   Part-A-General English : 50 questions, Part-B-General Knowledge : 50 questions,

   Part-C-Civil Engineering : 100 questions

2. All Questions are compulsory.
3. You will be supplied the Answer sheet separately by the invigilator. You must complete the details of particulars asked for.
4. Answers must be shown by completely blackening the corresponding circles in the Answer Sheet against the relevant question number by Black Ball Pen. OMR Answer Sheet without marking series/ double series marking shall not be evaluated.

Example :

Supposing the following question is asked :-

The Capital of Meghalaya is-

A. Guwahati
B. Kohima
C. Shillong
D. Delhi

You will have four alternatives in the Answer Sheet for your response corresponding to each question of the Question Booklet as below :-

Ⓐ Ⓑ Ⓒ Ⓓ

In the above illustration, if your chosen response is alternative C i.e. Shillong, then the same should be marked on the Answer Sheet by blackening the relevant circle with a Black Ball Point Pen only as below :-

Ⓐ Ⓑ ● Ⓓ

WHICH IS THE ONLY CORRECT METHOD OF ANSWERING

5. Answer the questions as quickly and as carefully as you can. Some questions may be difficult and others easy. Do not spend too much time on any one question.
6. There will NOT be any negative marking for wrong answers.
7. The Answer Sheet must be handed over to the invigilator before you leave the Examination Hall.
8. No rough work is to be done on the Answer Sheet. Space for rough work has been provided in the question booklet.

PART - A - GENERAL ENGLISH

Marks :100

Each question carries 2 marks :

Directions : (Q.No. 1 to 5) In these questions some of the sentences have errors and some have none. Find out which part of a sentence a, b, c, d has an error and select that part as an answer. If there is no error then D is the answer.

1. Give the package to whom ever (a) / has the authority (b) / to sign for it (c) / No error (d)

2. In our opinion that girl is (a) / enough beautiful (b) / to be a movie star (c) / No error (d)

3. Our friends got a bank loan (a) / for to buy (b) / a new car (c) / No error (d)

4. The flag is risen at 6.30 (a) / every morning (b) / without fail (c) / No error (d)

5. The refrigerator is too old (a) / to keep things (b) / at a proper temperature (c) / No error (d)

Directions : (Q.No. 6 to 15) In the following questions, sentences are given with blanks to be filled in with an appropriate and suitable word. Four alternatives are suggested for each question. Choose the correct alternative out of the four.

6. Doesn't the cat want _____ milk ?
a) some b) many
c) too many d) little

7. I am not as _____ as you.
a) kind b) kinder
c) kindest d) most kind

8. I have _____ things to do.
a) so much b) very little
c) too many d) a lot

9. He looks _____ his grandmother.
a) as b) by
c) like d) same

10. It was _____ to catch the plane.
a) late b) so late
c) very late d) too late

11. Lydia is _____ in our group about exam results.
a) the more nervous
b) the most nervous
c) not as nervous as
d) as nervous as

12. Ted wishes that he _____ his job last month.
a) have not lost b) is not losing
c) had not lost d) were not lost

13. I am opposed to _____ to war.
a) be gone b) be going
c) have been gone d) going

14. Your father is a teacher _____
a) is'nt it b) is'nt he
c) was'nt it d) was it not

15. He refused _____ my plea.
a) considering b) having to consider
c) consideration d) to consider

Directions : (Q.No. 16 to 25) In these questions out of the four alternatives given, choose the one which best expresses the meaning of the underlined word :

16. He has been <u>eliminated</u> from the chess tournament.
a) ousted b) killed
c) accepted d) promoted

17. I would like to <u>dispel</u> her sorrow.
a) increase b) extend
c) lighten d) move

18. He does not know how to <u>interact</u> with people.
a) travel b) socialise
c) communicate d) reject

19. He has written a <u>monumental</u> book
a) powerful b) explaratory
c) descriptive d) meaningless

20. The people want the administration to give them a subsidy.
a) hike b) perk
c) increment d) concession

21. I think this report is authentic .
a) unreal b) genuine
c) clever d) quick

22. The act has to be repealed.
a) imposed b) enforced
c) extended d) abolished

23. The airport officials frisked the passengers.
a) checked b) allowed
c) attacked d) stopped

24. He has always shown a readoress to accept challenges.
a) fear b) nervousness
c) eagerness d) hesitation

25. Her performance was exemplary .
a) magnificent b) ordinary
c) simple d) wrong

Directions : (Q.No. 26 to 35) Fill in the blanks with the appropriate preposition from the options given :

26. The man stepped _____ the platform.
a) on b) into
c) upto d) to

27. He came _____ the hill.
a) into b) down
c) onto d) in

28. He is resting _____ the tree.
a) inside b) up
c) off d) under

29. I had to appear _____ the court.
a) off b) opposite
c) at d) before

30. They are _____ ease with each other.
a) at b) of
c) beside d) into

31. Water is running _____ the bridge.
a) into b) beside
c) by d) under

32. He reaches the college _____ 9 am sharp
a) on b) before
c) to d) at

33. He comes _____ Orissa.
a) inside b) from
c) outside d) out of

34. He swam _____ the Ganges.
a) inside b) across
c) off d) into

35. He has been ill _____ last week.
a) from b) by
c) since d) for

Directions : (Q.No. 36 to 45) In these questions four alternatives are given for the given idiom / phrase. Choose the alternative which best expresses the meaning of the given idiom / phrase.

36. a lame duck
a) a person who is seriously ill
b) a person who cannot walk
c) a person who is ineffectual or unsuccessful
d) a person who troubles everyone.

37. He has followed instructions to the letter means
a) exactly b) carelessly
c) half-heartedly d) forcefully

38. His reputation has taken a knock means
a) increased b) spread far and wide
c) improved d) badly affected

39. To toe the line means
a) to disobey orders
b) to change orders
c) to obey orders
d) to challenge orders

40. Trying to get him to quit smoking is a lost cause means
a) no chance of success
b) possibility of success
c) every chance of success
d) no chance of failure

41. The principal will have the final word means
a) the final step

b) the final decision
c) the final success
d) the final moment

42. He is turning over a new leaf means
a) changing himself for the better
b) changing himself for the worse
c) changing himself formoney
d) changing himself by force

43. He is a man of letters means
a) he knows a lot about science
b) he knows a lot about chemistry
c) he knows a lot about literature
d) he knows a lot about painting

44. The lion's share of the allocation is for sports
a) the smaller part
b) the negligent part
c) the entire part
d) the bigger part

45. In the long run means
a) eventually b) quickly
c) very slowly d) promptly

Directions : (Q.No. 46 to 50) In these questions out of the four alternatives given, choose the one which is opposite in meaning to the underlined word :

46. The entire plan is <u>defective</u> .
a) incomplete b) scarce
c) flawless d) wanting

47. His condition will <u>deteriorate</u> .
a) improve b) worsen
c) spoil d) decline

48. She is very <u>crude</u> .
a) brash b) rude
c) undiplomatic d) refined

49. The statue is <u>colossal</u> .
a) massive b) beautiful
c) tiny d) modest

50. Children are always <u>impulsive</u> .
a) hasty b) cautious
c) reckless d) careless

PART - B -GENERAL KNOWLEDGE

Marks : 50

Each question carry 1 mark :

51. Which of the following regions is known as the 'Doldrums' ?
a) Polar b) Sub Polar
c) Temperate d) Equatorial

52. Which of the following organisation / prepares the topographical maps of India ?
a) Geological Survey of India
b) Survey of India
c) Geographical Survey of India
d) None of the above

53. Which of the following is a correct set of two official languages of the United Nations ?
a) Hindi & English
b) Arabic & French
c) Japanese & Mandarin
d) Hindi & Russian

54. Where is India's first Uranium located ?
a) Domiasiat b) Jadugoda
c) Pichli d) Singhbhum

55. Who wrote the book 'A Century is not Enough' ?
a) Sunil Gavaskar b) Kapil Dev
c) Saurav Ganguly d) Sachin Tendulkar

56. The southernmost point in India is
a) Indira Col b) Kanyakumari
c) Moore Island d) Indira Point

57. The highest point in Meghalaya is
a) Kyllang Peak b) Shillong Peak
c) Nokrek Peak d) Sohpetbneng Peak

58. Which country hosted the FIFA Football World Cup 2018 ?
a) Russia b) Japan
c) Poland d) France

59. The ICC World Cup Cricket 2018 for Women was won by
a) India b) England
c) Australia d) South Africa

60. Who is the Chief Justice of India ?
a) Ranjan Gogoi b) Dipak Misra
c) Madan Thakur d) J. Chelameswar

61. Who won the US Open 2017 for Tennis ?
a) Roger Federer b) Pete Sampras
c) Jimy Connors d) Rafael Nadal

62. In which year of the 1st World War did Germany declare War on Russia & France ?
a) 1914 b) 1915
c) 1916 d) 1917

63. India has the largest deposits of _____ in the world.
a) Gold b) Mica
c) Copper d) Silver

64. How many Lok Sabha seats belong to Meghalaya ?
a) 01 b) 02
c) 03 d) 04

65. The chief constituent of the gobar gas is
a) Ethane b) Methane
c) Hydrogen d) Carbon Dioxide

66. The unit of current is
a) Ohm b) Watt
c) Ampere d) Joule

67. Thomas Cup is associated with
a) Billiards b) Lawn Tennis
c) Table Tennis d) Badminton

68. World AIDS Day is observed on
a) 14th June b) 5th June
c) 1st December d) 8th April

69. Where is the permanent secretariat of SAARC located ?
a) New Delhi b) Islamabad
c) Kathmandu d) Colombo

70. Brass gets discoloured in air because of the presence of which of the following gas in air ?
a) Oxygen b) Hydrogen Sulphide
c) Carbon Dioxide d) Nitrogen

71. Which of the following is used in pencils ?

a) Graphite b) Silicon
c) Charcoal d) Phosphorous

72. Which instrument is used to measure earthquakes ?
a) Barometer b) Telegraph
c) Seismograph d) Thermometer

73. Which of the following vitamin helps in immunity of human body ?
a) Vitamin C b) Vitamin K
c) Vitamin B7 d) Vitamin B12

74. Which of the following is a nitrogenous fertilizer ?
a) Ammonium Sulphate
b) Sulphur Phosphate
c) Potassium Nitrate
d) Potassium Chloride

75. The disease transmitted through air is
a) Typhoid b) Cholera
c) Meningitis d) Tuberculosis

76. On which date is the International Day for Biodiversity observed ?
a) 15th May b) 20th May
c) 22nd May d) 5th June

77. Montreal Protocol is related to
a) Extinct Species b) Ozone Layer
c) Endangered Species d) Deforestation

78. Ranthombore National Park is located in which state of India ?
a) Rajasthan b) Madhya Pradesh
c) Gujarat d) Himachal Pradesh

79. The largest unit of living organism on earth is
a) Ecosystem b) Biome
c) Biosphere d) Population

80. The largest number of Tiger Reserves is located in
a) Karnataka b) Andhra Pradesh
c) Madhya Pradesh d) West Bengal

81. 'Lion tailed macaque' is a key faunal species of which Biosphere Reserve ?
a) Nilgiri b) Dehang Debang
c) Dibru Saikhowa d) Nokrek

82. By which Amendment Act of the Constitution of India Delhi was designated as National Capital Territory (NCT) ?
a) 63rd Amendment b) 69th Amendment
c) 74th Amendment d) 76th Amendment

83. The Constitution of India was adopted by the Constituent Assembly on
a) 25th October 1948
b) 25th October 1949
c) 26th November 1948
d) 26th November 1949

84. The Headquarter of the World Trade Organisation (WTO) is
a) New York b) Paris
c) Geneva d) Rome

85. The National Bird of Australia is
a) Emu b) Eagle
c) Peacock d) Falcon

86. Who is known as the Bird Man of India ?
a) Amir Khushro b) MD Ali Jinnah
c) Salim Ali d) C.R. Das

87. Lake Winnipeg is located in which of the following countries ?
a) Brazil b) Canada
c) Russia d) Japan

88. Which is the oldest Iron and Steel plant in India ?
a) TISCO b) IISCO
c) MISCO d) HSL

89. Who was the first woman to reach space ?
a) Sally Ride b) Kalpana Chawla
c) Valentina Tereshkova d) Eileen Collins

90. India's latest communication satellite GSAT 18 was launched from
a) SHAR, Sriharikota
b) Kourou, French Guiana
c) Kennedy Space Centre, USA
d) Woomera Rocket Range, Australia

91. Which among the following is the oldest Oil Refinery of India ?
a) Chennai b) Digboi
c) Jamnagar d) Panipat

92. Which state in India is the largest producer

of Iron Ore ?
a) Karnataka b) Goa
c) Meghalaya d) Madhya Pradesh

93. 'Sabarmati' & 'Jamuna' are two new varieties of
a) Wheat b) Rice
c) Mustard d) Maize

94. Blue Revolution is associated with
a) Fish Production
b) Food grain Production
c) Oilseed Production
d) Milk Production

95. The Head Office of NABARD is located in
a) Lucknow b) Hyderabad
c) New Delhi d) Mumbai

96. Where is the Headquarter of the Central Potato Research Institute located ?
a) Shillong b) Shimla
c) Bhowali d) Gangtok

97. Who is known as Father of White Revolution in India ?
a) MS Swaminathan b) V. Kurien
c) KN Bahal d) BP Pal

98. Pradhan Mantri Surakhsha Bima Yojna is related to which sector ?
a) Education b) Pension
c) Insurance d) Housing

99. Who wrote the book 'We the People' ?
a) TN Kaul b) JRD Tata
c) Khushwant Singh d) Nani Palkhivala

100. Who is the Governor of Reserve Bank of India (RBI) ?
a) Ajay Thyagi b) Raghuram Rajan
c) Urjit Patel d) UK Sinha

PART - C -CIVIL ENGINEERING

Marks :200

Each question carries 2 marks :

101. A space 25 mm wide between two large plane surfaces is filled with glycerine. Calculate the total force is required to drag a very thin plate of 0.75 sq. metre in area between the surfaces at a speed of 0.5 m/s, if the plate remains equidistant from two surfaces.Take μ = 0.785 N-s/m^2

a) 23.5 N b) 27 N
c) 47 N d) 54 N

102. The capillary depression in mercury is on account of _____.

a) Adhesion being greater than cohesion
b) Surface tension being larger than viscosity
c) Cohesion being greater than adhesion
d) Vapour pressure being small.

103. A metallic body floats at the interface of mercury (sp.gr.13.6) and water in such a way that 40% of its volume is submerged in mercury and 60% in water. Find the specific gravity of a body.

a) 5.04 b) 6.04
c) 6.44 d) 5.94

104. When a static liquid is subjected to a uniform rotation in a container the free surface assumes the shape of

a) a cone
b) a circular cylinder
c) a paraboloid of revolution
d) an ellipsoid of revolution

105. In the boundary layer of flow outside it the viscous effects are negligible and the flow in this part which constitutes the main body of flow is generally treated as

a) Rotational b) Irrotational
c) Vortex d) Streamline

106. The equation of motion which take into account only the gravity and pressure forces are known as

a) Euler's equations of motions
b) Newton's third law of motion
c) Reynold's equation
d) Chezy's equation

107. A certain shape of a body in which during the process of flow the pressure drag is large as compared to the friction drag such a body is known as

a) Bluff body b) Irregular body
c) Streamlined body d) Surface body

108. The oscillation of flow in pipelines when compressibility effects are not important is referred to as

a) Surge b) Water hammer
c) Drawdown d) Valve closure

109. A section where a definite relationship between depth of flow and discharge exist is known as

a) Prismatic section b) Control section
c) Regular section d) Transient section

110. The shut off head in a pump must always exceed the _____ against which the liquid is to be pumped.

a) Delivery head b) Pumping head
c) Static lift d) Dynamic lift

111. In earlier days large foundation stones of thickness 17 to 22 cm were laid with hand with Largest face down known as prescribed by

a) Tresaguet b) Telford
c) Metcalf d) Macadam

112. The layout of road network in Connaught Place New Delhi is

a) Radial and Circular pattern
b) Rectangular or Block pattern
c) Radial or Star and Block pattern
d) Radial or Star and Grid pattern

113. In highway the requirement of an ideal transition curve is fulfilled by

a) Lemniscate curve
b) Spiral curve
c) Cubic Parabola curve
d) Cubic spiral curve

114. The maximum length of ascending gradient which a loaded truck can operate without Undue reduction in speed is called

a) Limiting gradient

b) Exceptional gradient
c) Minimum gradient
d) Critical length of grade for design

115. The manoeuvre which consist of merging and diverging operations along a stretch in a Highway is known as
a) Weaving b) Crossing
c) Conflict d) Interchanging

116. The skidding occurs when the braking is gradual and the wheels continue to revolve is known as
a) Straight skidding b) Impending skidding
c) Sideway skidding d) Gradual skidding

117. The scientific concept to fix the priority for each road link based on maximum utility per Unit length of road on population and productivity is known as
a) Saturation system
b) Surface area concept
c) Surface length basis
d) Road link system

118. The emulsion type of bitumen which contain sufficient amount of emulsifiers to permit Mixing with certain grades of aggregates before breakdown occurs is known as
a) Labile emulsion
b) Low grade emulsion
c) Fully stable emulsion
d) Semi stable Emulsion

119. In a railway track the tongue rail should be longer than the rigid wheel base of
a) two wheel vehicle
b) four wheel vehicle
c) six wheel vehicle
d) eight wheel base

120. A three throw of switch arrangement is formed when number of turnout take off from same point is
a) one b) two
c) three d) four

121. The fastening which is used in two block RCC sleepers are
a) Lock clip
b) IRN-202 clip
c) IRN-304 clip
d) Double shank elastic spike

122. Horizontal fissure in a rail is caused due to
a) Defective rail head b) Thin flange
c) Thin web d) Defective web

123. In watershed growth of micro organism is encourages by the storage in
a) Swampy areas
b) Damsite
c) Geological storage basin
d) Underground storage Tank

124. In reservoir the bottom layers leads to the development of
a) Algae b) Protozoa
c) Carbon dioxide d) Softness

125. In water pumping system velocity head is converted into _____ before liquid leaves the impeller and enter the volute
a) Pressure head b) Hydraulic head
c) Total head d) Friction head

126. The milky appearance in water is due to excess concentration of
a) Copper b) Zinc
c) Cadmium d) Selenium

127. In water purification system during the flowing through period the efficiency of a well designed basin is taken greater than
a) 5% b) 10%
c) 20% d) 30%

128. In a water distribution system the term blow offs is for
a) Removing silts or sediments
b) To check leakage
c) To check pressure in pipe
d) To increase pressure

129. Removal of troublesome algae before filtration in a treatment plant is done by
a) Disinfection b) Lime coagulation
c) Microstraining d) Clarification

130. Adoption of a separate sewerage system is suitable where
a) Automatic flushing is provided
b) Rainfall is uneven throughout the year
c) Rainfall is even throughout the year
d) Effective or quicker flows have to be provided

131. The sewage must flow in the sewer at all times with the velocity to
a) Settling down
b) Keep in suspension
c) Maintain self cleansing
d) Transport

132. In the process of sewer ventilation the expelling of foul gases from the sewer by exhaust fans termed as
a) Foul expulsion b) Foul Extraction
c) Forced expulsion d) Forced draught

133. During sewer construction and laying for large jobs the dewatering of trenches is done by
a) Pumping out b) Well point drainage
c) Punctured drainage d) Side filtering

134. The indicators of low pollutional waters in streams and lakes are by presence of
a) Algae b) Chlorella
c) Rotifers d) Fungi

135. In sewage the traces of chlorides indicates the presence of
a) Salty water
b) Urinary discharge of men and animals
c) Human excreta
d) Fats

136. The pH value of sewage permissible for land irrigation is
a) 3.5-6.5 b) 4.5-7.5
c) 5.0-8.5 d) 5.5-9.0

137. The trickling filters are similar to contact beds in construction but allows constant
a) Percolation b) Filtration
c) Decomposition d) Aeration

138. Soils that have been deposited from suspension in still fresh water of lakes known as
a) Lacustrine soil b) Marine soil
c) Alluvial soil d) Residual soil

139. Clay soils possessing high values of liquid limit and plasticity index are term as
a) Low plastic b) Medium plastic
c) Highly plastic d) Ultra plastic

140. When a pile is driven into the clay soil, the soil structure gets disturbed and leads to loss in shear strength. When the pile was left undisturbed for certain period of time, part of shear strength is regained the process known as
a) Sensitivity b) Thixotropy
c) Resilience d) Remoulding

141. Group index method for classification of soil is applicable for used of soil in
a) Building foundation
b) Marine structure
c) Bridge foundation
d) Highway subgrade

142. From the following usual group symbol of soil, the soil when compacted permeability will be found in
a) GW b) GP
c) GM d) GC

143. The clay minerals which is least active is
a) Smectite b) Kaolinite
c) Montmorillonite d) Illite

144. Highly plastic soils are compacted in the field by using
a) Smooth wheeled rollers
b) Pneumatic tyred rollers
c) Vibrator
d) Sheep's foot roller

145. When the pore water pressure acts on all sides of the particles, but does not press against adjacent particles known as
a) Zero stress b) Neutral stress
c) Effective stress d) Confining stress

146. A piping failure which can be expected to occur on the downstream side of a hydraulic Structure when the upward acting forces of a seepage exceed the downward forces due the submerged weight of the soil is caused by
a) Heave b) Erosion
c) Loss in cohesion d) Boiling

147. An elevated structure with a total weight of 10,000KN, is supported on a tower with 4 Legs. The legs rest on a piers located at the corners of a square 6m a side. What is the Vertical stress increment due to this loading at a point 7m.
a) 38.57KN/m^2 b) 40.57KN/m^2
c) 42.57KN/m^2 d) 44.57KN/m^2

148. In soil condition under transient flow, vol

ume reduction occurs and increase in
a) Effective stress b) Volumetric stress
c) Compressibility d) Settlement

149. An embankment is proposed to be constructed over a layer of clay 10m thick, underlain by impremeable stratum. The embankment is 3m high and the fill soil has a unit weight of 20KN/m^3.The clay has the following properties c_h = 8.0 m^2/year, c_v = 4.50 m^2/year, m_v = 2.7 x 10^{-4} m^2/KN, sand drains 400 mm diameter are proposed to be installed in a square pattern at a spacing of 3m centre to centre. The ultimate settlement is
a) 86 mm b) 126 mm
c) 142 mm d) 162 mm

150. In the triaxial test as soon as the cell pressure is applied a pore water pressure of equal magnitude builds up in a saturated soil when the drainage valve is kept open ultimately at this stage the soil will be
a) Compressed b) Consolidated
c) Shear d) Decrease in volume

151. An unconfined compression test was conducted on an undisturbed sample of clay. The sample had a diameter of 37.5 mm and 80 mm long. The load at failure was measured by proving ring was 28N and the axial deformation of sample at failure was 13 mm. The unconfined compressive strength is
a) 21.3 KN/m^2 b) 25.3 KN/m^2
c) 28.2 KN/m^2 d) 30.2 KN/m^2

152. A retaining wall 8m high with a smooth vertical back retains a clay backfill with c` = 15 KN/m$^2$, $\phi$` = 15^0 and γ = 18KN/m^3 and the wall is subjected to a push by the soil, determine the earth pressure assuming tension crack develop to full theoretical depth.
a) 61.67 KN/m^2 b) 74.67 KN/m^2
c) 84.67 KN/m^2 d) 94.4 KN/m^2

153. The Ultimate bearing capacity of a strip footing was determined by following three methods of Meyerhof, Hansen and I S Code : 6403 and gives the following values, which of these is the one obtained by Hansen method
a) 1826 KN/m^2 b) 1647 KN/m^2
c) 1545 KN/m^2 d) 1670 KN/m^2

154. For aggregate to be used in concrete other than wearing course its impact value should not be greater than
a) 50% b) 45%
c) 40% d) 35%

155. The object of finding fineness modulus is to grade the given aggregate for most economical mix for required strength and workability with minimum quantity of
a) Cement b) Water
c) Fine aggregate d) Admixtures

156. Corrossion of steel in concrete caused due to presence of calcium chloride can be prevented by adding
a) Potassium Nitrate b) Aluminium Nitrate
c) Sodium hydroxide d) Sodium Nitrate

157. From the point of view of compactability of concrete the best mix should eliminate the original voids present by
a) 87 % b) 89 %
c) 97 % d) 99 %

158. A concrete having high fine aggregate content, requires increase amount of pastes to coat the surface in order to have the same
a) Mobility b) Gel
c) Strength d) Compaction

159. As per IS 456 : 1978 and ACI 318 : 1977, at 28 days the Compressive strength of concrete corresponding to the flexural strength of 3.3 MPa and 2.8 MPa respectively is
a) 10 MPa b) 15 MPa
c) 20 MPa d) 25 MPa

160. During construction process uncertainty which is due to used of in appropriate materials, violation of design condition and incorrect interpretation of designs requirement such type of uncertainty is known as
a) Primary b) Secondary
c) Tertiary d) Quarternary

161. During the process of concrete production the batching tolerance allowed for aggregates, cement and water are
a) +_1.0 % b) +_2%
c) +_3% d) +_4%

162. A concrete of Grade M15 and W/C ratio

0.55 produce from Ordinary Portland cement and Portland Pozzolanna Cement respectively and their strength at 14 days interms of strength percentage are-

a) 75% b) 80%
c) 82% d) 84%

163. For grouted concrete that is produced under high speed mixing the maximum size of sand used is

a) 2.5 mm b) 3.5 mm
c) 4.0 mm d) 5.0 mm

164. The non destructive testing by rebound hammer for measuring the surface hardness, the determination of hardness can be done upto a depth of

a) 2.5 cm b) 3.5 cm
c) 4.5 cm d) 5.0 cm

165. For ferrocement concrete when subjected to increase tensile stress it behaves like linear elastic material till first crack developed the material then enters the stage of

a) Tensile failure b) Brittle
c) Multiple cracking d) Shrinkage cracking

166. At the end of a field survey a 30m chain was found to be 10cm too long. The area of the plan drawn with a measurement taken with this chain was found to be 125sq.cm. If the scale of the plan is 1cm = 10m, what is the true area of the field. Assume that the chain was exact 30m at the commencement of work.

a) 12541.7sq.m b) 12480.6sq.m
c) 13462.6sq.m d) 13496.2sq.m

167. While carrying out survey for chaining round the obstacle the possible process that is not adopted is

a) Constructing a rectangle
b) Constructing a right angled triangle
c) Constructing a triangle enclosing the obstacle
d) Constructing a rectangle enclosing the obstacle

168. The whole circle bearing of a line is 160°10`, its reduced bearing is

a) S160°10`E b) N340°10`W
c) S19°50`E d) N19°50`E

169. The survey work was carried out on the field and the computation of areas was done by following three method Simpson's rule, Trapezoidal rule and the Average Ordinate and the following are the values ; which of these is the one obtained by Trapezoidal rule

a) 487.5sq.m b) 499.0sq.m
c) 468.0sq.m d) 528.0sq.m

170. An abstract from a traverse sheet for a closed traverse is given below

Line	Length	Latitude	Departure
AB	200m	-173.20	+100.00
BC	130m	00.00	+130.00
CD	100m	+86.60	+50.00
DE	250m	+250.00	0.00
EA	320m	-154.90	-280.00

By using Bowditch's method the corrected Latitude of AB is

a) 172.00 b) -171.500
c) -174.900 d) 171.500

171. For airports serving big aircrafts ICAO recommends that cross wind components should not exceed

a) 20 kmph b) 25 kmph
c) 30 kmph d) 35 kmph

172. The length of a runway under standard condition is 2100m. The airport is to be provided at elevation of 410m above the mean sea level. The airport reference temperature is 32° C. The corrected length for temperature is

a) 2301m b) 2560m
c) 2673m d) 2755m

173. The design method for airport rigid pavement based on Westergaard's analysis is considered as

a) Rational b) Semi Emperical
c) Emperical d) Classical

174. Reduction of piping can be done immediately after the toe of impervious apron by providing

a) Filter b) Inverted filter
c) Drainage d) Seepage channel

175. The type of stilling basin that is used for the hydraulic jump between the Froude's number between 4.5 to 9.0 is

a) Simple
b) With wave suppressors
c) With energy dissipators like sills and baffles
d) With bucket type energy dissipators

176. Construction of weir on river regime result in flattening of water slope which result in the formation of shoals in the pond due to
a) High scouring
b) Dropping of sediment load
c) Friction of sediment with bed level
d) Complete accumulation of sediment

177. In river regulation when the undersluicesbays are entirely closed and the flood passed through other barrage bays such a regulation is known as
a) Still pond b) Closed pond
c) Semi still pond d) Open flow

178. In hydraulic design of fall, when the energy is dissipated by means of impact and the deflection of velocity suddenly from the vertical to the horizontal direction, such a fall is known as
a) Ogee falls b) Rapid fall
c) Notch fall d) Vertical dropfall

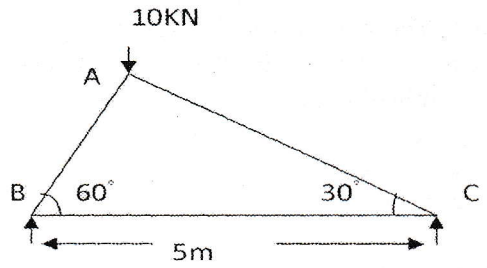
179. A uniform ladder of length 13m and weighing 250N is placed against a smooth vertical wall with its lower end 5m from the wall. The co efficient of friction between the ladder and the floor is 0.3. Determine the frictional force acting on the ladder at the point of contact between the ladder and floor.
a) 42N b) 48N
c) 52N d) 54N

180. In a differential pulley block a load of 180N is raised by an effort of 10N. The number of Teeth on the larger and smaller blocks are 12 and 11 respectively. The efficiency of the machine is
a) 75% b) 81.8%
c) 83.5% d) 84%

181. A vehicle of mass 500Kg is moving with a velocity of 25m/s. A force of 200N acts on it for 2 minutes. The velocity of vehicle when the force acts in a direction of motion is
a) 65 m/s b) 68 m/s
c) 71 m/s d) 73 m/s

182. A reinforced concrete column 50x50 cm in section is reinforced with 4 steel bars of 2.5 cm diameter one in each corner. The column is carrying a load of 200 tonnes, the Stress in concrete is
a) 65 Kg/cm^2 b) 68 Kg/cm^2
c) 70 Kg/cm^2 d) 72 Kg/cm^2

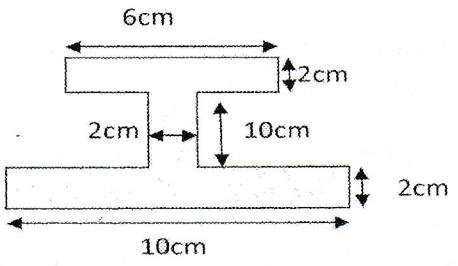
183. The truss ABC shown in figure has a span of 5m. It is carrying a load of 10KN at its Apex. The force in the member AC is
a) 4.33KN b) 4.55KN
c) 4.85KN d) 5.0KN



184. A steel bar 25cm long, 5cm x 5cm in cross section is subjected to a pull of 30 tonnes in the direction of its length. The change in volume with usual notations if m = 4, E = 2.0 x 10^6 Kg/cm^2 is
a) 0.1565 cm^3 b) 0.1785 cm^3
c) 0.1875 cm^3 d) 0.2115cm^3

185. A cantilever beam 2m long carries a uniformly distributed load of 1000Kg/m on a span of 1m which is at a distance of 0.5m from the free end. The self weight of the beam is 200Kg/m run. The maximum bending moment is
a) -1400Kg-m b) 1340Kg-m
c) 1600Kg-m d) 1640Kg-m

186. A beam of shaped as shown in figure is subjected to a bending moment of 500Kg-m at its neutral axis. The maximum stress induced in the beam is
a) 264.3Kg/cm^2 b) 286.2Kg/cm^2
c) 308.2Kg/cm^2 d) 322.6Kg/cm^2



187. A simply supported beam of span 10m is carrying a point load of 10KN at a distance of 6m from the left end. If $E = 200GN/m^2$ and $I = 1000 \times 10^6 mm^4$ the maximum deflection of the beam is

a) 0.96mm b) 0.985mm
c) 1.03mm d) 1.04mm

188. A hollow alloy tube 5m long with diameters 40mm and 25mm respectively was found to extend 6.4mm under a tensile load of 6 tonnes. The buckling load of a tube when used as strut with both ends pinned

a) 226.4Kg b) 238.6Kg
c) 257.3Kg d) 271.3Kg

189. A two hinged parabolic arch of span 24m and rise 3m is uniformly loaded over the left. Half of the span with a 3 tonnes/metre and a concentrated load of 7 tonnes at the Crown. Determine the horizontal thrust assuming secant variation for moment of Inertia.

a) 43.0 tonnes b) 47.0 tonnes
c) 49.0 tonnes d) 51.5 tonnes

190. A continous beam ABC in which AB = BC = 4m and each span carries a load of 10 tonnes concentrated at its middle point. If B sinks by 0.25 cm below the level of A and C, if $I = 8200cm^4$ and $E = 2047$ tonnes/cm^2 the moment at B is

a) -6.7125 t-m b) -7.2540 t-m
c) 7.5700 t-m d) 10.0 t-m

191. The redundant re-action is one in which of the following bridges

a) Centre bearing swing bridge
b) Rim bearing swing bridge
c) Side bearing swing bridge
d) Top bearing swing bridge

192. Theorem of least work states that the redundant re action components of statically indeterminate structure so as to make the total _____ up a minimum.

a) Slope-deflection b) Deflection
c) Strain Energy stored d) Rotation

193. A crusher which can be used as either primary or secondary crusher is

a) Hammer mill b) Jaw crusher
c) Gyratory crusher d) Jaw crusher

194. Bottom dump wagons are not suitable for

a) Sand b) Gravels
c) Lumps of wet clay d) Surkhi

195. Hoe is primarily used to excavate

a) Below the natural surface of the ground on which the machine rests
b) Trenches requiring precise control of depth
c) Pits of basements requiring precise control of depth
d) All the above

196. Bar charts are considered suitable for

a) Major projects b) Minor projects
c) Large projects d) All the above

197. The thickness of a 25 gauge sheet is

a) Less than 1 mm b) 1 mm
c) Between 1 mm and 2 mm d) 2 mm

198. The valuation of property is done when

a) Owner of a property wants to sell it
b) Municipal tax, wealth tax, estate duty etc have to be fixed
c) Insurance of the property has to be done
d) All the above are correct

199. When a contractor is paid certain percentage over the actual cost of the construction as his profit such contract is termed as

a) Lump-sump contract
b) Work order
c) Schedule contract
d) Cost plus percentage contract

200. Estimate expected to be least accurate is

a) Supplementary estimate
b) Plinth area estimate
c) Detailed estimate
d) Revised estimate