final

B.E. (Mining) 3rd Sem. Exam Nov. Dec 2012

Subject Mine Development (MN-301)

Full Marks : 70 **Time: 3 Hours**

Answer any 3 questions from first half. Answer question no. 6 and any two questions from the rest from second half. All parts of a question should be answered at one place.

~~**Subject: Mine Development**~~

~~**(MN – 301)**~~

First Half

Answer any three questions from first half.
Half marks are kept for neatness.

1. a) Write main provisions of CMR related to outlets from a mine.
   b) Write the advantages of incline over the shaft.
   c) Explain the followings:
      Incline
      Shaft
      Adit
   $3^1/_2+5+3 = 11^1/_2$

2. a) Name the types of exploratory opening for detailed exploratory work.
   b) How identification of target area for detailed exploration work can be done?
   c) Explain the factors to be considered for selecting site of an incline or pit.
   $4+4+3^1/_2=11^1/_2$

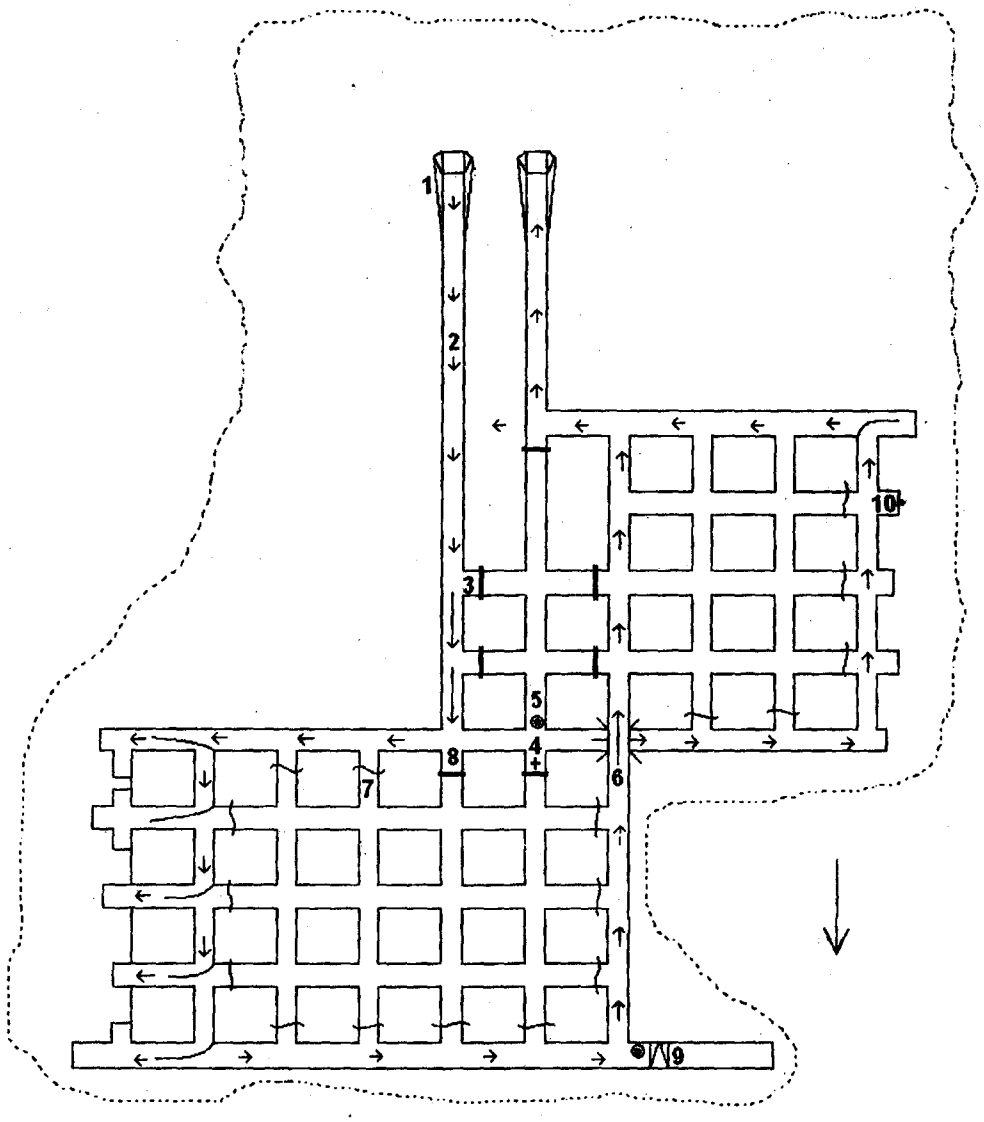
3. Explain the (i) temporary lining, (ii) Walling Scaffold and (iii) Water garland curb in shaft sinking with all necessary sketches.
   $4+4+3^1/_2=11^1/_2$

4. a) What are the special methods of shaft sinking?
   b) Explain Piling method of shaft sinking with suitable sketches.
   $2^1/_2+9 =11^1/_2$

5. a) What are the surface plant and equipment required for shaft sinking?
   b) Explain drilling and blasting in shaft sinking.
   $7+ 4^1/_2= 11^1/_2$

Second Half

6. a) Name the symbols with its appropriate colours in the part-plan of a mine given below.



b) Indicate the differences:-

I. Shaft and staple pit
II. Upcast shaft and downcast shaft

c) Draw the diagram of a stope which is operating by cut and fill system and show the different components.

(5+4+4)

7. a) Draw the layout of development face supported with conventional timber support and describe.

b) Describe statutory provision regarding monitoring of roof bolting in Indian coal mines.

(5+6)

8. A retreat longwall panel is to be developed in a coal seam at depth of 350 m from surface and 3.6 m thick by Road Header. The immediate roof above coal seam is made of shale, sandy shale and medium grain sandstone. The thickness and RMR of the immediate strata is given below

Types of strata	Thickness (m)	RMR
Coal	3.6	55
Shale	0.2	42
Sandy shale	0.6	54
Medium grain Sandstone	1.1	74

Calculate final RMR for designing SSR for development of the longwall panel.

(11)

9 a) Write short notes on the followings

i. Yield valve and rapid yield valve
ii. Linear control valve and rotary control valve

b) What is ring-main system?

(4×2+3)

10 a) Classify roof strata in coal mines as per Indian system of roof classification and describe its support requirements.

b) Draw neat sketches of chock-shield support, label its components and describe the necessity of each component.

(5+6)