B.E.(with Credits)-Regular-Semester 2012-Mining Engineering Sem. V

MN506 - Mine Supports

P. Pages : 2 **GUG/W/16/3806**

Time : Three Hours * 3 9 9 1 * Max. Marks : 80

Notes : 1. Due credit will be given to neatness and adequate dimensions.
2. Assume suitable data wherever necessary.
3. Illustrate your answers wherever necessary with the help of neat sketches.
4. Weightage to the question indicated on its right.

1. a) Explain the following terms wrt strata support / Reinforcement. **8**
i) Passive Support
ii) Yield Support
iii) Strong roof
iv) Front abutment pressure.

b) Explain the mechanism of load coming on B + P roadway support. **8**

OR

2. a) Differentiate **9**

i) Active Support and Passive Support.

ii) Weak roof and Strong roof.

iii) Strata support and strata reinforcement.

b) Explain the mechanism of load coming on L/W face support. **7**

3. a) Explain the working principle of hydraulic support. **6**

b) Explain pressure chamber methods for treatment of timber. **10**

OR

4. a) Explain the factors affecting LBC of timber prop. **6**

b) Explain construction and working of steel arches (Both Rigid and yielding) **10**

5. a) Explain the suitability of river sand as stowing material. **5**

b) Calculate sand water requirement for a mine having production 600 TPD of coal and sand water ratio is 1 : 3 . 6. Also calculate the percentage composition of slurry. **11**

OR

6. a) Explain mechanism of slurry flow through stowing range. **6**

b) Describe Pneumatic Stowing. **5**

c) Explain Construction of Barricade. **5**

7. Explain the following. **16**

i) Shotcrete

ii) Dry – shotcrete

iii) Reinforce shotcrete

iv) Hydration control wrt shotcrete.

v) Pillar stress

vi) Protective pillar.

vii) Hydrostatic stress on shaft lining.

viii) Concrete block support.

OR

8. a) Explain Tributary area approach for pillar loading with its limitations. **4**

b) Calculate the pillar stress of pillar is formed at a depth of 150 m from surface under following conditions. **6**

Depth	-	150 m
Density	-	$2.4\ T/m^3$
Size of Pillar	-	$24 \times 24 m^2$
Size of Gallery	-	$4.5m \times 3m$

c) Explain various method of stabilisation of Neak pillar. **6**

9. a) Classify roof bolting system. **11**
Calculate bearing capacity of full column grouted bolt.
if

dia of bolt	-	22 mm
length	-	2 m
Adherence between grout and steel	-	$7 kg/cm^2$

b) Explain Roof Stitching. **5**

OR

10. a) Explain construction and working of split set and expansion shell bolt. **6**

b) Calculate the anchorage capacity of expansion shell bolt if **6**

c) Coefficient of friction between **4**

rock and shell	-	0.28
Bearing capacity of rock	-	$250 kg/cm^2$
no. of shell	-	4.
area of each shell	-	$5 cm^2$

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