

Power Grid Company of Bangladesh

Assistant Engineer (Civil)-2019

Exam Taker- Buet

Total- 100 marks (1.5 hr)

Non-Departmental: 40 marks

General- 20 marks & Power sector – 20 marks

Departmental: 40 marks

Q.1 Write down assumption of Truss analysis

Q.2 Find Uniformity coefficient and Coefficient of curvature

Particle size	% Fine
0.05	10
0.40	30
0.30	60

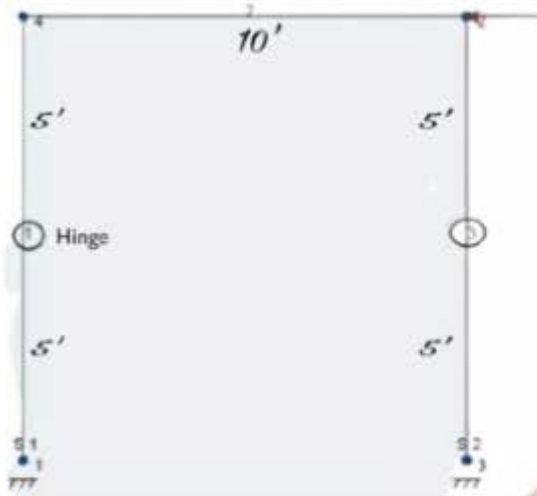
Q.3 A frictionless retaining wall of 10ft height ,Unit weight of soil 120 #/ft³ and $\Phi=20$, $C=0$. Find the active earth pressure .

Q.4 $BOD_5 = 180$ mg/L , Bottle volume is 300mL. Calculate dilatation factor and sample volume when BOD consumption is 4mg/L

Q.5 Coal consumption rate is 1kg/sec and Test coal contains 5% sulphur, 3% sulphur emitted as SO_2 .Calculate annual sulphur emission

Q.6 $Ph=9.5$, Calculate the OH^- concentration

Q.7 Draw BMD by portal frame method of the following structure, Assume each pin carry equal load



Q.8. Calculate flexural strength of a Cantliver Beam $f'_c = 3\text{ksi}$, $f_y = 60\text{ksi}$, $b=12''$
 $h=15''$, $c/c=1.5''$ 3#8 bar

Q.9. A strip footing, 1m wide at its base is located at a depth of 0.8m below the ground surface. The properties of the foundation soil are $\gamma=18\text{kN/m}^3$, $c=30\text{kN/m}^2$ and $\phi=20^\circ$. Determine the safe bearing capacity using a factor of safety of 3. Use Terzaghi's analysis. Assume the soil fails by local shear

Q.10. Draw section of Railway track

Q.11. Calculate ADT for following data

Vehicle	PCU
Bus	2.5
Car	1
Truck	2

Q.12. Calculate ESAL for 27k load and 45 repetition per day