

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

## QUESTION BOOKLET

**SERIES II**

**Subjects : General English, General Knowledge & Civil Engineering**

**BOOKLET SERIAL NO.**

**200158**

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 **175 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 : 25 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 :-

(A) (B) (C) (D)

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 :-

(A) (B) (●) (D)

### 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 :

### SECTION-I

**A. Read the following passage and answer the questions below following the instructions :**

Young people naturally seek the society of those of their own age ; but be careful in choosing your companions ; and lay this down as a rule never to be departed from, that no youth nor man, ought to be called your friend, who is addicted to indecent talk or who is fond of low society. Either of these argues a depraved taste and even a depraved heart ; an absence of all principles and trustworthiness ; and I have remarked it my life long, that young men, addicted to these vices, never succeed in the end whatever advantages they may have whether in fortune or in talent. Fond mothers and fathers are too apt to be over lenient to such offenders ; and as long as youth and fortune smiles, the punishment is deferred ; but it comes at last ; it is sure to come ; and the gay and dissolute youth is a dejected and miserable man.

**Choose the appropriate antonyms of the following :**

**1. Dejected :**

- |            |            |
|------------|------------|
| a) upbeat  | b) forlorn |
| c) debased | d) sombre  |

**2. Jovial :**

- |            |           |
|------------|-----------|
| a) morose  | b) blithe |
| c) buoyant | d) jocund |

**3. Naturally :**

- |                  |                  |
|------------------|------------------|
| a) spontaneously | b) improbability |
| c) unusually     | d) likely        |

**4. Depraved :**

- |            |             |
|------------|-------------|
| a) inhuman | b) ethical  |
| c) deviate | d) diabolic |

**5. Slovenly :**

- |                 |               |
|-----------------|---------------|
| a) permissively | b) indolently |
| c) neatly       | d) latently   |

**Choose the appropriate synonyms of the following :**

**6. Enthrall**

- |            |            |
|------------|------------|
| a) enthuse | b) bewitch |
| c) exclaim | d) entice  |

**7. Meteoric**

- |               |             |
|---------------|-------------|
| a) long drawn | b) gradual  |
| c) swift      | d) mindless |

**8. Principles :**

- |           |             |
|-----------|-------------|
| a) tenets | b) examples |
| c) models | d) laws     |

**9. Plausible**

- |             |               |
|-------------|---------------|
| a) probable | b) dependable |
| c) paucity  | d) amiable    |

**10. Dissolute**

- |             |               |
|-------------|---------------|
| a) resolved | b) irresolute |
| c) wanton   | d) strict     |

### SECTION-II

**Choose the correct option to fill in the gaps where necessary :**

**11. The inhabitants of France speak \_\_\_\_\_ French.**

- |        |               |
|--------|---------------|
| a) the | b) a          |
| c) an  | d) no article |

**12. \_\_\_\_\_ Golden Arrow is an express train that runs from London to Paris each day.**

- |        |               |
|--------|---------------|
| a) the | b) a          |
| c) an  | d) no article |

**13. \_\_\_\_\_ gold is a precious metal.**

- |        |               |
|--------|---------------|
| a) the | b) a          |
| c) an  | d) no article |

**14. There is \_\_\_\_\_ underlying force that drives the students to give their best.**

- |        |               |
|--------|---------------|
| a) the | b) a          |
| c) an  | d) no article |

**15. The story is \_\_\_\_\_ accurate portrayal**

of rustic life.

- a) the
- b) a
- c) an
- d) no article

16. I bought this watch at a shop in \_\_\_\_\_ Morton Road.

- a) the
- b) a
- c) an
- d) no article

17. \_\_\_\_\_ honorary secretary is one who is not paid for his services.

- a) the
- b) a
- c) an
- d) no article

18. I have never been in so large \_\_\_\_\_ house before.

- a) the
- b) a
- c) an
- d) no article

19. He had lived \_\_\_\_\_ for a good many years.

- a) in the abroad
- b) abroad
- c) out
- d) outside

20. We \_\_\_\_\_ see such a sight as this.

- a) hardly
- b) scarcely
- c) seldom
- d) seldomly

21. You had better \_\_\_\_\_ some food with you, in case you get hungry.

- a) bring
- b) fetch
- c) packed
- d) fetched

22. Susanna encouraged us to help \_\_\_\_\_ to more strawberry shortcake.

- a) ourselves
- b) out
- c) in
- d) ourself

23. The tiger and \_\_\_\_\_ cat belong to the same family of animals.

- a) the
- b) a
- c) an
- d) no article

24. Denmark is \_\_\_\_\_ European country.

- a) the
- b) a
- c) an
- d) no article

25. The hotel \_\_\_\_\_ to each guest.

- a) issues free guide books
- b) issues a free guide book
- c) is issuing free guide books
- d) will issue free guide books

26. We have had a \_\_\_\_\_ good holiday.

- a) fairly
- b) rather
- c) fairly well
- d) moderately

27. As I \_\_\_\_\_ him he turned and walked away.

- a) approached to
- b) was approaching
- c) approached towards
- d) approached

28. If Tom passes the examination, his father \_\_\_\_\_ him a bicycle.

- a) will be buying
- b) would be buying
- c) is going to buy
- d) is getting

29. The father was very angry \_\_\_\_\_ his son.

- a) against
- b) with
- c) at
- d) of

30. In shape, the object \_\_\_\_\_ an egg.

- a) resembles
- b) resembling
- c) is similar with
- d) resemble

### SECTION-III

Choose the correct sentences :

31. (i) We spent the holidays in a cottage in the mountains.

(ii) We spent the holidays in a small cottage, rented from a friend in the mountains.

(iii) We spent the holidays in the mountains, in a small cottage we rented from a friend.

- a) (i) & (ii)
- b) (i) & (iii)
- c) (ii) & (iii)
- d) (i), (ii) & (iii)

32. (i) He announced his retirement from the civil service.

(ii) He announced that he was retiring from civil service.

(iii) He announced that he was retiring from the civil service.

- a) (i) & (ii)
- b) (i) & (iii)
- c) (ii) & (iii)
- d) (i), (ii) & (iii)

33. (i) What an opportunity you have missed !

(ii) What an opportunity you missed !

(iii) What opportunity you missed !

- a) (i) & (ii)
- b) (i) & (iii)
- c) (ii) & (iii)
- d) (i), (ii) & (iii)

34. (i) He picked up the ball quite quickly.



(ii) He picked up the ball quickly.

(iii) He quickly picked the ball.

- a) (i) & (ii)                      b) (i) & (iii)  
c) (ii) & (iii)                    d) (i), (ii) & (iii)

35. (i) Her husband gave the necklace on their wedding day.

(ii) Her husband gave her a necklace on their wedding day.

(iii) Her husband gave her the necklace on their wedding day.

- a) (i) & (ii)                      b) (i) & (iii)  
c) (ii) & (iii)                    d) (i), (ii) & (iii)

36. (i) I have not seen him since last January.

(ii) I did not see him since last January.

(iii) I have not seen him since January.

- a) (i) & (ii)                      b) (i) & (iii)  
c) (ii) & (iii)                    d) (i), (ii) & (iii)

37. (i) A terrorist got killed in an encounter.

(ii) A terrorist was killed in an encounter.

(iii) A terrorist has been killed in an encounter.

- a) (i) & (ii)                      b) (i) & (iii)  
c) (ii) & (iii)                    d) (i), (ii) & (iii)

38. (i) I told him, 'honesty is the best policy'.

(ii) I told him that honesty is the best policy.

(iii) I told him that honesty was the best policy.

- a) (i) & (ii)                      b) (i) & (iii)  
c) (ii) & (iii)                    d) (i), (ii) & (iii)

39. (i) I switched on the television. There were no interesting programmes on.

(ii) I switched on the television but there were no interesting programmes on.

(iii) I switched on the television and there were no interesting programmes on.

- a) (i) & (ii)                      b) (i) & (iii)  
c) (ii) & (iii)                    d) (i), (ii) & (iii)

40. (i) I have decided to sell several of my furniture.

(ii) I have decided to sell my furniture.

(iii) I have decided to sell some of my furniture.

- a) (i) & (ii)                      b) (i) & (iii)  
c) (ii) & (iii)                    d) (i), (ii) & (iii)

## SECTION-IV

Choose the correct meaning for the phrases given below :

41. lasting only for a short time

- a) transferable                      b) negotiable  
c) malleable                        d) transient

42. push or force into a small space

- a) cram                                b) pack  
c) load                                d) stack

43. to make someone to agree to do something by giving them good reasons for doing it

- a) persuade                        b) pervade  
c) convince                        d) coerce

44. careful about spending money and not wasting things

- a) thrift                                b) thrifty  
c) tight fisted                      d) stingy

45. unfounded speculation

- a) sprig                                b) sceptre  
c) tirade                              d) conjecture

46. to be familiar with

- a) concur                              b) acquaintanceship  
c) conversant                        d) recognise

47. very pleasing to eat

- a) palatable                        b) tasty  
c) flavour                            d) toothsome

48. a person who knows and can speak many languages

- a) bigot                                b) teetotaller  
c) misologist                        d) polyglot

49. incapable of being corrected

- a) incoagulable                      b) intimidating  
c) incorrigible                        d) radical

50. to give a general idea or description of something without details

- a) adroit                                b) adumbrate  
c) elaborate                        d) alleviate



## **PART - B - GENERAL KNOWLEDGE**

**Marks : 50**

**Each question carries 2 marks :**

51. The Rumtek Monastery is located in which state ?

- a) Himachal Pradesh
- b) Arunachal Pradesh
- c) Jammu and Kashmir
- d) Sikkim

52. The 6<sup>th</sup> Schedule of the Indian Constitution deals with the administration and control of Scheduled Areas & Scheduled Tribes in four states of

- a) Manipur, Mizoram, Tripura, Nagaland
- b) Assam, Meghalaya, Tripura, Mizoram
- c) Assam, Meghalaya, Arunachal Pradesh, Nagaland
- d) Meghalaya, Mizoram, Manipur, Nagaland

53. International Women's Day is observed on

- a) March 8
- b) March 18
- c) February 8
- d) February 14

54. The 'World Beneath His Feet' is a biography of

- a) Sachin Tendulkar
- b) Ajit Wadekar
- c) Pullela Gopichand
- d) Nawab Pataudi

55. The 'Sangai Festival' is celebrated in which state ?

- a) Assam
- b) Manipur
- c) Nagaland
- d) Mizoram

56. Which of the following is the largest Lok Sabha Constituency (area wise) ?

- a) Arunachal West
- b) Barmer
- c) Ladakh
- d) Kutch

57. The Comptroller and Auditor General of India is appointed for how many years ?

- a) Two
- b) Four
- c) Five
- d) Six

58. Which is not a Fundamental Right ?

- a) Right of Equality
- b) Right of Liberty
- c) Right against Exploitation

d) Right to Property

59. In India, the National Voters Day is observed on ?

- a) January 17
- b) January 25
- c) March 25
- d) December 17

60. Which among the following Steel Plants of India is called 'India's first swadeshi Steel Plant'?

- a) Bengal Iron Works Co
- b) TISCO
- c) IISCO
- d) Bokaro Steel Plant

61. Hirakud Dam, one of the world's longest earthen dams is located in which of the following states ?

- a) Odisha
- b) Andhra Pradesh
- c) West Bengal
- d) Bihar

62. The founder of the autonomous kingdom of Avadh was

- a) Shija-ud-Daula
- b) Saadat Khan Burhan-ul Mulk
- c) Safderjang
- d) Sher Shah

63. The Declaration of the Rights of Man is related with

- a) French Revolution
- b) Russian Revolution
- c) American War of Independence
- d) Glorious Revolution of England

64. The National Emblem was adopted by the Government of India on which date ?

- a) 26<sup>th</sup> January 1947
- b) 15<sup>th</sup> August 1950
- c) 26<sup>th</sup> January 1950
- d) 15<sup>th</sup> August 1947

65. The state in India having the least population density is

- a) Goa
- b) Nagaland
- c) Sikkim
- d) Arunachal Pradesh

66. How many states of India share a common border with Bhutan ?

- a) Two
- b) Three
- c) Four
- d) Five

67. Urban Cooperative Banks are governed by

- a) State Government
- b) RBI
- c) Both (a) & (b)
- d) Central Government

68. The satellite GSAT-I was launched from which of the following space stations ?

- a) Guiana
- b) Kennedy space centre
- c) Sriharikota
- d) Woomera

69. Schizophrenia is related to

- a) A hereditary disorder which leads to increase in performance of Thyroid glands.
- b) A breathing problem due to increase in pollution levels.
- c) A chronic & severe mental disorder that affects how a person thinks, feels and behaves.
- d) A chronic neurodegenerative disease.

70. Which of the following Mountain passes forms the 'tri-junction' of India, China and Myanmar ?

- a) Nathu La
- b) Jelep La
- c) Bomdi La
- d) Diphu

71. Which Indian state has the largest number of Cotton Textile mills ?

- a) Madhya Pradesh
- b) Maharashtra
- c) Uttar Pradesh
- d) West Bengal

72. The world's longest sandstone cave is

- a) Krem Kotsati
- b) Krem Puri
- c) Krem Mawmluh
- d) Krem Liat Prah

73. The total number of National Parks located in the state of Meghalaya is

- a) One
- b) Two
- c) Three
- d) Four

74. The current Reserve Bank of India (RBI)

Governor is

- a) Urjit Patel
- b) Raghuram Rajan
- c) Shaktikanta Das
- d) Arun Jaitley

75. In the sports of Kho-Kho, the players occupying the squares are known as

- a) Lobby
- b) Raiders
- c) Chasers
- d) Chukker



## PART - C - CIVIL ENGINEERING

Marks :200

Each question carries 2 marks :

76. The bacterial action which cause tuberculation in water supply pipe is due to the  
a) iron consuming bacteria  
b) sulphate reducing bacteria  
c) aerobic bacteria  
d) manganese consuming bacteria

77. The spring resulting from the out-cropping of an impervious stratum underneath the water bearing formation is known as  
a) Artesian spring  
b) Non artesian spring  
c) Gravity spring  
d) None of the above

78. \_\_\_\_\_ they are provided at all dead ends in the distribution system as well as at all depressions in the mains.  
a) hydrants  
b) air valves  
c) blow-offs  
d) released valves

79. During the process of water purification the percentage ratio of the flowing through period to the detention period in the tank which is a measure also known as the  
a) efficiency of the basin  
b) detention efficiency  
c) regulatory works  
d) flowing through period

80. In the hydraulic design of sewers the water and sewage are considered  
a) water more than sewage  
b) identical  
c) sewage more than water  
d) none of the above

81. The presence of cadmium in public water supply is permissible upto  
a) 0.1 mg/L  
b) 0.01 mg/L  
c) 0.05 mg/L  
d) 1.0 mg/L

82. While working inside a sewer when a miner's safety lamp is lower near the level of the sewage, if the Flame gets extinguish within 5 minutes it indicates presence of  
a)  $H_2S$   
b)  $NH_3$

c)  $NO_3$

d)  $CO_2$

83. The storm relief work which is effectively used incase of combined sewer is  
a) Siphon spillway  
b) Leaping weir  
c) Overflow weir  
d) Cipoletti weir

84. The crop yield under sewage irrigation better than that by well or canal irrigation by  
a) more than 15%  
b) more than 20%  
c) more than 25%  
d) more than 33%

85. In sedimentation tank the sewage that has been partially clarified by the settling out of the solids is known as  
a) sludge  
b) sewage  
c) effluent  
d) grit

86. In a single stack system the depth of water seal in the trap should not be less than  
a) 25 mm  
b) 30 mm  
c) 50 mm  
d) 75 mm

87. In Newtonian fluids the viscosity is  
a) independent of shear stress  
b) dependent of velocity  
c) having linear velocity distribution  
d) having fluid deformation

88. The breaking up of the trap seal as a result of removing water therefrom, by discharge of the fixture to which the trap is connected is known as  
a) anti siphonage  
b) self siphonage  
c) induced siphonage  
d) trap lock

89. 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

90. Absolute pressure in a flow system  
a) is always above local atmospheric pressure  
b) is a vacuum pressure  
c) may be above, below or equal to local atmospheric pressure

spheric pressure  
d) also called negative pressure

91. The dimension indicated by  $ML^{-1}T^{-2}$  is that of

- a) pressure
- b) dynamic viscosity
- c) energy
- d) torque

92. Fluid particles moving in boundary layer are decelerated because of

- a) viscous friction
- b) negative pressure
- c) increase in kinetic energy
- d) separation

93. The continuity equation in fluid mechanics is a mathematical statement embodying the principle of

- a) conservation of energy
- b) conservation of mass
- c) conservation of momentum
- d) none of the above

94. The hydraulic grade line is one which indicates the variation of

- a) total energy of flow in the direction of flow
- b) piezometric head in the direction of flow
- c) velocity head in flow direction
- d) pressure head in the direction of flow

95. Laminar flow through a circular tube was studied experimentally by

- a) Newton
- b) Pascal
- c) Hagen and Poiseuille
- d) Prandtl

96. The critical depth is the depth of flow at which

- a) specific energy is maximum
- b) the unit discharge  $q$  is minimum
- c) specific energy is minimum
- d) the Froude number is greater than unity

97. An object placed in a fluid stream may experience drag and lift forces, these forces are due to

- a) pressure and gravity
- b) pressure and viscosity
- c) viscosity and turbulence
- d) pressure and Turbulence

98. In order to have a continuous flow through a siphon, no portion of the pipe be higher than

- a) 10 m
- b) 10.33 m

c) 5.5 m

d) 7.75 m

99. In reaction turbine the separation of air or air cavitation usually occurs before

- a) vapour cavitation
- b) high discharge
- c) low discharge
- d) vapour pressure

100. In reciprocating pump air vessel is provided so that

- a) fluid acceleration in the pipe is maximized
- b) fluid acceleration in the pipe is minimized
- c) increase suction
- d) increase friction losses

101. The roads which are used for processional purposes called as

- a) boulevard
- b) freeways
- c) marker
- d) sideway

102. The test which measure the ease or difficulty with which aggregate particle will deteriorate under the action of traffic is

- a) impact test
- b) water absorption test
- c) crushing test
- d) abrasion test

103. The road has a designed speed of 50 Km/h, the co-efficient of friction between the road surface and the tyres is taken as 0.4, driver reaction time is 3 seconds, the stopping sight distance is

- a) 43m
- b) 57m
- c) 67m
- d) 129.50m

104. The transition curve that is used throughout without having intermediate circular curve is

- a) bernoulli's lemniscate
- b) cubic parabola
- c) cubic spiral
- d) spiral

105. The bitumen emulsion that contain minimum amount of emulsifiers known as

- a) low grade emulsions
- b) acute emulsions
- c) semi stable emulsions



d) labile emulsions

**106.** The delay that is occurring at intersections of roads due to traffic signals is known as

- a) fixed delay                      b) operational delay
- c) stalled delay                      d) traffic delay

**107.** The machine that is used to excavate earth much below the natural surface where the machine is stationed is known as

- a) power shovel                      b) dragline
- c) clam shell                      d) hoe

**108.** As per Highway Research Board, the soil which have higher change in volume characteristics belong to soil group

- a) A-1                      b) A-2
- c) A-6                      d) A-7

**109.** The length of rotary roadway in which merging and diverging operations can take place between two Channelizing islands of the adjacent intersecting roads is known as

- a) length of rotary
- b) length of channelized road
- c) weaving length
- d) intersecting length

**110.** The localized shattering of the rigid pavement slab usually occur at the

- a) tranverse crack
- b) longitudinal crack
- c) middle of slab
- d) edge of slab

**111.** The discharge of the contract before the date of performance by the agreement between the parties that it no longer bind them, the agreement is known as

- a) rescission                      b) escrow
- c) denovation                      d) sumptuary

**112.** The movement of an employee to a more responsible job within the same occupational unit and with corresponding increase in pay is termed as

- a) dry promotion
- b) limited chain promotion

- c) limited promotion
- d) up and in promotion

**113.** The study of concepts, procedure or technology used by the administration, employee in the activity of various study is referred as

- a) Optimisation study
- b) Randomisation study
- c) Conceptual study
- d) Operation research

**114.** For stablisation of black cotton soil, the method is done by

- a) mechanical                      b) soil lime
- c) thermal                      d) soil cement

**115.** In flexible pavement fatigue of materials results in formation of

- a) consolidation                      b) heaving
- c) map cracking                      d) wave formation

**116.** In building planning the access to the rooms on the same floor is termed as

- a) floor access
- b) horizontal access
- c) horizontal circulation
- d) room access

**117.** The difference in air temperature between inside and outside of the room and the difference in Height between inlet and outlet openings is termed as

- a) stack effect
- b) wind effect
- c) temperature effect
- d) temperature variation

**118.** A strip of land provided on the periphery of the town for the purpose of limiting the growth of the town is known as

- a) green field                      b) green belt
- c) city limit                      d) ground limit

**119.** In a p-chart if all the sample points lie within control limit, the process is said to be

- a) in statistical control
- b) in regular limit
- c) in optimization limit



d) in control limit

**120.** The writing off the proportionate value of intangible assets such as goodwill, copyright, patents etc is termed as

- a) obsolescence                      b) indemnation
- c) mortization                        d) amortization

**121.** For equipment maintenance the most predominant mode of maintenance in Indian construction scenario is

- a) reactive                              b) preventive
- c) predictive                           d) regular

**122.** In a simplex procedure if a constant has a sign  $\geq$ , in order to make it an equality, a positive variable has to be subtract from its left hand side is called the

- a) slack variable                      b) surplus variable
- c) acute variable                       d) obtuse variable

**123.** The training in which the theory is related to practice is termed as

- a) job training
- b) apprenticeship training
- c) internship training
- d) vestibule training

**124.** In survey chain due to prolong used of the chain, the opening out of small rings may result in the beginning

- a) increase in chain length
- b) decrease in chain length
- c) damaged the chain
- d) breaking of link

**125.** The obstacle in which the ends of a chain line are not intervisible, such type of obstacle is

- a) obstruct chaining but not ranging
- b) obstruct ranging but not chaining
- c) obstruct both ranging and chaining
- d) none of the above

**126.** The imaginary lines joining the points having same dip on the surface of the earth are known as

- a) isolines                              b) synclines
- c) anti clines                           d) isoclinic lines

**127.** When a station is sighted and a line is drawn through the plotted location of that station towards the instrument station the sight is called

- a) foresight                              b) back sight
- c) intersecting sight                   d) resector

**128.** While carrying out precise levelling, the correction are carried out as below

- a) curvature correction is subtracted from staff reading, refraction correction is added to staff reading
- b) curvature correction is added to staff reading, refraction correction is subtracted from staff reading
- c) only curvature correction is added to staff reading
- d) only refraction correction is subtracted from staff reading

**129.** The whole circle bearing is  $160^{\circ}10'$ , its quadrantal bearing is

- a)  $S160^{\circ}10'E$                               b)  $S19^{\circ}50'E$
- c)  $N160^{\circ}10'E$                               d)  $N19^{\circ}50'E$

**130.** The declination at a place 50 years back was  $2^{\circ}15'W$ , the present declination is  $1^{\circ}30'E$ . The old Magnetic bearing of a line in such an area, is recorded as  $153^{\circ}$ , the true bearing of a line is

- a)  $150^{\circ}45'$                               b)  $149^{\circ}15'$
- c)  $155^{\circ}15'$                               d)  $151^{\circ}30'$

**131.** While setting out a simple circular curve, one of the following method may be carried out select the incorrect one

- a) offsets from tangents
- b) offsets from the long chord
- c) offsets from chords produced
- d) offsets from the centre of the chord

**132.** Calculate the length of a transition curve to be introduced between a straight and a circular curve such that 15 cm super elevation may be introduced over a circular curve, the rate of super elevation is 1 in 500

- a) 75m                                      b) 3m
- c) 333m                                    d) 33.33m



**133.** The angle of intersection between two straights is  $140^\circ$ . The spiral angle for each transition curve is  $5^\circ$ . The radius of the main curve is 400m, the length of a circular curve is

- a) 69.81m                      b) 244.22m
- c) 209.44m                      d) 66.67m

**134.** A member of a roof truss consists of two angle irons  $80 \times 50 \times 6$ mm, placed back on both sides of an 8mm thick gusset plate. It carries a direct load of 71kN. Determine the bearing strength for a gusset plate. The shearing stress is 90MPa, bearing stress is 270MPa.

- a) 43.3kN                      b) 17.28kN
- c) 21.65kN                      d) 37.8kN

**135.** For steel structure in case of simple beam with ends connection in steel, the stiffened seat connection is provided when end reaction is about

- a) 80kN                      b) 110kN
- c) 125kN                      d) 150kN

**136.** When the length of the smallest size fillet weld required to transmit stress is less than the continuous Length of the joint, the type of fillet used is

- a) side fillet                      b) single fillet
- c) end fillet                      d) intermittent fillet

**137.** For steel compression member of constant dimension when it is effectively held in position and restrained against rotation at both ends, the value of effective length is

- a) 0.65L                      b) 0.70L
- c) 0.80L                      d) 1.0L

**138.** A small diversion weir generally constructed in masonry in a stream or rivulet for utilization of Perennial flow is known as

- a) Sharda                      b) Bandhara
- c) Alla bund                      d) Kanwar

**139.** The commonly used flooding method used for surface irrigation for soil of medium texture and moderate slope is

- a) wild flooding                      b) free flooding
- c) border flooding                      d) check flooding

**140.** The course of the river having bends of different amplitudes and frequencies is known as

- a) regular meanders
- b) irregular meanders
- c) simple meanders
- d) compound meanders

**141.** A weir constructed at the offtake of canal across the river to raise the water level for feeding the canal is termed as

- a) waste weir                      b) diversion weir
- c) offtake weir                      d) pickup weir

**142.** When the bed level of the drainage is at or higher than the designed full supply level of the canal the inlet provided is known as

- a) flush inlet                      b) weir inlet
- c) drainage inlet                      d) diversion inlet

**143.** A canal which is taken up for protection against famine and financed from famine fund is called

- a) protective canal
- b) productive canal
- c) special assistance canal
- d) multipurpose canal

**144.** For a canal where expansive soils or high ground water table condition are met the suitable lining that is provided is

- a) bentonite                      b) clay
- c) bitumen                      d) polyethylene

**145.** A drainage used to intercept seepage water but has in addition wells dug at regular interval for letting the water to come up from the lower stratum and enter the drain is

- a) double system
- b) grouping system
- c) intercepting system
- d) sink hole drainage system

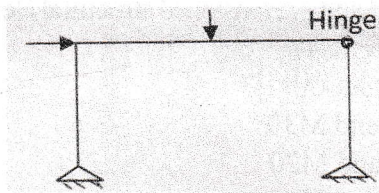
**146.** The grouting that is carried out at the abutment area of concrete dam is termed as

- a) consolidation grouting
- b) curtain grouting
- c) contact grouting



d) embedment grouting

147. A plane structure shown in figure is



- a) stable and statically determinate
- b) unstable and statically determinate
- c) stable and statically indeterminate
- d) unstable and statically indeterminate

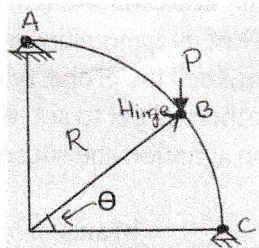
148. Influence line for redundant structures can be obtained by

- a) Castigliano's theorem
- b) Muller Breslau principle
- c) Unit load theorem
- d) Maxwell-Betti's reciprocal theorem

149. A beam PQRS is 18m long, simply supported at Q and R 10m apart. The overhangs PQ and RS are 3m and 5m respectively. A train of two point loads of 150kN and 100kN, 5m apart crosses this beam from left to right with 100kN leading. The maximum sagging moment under 150kN load anywhere is

- a) 500kN-m
- b) 450kN-m
- c) 400kN-m
- d) 375kN-m

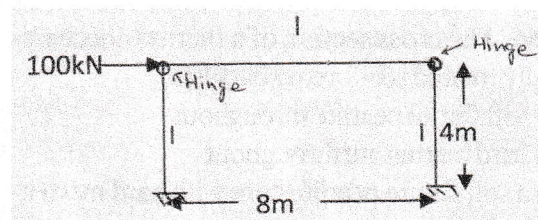
150. A three hinged arch shown in figure is quarter of a circle. If the vertical and horizontal Components of reaction at A are equal, the value of  $\theta$  is



- a) 60°
- b) 45°
- c) 30°
- d) None in (0°, 90°)

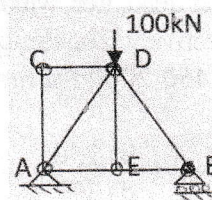
151. For the frame shown in figure the maxi-

mum bending moment in the column is



- a) Zero
- b) 400kNm
- c) 100kNm
- d) 200kNm

152. The force in the member DE of the truss shown in figure is



- a) 100.0kN
- b) Zero
- c) 35.5kN
- d) 25.0kN

153. The stiffness matrix of a beam element is

given as  $(2EI/L) \begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix}$ . Then the flexibility matrix is

- a)  $(L/2EI) \begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix}$
- b)  $(L/6EI) \begin{bmatrix} 2 & -1 \\ -1 & 2 \end{bmatrix}$
- c)  $(L/3EI) \begin{bmatrix} 2 & -1 \\ -1 & 2 \end{bmatrix}$
- d)  $(L/5EI) \begin{bmatrix} 2 & -1 \\ -1 & 2 \end{bmatrix}$

154. The modulus of rupture of concrete gives

- a) the direct tensile strength of concrete
- b) the direct compressive strength of concrete
- c) the tensile strength of concrete under bending
- d) the characteristic strength of concrete

155. The characteristic strength of concrete is defined as that compressive strength below which not more than

- a) 10% of results fail
- b) 5% of results fail
- c) 2% of results fail



d) None of the above

**156.** The cross section of a thermo-mechanically treated reinforcing bars has

- a) soft ferrite pearlite throughout
- b) hard martensite throughout
- c) a soft ferrite pearlite core with hard martensitic rim
- d) a hard martensitic core with soft pearlite bainitic rim

**157.** The unfactored maximum bending moment at a section of a reinforced concrete beam resulting from a frame analysis are 50, 80, 120 and 180 kNm under dead, live, wind and earthquake loads respectively. The design moment (kNm) as per IS 456:2000 for limit state of collapse is

- a) 195
- b) 250
- c) 345
- d) 372

**158.** In the designed of a reinforced concrete beam the requirement for bond is not getting satisfied. The economical option to satisfy the requirement for bond is by

- a) bundling of bars
- b) providing smaller diameter bars more in number
- c) providing large diameter bars less in number
- d) providing same diameter bars more in numbers

**159.** A reinforced concrete wall carrying vertical loads is generally designed as per recommendations given for columns. The ratio of minimum reinforcements in the vertical and horizontal directions is

- a) 2 : 1
- b) 5 : 3
- c) 1 : 1
- d) 3 : 5

**160.** The loss of prestress due to elastic shortening of concrete is least in

- a) one wire pre tensioned beam
- b) one wire post tensioned beam
- c) multiple wire pretensioned beam with sequential cutting of wires
- d) multi wire post tensioned beam subjected to sequential prestressing

**161.** As per Indian standard code of practice for prestressed concrete (IS 1343 : 1980) the minimum grade of concrete to be used for post tensioned and pre tensioned structural elements are respectively

- a) M20 for both
- b) M40 and M30
- c) M15 and M20
- d) M30 and M40

**162.** Principal involved in the relationship between submerged unit weight and saturated weight of a soil is based on

- a) equilibrium of floating bodies
- b) archimedes' principle
- c) stoke's law
- d) darcy's law

**163.** An open ended steel barrel of 1m height and 1m diameter is filled with saturated fine sand having coefficient of permeability of  $10^{-2}$  m/s. The barrel stands on a saturated bed of gravel. The time required for the water level in the barrel to drop by 0.75 m/s is

- a) 58.9 s
- b) 75 s
- c) 100 s
- d) 150 s

**164.** The time for a clay layer to achieve 90% consolidation is 15 years. The time required to achieve 90% consolidation if the layer were twice as thick, 3 times more permeable and 4 times more compressible would be

- a) 70 years
- b) 75 years
- c) 80 years
- d) 85 years

**165.** Some of the structural strength of a clayey material that is lost by remoulding is slowly recovered with time. This property of soils to undergo an isothermal gel to sol to gel transformation upon agitation and subsequent rest is termed

- a) isotropy
- b) anisotropy
- c) thixotropy
- d) allotropy

**166.** A sample of saturated cohesionless soil tested in a drained triaxial compression test show an angle of internal friction of  $30^\circ$ . The deviator stress at failure for the sample at a

confining pressure of 200 kPa is equal to

- a) 200kPa                      b) 400kPa
- c) 600kPa                      d) 800kPa

167. Two people weighing  $W$  each are sitting on a plank of length  $L$  floating on water at  $L/4$  from either end. Neglecting the weight of the plank, the bending moment at the centre of the plank is

- a)  $WL/8$                       b)  $WL/16$
- c)  $WL/32$                       d) Zero

168. An axially loaded bar is subjected to a normal stress of 173MPa. The shear stress in the bar is

- a) 75MPa                      b) 86.5MPa
- c) 100MPa                      d) 122.3MPa

169. The survey of elevated objects in an around the airport site is known as

- a) approach zone survey
- b) objects survey
- c) physical survey
- d) building survey

170. In airport the calm period is that period where the wind speed is

- a) less than 4kmph
- b) less 6kmph
- c) less 10kmph
- d) less 12kmph

171. The ultimate bearing capacity of a soil is  $300\text{kN/m}^2$ . The depth of the foundation is 1m and unit weight of soil is  $20\text{kN/m}^3$ . Considering a factor of safety of 2.5, the net safe bearing capacity is

- a)  $100\text{kN/m}^2$                       b)  $112\text{kN/m}^2$
- c)  $80\text{kN/m}^2$                       d)  $100.5\text{kN/m}^2$

172. A mild steel specimen is under uniaxial tensile stress. The Young's modulus and yield stress for mildsteel are  $2 \times 10^5$  MPa and 250 MPa respectively. The maximum amount of strain energy per unit volume that can be stored in this specimen is

- a)  $156\text{N mm/mm}^3$                       b)  $15.6\text{N mm/mm}^3$
- c)  $1.56\text{N mm/mm}^3$                       d)  $0.156\text{N mm/mm}^3$

173. The creep formation by the impact of wheels at the rail end ahead at joints is due to

- a) percussion                      b) drag
- c) coning                      d) creeping

174. Pandrol clip for fastenings of rails to the sleepers is employed in case of

- a) wooden sleepers
- b) steel sleepers
- c) cast iron sleepers
- d) pre-stressed concrete sleepers

175. The ratio of the spread at the leg of crossing to the length of crossing from Theoretical Nose of Crossing is defined as

- a) switch angle
- b) heel divergence
- c) number of crossing
- d) throw of switch

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