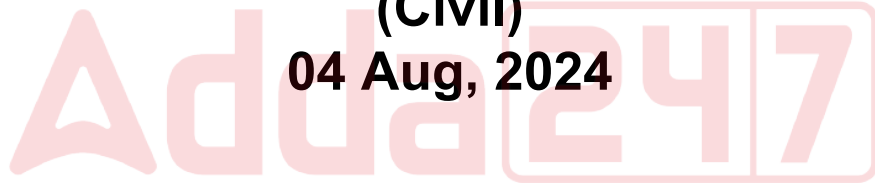


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WBMSC/web/25/Direct-III

Dated the Kolkata 4<sup>th</sup> October, 2024**NOTIFICATION**

DISPLAY OF FINAL ANSWER KEYS TO THE QUESTIONS FOR WRITTEN EXAMINATION FOR RECRUITMENT TO THE POST OF SUB-ASSISTANT ENGINEER (CIVIL) (ADVT. NO. 06 OF 2023) UNDER BUNIADPUR MUNICIPALITY HELD ON 04/08/2024 (SUNDAY). [QUESTION BOOKLET CODE: SACB (Annexed herewith)]

The Final Answer Keys to the Questions for written examination for recruitment to the post of Sub-Assistant Engineer (Civil) under Buniadpur Municipality (Advt. No. 06 of 2023) are hereby published for information to the candidates.

**Answer Key to Booklet Code - SACB**

Q. No.	Answer Option	Q. No.	Answer Option	Q. No.	Answer Option	Q. No.	Answer Option
1	C	26	D	51	B	76	D
2	B	27	C	52	B	77	A
3	A	28	C	53	A	78	B
4	A	29	B	54	B	79	C
5	D	30	B	55	A	80	B
6	B	31	D	56	A	81	D
7	A	32	D	57	D	82	B
8	D	33	A	58	C	83	C
9	C	34	B	59	C	84	C
10	D	35	D	60	C	85	B
11	C	36	A	61	B	86	D
12	A	37	B	62	B	87	B
13	C	38	B	63	D	88	C
14	C	39	A	64	B	89	D
15	D	40	A	65	B	90	A
16	B	41	C	66	A	91	C
17	C	42	C	67	A	92	D
18	C	43	D	68	B	93	C
19	D	44	B	69	C	94	A
20	C	45	C	70	C	95	B
21	A	46	B	71	B	96	B
22	A	47	C	72	D	97	D
23	A	48	D	73	A	98	B
24	D	49	C	74	C	99	A
25	B	50	C	75	B	100	C

Annexure: As mentioned.

*Pass 4/10/24*  
Secretary, WBMSC  
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Annexure to: WBMSC/web/25/Direct-III Dated:04.10.2024

**SACB**

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1. A short masonry pillar is  $60 \text{ cm} \times 60 \text{ cm}$  in cross-section, the core of the pillar is a square whose side is

- (A) 17.32 cm
- (B) 20.00 cm
- (C) 14.14 cm
- (D) 22.36 cm

2. The carryover factor in a prismatic member whose far end is fixed is

- (A) 0
- (B)  $\frac{1}{2}$
- (C)  $\frac{3}{4}$
- (D) 1

3. A 8 meter long simply supported rectangular beam which carries a distributed load  $45 \text{ kg/m}$ . experiences a maximum fibre stress  $160 \text{ kg/cm}^2$ . If the moment of inertia of the beam is  $1125 \text{ cm}^4$ , the overall depth of the beam is

- (A) 10 cm
- (B) 12 cm
- (C) 15 cm
- (D) 16 cm

4. With the rise of temperature, the sensitivity of a bubble tube

- (A) decreases
- (B) increases
- (C) remains unaffected
- (D) None of these

5. The process of turning the telescope about the vertical axis in horizontal plane is known as

- (A) transiting
- (B) receiving
- (C) plunging
- (D) swinging

6. The reduced bearing of a line is  $N 87^\circ W$ . Its whole circle bearing is

- (A)  $87^\circ$
- (B)  $273^\circ$
- (C)  $93^\circ$
- (D)  $3^\circ$

7. ABCD is a rectangular plot of land. If the bearing of the side AB is  $75^\circ$ , the bearing of DC is

- (A)  $75^\circ$
- (B)  $255^\circ$
- (C)  $105^\circ$
- (D)  $285^\circ$

8. The bearings of two traverse legs AB and BC are  $N52^\circ 45' E$  and  $N34^\circ 30' E$  respectively. The deflection angle is

- (A)  $87^\circ 15'$
- (B)  $55^\circ 30'$
- (C)  $37^\circ 15'$
- (D)  $18^\circ 15'$

9. The bearing of AB is  $190^\circ$  and that of CB is  $260^\circ 30'$ . The included angle ABC, is

- (A)  $80^\circ 30'$
- (B)  $99^\circ 30'$
- (C)  $70^\circ 30'$
- (D) None of these

10. A steel plate is 200 mm wide and 10 mm thick. If the diameter of the bolt hole is 20 mm. the net sectional area of the plate is

- (A)  $27 \text{ cm}^2$
- (B)  $20 \text{ cm}^2$
- (C)  $22 \text{ cm}^2$
- (D) None of these



11. The most fire resistant paints are  
 (A) enamel paints  
 (B) aluminium paints  
 (C) asbestos paints  
 (D) cement paints
12. M10 grade of concrete approximates  
 (A) 1 : 3 : 6 mix  
 (B) 1 : 1 : 2 mix  
 (C) 1 : 2 : 4 mix  
 (D) 1 : 1.5 : 3 mix
13. If 20 kg of coarse aggregate is sieved through 80 mm, 40 mm, 20 mm, 10 mm, 4.75 mm, 2.36 mm, 1.18 mm, 600 micron, 300 micron and 150 micron standard sieves and the weights retained are 0 kg, 2 kg, 8 kg, 6 kg, 4 kg respectively, the fineness modulus of the aggregate, is  
 (A) 7.30  
 (B) 7.35  
 (C) 7.40  
 (D) 7.45
14. A fixture which allows water in a pipe to flow in one direction only is called  
 (A) Sluice valve  
 (B) Scour valve  
 (C) Reflux valve  
 (D) Air relief valve
15. In one-pipe system of plumbing, waste water is carried down in soil pipe from  
 (A) water closets  
 (B) kitchen and bathrooms  
 (C) wash basins and sinks  
 (D) All of these
16. The minimum water content at which the soil just begins to crumble when rolled into threads 3 mm in diameter, is known  
 (A) liquid limit  
 (B) plastic limit  
 (C) shrinkage limit  
 (D) permeability limit
17. Degree of saturation of a natural soil deposit having water content 15%, specific gravity 2.50 and void ratio 0.5, is  
 (A) 50%  
 (B) 60%  
 (C) 75%  
 (D) 80%
18. A soil has bulk density  $2.30 \text{ g/cm}^3$  and water content 15 per cent, the dry density of the sample, is  
 (A)  $1.0 \text{ g/cm}^3$   
 (B)  $1.5 \text{ g/cm}^3$   
 (C)  $2.0 \text{ g/cm}^3$   
 (D)  $2.5 \text{ g/cm}^3$
19. A coarse-grained soil has a voids ratio 0.75, and specific gravity as 2.75. The critical gradient at which quick sand condition occurs, is  
 (A) 0.25  
 (B) 0.50  
 (C) 0.75  
 (D) 1.00
20. For determining the moisture content of a soil sample, the following data is available:  
 Weight of container = 260g, Weight of soil sample and container = 320g, Weight of soil sample (dried) and container = 310g. The moisture content of the soil sample, is  
 (A) 15%  
 (B) 18%  
 (C) 20%  
 (D) 25%

SACB

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21. If dry density, water density and specific gravity of solids of a given soil sample are 1.6g/cc, 1.00g/cc and 2.56 respectively, the porosity of the soil sample, is

- (A) 0.375
- (B) 0.370
- (C) 0.380
- (D) 0.390

22. The plasticity index is the numerical difference between

- (A) liquid limit and plastic limit.
- (B) plastic limit and shrinkage limit.
- (C) liquid limit and shrinkage limit.
- (D) None of these

23. The maximum grade compensation for a curve of radius 75m is

- (A) 1%
- (B) 1.4%
- (C) 1.5%
- (D) 1.6%

24. For a terrain to be termed as steep, the cross slope should be greater than \_\_\_\_\_ %

- (A) 25
- (B) 35
- (C) 45
- (D) 60

25. Run off is measured in

- (A) cubic metres.
- (B) cubic metres per second.
- (C) cubic metres per minute.
- (D) cubic metres per hour.

26. By boiling water, hardness can be removed if it is due to

- (A) calcium sulphate
- (B) magnesium sulphate
- (C) calcium nitrate
- (D) calcium bicarbonate

27. The sewage discharge in a detritus tank of a treatment plant is 576 litres/sec with flow velocity of 0.2 m/sec. If the ratio of width to depth is 2, the depth is

- (A) 100 cm
- (B) 110 cm
- (C) 120 cm
- (D) 150 cm

28. 3.0 ml of raw sewage is diluted to 300ml. The D.O. concentration of the diluted sample at the beginning of the test was 8 mg/l. After 5 day-incubation at 20°C, the D.O. concentration was 5mg/l. The BOD of raw sewerage is

- (A) 100 mg/l
- (B) 200 mg/l
- (C) 300 mg/l
- (D) 400 mg/l

29. The moisture content of a sludge is reduced from 90% to 80% in a sludge digestion tank. The percentage decrease in the volume of sludge, is

- (A) 25%
- (B) 50%
- (C) 10%
- (D) 5%

30. If the modulus of elasticity E of a material is twice the modulus of rigidity G, then the bulk modulus K will be

- (A)  $\frac{3}{2}G$
- (B)  $\frac{2}{3}G$
- (C) 2G
- (D) G

31. The section modulus of a circular section about an axis through its CG is

- (A)  $\frac{\pi}{4}d^2$
- (B)  $\frac{\pi}{16}d^2$
- (C)  $\frac{\pi}{16}d^3$
- (D)  $\frac{\pi}{32}d^3$

32. In a simply supported beam carrying a uniformly distributed load per unit length, the point of contraflexure

- (A) lies in the center of the beam.
- (B) lies in the end of the beam.
- (C) depends upon the length of the beam.
- (D) does not exist.

33. The value of  $\cos 31^\circ / \sin 59^\circ$  is

- (A) 1
- (B) 1.74
- (C) 2.03
- (D) 0

34. The resultant of two equal forces (p) making an angle  $\alpha$ , is given by

- (A)  $2p \sin \frac{\alpha}{2}$
- (B)  $2p \cos \frac{\alpha}{2}$
- (C)  $2p \tan \frac{\alpha}{2}$
- (D)  $2p \cot \frac{\alpha}{2}$

35. When a cantilever beam is loaded with uniformly distributed loads, the bending moment diagram will be a

- (A) Horizontal straight line
- (B) Vertical straight line
- (C) Inclined straight line
- (D) Parabolic Curve

36. The under surface of an arch is called

- (A) Soffit
- (B) Springer
- (C) Honch
- (D) Back

37. The process of making the background rough, before plastering is

- (A) Dubbing
- (B) Hacking
- (C) Blistering
- (D) Peeling

38. Which of the following is not endogenous tree?

- (A) Bamboo tree
- (B) Teak tree
- (C) Palm tree
- (D) Coconut tree

39. A temporary rigid structure having platforms to enable masons to work at different stages of a building is known as

- (A) Scaffolding
- (B) Dead shore
- (C) Racking shore
- (D) Underpinning

40. Sandstone is

- (A) Sedimentary rock
- (B) Metamorphic rock
- (C) Igneous rock
- (D) Volcanic rock

**SACB**

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**41.** The smaller horizontal angle between the true meridian and a survey line is known as

- (A) Declination
- (B) Bearing
- (C) Azimuth
- (D) Dip

**42.** A chord whose length is less than peg interval is called

- (A) Short Chord
- (B) Small Chord
- (C) Sub Chord
- (D) Chord

**43.** A total station can measure.

- (A) Distance electronically
- (B) Horizontal angles accurately
- (C) Vertical angles and distances
- (D) Horizontal angles, Vertical angles and distance

**44.** To obtain the correct volume using the trapezoidal rule, the prismoidal correction should always be

- (A) added
- (B) subtracted
- (C) multiplied
- (D) divided

**45.** The clay mineral with the largest swelling and shrinkage characteristics is

- (A) Kaolinite
- (B) Illite
- (C) Montmorillonite
- (D) None of these

**46.** For better strength and stability, the fine-grained soils and coarse-grained soils are compacted respectively as

- (A) dry of OMC and wet of OMC.
- (B) wet of OMC and dry of OMC.
- (C) wet of OMC and wet of OMC.
- (D) dry of OMC and dry of OMC.

**47.** In which system both soil pipe and waste pipe are separately ventilated by vent pipe?

- (A) Single stack system
- (B) One pipe system
- (C) Two pipe system
- (D) All of these

**48.** Which of the following is not a water borne disease?

- (A) Dysentery
- (B) Cholera
- (C) Typhoid
- (D) Malaria

**49.** The 'safe-water' does not contain any

- (A) colour
- (B) taste
- (C) pathogen
- (D) odour

**50.** The gradual reduction in value with age of a property is known as

- (A) Devaluation
- (B) Revaluation
- (C) Depreciation
- (D) Appreciation



51. The separation of water in the fresh concrete is called

- (A) Curing
- (B) Bleeding
- (C) Segregation
- (D) Hydration

52. The approximate ratio of concrete strength at 7 days to its strength at 28 days is

- (A)  $\frac{3}{4}$
- (B)  $\frac{2}{3}$
- (C)  $\frac{1}{2}$
- (D)  $\frac{1}{3}$

53. Los Angeles testing machine is used to conduct

- (A) Abrasion test
- (B) Impact test
- (C) Attrition test
- (D) Crushing strength test

54. Broad gauge width in India is

- (A) 1.7666 m
- (B) 1.676 m
- (C) 2.676 m
- (D) 2.766 m

55. When the velocity of flowing water causes no silting or scouring in a channel it is known as

- (A) Critical velocity
- (B) Average velocity
- (C) Optimum velocity
- (D) None of these

56. Water flows with a free surface in case of

- (A) open channel flow.
- (B) pressure flow through pipe.
- (C) flow in confined aquifer.
- (D) None of these

57. The representative fraction 1/5000 means that the scale is 1 cm equal to

- (A) 0.5 m
- (B) 5 m
- (C) 5 km
- (D) 50 m

The length visible to driver at any instance

- (A) Visibility limit
- (B) Head light distance
- (C) Sight distance
- (D) None of these

In survey work, which of the following chain used for land measurement with a length of 66ft.?

- (A) Metric chain
- (B) Engineer's chain
- (C) Gunter's chain
- (D) Revenue chain

60. The compound of Portland cement which reacts immediately with water and set first is

- (A) Tri calcium silicate
- (B) Di calcium silicate
- (C) Tri calcium aluminate
- (D) Tetra-calcium alumino-ferrite

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**SACB**

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- 61.** Soundness of cement is tested by  
 (A) Vicat's apparatus  
 (B) La-chatelier apparatus  
 (C) Compressive testing machine  
 (D) None of these
- 62.** PVC stands for  
 (A) plastic very compact  
 (B) polyvinyl chloride  
 (C) polyvinyl carbon  
 (D) None of these
- 63.** Pile foundation is generally provided if soil is  
 (A) compressible  
 (B) water logged  
 (C) made up  
 (D) All of these
- 64.** The brick laid with its length parallel to the face of a wall, is known as  
 (A) header  
 (B) stretcher  
 (C) closer  
 (D) None of these
- 65.** In which of the following cases compass surveying is recommended?  
 (A) When area is small, undulating and no details are crowded.  
 (B) When area is large, undulating and crowded with many details.  
 (C) When area is small, even and crowded with many details.  
 (D) When area is large, even and crowded with many details.
- 66.** Which of the following is not a method of plane table surveying?  
 (A) Trisection  
 (B) Intersection  
 (C) Resection  
 (D) Radiation
- 67.** Seepage through foundation in an earthen dam is controlled by providing  
 (A) impervious cut-off  
 (B) chimney drain  
 (C) rock toe  
 (D) horizontal blanket
- 68.** A rain-gauge should preferably be fixed  
 (A) under the tree.  
 (B) in an open space.  
 (C) in a closed space.  
 (D) near the building.
- 69.** The main reinforcement of a RCC slab consists of 10 mm diameter bar@ 10 cm spacing. If 10 mm diameter bar is replaced by 12 mm diameter bar, what will be the spacing now?  
 (A) 10 cm  
 (B) 12 cm  
 (C) 14.40 cm  
 (D) 16 cm
- 70.** As per IS 456-2000 the maximum area of tensile reinforcement of a beam shall not exceed.  
 (A) 0.15%  
 (B) 6%  
 (C) 4%  
 (D) None of these

71. The value of maximum shear stress of a rectangular beam is

- (A) 1.25 of average shear stress.
- (B) 1.50 of average shear stress.
- (C) 1.75 of average shear stress.
- (D) 2.00 of average shear stress.

72. The value of toughness Index less than unity indicates that the soil can be easily crushed at the \_\_\_\_\_.

- (A) elastic limit
- (B) liquid limit
- (C) composite limit
- (D) plastic limit

73. Degree of consolidation is

- (A) directly proportional to time and inversely proportional to the square of drainage path.
- (B) directly proportional to time and inversely proportional to the drainage path.
- (C) directly proportional to drainage path and inversely proportional to the time.
- (D) directly proportional to square of drainage path and inversely proportional to the time.

74. The average co-efficient of permeability of natural deposit

- (A) parallel to stratification may or may not be greater than the perpendicular to stratification .
- (B) is always same for both the direction.
- (C) parallel to stratification is always greater than the perpendicular to stratification.
- (D) parallel to stratification is always less than the perpendicular to stratification.

75. If the water content of a fully saturated soil mass is 100%, the void ratio of that sample

- (A) less than specific gravity of soil.
- (B) equal to specific gravity of soil.
- (C) more than specific gravity of soil.
- (D) independent of specific gravity of soil.

76. The camber required depend upon

- (A) rainfall characteristics
- (B) type of pavement
- (C) rainfall
- (D) both type of pavement and rainfall

77. In case of traffic engineering a median is termed as

- (A) traffic separator
- (B) traffic junction
- (C) traffic check-post
- (D) traffic flow

78. Kinematic viscosity is defined as equal to

- (A) dynamic viscosity  $\times$  density
- (B) dynamic viscosity / density
- (C) dynamic viscosity  $\times$  pressure
- (D) density  $\times$  pressure

79. The resultant hydrostatic force acts through the points known as

- (A) centre of gravity
- (B) centre of buoyancy
- (C) centre of pressure
- (D) None of these

80. Bernoulli's theorem deals with the law of conservation of

- (A) mass
- (B) energy
- (C) momentum
- (D) None of these

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81. Which of the following type of ranging is done if both ends of surveying lines are visible?

- (A) Indirect
- (B) Reciprocal
- (C) Unable to do
- (D) Direct

82. The angle of intersection of the two plane mirrors of an optical square is

- (A)  $30^\circ$
- (B)  $45^\circ$
- (C)  $60^\circ$
- (D)  $90^\circ$

83. The correction due to sag in chain surveying is

- (A) always zero
- (B) always additive
- (C) always subtractive
- (D) sometime additive and sometime subtractive

84. The cross hair of a surveying telescope are placed

- (A) midway between object glass and eye piece.
- (B) much closure to object glass than eye piece.
- (C) much closure to eye piece than object glass.
- (D) anywhere between eye piece and object glass.

85. If RL on Bench Mark is 100.000 m and back sight reading is 1.265 m and fore sight reading is 1.955 m, then what will be the RL of the forward point?

- (A) 100.69 m
- (B) 99.31 m
- (C) 99.69 m
- (D) 100.31 m

86. Series of closely spaced contour lines represent as

- (A) Plane surface
- (B) Gentle slope
- (C) Uniform slope
- (D) Steep slope

87. The centre of gravity of a hemisphere from the base measured along the vertical radius is at a distance of

- (A)  $\frac{4R}{3\pi}$
- (B)  $\frac{3R}{8}$
- (C)  $\frac{3\pi R}{4}$
- (D)  $\frac{8R}{3}$

88. The moment of inertia of a triangular section (base b, height h) about centroidal axis parallel to the base, is

- (A)  $bh^3/12$
- (B)  $bh^3/3$
- (C)  $bh^3/36$
- (D)  $bh^3/8$

89. Path traced by a projectile in the sky, is

- (A) circular
- (B) elliptical
- (C) catenary
- (D) parabolic

90. If the width of a simply supported beam carrying a point load at its centre is doubled, its deflection of the beam at the centre is changed by

- (A)  $1/2$
- (B)  $1/8$
- (C) 2
- (D) 8

- 91.** A three hinge arch is said to be  
 (A) statically indeterminate structure  
 (B) a bent beam  
 (C) statically determinate structure  
 (D) None of these
- 92.** In Chezy's formula  $V = C\sqrt{rs}$  for calculating the velocity of flow in a circular sewer of diameter  $D$  running full, the value of hydraulic mean radius  
 (A)  $D$   
 (B)  $D/2$   
 (C)  $D/3$   
 (D)  $D/4$
- 93.** The void ratio of a soil is defined as the ratio of  
 (A) weight of water to weight of soil.  
 (B) volume of water to volume voids in the soil mass.  
 (C) total volume of voids to volume of soil solids.  
 (D) total volume of voids to total volume of soil.
- 94.** The secondary treatment of sewage caused by  
 (A) bacteria  
 (B) algae  
 (C) virus  
 (D) coagulants
- 95.** The multiplying factor, as applied to obtain the maximum daily water demand, in relation to the average i.e. per capita daily demand  
 (A) 1.5  
 (B) 1.8  
 (C) 2  
 (D) 2.7
- 96.** Sewers are generally laid, starting from their  
 (A) off take point  
 (B) out fall point  
 (C) mid-point  
 (D) any point along the alignment
- 97.** In very first stage of decomposition of the organic matter in sewage  
 (A) nitrites are formed.  
 (B) nitrates are formed.  
 (C) carbon dioxide is formed.  
 (D) ammonia is formed.
- 98.** The gas which may cause explosion in sewer, is  
 (A) carbon dioxide  
 (B) methane  
 (C) ammonia  
 (D) carbon monoxide
- 99.** Maximum energy that given component can absorb without undergoing any permanent deformation up to elastic limit is known as  
 (A) proof resilience  
 (B) resilience  
 (C) hardness  
 (D) toughness
- 100.** A stone piece projecting beyond the wall provided to support a structural member, is called  
 (A) Cornice  
 (B) Topping  
 (C) Corbel  
 (D) Throating