



SECTION - A
GENERAL STUDIES

1. Under whose editorship was "Dainik Lokmat" started from Jabalpur in February 1930 ?

- (A) Madhav Agarkar
- ☒ (B) Seth Govind Das
- (C) D. P. Mishra
- (D) Girija Shankar

2. Under what name was Arya Samaj established in Bhopal in 1890 ?

- (A) Jan Sabha
- (B) Lok Sabha
- ☒ (C) Jagriti Sabha
- (D) Mitra Sabha

3. Who is the author of "Papers Relating to the Aboriginal Tribes of the Central Provinces" ?

- ☒ (A) Russel
- (B) Stephen Hislop
- (C) Hiralal
- (D) R. B. Foote

4. Which tribe of Madhya Pradesh mainly worship Meghnath as their deity ?

- ☒ (A) Korku
- (B) Gond
- (C) Baiga
- (D) Oraon

5. When was Bhopal State Praja Mandal established ?

- ☒ (A) 1942
- (B) 1944
- (C) 1946
- (D) 1938

6. The tenure of Up-Lokayukt in Madhya Pradesh is

- ☒ (A) 3 years
- (B) 4 years
- (C) 5 years
- (D) 6 years

7. Who among the following was the longest serving Chief Secretary of Madhya Pradesh ?

- (A) H. S. Kamath
- ☒ (B) R. P. Naronha
- (C) B. K. Dubey
- (D) K. S. Sharma

8. Which was the first State in India to implement Panchayati Raj as per 73rd Constitutional Amendment Act ?

- (A) Gujarat
- (B) Maharashtra
- (C) Uttar Pradesh
- ☒ (D) Madhya Pradesh





9. Which of the following is not a part of the committee to select State Information Commissions ?

- (A) Chief Minister
- (B) Leader of Opposition Legislative Assembly
- (C) Cabinet Member nominated by CM
- (D) Chief Justice of High Court

10. According to 'Madhya Pradesh Govansh Vadh Pratishedh Adhiniyam 2004', which of the following is/are included under definition of "Cow progeny" ?

- (A) Cows only
- (B) Cows and Calves
- (C) Cows, Bulls, Bullocks and Calves
- (D) Cows, Bulls and Calves

11. Under which Rule of the Madhya Pradesh Panchayat Provisions (Extension to Scheduled Areas) Rules 2022 (PESA Act), the Gram Sabha has the right to return the land of Scheduled Tribes transferred by fraud ?

- (A) Rule - 19
- (B) Rule - 20
- (C) Rule - 21
- (D) Rule - 22

12. In which year was the State Level Kol Tribe Development Agency whose name has been changed to Kol Tribe Development Authority formed ?

- (A) Year 2009
- (B) Year 2010
- (C) Year 2011
- (D) Year 2012

13. How many districts of Madhya Pradesh were benefited under the Pradhan Mantri Jan Jati Nyay Mahaabhiyan (P.M. Janman-2) in the year 2024-25 ?

- (A) 20
- (B) 24
- (C) 28
- (D) 30

14. Which Section of the Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act 1989 provides for punishment for dereliction of duty by a public servant who is not a member of a Scheduled Caste or Scheduled Tribe ?

- (A) Section - 2
- (B) Section - 3
- (C) Section - 4
- (D) Section - 5



15. What is the total number of Chairperson, Vice Chairperson and Members prescribed in the Tribal Advisory Council ?
(A) 10
(B) 15
(C) 20
(D) 25
16. The Southern Boundary of the Malwa Plateau is defined by which geomorphological feature ?
(A) Vindhyan range
(B) Satpura range
(C) Aravali range
(D) Deccan plateau
17. The most significant geomorphological feature of the Bundelkhand region in Madhya Pradesh
(A) Residual hills
(B) Erosion surfaces
(C) Alluvial plains
(D) Conical hills
18. Which element is less in black soil ?
(A) Iron and lime
(B) Phosphorus and nitrogen
(C) Carbon and hydrogen
(D) Sulfur and zinc
19. In which districts are tropical moist deciduous forests found in Madhya Pradesh ?
(A) Murena, Shivpuri, Gwalior
(B) Balaghat, Mandala, Shahdol
(C) Panna, Tikamgarh, Chattarpur
(D) Mandsaur, Dhar, Bhind
20. On which river is the Rajghat Dam built ?
(A) Narmada
(B) Betwa
(C) Sindh
(D) Chambal
21. Which of the following e-governance project was started by the Government of Madhya Pradesh ?
(A) Lok Mitra
(B) Nai Disha
(C) Gyandoot
(D) Jan Mitra
22. Method of data storage consisting of a loop of flexible celluloid like material that can store data in the form of electro-magnetic charges, is known as
(A) Tape Storage (TS)
(B) Floppy Disks (FD)
(C) Optical Disks (CD)
(D) Hard Disks (HD)





23. With respect to CPU, the computer memory hierarchy is organised as follows
- (A) Primary Memory → Secondary Memory → Processor Registers → Cache Memory ✓
 - ✓(B) Processor Registers → Cache Memory → Primary Memory → Secondary Memory
 - (C) Cache Memory → Processor Registers → Primary Memory → Secondary Memory
 - (D) Primary Memory → Cache Memory → Secondary Memory → Processor Registers ✗
24. Which of the following is **not** a type of 'Machine Learning' ?
- (A) Supervised Learning
 - (B) Unsupervised Learning
 - ✓(C) Refurbished Learning
 - (D) Reinforcement Learning
25. With the advancements in Artificial Intelligence (AI) a new challenging phenomenon has emerged which refer to those audio, video or images that are generated by AI and it never actually existed in the real world. This is known as
- ✓(A) Deep fake
 - (B) K – anonymity
 - (C) L – diversity
 - (D) Biases in AI
26. In which of the following districts of Madhya Pradesh does the Baiga tribe reside ?
- (A) Jhabua ✗
 - ✓(B) Chindwara
 - (C) Hoshangabad
 - (D) Dindori
27. Which of the following is the special backward tribes of Madhya Pradesh ?
- ✓(A) Saharia
 - (B) Gond
 - (C) Bhil
 - (D) Kol
28. The Korku tribe is mainly found in
- (A) Jhabua
 - ✓(B) Betul
 - (C) Shahdol
 - (D) Guna
29. According to the 2011 Census, the percentage of Scheduled Tribe population in the total population of Madhya Pradesh was
- (A) 21.09
 - (B) 22.01
 - ✓(C) 21.20
 - (D) 22.50





30. Saharia tribe mainly resides in which of the following districts ?

- (A) Jhabua
- (B) Khargone
- ☒ (C) Shivpuri
- (D) Khandwa

31. Which is the combined inter-state project of Madhya Pradesh, Uttar Pradesh and Bihar ?

- (A) Harsi Project
- (B) Bansagar Project
- ☒ (C) Rajghat Project
- (D) Sindh Project

32. Where was Chandni thermal power station established ?

- (A) Chhindwara
- (B) Dewas
- (C) Amalai
- ☒ (D) Nepanagar

33. In which area is Amarkantak thermal power plant located ?

- (A) Baidhan
- (B) Budhar
- (C) Chachai
- ☒ (D) Pather Kheda

34. What is the percentage of urban population in Madhya Pradesh according to the 2011 Census ?

- (A) 21 to 23 percentage
- ☒ (B) 24 to 26 percentage
- (C) 27 to 29 percentage
- (D) 30 to 32 percentage

35. Which of the following districts of Madhya Pradesh shares its borders with Uttar Pradesh and Chhattisgarh both ?

- (A) Anuppur
- ☒ (B) Singrauli
- (C) Rewa
- (D) Shahdol

36. Which archaeologist discovered the human skull fossil from Hathnora ?

- (A) Manoranjan Ghosh
- ☒ (B) Arun Sonkia
- (C) V. S. Wakankar
- (D) K. D. Vajpai

37. At which place did Vrishnag, the founder of the Naga dynasty, established his dynasty ?

- (A) Ujjaini
- (B) Gwalior
- (C) Vidisha
- (D) Jabalpur





38. The famous poet and dramatist Rajashekhar received the patronage of which Kalchuri king ?

- (A) Yuvraj dev
- ☒ (B) Kokalla
- (C) Balharsh
- (D) Karna

39. Which Muslim commander defeated the Parmar ruler Mahalakdev and captured Ujjain ?

- (A) Mir Khwaza
- (B) Ain-ul-Mulk
- (C) Husang Shah
- (D) Khan Mohammad Shah

40. Who was the founder of the Faruki dynasty of Nimar ?

- (A) Malik Raja
- ☒ (B) Dilawar Khan
- (C) Nasir Khan
- (D) Mohammad Shah

41. Madhya Pradesh Forest Development Corporation was established in

- (A) 24 July 1975
- (B) 15 August 1984
- (C) 27 August 2008
- (D) 10 July 1975

42. Which department was constituted in the year 2001 for the purpose of better utilisation of biological (organic) resources in Madhya Pradesh ?

- (A) Madhya Pradesh State Biodiversity Board
- (B) Madhya Pradesh Council of Biotechnology
- ☒ (C) Madhya Pradesh Biodiversity Department
- (D) Madhya Pradesh Biodiversity Ministry

43. On what basis was the division of forests done in Madhya Pradesh ?

- (A) Based on the tropics
- (B) Based on vegetation and geographical region
- ☒ (C) Based on the forest division
- (D) On the basis of forest villages

44. In the marketing year of 2024-25 which crop is included in price support scheme first time at minimum support price of earning value ?

- ☒ (A) Chickpea (Gram)
- (B) Soyabean
- (C) Lentil
- (D) Mustard



45. What was the Gross State Domestic Product (GSDP) of Madhya Pradesh at current prices for the financial year 2024-25 ?

- (A) Rs. 13,53,809 crore
- (B) Rs. 14,00,000 crore
- ☒ (C) Rs. 15,03,395 crore
- (D) Rs. 16,00,000 crore

46. Who has been awarded the Nobel Prize in Literature 2025 ?

- (A) Annie Ernaux
- (B) Han Kang
- ☒ (C) Laszlo Krasznahorkai
- (D) Louise Gluck

47. Who became the first person to successfully ski down Mount Everest without supplemental oxygen ?

- (A) Reinhold Messner
- (B) Andrzej Bargiel
- (C) Bartek Bargiel
- ☒ (D) Donald Tusk

48. In which Indian city has it been announced that the 2030 Commonwealth Games will be held ?

- (A) New Delhi
- (B) Mumbai
- (C) Ahmedabad
- (D) Chennai

49. Who is the author of the novel "Sarag-Narak Yan Che" ?

- (A) Makhanlal Chaturvedi
- (B) Balkavi Bairagi
- (C) Ram Narayan Upadhyay
- ☒ (D) Jagdish Chandra Joshila

50. In which district of Madhya Pradesh is India's first Pradhan Mantri Mega Integrated Textile Region and Apparel (PM MITRA) Park being established ?

- ☒ (A) Indore
- (B) Khargone
- (C) Ujjain
- (D) Dhar

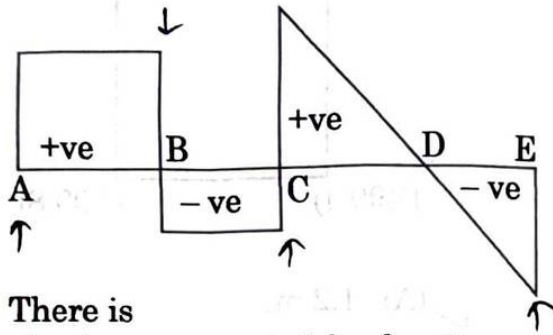


SECTION - B CIVIL ENGINEERING

51. National Clean Air Programme (NCAP) was launched by
(A) CPCB
(B) PRANA
(C) MoEFCC
(D) NAAQM
52. Which test is not carried out to determine the physical characteristics of sewage?
(A) Turbidity
(B) Colour
(C) Odour
(D) pH
53. Air-binding phenomenon in rapid sand filter is an operational trouble. This may occur due to
(A) Mud-ball formation
(B) Excessive negative pressure
(C) Low temperature
(D) Sand incrustation
54. Generally, _____ of the used water may be expected to reach to the sewers unless data is available.
(A) 50%
(B) 65%
(C) 80%
(D) 99%
55. Which of the following Act is not in preview of the National Green Tribunal (NGT) - 2010?
(A) The Biological Diversity Act, 2002
(B) The Motor Vehicles Act, 1988
(C) The Environment (Protection) Act, 1986
(D) The Water (Prevention and Control of Pollution) Act, 1974
56. Stiffness matrix method is the matrix version of
(A) Strain energy method
(B) Moment distribution method
(C) Kani's method
(D) Slope deflection method
57. A simply supported beam of span "l" subjected to point load at centre, the deflection can not be obtained by
(A) Mohr's Moment Area Method
(B) Conjugate Beam Method
(C) Macaulay's Method
(D) Shear Centre Method



58. Consider the following statement with reference to a continuous beam supported at A, C and E, for which shear force diagram is shown in the below figure.



There is

1. A concentrated load acting at point B.
2. A concentrated load acting at point D.
3. A uniformly distributed load acting on the portion CE.

Which of these statements are correct?

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



59. The crippling load borne by a column with an actual length (l) with one end fixed and the other end is free

- (A) $4\pi^2 EI/l^2$
(B) $\pi^2 EI/4l^2$
(C) $\pi^2 EI/l^2$
(D) $2\pi^2 EI/l^2$

60. Match List – I with List – II and choose the correct answer using the options given below.

List – I

List – II

- | | |
|---------------------------------|-------------------------|
| 1. Slope deflection method | i. Force method |
| 2. Moment distribution method | ii. Displacement method |
| 3. Method of three moments | |
| 4. Castigliano's second theorem | |

- (A) 1 – i, 2 – ii, 3 – i and 4 – ii
(B) 1 – ii, 2 – i, 3 – ii and 4 – i ✓
(C) 1 – i, 2 – i, 3 – ii and 4 – ii ✓
(D) 1 – ii, 2 – ii, 3 – i and 4 – i

61. A line AB measured along sloping ground, distance between A and B along slope is 13 m and the difference in elevation between A and B is 5 m. What is the horizontal distance between A and B?

- (A) 8 m
(B) 11.5 m
(C) 12 m
(D) 18 m



62. The magnetic bearing of a line PQ is $S 46^{\circ}15' E$. Calculate the true bearing of PQ, if the magnetic declination is $3^{\circ}15' W$.

(A) $S 3^{\circ}15' W$
 (B) $S 43^{\circ} E$
 (C) $S 46^{\circ}15' W$
 (D) $S 49^{\circ}30' E$

63. Match the types of EDM instruments with wavelength used.

Wavelength **Type of EDM instrument**

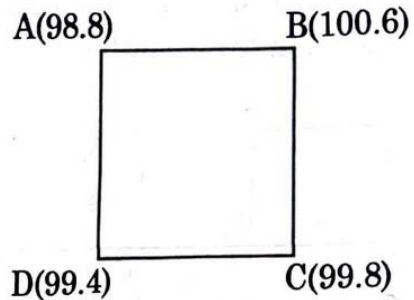
a. Microwave i. Geodimeter
 b. Visible light ii. Distomat
 c. Infrared iii. Tellurometer

(A) a - iii, b - i, c - ii
 (B) a - i, b - ii, c - iii
 (C) a - ii, b - iii, c - i
 (D) a - iii, b - ii, c - i

64. In trigonometric levelling, horizontal distance between two stations P and Q is 100 m. The vertical angle observed from P to the target at Q at a height of 5 m is 45° . Find out the RL of Q, if the RL of instrument axis at P (Horizontal line of collimation) is 100 m.

(A) 95 m
 (B) 105 m
 (C) 195 m
 (D) 205 m

65. A square figure of 9 sq.m. is shown, the contour line of 100 m. elevation will intersect AB at _____ from A.



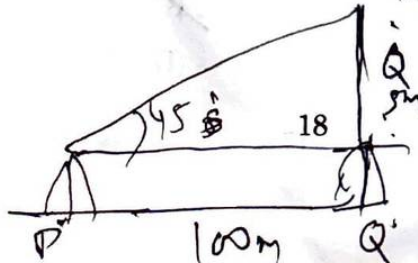
(A) 1.2 m.
 (B) 1.8 m.
 (C) 2.0 m.
 (D) 2.2 m.

66. In brick masonry, which type of bond provides the maximum structural strength and stability for wall thicker than $1\frac{1}{2}$ brick?

(A) Stretching bond
 (B) Heading bond
 (C) English bond
 (D) Flemish bond

67. Identify the correct plumbing and drainage system from the following, where in all the traps are completely ventilated by separate ventilating pipes and thus four pipes are necessarily required in the system.

(A) Single stack system
 (B) One pipe system
 (C) Two pipe system
 (D) Partially ventilated single stack system





68. According to National Building Code of India, a building is classified as "Type 3 construction", where all structural components have _____ fire resistance.

(A) 1 - hour

(B) 2 - hours

~~(C) 3 - hours~~

(D) 4 - hours

69. The type of plastering defect in which small patches of plaster swelling out beyond the plaster surface due to improper slaking of lime particles in the plaster is known as

(A) Cracking

~~(B) Blistering~~

(C) Efflorescence

(D) Peeling



70. Which type of wall is generally recommended in a building, for achieving effective sound insulation in a building?

(A) Solid Brick Wall

~~(B) Cavity Wall~~

(C) Reinforced Concrete Wall

(D) Stone Masonry Wall

71. The Field Capacity and Optimum Moisture Content of a soil having density of 1.3 g/cc are 28% and 16% respectively. If the effective depth of rootzone is 70 cm, then water available for evapotranspiration is

(A) 22.29 cm

(B) 25.4 cm

~~(C) 10.92 cm~~

(D) 14.56 cm

72. Muskingum method is used in

~~(A) Hydrologic Channel Routing~~

(B) Hydraulic Reservoir Routing

(C) Hydraulic Channel Routing

(D) Hydrologic Reservoir Routing

73. Superpassage is a canal cross drainage structure in which

~~(A) Canal water flows under pressure below a drain~~

(B) Drain water flows with free surface below a canal ✓

(C) Drain water flows under pressure below a canal ✓

~~(D) Canal water flows under gravity below a drain~~ ✓

River
canal



74. A culvert is designed for a flood magnitude of 100 years and a useful life of 20 years. The risk involved in the design of the culvert (in %) is

- (A) 81.8%
- ☒ (B) 18.2%
- (C) 50%
- (D) 66%



75. An effective rainfall of 2 hrs duration produced a flood hydrograph peak of $200 \text{ m}^3/\text{s}$. The flood hydrograph has a base flow of $20 \text{ m}^3/\text{s}$. If the spatial average rainfall in watershed for the duration of storm is 2 cm and the average loss rate is 0.4 cm/hr, the peak of 2 hrs unit hydrograph (m^3/s) is

- (A) $100 \text{ m}^3/\text{s}$
- (B) $75 \text{ m}^3/\text{s}$
- ☒ (C) $150 \text{ m}^3/\text{s}$
- (D) $300 \text{ m}^3/\text{s}$

76. Which of the following statement is incorrect related to road drainage?

- (A) Aqueducts culverts are type of transverse drainage
- ☒ (B) Kerb channel drain is type of transverse drainage
- (C) Longitudinal interception drain is a type of subsurface drainage
- (D) Longitudinal water table lowering drain is example of subsurface drainage

77. Select the incorrect statement for Rigid Pavement from the following.

- (A) The spacing of contraction joints should be limited to 4.5 m
- (B) Longitudinal joints are required in pavements of width greater than 4.5 m
- ☒ (C) Longitudinal joints are provided for transverse contraction and warping
- (D) Expansion joints are provided to prevent top-down cracking during the night hours

78. Which of the following is not an approach to the task of treating roads with bad road accidents records?

- ☒ (A) Single site scheme
- (B) Total action scheme
- (C) Route action scheme
- (D) Mass action scheme

79. As per IS 1944-Part I and II-1970, lighting for bridges and flyovers is classified as which of the following groups?

- (A) Group D
- (B) Group A
- (C) Group E
- ☒ (D) Group B



80. As per MORTH, granular sub-base material is classified in how many grades ?

- (A) 4
- (B) 3
- (C) 6
- (D) 5

81. For CPM, there are two methods to draw network, they are

- (A) DON and AON
- (B) ABC and CAD
- (C) PERT and GERT
- (D) AON and AOA

82. _____ is any temporary structure used to support the forms for concrete.

- (A) Formwork
- (B) Scaffolding
- (C) Shoring
- (D) Falsework

83. Liquidated damage,

- (A) It is an amount of compensation payable by a contractor to the owner due to liquid seepage in faulty construction
- (B) It is an amount of compensation payable by a contractor to the owner due to delayed construction
- (C) It is an amount of compensation payable by a contractor to the owner related to all real damages
- (D) All of the above

84. In construction industry there are mainly two possible causes for litigation,

- (A) Bad construction or bad contractual arrangements
- (B) Bad weather or bad material
- (C) Quality construction or quality contractual arrangements
- (D) Impartial or un-biased arbitrator



85. Roll crushers are

- (A) Primary crushers
- (B) Secondary crushers
- (C) Tertiary crushers
- (D) All round crushers

86. The First Indian Remote Sensing Satellite, IRS - 1A was launched in

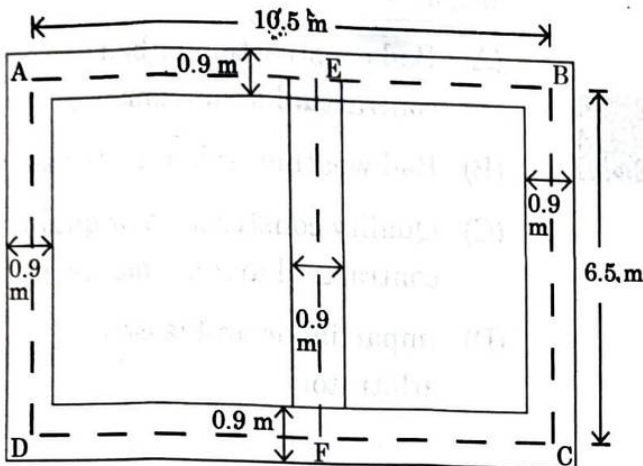
- (A) January, 1988
- (B) March, 1988
- (C) August, 1988
- (D) December, 1988

87. The provision of contingencies in detailed estimate usually in the range of _____ of the estimated cost.

- (A) 1 - 2%
- (B) 3 - 5%
- (C) 6 - 8%
- (D) 9 - 10%



88. The figure given below is for foundation trench. What is the net centre-line length ?



- (A) 39.60 m
(B) 40.50 m
(C) 34.00 m
(D) 38.70 m

$$\begin{array}{r} 21 \\ 12 \\ \hline 34 \\ 1.8 \\ \hline \end{array}$$

89. Match correctly, units of measurements of various construction of Brickwork.

Brickwork Units of measurements

- a. Brickwork in foundation, plinth and super structure i. r.m
b. Brickwork in partition wall ii. cu m
c. Work in corbels, cornices and grooves iii. sq m

- (A) a - iii, b - ii, c - i
(B) a - ii, b - i, c - iii
(C) a - ii, b - iii, c - i
(D) a - iii, b - i, c - ii

90. A person purchases a plot of land having an area of 5000 m^2 at Rs. 2,000/- per m^2 . He then subdivides the plot and net area of all sub-plots after making provision for service roads and common plot works out to 4000 m^2 . If he expects a return of 10% on his investment and if all sub-plots are likely to be sold out in a period of 2 years, at what minimum price sub-plots to sell out without loss ?

- (A) 2025
(B) 2500
(C) 2725
(D) 3025

$$\begin{array}{r} 5000 \times 2000 \\ = 10 \times 10^6 \\ 1210 \quad 3025 \\ \hline 4 \end{array}$$

91. Water is flowing through a pipe 1500 m long with a velocity of 0.8 m/s. What should be the diameter of pipe, if the loss of head due to friction is 8.7 m ?

Take f for the pipe as 0.01.

- (A) 225 mm
(B) 22.5 mm
(C) 28.4 mm
(D) 284 mm

$$\begin{array}{r} 0.01 \times 1500 \\ \times 0.9 \\ \times 0.9 \\ \hline 2 \times 10 \times 8.7 \\ 15 \times 8.7 \\ \hline 20 \times 8.7 \end{array}$$

92. Which of the following is not a minor loss in pipe flow ?

- (A) Sudden loss due to expansion or contraction
(B) Loss due to friction
(C) Loss due to bend or pipe fitting
(D) Loss due to obstruction in pipe

$$\begin{array}{r} 32 \\ \times 1.8 \\ \hline 490 \end{array}$$

$$0 \times 10^6$$

$$\begin{array}{r} 2500 \\ \times 4000 \\ \hline 100 \end{array}$$

$$\begin{array}{r} 1.1 \\ \hline 4 \end{array} 2$$



93. Find the valid assumptions for gradually varied flow equation.

- i. There should be zero bed slope.
- ii. Energy correction factor α is zero.

iii. Discharge is constant.

iv. Channel is prismatic.

(A) Both i and ii

(B) Both i and iii

(C) Both iii and iv

(D) Both i and iv

94. Hydraulic efficiency of turbine is

(A) Ratio of power at shaft of turbine verses power delivered by water to the turbine

(B) Ratio of power delivered by water to the turbine verses power at shaft of the turbine

(C) Ratio of power delivered to runner verses power supplied at inlet

(D) Ratio of power supplied at inlet verses power delivered to runner

95. In a pressure penstock 4500 m long water is flowing at 4 m/sec. If the velocity of the pressure wave travelling in the pipe due to sudden complete closure of a valve at the downstream end is given as 1500 m/sec. Find the maximum pressure rise.

(A) 6 N/m²

(B) 6 N/mm²

(C) 6 MN/m²

(D) 6 MN/mm²



96. The moment of several concurrent coplanar forces about any point "O" in their plane equals the moment of their resultant about point "O". This is known as

(A) Varignon's theorem

(B) Law of parallelogram

(C) Law of triangle

(D) Law of polygon

97. The modular ratio of any two materials is the ratio of

(A) Linear stress to linear strain

(B) Shear stress to shear strain

(C) Their modulus of elasticities

(D) Their modulus of rigidities $m = \frac{E_1}{E_2}$

98. The strain energy stored by a member, when work is done on it to deform it is called

(A) Modulus of resilience

(B) Proof resilience

(C) Resilience

(D) Shear resilience

99. The moment of inertia for a rectangular section having width "b" and depth "d" about its bottom base parallel to X-X axis is

(A) $bd^3/2$

(B) $bd^3/12$

(C) $bd^3/4$

(D) $bd^3/3$



$$\frac{bd^3}{12} + bd \left(\frac{d}{2} \right)^2 = \frac{bd^3}{12} + \frac{bd^3}{4} = \frac{bd^3}{3}$$

[P.T.O.]

RSAE/2025/C-B

60 m/s

W/m

$$2 \times V \times L \times g$$

6x

$$\frac{4500 \times 4}{1500} \times 1000 = 12000$$

$$\frac{4}{12} \times \frac{1}{12} = \frac{1}{36}$$

$$\frac{bd^3}{12} + \frac{bd^3}{4} = \frac{bd^3}{3}$$



100. There are two statements below, one labelled as Statement [I] and the other as Statement [H]. Examine which of the statement is correct.

Statement [I] : In a simple bending theory of a elastic beam, stress and strain varies linearly across the beam depth.

Statement [H] : As per Hooke's law, stress is proportional to strain within the elastic limit.

- (A) Both the statements are individually true and Statement [H] is the correct explanation of Statement [I]
- (B) Both the statements are individually true but Statement [H] is not the correct explanation of Statement [I]
- (C) Statement [I] is true but Statement [H] is false
- (D) Statement [H] is true but Statement [I] is false



101. As per the provision of National Building Code of India, what is the minimum headroom required for a good staircase in a residential building ?

- (A) 1.50 m
- (B) 1.8 m
- (C) 1.02 m
- (D) 2.1 m

102. As per IS 383:1970, what is the maximum particle size for the fine aggregate used in concrete ?

- (A) 20 mm
- (B) 4.75 mm
- (C) 10 mm
- (D) 2.36 mm

103. Which of the following rock is primarily formed by the accumulation of plant or animal remains and classified as sedimentary rock ?

- (A) Granite
- (B) Basalt
- (C) Limestone
- (D) Slate

104. According to Indian Standard, which IS code provides the guidelines for proportioning concrete mix of various grade for structural application ?

- (A) IS 456:2000
- (B) IS 10262:2019
- (C) IS 516:2021
- (D) IS 383:1970



$$\begin{aligned} & 0.95 + 50 \times 1.640 = 328 \\ & 37 \times 849 \\ & 0.95 + 30 \times 230 = 100 \\ & 2 + \pi \end{aligned}$$

$$2 \times 314 \times 412 \times 9 = 5 \times 53$$

105. Which IS code is used for physical testing of Hydraulic cement ?

- (A) IS-456
(B) IS-383
(C) IS-4031
(D) IS-516

106. Determine the depth of neutral axis for the section of 230 mm width, 450 mm overall depth provided with 3 bars of 20 mm diameter, having an effective cover of 50 mm.

Use M30 grade of concrete and Fe 500 steel.

- (A) 165 mm
(B) 212 mm
(C) 225 mm
(D) 236 mm



$$\begin{aligned} & 0.46 \\ & 4 \\ & 184 \end{aligned}$$

107. The economical depth 'd' of plate girder is given by which of the following options ?

Where k is constant yield strength of steel

- (A) $d = (Mk / f_y)^{1/5}$
(B) $d = (Mk / f_y)^{1/2}$
(C) $d = (Mk / f_y)^{1/3}$
(D) $d = (Mk / f_y)^2$

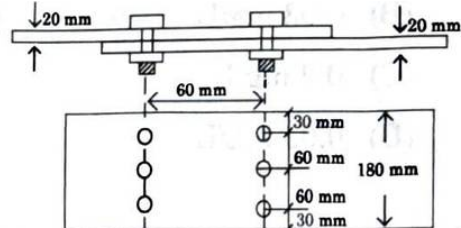
108. The magnitude of shear in beam column joint is find out by which one of the following ?

V_j is shear in the joint, σ_y is steel strength, A_s is area of tension steel in the beam and V_{col} is shear in column.

- (A) $V_j = \sigma_y A_s + V_{col}$
(B) $V_j = \sigma_y A_s / V_{col}$
(C) $V_j = \sigma_y A_s - V_{col}$
(D) $V_j = \sigma_y A_s * V_{col}$

109. Find the design strength of plate in joints as shown in fig. below.

Use M20 bolts of grade 4.6 and Fe 410 (E 250) plates are used.



- (A) 670.50 kN
(B) 673.05 kN
(C) 672.12 kN
(D) 665.70 kN

110. Determine loss of strain due to elastic shortening of prestress in a pretensioned prestressed concrete beam of 8 m span to carry a load of 5000 N/m.

The beam is prestressed with 1.8 MN at transfer and the cable has a parabolic profile with maximum eccentricity of 10 cm at the middle of the span.

- (A) 2.25×10^{-4}
(B) 2.75×10^{-4}
(C) 3.25×10^{-4}
(D) 7.25×10^{-4}

$$\begin{aligned} & 40 \\ & 1.8 \\ & 2.2 \\ & 1.2 \\ & 2.2 \end{aligned}$$



111. Which unit can be used as a secondary treatment method for treating wastewater for small communities ?

- (A) Rotating biological contractor
- (B) Settling tank
- (C) Reverse osmosis
- (D) None of the above

112. As per IS : 10500 : 2012 acceptable limit of Aluminium in drinking water is

- (A) 0.3 mg/L
- (B) 0.03 mg/L
- (C) 0.2 mg/L
- (D) 0.02 mg/L



113. Duties of Ministry of Environment, Forest and Climate Change (MoEFCC) in SWM Rules, 2016 India includes

- (A) Overall monitoring the implementation of SWM rules in Country
- (B) Segregate waste and store separately and handover to waste picker for composting
- (C) Identification of MSW landfill sites
- (D) Collection, transportation, processing and disposal of MSW on National scale

114. Which is the code of basic requirements for water supply, drainage and sanitation by Bureau of Indian Standards ?

- (A) IS 1172 : 1993
- (B) IS 2064 : 1993
- (C) IS 4878 : 1986
- (D) IS 9668 : 1990

115. Which of the following pollutants are most responsible for acid rain formation ?

- a. Ozone
- b. Sulphur dioxide
- c. Carbon monoxide
- d. Nitrogen dioxide

Choose the correct answer from the options given below :

- (A) a, b, d
- (B) b, c, d
- (C) b, d
- (D) a, b, c

116. What is design period for state highways ?

- (A) 20 years
- (B) 15 years
- (C) 30 years
- (D) 50 years

117. In which road development plan 'Expressway (EW)' is introduced as a non-urban road type ?

- (A) Third 20-years road plan
- (B) Fourth 20-years road plan
- (C) Fifth 20-years road plan
- (D) Bombay road plan



21
23.5
24
20

U

118. The Kerbs of all islands located in the line of traffic flow are generally painted with black and white strips. The width of one strip generally used is

- (A) 300 mm
- (B) 200 mm
- (C) 700 mm
- (D) 500 mm

119. Which of the following repair techniques can be used to seal shallow fine to medium-width cracks and prevent concrete breaking out at spalls?

- (A) Partial depth repairs
- (B) Crack cross stitching
- (C) Crack sealing with epoxy resin
- (D) Crack and joint resealing with flexible sealant

120. Seven-day, 24-hour traffic volume studies were carried out at a control count station, and the daily traffic volumes (in PCUs) from Monday to Sunday were measured as 21000, 23000, 23500, 24000, 20000, 18000 and 16000. The traffic volume at a coverage count station in the influence area of the control count station was measured as 14000 PCU based on 24-hour volume survey on Thursday of the same week. Calculate the adjusted ADT (i.e. weekly average) for the coverage count station.

- (A) 15124 PCU
- (B) 16124 PCU
- (C) 12124 PCU
- (D) 10824 PCU

21
23.5
24
20
18
16
145.5

121. The probability that a 100 year flood may not occur at all during 50 years life of a project is

- (A) 0.6
- (B) 0.5
- (C) 0.75
- (D) 0.45



122. Which of the following expression was given by Von Karman for estimation of hydrodynamic force (P_e) in gravity dams?

H = depth of water above the base,
 α_h = horizontal acceleration co-efficient, w = unit wt. of water and C = dimensionless co-efficient depending upon slope of the upstream face and depth of reservoir

- (A) $2.555 \alpha_h w H^2$
- (B) $0.555 \alpha_h w H^2$
- (C) $2 \alpha_h w H^3$
- (D) $C \alpha_h w H$

123. The flow duration curve is a plot of

- (A) Accumulated flow against time
- (B) Discharge against time in chronological order
- (C) The base flow against the percentage of times the flow is exceeded
- (D) The stream discharge against the percentage of times the flow is equalled or exceeded



124. Based on the alignment criteria of constructing a canal in catchment area, the type of canal having maximum number of cross drainage work is

- (A) Watershed / Ridge canal
- (B) Side slope canal
- ☒ (C) Contour canal
- (D) Branch canal

125. Sprinkler irrigation system is suitable for

- ☒ (A) The land gradient is steep and soil is easily erodible
- (B) The soil is having low permeability
- (C) The water table is low
- (D) The crops to be grown have deep roots

126. Dynamic compaction is most effective for

- (A) Organic soil
- (B) Fine grained soil
- ☒ (C) Clayey soil
- ☒ (D) Granular soil

127. Taylor stability charts are based on the total stresses using the

- ☒ (A) Friction circle method
- (B) Method of slices
- (C) Effective stress analysis
- (D) Considering the equilibrium of forces and moment

128. The maximum and minimum void ratio of a granular soil are 0.95 and 0.45. What is in-situ void ratio of soil, if relative density of soil is 80%?

- (A) 0.45
- (B) 0.32
- (C) 0.62
- ☒ (D) 0.55

129. For a flexible footing resting on a saturated clay soil, the contact pressure distribution subjected to uniformly distributed load is

- (A) Uniform across the base
- (B) Maximum at the centre and minimum at edge
- ☒ (C) Maximum at the edge and minimum at centre
- (D) None of the above

130. The negative skin friction in context of pile foundation is

- (A) Soil surrounding a pile settles less than the pile
- (B) Uplift force acts along a pile
- ☒ (C) Soil surrounding a pile settles more than the pile
- (D) Uplift force acts along soil and a pile

$$\begin{array}{r} 0.95 \\ - 0.45 \\ \hline 0.50 \end{array}$$
$$\begin{array}{r} 0.95 \\ - 0.45 \\ \hline 0.50 \end{array}$$

$$\begin{array}{r} 0.95 \\ - 0.55 \\ \hline 0.40 \end{array}$$
$$\begin{array}{r} 0.45 \\ - 0.55 \\ \hline 0.10 \end{array}$$





131. For construction equipments operation, load factor generally vary from

- (A) 3 to 7%
- (B) 30 to 70%
- (C) 13 to 17%
- (D) 13 to 70%

132. Generally, a minimum period of _____ days shall be given for submission of open tenders from the date of publication of the tender notice or from the date of uploading of the tender document on the portal, whichever is later.

- ~~(A) 07~~
- (B) 14
- ~~(C) 21~~
- (D) 28

133. In M.P. Store Procurement Procedure, RFP, means

- (A) Requirement For Procurement
- (B) Request For Proposal
- ~~(C) Requisition For Procurement~~
- (D) Request For Procedure

134. On site, working persons should have ample _____ for free working. It makes them free to work and creates feeling of safety against any accident.

- ~~(A) Space~~
- (B) Time
- (C) Knowledge
- (D) Food



135. _____ was passed in 1948.

- (A) The Arbitration Act
- (B) The Minimum Wages Act
- (C) The Workers Compensation Act
- (D) The Industrial Dispute Act

136. Fluid pressure can not be measured by

- (A) Bourdon pressure gauge
- (B) Differential manometer
- ~~(C) Venturimeter~~
- (D) Piezometer

137. Fluid motion described by which of the following methods?

- ~~(A) Lagrangian method and Eulerian method~~
- (B) Lagrangian method and Bernoulli's method
- (C) Eulerian method and Bernoulli's method
- (D) None of the above

138. For Navier-Stokes equation

- ~~(A) Gravity, pressure, viscosity, turbulence and compressibility forces are considered~~
- (B) Gravity, pressure and viscosity forces are considered
- (C) Gravity, pressure and compressibility forces are considered
- (D) Gravity, pressure, viscosity and compressibility forces are considered



$$\frac{87}{1.5} = 58$$

$$1.7$$

2

139. For the derivation of Bernoulli's equation, which of the following assumption is wrong?
- (A) The liquid is ideal and incompressible ✓
- (B) The flow is steady and continuous ✓
- (C) The flow is 3-dimensional and velocity is uniform over cross-sectional area
- (D) Only gravity and pressure forces are considered ✓



140. Drop of pressure for a given length (L) of circular pipe in viscous flow determined by
- (A) Hagen-Poiseuille formula ✓
- (B) Prandtl mixing length formula
- (C) N-stokes formula
- (D) Lagrangian formula

141. A circular RCC girder has a rectangular section with a width of 500 mm and overall depth 1000 mm. At a particular section, the fractured values of bending and torsional moments are 150 and 30 kNm respectively. The ultimate shear force at the section is 150 kN. Analyse the design moment and shear force for which the beam has to be designed.

(A) 203 kNm and 246 kN

(B) 215 kNm and 246 kN ✓

(C) 53 kNm and 246 kN ✗

(D) 150 kNm and 246 kN ✗

142.

A reinforced concrete beam has a support section with a width 250 mm and effective depth 500 mm. The support section is reinforced with 3 bars of 20 mm diameter on the tension side and 8 mm diameter 2 legged stirrups are provided at a spacing of 200 mm c/c. Using M20 grade concrete and Fe 415 steel, calculate the shear strength of the support section. (Given $\tau_c = 0.56 \text{ N/mm}^2$ for M20 and $p_t = 0.75$, $A_{sv} = 100 \text{ mm}^2$)

(A) 160.15 kN

(B) 160.26 kN

(C) 162.55 kN

(D) 161.15 kN

143.

The effective span 'L' for the staircase (where G is going, X and Y are half width of landings) to be considered according to IS 456 code

(A) $L = G + X - Y$

(B) $L = G + X + Y$ ✓

(C) $L = G - X - Y$

(D) $L = G - X + Y$

144.

Determine the area of foundation of a square column carrying a service load of 1000 kN.

The depth of the footing below the ground level is 1.5 m, the gross bearing capacity of soil is 100 kN/m^2 , dry density is 17 kN/m^3 and angle of repose is 29° .

(A) 21.91 m^2

(B) 17.35 m^2

(C) 13.87 m^2

(D) 18.78 m^2

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$$1.6 \times \frac{30 \times 10}{500}$$

$$150 + 1.6 \times \frac{17 \times 30}{2}$$

$$1.6 \times \frac{30 \times 10}{500}$$

$$\frac{1000}{100} = 10$$

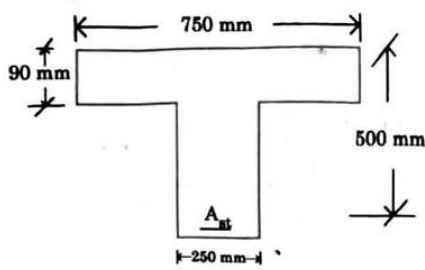
$$\frac{4 \times 10}{5} = 8$$

$$\frac{1 \times 1.5}{3 \times 0.5} = 1$$

16.5 (77)



145. Calculate the A_{st} (Area of steel) in mm^2 for the T-beam having the following data :
 Width of flange = 750 mm, Breadth of beam = 250 mm, Effective depth of beam = 500 mm, Thickness of flange = 90 mm, Applied moment = 130 kNm, Use M20 concrete and Fe 415 steel as shown in fig.



- (A) 1364
 (B) 938
 (C) 1154
 (D) 1290
146. In the equation of equilibrium for a slice in Bishop's simplified method, which forces are considered ?
 (A) Only normal forces
 (B) Vertical and horizontal forces without moments
 (C) Normal forces and shear forces
 (D) Only shear forces
147. In Westergaard's theory, compared to Boussinesq's theory, the vertical stress beneath a point load, for $r/z < 1.5$, is (where z = depth below the G.L. and r = radius/distance from point load)
 (A) Always greater at all points
 (B) Always less at all points
 (C) Less near the surface, but more at greater depths
 (D) Greater near the axis of loading, but less off-axis

148. A soil sample has preconsolidation pressure of 200 kPa and present effective vertical stress of 100 kPa. What is the Over Consolidation Ratio (OCR) ?
 (A) 0.5
 (B) 1.0
 (C) 2.0
 (D) 0.2

149. What will be the load carrying capacity (kN) of a group of 6 piles if the individual load carrying capacity of a pile is 150 kN and group efficiency is 75% ?
 (A) 642
 (B) 675
 (C) 575
 (D) 542



3 x 900
 4 30
 2.7 2
 4
 675

150. The gas produced during the determination of water content of a soil sample, by calcium carbide method, is
 (A) CaC_2
 (B) C_2H_2
 (C) CaN_2
 (D) C_2N_2