

SGAFL-2023

Assistant Manager (Civil)
Exam Taken BUET

16-06-2023

Non Technical - 20 x 1 = 20

1. Break a leg means
2. I tripped _____ the stone on the pavement.
3. I like him because he is active. The sentence contains which clause?
4. The company is looking _____ some energetic Engineer.
5. Correct spelling - Psychiatric patient.

6. ଦୁର୍ଘଟଣା କାରଣ କଣ?

7. ଆଠିଆକଳ ଚିକିତ୍ସା - ମନି.

8. ଲିଙ୍ଗତନ୍ତ୍ର କାରଣ: ଜୀବିକା, ଜୀବନୀ.

9. ସ୍ୱାଧୀନ ଅଠିକାର -

10. ଆକ୍ଷିତ ସ୍ୱାଧୀନ ପୁନିମାରଣ -

11. 11 ଅଠିକାର ଆଠିକାର ଅଠିକାର (ପାଠ୍ୟ 32 ଲେଖା
ନାହିଁ ମାନ ଦେ)

12. ଚିକିତ୍ସା ପ୍ରକାର 36 ଡିଗ୍ରୀ ଚିକିତ୍ସା କରାଯାଏ ଏ ଚିକିତ୍ସା
72 ଡିଗ୍ରୀ ଚିକିତ୍ସା କରାଯାଏ ଏ ଚିକିତ୍ସା 115 ଡିଗ୍ରୀ
ଅଠିକାର କରାଯାଏ କରାଯାଏ

13. If $\frac{x}{7} = \frac{7}{5}$ (କରାଯାଏ) $\frac{y}{2} = \frac{5}{7}$ then $\frac{x}{2} = ?$

14. ଏକ ଅଠିକାର ଚିକିତ୍ସା (ଫିଟ) ~~8 cm~~ 2m
~~AP = 60~~ 2 (ଅଠିକାର କରାଯାଏ)



3. Define HGL and EGL of flow in a river. Also sketch the diagram.

b. A bridge is to be constructed at a river side having design life of 20 years. Using Gumbel distribution method the estimated flood discharge peaks at the proposed bridge site of the river for two return periods of 30 years and 70 years. ~~are~~ 32500 cumec and 56200 cumec respectively. Estimate the magnitude of flood peak in this river section for a return period of 20 years.

4. a. Calculate the saturation flow, total loss time per phase (initial and end) for a traffic lane if a US green plus amber phase traffic counts in the lane in 6s intervals are found as 2, 4, 4, 3, 4, 3, 4, 2

b. In an expressway which is travelling along a horizontal curve of radius $R = 800$ ft and legal speed limit of 50 mph determine the angle at which the pavement should be banked to avoid outward sliding. Given a side friction factor $f_s = 0.16$ and $e = \frac{V^2}{gR} - f_s$.

5a. In the following analysis of a ground water expressed as CaCO_3 . Find the total hardness of the water sample.

	mg/l as Ion	Eqw CaCO_3 ion
Ca^{2+}	103	2.5
Mg^{2+}	5.5	4.12
Na^+	12	2.18
HCO_3^-	255	0.82
SO_4^{2-}	49	1.04
Cl^-	37	1.41

b. A waste is being discharged into a river that has a temperature of 10°C . What fraction of the maximum oxygen consumption in four days if BOD reaction rate determined in the laboratory under standard conditions is 0.115 (e base)?

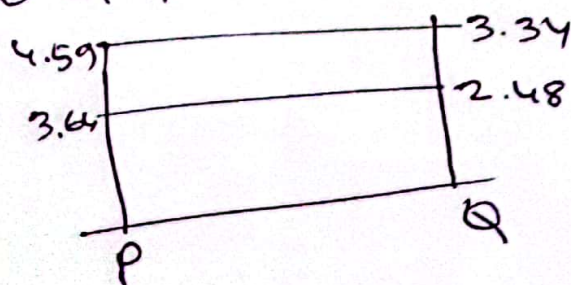
6. a. A $12' \times 8'$ rectangular footing will be constructed on a saturated silty clay layer at a depth of $5'$ from the ECL. The average unconfined compression strength of the soil for that layer is 2000 psf . Determine the ultimate bearing capacity of footing under the undrained condition of the soil use Terzaghi's bearing capacity equation and factor considering only the shape factor.

6.6. In a field a whole cutoff volume 0.2 ft^3 , and wet mass of the hole 25 lb and dry mass 20 lb. Find bulk unit wt, dry unit wt and moisture content.

7. For a sieve analysis of soil sample the following results are found. Find FM.

Sieve size	wt retained (gm)
#4	0
#8	6
#16	2
#30	10
#40	
#50	
#100	
#200	
#an	

8. For reciprocal levelling. find the RL of Q if RL of P is 110'.



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