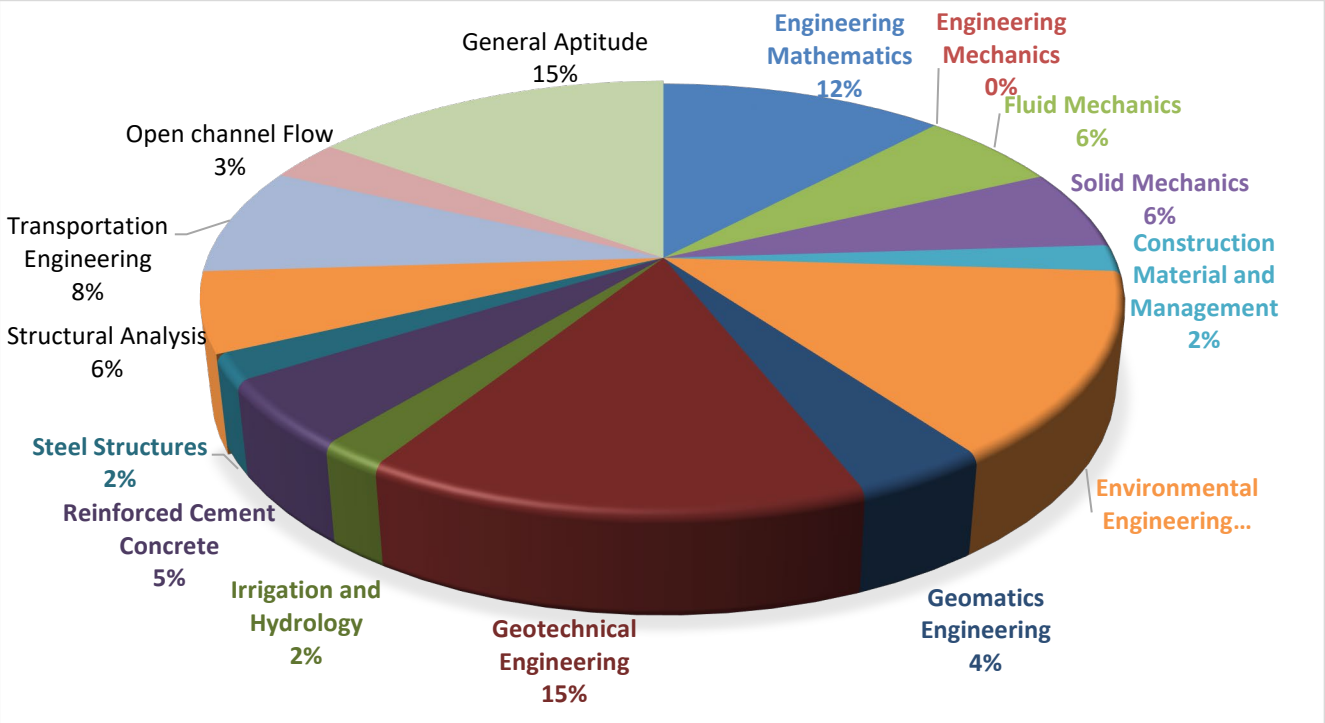
ANALYSIS OF GATE 2020

Memory Based

Civil Engineering



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CE ANALYSIS-2020_Feb-09_Morning

SUBJECT	No. of Ques.	Topics Asked in Paper(Memory Based)	Level of Ques.	Total Marks
Engineering Mathematics	1 Marks: 4 2 Marks: 4	Numerical methods, Limits	Easy	12
Engineering Mechanics	1 Marks: 0 2 Marks: 0	-	-	0
Fluid Mechanics	1 Marks: 4 2 Marks: 1	Bernoulli equation		6
Solid Mechanics	1 Marks: 2 2 Marks: 2	Stresses and Strain, Deflection of beams	Average	6
Construction Material and Management	1 Marks: 2 2 Marks: 0	Cement, Aggregate	Easy	2
Environmental Engineering	1 Marks: 2 2 Marks: 6	BOD concept, Air pollution	Average	14
Geomatics Engineering	1 Marks: 0 2 Marks: 2	Traversing, Northing southing and closed traverse, Coordinate and omitted measurements	Easy	4
Geotechnical Engineering	1 Marks: 1 2 Marks: 7	Consolidation, Lateral Earth pressure, Shear strength of soil		15
Hydrology and Irrigation Engineering	1 Marks: 2 2 Marks: 0	Flood analysis		2
Reinforced Cement Concrete	1 Marks: 1 2 Marks: 2	Design of singly reinforced beams, Bond stress, Analysis of prestress.	Easy	5
Steel Structures	1 Marks: 0 2 Marks: 1	Arches, Hinges		2
Structural Analysis	1 Marks: 2 2 Marks: 2	Analysis of stresses		6
Transportation Engineering	1 Marks:4 2 Marks:2	Airport Engineering, Traffic engineering, pavement design, highway materials, geometric design	Difficult	8
Open channel Flow	1 Marks: 1 2 Marks: 1	hydraulic jump	Easy	3
General Aptitude	1 Marks: 5 2 Marks: 5	Analogy, English- Grammar, Arrangements, Concept of unit digit, DI, Number systems	Easy	15
Total	65			100
Faculty Feedback	Overall paper was easy to moderate. Compared to GATE-2019, this year paper was easy. More questions from Geotechnical Engineering and Transportation.			

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GATE 2020 Examination* (Memory Based)

Civil Engineering

Test Date: 9th Feb-2020

Test Time: 9.30 am to 12.30 pm

Stream Name: Civil Engineering

General Aptitude

Q.1 - Q.5 Carry One Mark each.

1. Fuse : Fusion :: use: ?
   (A) Uses
   (B) Usion
   (C) Usage
   (D) User
   [Ans. C]

2. Five friends P, Q, R, S and T went camping. At night, they had to sleep in a row in tent. P, Q and T did not want to sleep next to R, as he snored loudly. P and S avoided Q, as he usually hugged people during sleep.
   Assuming every friends apprehensions, in what order did they slept?
   (A) RSPTQ
   (B) QRSPT
   (C) SPRTQ
   (D) QTSPR
   [Ans. A]

3. His reading is insatiable. He reads indiscriminately. He is a/an _____ reader.
   (A) Wise
   (B) Precocious
   (C) All round
   (D) Voracious
   [Ans. D]

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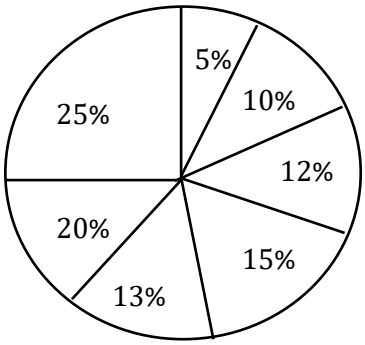
4. The total monthly expenditure of a family is shown in a pie chart. Find what is the extra money spent on education as compared to transport (in percent)10%- transportation, 10% Transportation
15% education,
5% bills,
25% others



Find the excess money spent on education to the transportation in %_____.
(A) 50
(B) 5
(C) 33.33
(D) 100
[Ans. A]

5. Insert seven numbers between 2 and 34 such that the resulting series is arithmetic progression. The sum of the seven numbers are_____.
(A) 120
(B) 126
(C) 130
(D) 124
[Ans. B]

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Q.6 - Q.10 Carry Two Mark each.

6. The sum of two positive numbers is 100. After subtracting 5 from each numbers, the product of the resulting numbers will be 0. One of the original numbers is _____.
(A) 85
(B) 90
(C) 95
(D) 80
[Ans. C]

7. The unit digit in 26591749^{110016} is _____.
(A) 3
(B) 1
(C) 6
(D) 9
[Ans. B]

8. If 0, 1, 2, ... 7, 8, 9 are coded as O, P, Q, ..., V, W, X then 45 will be coded as
(A) SS
(B) ST
(C) SU
(D) TS
[Ans. B]

9. There is a common thinking that the academicians live in their _____, so, they are not open to the outside world.
(A) glass palaces
(B) homes
(C) big flats
(D) ivory towers
[Ans. D]

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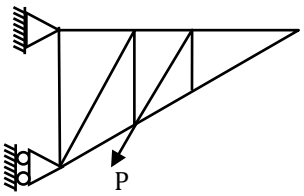
Technical

Q.1 - Q.25 Carry One Mark each.

1. The probability that a 50 years flood may not occur of all during 25 years life of a project is _____?

[Ans. 0.603]

2. Number of zero forces members on it



(A) 6
(B) 7
(C) 8
(D) 9

[Ans. A]

3. Which is the most reactive disinfectant?

(A) Cl
(B) H+
(C) HOCl
(D) OH

4. A floating body is in a state of stable equilibrium if it's

(A) metacenter is above the center of gravity
(B) metacenter is below the center of gravity
(C) center of gravity is below the center of buoyancy
(D) metacenter coincides with the center of gravity

[Ans. A]

5. In a drained triaxial compressive test, the soil sample fails at deviator stress of 150 kPa under confining pressure of 50 kPa. The angle of internal friction of the sample is _____

6. A 4m wide rectangular channel carries $6m^3/s$ of water. The Manning's 'n' is 0.02. Considering $g = 9.81\ m/s^2$, the critical velocity of flow in the channel is _____

7. A gradient of 4.5%, due to horizontal curve of the radius =100m, grade compensation applied, compensated gradient =?

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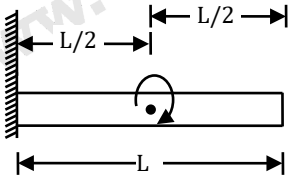
8. Velocity of flow is directly proportional to first power of critical hydraulic gradient in Darcy's Law. This law is applicable to
(A) Laminar flow in porous media
(B) Turbulent flow in porous media
(C) Laminar as well as turbulent flow in porous media
(D) Transitional flow in porous media
[Ans. A]

9. Pan Evaporation = 100 mm (Monthly data)
Rainfall = 20 mm
Crop coefficient = 0.4
Irrigation efficiency = 0.5
Irrigation water required for that month (Net)
(A) 0
(B) 80
(C) 40
(D) 50
[Ans. A]

10. A bi-axial state of stress is given as $\begin{bmatrix}\sigma_{xx} & \tau_{xy}\\ \tau_{yx} & \sigma_{yy}\end{bmatrix}$ as for pure shear, which of the following relation is correct?
(A) $\tau_{xy} = 0$
(B) $\sigma_x \cdot \sigma_y - 4\tau_{xy} = 0$
(C) $\sigma_x \cdot \sigma_y - \tau_{xy} = 0$
(D) $\sigma_x + \sigma_y = 0$
[Ans. D]

11. Find the deflection at free end?



$\left[\text{Ans.}\ \frac{3}{8}\frac{KL^2}{EI}\right]$

12. Radius = 100 m
Gradient = 45%
Compensated gradient =?
[Ans. *]Range: 4 to 4

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13. The Los Angeles test is used for?
(A) Soundness
(B) Sp. gravity
(C) Crushing strength
(D) Abrassion
[Ans. D]

14. How much % more for education as compared to transportation in pie chart?
(A) 100
(B) 33.3
(C) 5
(D) 50 %

15. In the process of hydration of cement when C2S is added what happens
(A) Decreases
(B) Increases
(C) Both
(D) None

16. The Los Angeles test of stone aggregate is done for
(A) Specific gravity
(B) Abrasion resistance
(C) Crushing strength
(D) Soundness

17. The exact value of ln (2) is 0.69. Then what is the percentage error if the approximate value is obtained by interpolating from ln (1) to ln (6)?

18. If $\lim_{x\to\infty} \frac{(x^2-5x+4)}{(4x^2+2)} =$
$\left[\textbf{Ans.}\frac{\mathbf{1}}{\mathbf{4}}\right]$

19. Area of Ellipse represented by an equation $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ is _____
(A) πab
(B) $\frac{\pi ab}{4}$
(C) $\frac{\pi ab}{2}$
(D) π
[Ans. A]

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Q.26 - Q.55 Carry Two Mark each.

26. A river has a flow of 1000 million litre per day, BOD_5 of 5 mg/l and DO level of 8 mg/l before receiving the waste water discharge at a location. For the existing environmental condition the saturation DO level is 10mg/l in the river. Waste water discharge of 100 MLD with BOD_5 of 200 mg/l and DO level 2 mg/l falls of that location.
Assuming complete mixing of waste water and river water, the immediate DO deficit (mg/l) is _____?
[Ans. 7.45 mg/l]

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