

PROVISIONAL ANSWER KEY

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Department	Kerala Ceramics Limited

Question1:-Which of the following statement is/are correct?

Statement 1 : Soda acid type extinguishers or water shall be used for fighting oil or electrical fires.

Statement 2 : Foam type extinguishers shall be used for fighting electrical fires.

A:-Only Statement 1

B:-Only Statement 2

C:-Both Statement 1 and Statement 2

D:-None of these

Correct Answer:- Option-D

Question2:-No person shall act or be employed as a manager unless he is _____ years of age and is paid by, and is directly answerable to, the owner or agent of the mine as per Metal Mine Regulation 1961.

A:-18

B:-20

C:-23

D:-25

Correct Answer:- Option-C

Question3:-What is the primary function of an Auxiliary Fan?

A:-To exhaust air from the main return airway

B:-To increase atmospheric pressure in the mine

C:-To circulate air throughout the entire mine

D:-To ventilate a face or faces or blind ends

Correct Answer:- Option-D

Question4:-In a stope, air analysis shows :

Oxygen = 19.2%,

Carbon dioxide = 0.48%

Inflammable gas = 1.35%

As per MMR, 1961, the stope shall be considered :

A:-Safe for working

B:-Unsafe due to oxygen deficiency

C:-Unsafe due to inflammable gas

D:-Unsafe due to carbon dioxide

Correct Answer:- Option-C

Question5:-Which of the following represents the largest scale of a plan?

A:-1 cm represents 50 m

B:-Scale of 1 : 42,000

C:-Representative Fraction = $1/3,00,000$

D:-1 cm represents 50 km

Correct Answer:- Option-A

Question6:-Which of the following statements is/are correct?

Statement 1 : No working shall be made within 7.5 m of the boundary of any time.

Statement 2 : In case of disputed boundary, workings may be made after approval of the mines manager.

A:-Only Statement 1

B:-Only Statement 2

C:-Both Statement 1 and Statement 2

D:-Neither Statement 1 nor Statement 2

Correct Answer:- Option-A

Question7:-Which mine plans may show surface contours?

A:-Surface plan

B:-Underground plan

C:-Geological plan

D:-All of the above

Correct Answer:- Option-D

Question8:-Match List-I with List-II with respect to average employment for appointment of officials in underground mines (MMR, 1961) :

List-I

- A. Assistant Managers or Underground Managers
- B. First Class Manager's Certificate
- C. First- or Second-Class Manager's Certificate
- D. First- or Second-Class Manager's Certificate or a Managers Permit

List-II

- 1. Less than 75
- 2. 75-150
- 3. More than 150
- 4. More than 450

Choose the correct answer :

A:-A-4, B-3, C-2, D-1

B:-A-3, B-4, C-2, D-1

C:-A-4, B-2, C-3, D-1

D:-A-2, B-3, C-4, D-1

Correct Answer:- Option-A

Question9:-Match List-I with List-II with respect to different forms mentioned under First Schedule of MMR, 1961 :

List-I

List-II

- | | |
|--------------|--|
| A. Form I | 1. Notice of accident/dangerous occurrence |
| B. Form III | 2. Notice of Disease notified |
| C. Form IV-A | 3. Annual Return |
| D. Form V | 4. Notice of opening, closing or change etc. |

Choose the correct answer :

A:-A-1, B-4, C-3, D-2

B:-A-4, B-3, C-1, D-2

C:-A-3, B-2, C-4, D-1

D:-A-4, B-1, C-2, D-3

Correct Answer:- Option-B

Question10:-Match List-I with List-II and select the correct code for safe underground working conditions as per MMR, 1961 :

List-I	List-II
A. Minimum distance from stoped-out or disused workings	1. 1.5 m
B. Minimum length of advance precautionary borehole to detect likely accumulation of inflammable or noxious gases	2. 2 m
C. Maximum width or height of workings around abandoned waterlogged workings shall not exceed	3. 30 m
D. Minimum distance from disused or abandoned waterlogged workings	4. 60 m

Choose the correct answer :

A:-A-3, B-2, C-1, D-4

B:-A-1, B-3, C-2, D-4

C:-A-3, B-1, C-2, D-4

D:-A-4, B-1, C-2, D-3

Correct Answer:- Option-C

Question11:-A worker suffers an injury on 1st June and resumes duty on 5th June. Considering the day of accident is excluded, the injury will be classified as :

A:-Non-reportable

B:-Reportable injury

C:-Dangerous occurrence

D:-Minor injury

Correct Answer:- Option-A

Question12:-The Dhori Mine Disaster, which occurred on 28 May 1965 is recorded as one of the worst coal mine disasters in India. How many persons were killed in this accident?

A:-268

B:-375

C:-14

D:-50

Correct Answer:- Option-A

Question13:-During the investigation of an underground mine accident, it was observed that engineering safeguards were functional and risk assessments had been formally documented. However, prescribed operating procedures were routinely by passed at the workplace. In such a scenario, the most technically appropriate corrective strategy would be :

A:-Re-evaluating the intrinsic safety classification of installed equipment

B:-Strengthening accountability through supervisory auditing, strict enforcement of SOPs, and reinforcement of safety culture

C:-Increasing redundancy in mechanical protective systems

D:-Modifying ventilation circuit design to reduce exposure time

Correct Answer:- Option-B

Question14:-The Rajmahal Mine Accident that occurred in December 2016 at the Rajmahal Opencast Project (ECL) was primarily caused by :

A:-Underground gas explosion

B:-Inrush of water

C:-Dump/Overburden slope failure

D:-Shaft over winding

Correct Answer:- Option-C

Question15:-The Anjan Hill Explosion of Disaster (2010) occurred in an underground coal mine classified under which degree of gassiness?

A:-Degree-0

B:-Degree-I

C:-Degree-II

D:-Degree-III

Correct Answer:- Option-B

Question16:-In the investigation of a roof fall accident in an underground coal mine, which of the following would be most appropriately classified as a root cause rather than an immediate (direct) cause?

A:-Inadequate installation and supervision of systematic roof bolting as per support plan

B:-Instantaneous shear failure of roof rock at the working face

C:-Presence of visible roof cracks prior to failure

D:-Sudden detachment of a roof slab from unsupported strata

Correct Answer:- Option-A

Question17:-In an underground mine, the probability of a roof fall in a district is 0.02 per year and the potential financial consequences is Rs. 2 crore. What is the annual risk value?

A:-Rs. 2,00,000

B:-Rs. 4,00,000

C:-Rs. 40,00,000

D:-Rs. 1,00,000

Correct Answer:- Option-B

Question18:-In an underground coal mine, methane (CH₄) concentration is detected at 1.25% in the return airway during routine monitoring. No ignition occurs and no injury is reported. This situation is most appropriately classified as :

A:-Reportable accident

B:-Dangerous occurrence

C:-Serious bodily injury

D:-Non-reportable event with no statutory relevance

Correct Answer:- Option-B

Question19:-A technically sound accident investigation report in mining operations should present its findings in which of the following logical analytical sequences?

A:-Recommendations → Incident description → Evidence collection → Root cause analysis

B:-Incident description → Immediate causes → Root cause analysis → Corrective and preventive measures

C:-Witness statements → Financial loss estimation → Recommendations → Conclusion

D:-Regulatory citations → Penalty Assessment → Incident summary → Control measures

Correct Answer:- Option-B

Question20:-Which of the following conditions most significantly increases the risk of roof fall in an underground coal mine?

A:-Installation of systematic roof bolting as per the approved support plan

B:-Presence of laminated shale roof with frequent bedding plane separations and inadequate support density

C:-Regular roof inspection and scaling before commencing work

D:-Controlled blasting with proper stemming and delay sequencing

Correct Answer:- Option-B

Question21:-A rescuer without breathing apparatus enters a mine gallery containing 0.12% CO. At 0.1% CO, 50% Hb saturation occurs in 2 minutes. CO absorption rate is proportional to concentration. Time required for 50% haemoglobin saturation at 0.12% CO is closest to:

A:-1.2 min

B:-1.5 min

C:-1.7 min

D:-2.4 min

Correct Answer:- Option-C

Question22:-A self-contained breathing apparatus (SCBA) contains 6 L of oxygen at 200 bar.A rescuer consumes oxygen at 1.8 L/min (STP). Considering 20% reserve mandatory, the maximum safe operating time is approximately:

A:-400 min

B:-480 min

C:-533 min

D:-600 min

Correct Answer:- Option-C

Question23:-In a mine employing 1200 workers, an occupational health survey found:

180 workers with early silicosis

60 workers with advanced silicosis

The prevalence (%) of silicosis in the mine is:

A:-10%

B:-12.5%

C:-15%

D:-20%

Correct Answer:- Option-D

Question24:-In a 10-year cohort survey

Group	No. of workers	Silicosis Cases
Exposed	500	75
Non-exposed	400	20

Calculate Relative Risk.

A:-1.5

B:-2.0

C:-3.0

D:-3.75

Correct Answer:- Option-C

Question25:-Permissible respirable dust limit = 3 mg/m^3 . A worker has TWA exposure of 2.8 mg/m^3 for 6 hours. For remaining 2 hours, what is the maximum allowable concentration so that 8-hr TWA does not exceed limit?

A:- 3.4 mg/m^3

B:- 3.6 mg/m^3

C:- 3.8 mg/m^3

D:- 4.0 mg/m^3

Correct Answer:- Option-B

Question26:-The molecular weight of a gas is 44. If the molecular weight of air is 29, the specific gravity of the gas is approximately:

A:-0.66

B:-1.52

C:-1.29

D:-2.00

Correct Answer:- Option-B

Question27:-In underground coal mines, methane-air mixtures become explosive only within a specific concentration range. Which of the following correctly represents the explosive (flammable) range of methane in air by volume?

A:-1%-5%

B:-5%-15%

C:-7%-25%

D:-10%-30%

Correct Answer:- Option-B

Question28:-Which of the following statements regarding breathing apparatus used in mine rescue operations is CORRECT?

A:-Self-Contained Breathing Apparatus (SCBA) supplies oxygen from compressed air cylinders and is mainly used for long-duration rescue operations underground.

B:-Self-Rescuer provides oxygen chemically and can be reused after exposure to toxic gases.

C:-Closed-circuit breathing apparatus recirculates exhaled air after removing CO₂ and supplementing oxygen, making it suitable for irrespirable atmospheres.

D:-Filter-type respirators can be safely used in oxygen-deficient mine fire conditions.

Correct Answer:- Option-C

Question29:-Silicosis is an occupational lung disease commonly observed among mine workers exposed to respirable dust.Which of the following statements regarding silicosis is CORRECT?

A:-Silicosis is a reversible lung disease caused by prolonged exposure to coal dust.

B:-Silicosis results from inhalation of crystalline silica dust and leads to progressive fibrosis of lung tissue.

C:-Silicosis develops only when silica content in dust exceeds 20% and disappears after exposure stops.

D:-Use of filter-type respirators completely eliminates the risk of silicosis in underground mines.

Correct Answer:- Option-B

Question30:-The BG4 breathing apparatus, used in mine rescue operations, is best described by which of the following statements?

A:-It is an open-circuit compressed air breathing apparatus with a maximum duration of 30 minutes.

B:-It is a closed-circuit oxygen breathing apparatus capable of providing breathable air for up to 4 hours under controlled conditions

C:-It is a filter-type respirator designed for use in oxygen-deficient mine atmospheres.

D:-It supplies oxygen from liquid oxygen and does not require carbon dioxide absorption.

Correct Answer:- Option-B

Question31:-Assertion (A): The Safety Management Plan (SMP) is mandatory in coal mines.
Reason (R): CMR 2017 requires systematic hazard identification and risk control measures.
Choose the correct option:

A:-Both Assertion (A) and Reason (R) are true, and (R) is the correct explanation of (A).

B:-Both (A) and (R) are true, but (R) is NOT the correct explanation of (A).

C:-(A) is true, but (R) is false.

D:-(A) is false, but (R) is true.

Correct Answer:- Option-A

Question32:-Assertion (A): Inundation risk assessment is mandatory when workings approach old water-logged workings.
Reason (R): Sudden inrush of water may lead to multiple fatalities and mine closure.
Choose the correct option:

A:-Both Assertion (A) and Reason (R) are true, and (R) is the correct explanation of (A).

B:-Both (A) and (R) are true, but (R) is NOT the correct explanation of (A).

C:-(A) is true, but (R) is false.

D:-(A) is false, but (R) is true.

Correct Answer:- Option-A

Question33:-Assertion (A): Risk assessment in coal mines is a continuous process.
Reason (R): Mining conditions such as strata behavior, gas emission, and equipment usage change over time.
Choose the correct option:

A:-Both Assertion (A) and Reason (R) are true, and R is the correct explanation of (A).

B:-Both (A) and (R) are true, but (R) is NOT the correct explanation of (A).

C:-(A) is true but (R) is false.

D:-(A) is false, but (R) is true.

Correct Answer:- Option-A

Question34:-The ultimate objective of Safety Management Plan is:

A:-Increase production

B:-Ensure zero harm

C:-Reduce taxation

D:-Improve exports

Correct Answer:- Option-B

Question35:-Which document outlines emergency escape routes?

A:-Ventilation Plan

B:-Surface Plan

C:-Emergency Response Plan

D:-Financial Plan

Correct Answer:- Option-C

Question36:-In Indian mines, the Emergency Plan must be approved by:

A:-Mine Manager

B:-Area General Manager

C:-DGMS

D:-District Magistrate

Correct Answer:- Option-C

Question37:-Assertion (A): A safety audit may reveal full statutory compliance, yet the mine may still carry high operational risk.

Reason (R): Statutory compliance ensures legal conformity but does not automatically guarantee adequacy of risk controls for site-specific dynamic hazards.

Choose the correct option:

A:-Both Assertion (A) and Reason (R) are true, and (R) is the correct explanation of (A).

B:-Both (A) and (R) are true, but (R) is NOT the correct explanation of (A).

C:- (A) is true, but (R) is false

D:- (A) is false, but (R) is true.

Correct Answer:- Option-A

Question38:-Fault Tree Analysis (FTA) is primarily used to:

A:-Increase production efficiency

B:-Identify unsafe workers

C:-Model logical combinations of failures leading to a top accident event

D:-Conduct medical examination

Correct Answer:- Option-C

Question39:-Which statement correctly distinguishes Safety Management Plan (SMP) and Disaster Management Plan (DMP)?

A:-SMP is reactive; DMP is preventive

B:-SMP focuses on prevention; DMP focuses on response and recovery

C:-Both are identical

D:-DMP replaces SMP

Correct Answer:- Option-B

Question40:-In an underground coal mine, methane ignition probability is 0.02 per year, and consequence analysis predicts 5 fatalities per event. The annual societal fatality risk is:

A:-0.02 fatalities/year

B:-5 fatalities/year

C:-0.1 fatalities/year

D:-0.002 fatalities/year

Correct Answer:- Option-C

Question41:-Which of the following characteristics best distinguishes intrusive igneous rocks from exclusive igneous rocks?

A:-Higher iron and magnesium content

B:-Coarse-grained texture with visible crystals

C:-Presence of rounded grains

D:-Occurrence primarily in layered beds

Correct Answer:- Option-B

Question42:-Which process is primarily responsible for the formation of chemical sedimentary rocks such as limestone and phosphates?

A:-Mechanical weathering

B:-Compaction of detrital fragments

C:-Precipitation of soluble products of chemical weathering

D:-Metamorphism due to high pressure

Correct Answer:- Option-C

Question43:-Which combination of geological processes is most likely to produce placer deposits of gold and platinum?

A:-Hydrothermal alteration followed by recrystallization

B:-Magmatic segregation and slow cooling

C:-Chemical weathering → mechanical transport → sorting by natural agencies

D:-Regional metamorphism followed by folding

Correct Answer:- Option-C

Question44:-Which statement correctly differentiates syngenetic and epigenetic magmatic ore deposits?

A:-Syngenetic deposits form after the host rock, while epigenetic form simultaneously

B:-Epigenetic deposits form after the host rock, while syngenetic form simultaneously with the host rock

C:-Both form before the host rock crystallizes

D:-Both deposit minerals during sedimentary processes

Correct Answer:- Option-B

Question45:-Which of the following is a foliated metamorphic rock?

A:-Marble

B:-Quartzite

C:-Slate

D:-Limestone

Correct Answer:- Option-C

Question46:-In areas affected by multiple seam splitting and stone intrusions, what is the most critical precaution for roadway alignment?

A:-Drive perpendicular to bedding to increase stability

B:-Avoid entry into axial regions where upper splits rise into the roof

C:-Maintain high production rate to shorten exposure time

D:-Ignore variations in gradient of lower members

Correct Answer:- Option-B

Question47:-When encountering a washout filled with unconsolidated glacial material, what is the greatest immediate danger during driveage?

A:-Excessive methane adsorption

B:-Rapid influx of loose sediments and water

C:-Roof forming a strong natural arch

D:-High temperature from frictional heating

Correct Answer:- Option-B

Question48:-While approaching a fault zone, which combined symptom most reliably indicates weakening of roof and potential for water/gas ingress?

A:-Increase in coal rank + increase in ash

B:-Drag effects in strata + polished bedding surfaces in shales

C:-Reduction in mica + increase in feldspar

D:-Lowering of roof height + improved cleat spacing

Correct Answer:- Option-B

Question49:-Why do igneous intrusions such as sills pose significant danger to roof stability?

A:-They reduce the density of overlying strata

B:-They create strong but brittle hard roofs that may collapse suddenly after mining larger area

C:-They cause thinning of all seams uniformly

D:-They increase coal moisture

Correct Answer:- Option-B

Question50:-What is the main precaution while approaching a roof roll?

A:-Increase production rate at the face

B:-Use only blasting to break the roll

C:-Provide extra support because the basal surface is highly irregular

D:-Assume the roof is self-supporting

Correct Answer:- Option-C

Question51:-Which drilling pattern in underground mine development consist of parallel blastholes?

A:-Burn cut

B:-Wedge cut

C:-Fan cut

D:-Drag Cut

Correct Answer:- Option-A

Question52:-Which of the following best describes the function of lifters in development blasting?

A:-Control overbreak

B:-To throw the blasted material

C:-Reduce ground vibration

D:-To support the roof

Correct Answer:- Option-B

Question53:-Which factor primarily governs the selection of burden and spacing in development blasting?

A:-Width of the drivage

B:-Length of the drivage

C:-Blasthole diameter

D:-Height of the drivage

Correct Answer:- Option-C

Question54:-Which drifting method requires the highest drilling accuracy?

A:-Fan cut

B:-Wedge cut

C:-Drag cut

D:-Burn Cut

Correct Answer:- Option-D

Question55:-If a drift face shows good fragmentation but poor advance, the most probable cause is:

A:-Weak rock mass

B:-Excessive relief

C:-Cut design failure

D:-Lesser dimension of drivage

Correct Answer:- Option-C

Question56:-In room and pillar mining, the primary cause of ore loss is:

A:-Blasting inefficiency

B:-Fragmentation of larger size

C:-Poor ventilation

D:-Pillars requirement for ground support

Correct Answer:- Option-D

Question57:-If the ore is of oxidizing nature, then which underground mining method is NOT suitable?

A:-Shrinkage stoping

B:-Cut and Fill stoping

C:-Sublevel stoping

D:-Block caving

Correct Answer:- Option-A

Question58:-The ultimate pit limit in open-pit mining is primarily NOT governed by:

A:-Bench height

B:-Drilling and blasting cost

C:-Slope stability

D:-Economic stripping ratio

Correct Answer:- Option-A

Question59:-In surface mining, haul road gradient is kept as low as possible mainly to:

A:-Improve drilling accuracy

B:-Prevent the fall of loaded material

C:-Improve truck productivity

D:-Control blasting vibration

Correct Answer:- Option-C

Question60:-The break even stripping ratio is defined as the ratio at which:

A:-Mining cost equals excavation cost of ore

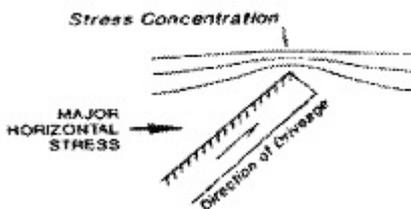
B:-Revenue from ore equals total cost of mining ore and waste

C:-Waste removal cost equals ore mining cost

D:-Pit slope becomes unstable

Correct Answer:- Option-B

Question61:-From the figure shown below, what will be the influence of horizontal stress on the roadway stability considering an unsupported drivage



A:-Good Condition

B:-No damage

C:-Roof deformation on the left hand side

D:-Roof deformation on right hand side

Correct Answer:- Option-C

Question62:-The method of mining for rock salt in India is?

A:-Room and Pillar

B:-Cut and fill

C:-Sub level

D:-None of the above

Correct Answer:- Option-A

Question63:-Based on the applicability criteria for CM deployment and the constraints for bord and pillar depillaring, which factor is the most critical single reason why CM-based depillaring would be unsafe in this panel?

A:-The seam thickness exceeds the ideal-lift extraction range for CM (2.5-4.5 m)

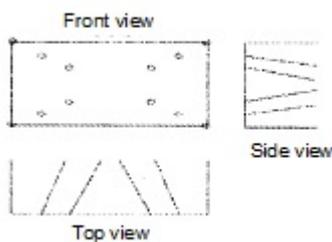
B:-The roof is competent but non-cavable, violating the need for "roof that caves well" for safe mining with CM

C:-The overlying waterlogged seam standing on pillars poses a major risk of water inrush and strata instability during caving-based depillaring

D:-None of the above

Correct Answer:- Option-C

Question64:-The blast pattern of a coal face shown in the figure represents



A:-burn cut.

B:-pyramid cut.

C:-wedge cut.

D:-drag cut.

Correct Answer:- Option-B

Question65:-The primary purpose of cut holes for blasting in an underground drivage is to -

A:-Provide additional free face

B:-Have smooth surface after blasting

C:-Prevent over-breakage

D:-Reduce noise

Correct Answer:- Option-A

Question66:-The mineral is transported downwards in different sections to the lower level and all the ore is carried to crusher at lowest level through?

A:-Mine tubs

B:-Belt

C:-Ore passes

D:-Hoists of small capacity

Correct Answer:- Option-C

Question67:-As per Indian standards thick seam means having seam thickness

A:-1.5-4.5 m

B:-0-1.5 m

C:-4.5-9 m

D:-above 9 m

Correct Answer:- Option-C

Question68:-In sand stowing generally the sand required for one tonne of coal extraction in virgin area?

A:-1.3 tonne

B:-2 tonne

C:-2.5 tonne

D:-3 tonne

Correct Answer:- Option-A

Question69:-The angle of inclination from vertical of the line connecting the edge of the workings and the edge of the subsidence area is called?

A:-Angle of fracture

B:-Angle of draw

C:-Breaking angle

D:-Hade

Correct Answer:- Option-B

Question70:-Which of the following machine is NOT used in Longwall mining?

A:-Shearer

B:-Armoured Flexible Conveyor

C:-Stage Loader

D:-Side Dump Loader

Correct Answer:- Option-D

Question71:-The place of the reserve station is appointed by

A:-Mine Manager

B:-Mining Supervisor

C:-Chief Inspector

D:-Regional Inspector

Correct Answer:- Option-A

Question72:-Which of the following values represents the best value of in-hole VOD of the SME?

A:-10000 m/s

B:-9000 m/s

C:-4200 m/s

D:-7000 m/s

Correct Answer:- Option-C

Question73:-Ammonium Nitrate is called a blasting agent because _____.

(i) It is an explosive in itself.

(ii) When mixed in a fixed proportion with other chemicals, it becomes explosive.

(iii) It is a custom to call it a blasting agent.

A:-Option (i) is correct

B:-Option (ii) is correct

C:-Option (iii) is correct

D:-Both options (i) and (ii) are correct

Correct Answer:- Option-B

Question74:-SME is loaded in the blast holes _____.

- (i) Using a pump truck
- (ii) Manually
- (iii) Sometimes manually and sometimes using a pump truck

A:-Option (i) is correct

B:-Option (ii) is correct

C:-Option (iii) is correct

D:-All the options (i), (ii) and (iii) are correct

Correct Answer:- Option-A

Question75:-As the dominant excitation frequency of the ground vibration wave increases, the limiting value of the ppv at the foundation level of the structures _____.

A:-Always remains constant

B:-Increases

C:-Decreases

D:-Sometimes increases and sometimes decreases

Correct Answer:- Option-B

Question76:-Misfire is caused due to _____

- (i) Poor quality of explosives
- (ii) Poor quality of initiating devices
- (iii) Faulty connections in the blast circuit

A:-Option (i) is correct

B:-Option (ii) is correct

C:-Option (iii) is correct

D:-All the options (i), (ii) and (iii) are correct

Correct Answer:- Option-D

Question77:-In opencast mines, rock blasting is carried out in the afternoon because _____

- (i) Desired rock fragmentation is obtained easily

- (ii) Noise is less as the air density is less during the afternoon
- (iii) Ground vibrations are less

A:-Option (i) is correct

B:-Option (ii) is correct

C:-Option (iii) is correct

D:-All the options (i), (ii) and (iii) are correct

Correct Answer:- Option-B

Question78:-What is the advantage of a shock tube over a detonating fuse?

- (i) Less Noise
- (ii) Less drilling is required
- (iii) Less explosive consumption happens

A:-Option (i) is correct

B:-Option (ii) is correct

C:-Option (iii) is correct

D:-All the options (i), (ii) and (iii) are correct

Correct Answer:- Option-A

Question79:-Which of the following statements is wrong?

- (i) A shock tube is an example of a non-electric initiating device
- (ii) If required, cartridges of different explosives can be loaded in a blast hole
- (iii) Explosive cartridges put in a hole should be of the same diameter

A:-Option (i) is wrong

B:-Option (ii) is wrong

C:-Option (iii) is wrong

D:-All the options (i), (ii) and (iii) are wrong

Correct Answer:- Option-B

Question80:-Which of the following statements is incorrect?

- (i) ANFO is used in watery holes
- (ii) Every explosive must have an oxidizing agent as one of its components
- (iii) SME is a water-based explosive

A:-Option (i) is incorrect

B:-Option (ii) is incorrect

C:-Option (iii) is incorrect

D:-All the options (i), (ii) are (iii) are in correct

Correct Answer:- Option-A

Question81:-Venturimeter is used to measure _____.

A:-Speed of a locomotive

B:-Illumination level in an underground mine

C:-Rate of flow of water in a pipe

D:-Blast-induced ground vibration level

Correct Answer:- Option-C

Question82:-The correct sequence of attaching a cage to the winding rope in a mine shaft is _____.

A:-Rope → Cappel → Detaching hook → Bull chain → Triangular plate → Cage chain → Cage

B:-Rope → Detaching hook → Cappel → Bull chain → Triangular plate → Cage chain → Cage

C:-Rope → Cappel → Bull chain → Detaching hook → Triangular plate → Cage chain → Cage

D:-Rope → Cappel → Detaching hook → Triangular plate → Bull chain → Cage chain → Cage

Correct Answer:- Option-A

Question83:-A rope in which the wires in the strands are laid in the same direction as the strands are laid in the rope is called _____.

A:-Non-stranded rope

B:-Lang's lay rope

C:-Ordinary lay rope

D:-Locked coil rope

Correct Answer:- Option-B

Question84:-A gear has a pitch circle diameter of 70 mm and 10 teeth. The circular pitch is _____

A:-7 mm

B:-14 mm

C:-22 mm

D:-31.4 mm

Correct Answer:- Option-C

Question85:-Which of the following statements is/are correct?

- (i) Dumpers are crawler-mounted machines.
- (ii) Transportation of materials with the help of dumpers is considered as a continuous mode of transportation.
- (iii) Dragline is one of the excavators used in surface mines.
- (iv) Bucket wheel excavator is a giant excavator used for excavating soft coal or lignite.

A:-Only (iii)

B:-Only (iii & iv)

C:-Only (i, iii & iv)

D:-All (i, ii, iii & iv)

Correct Answer:- Option-B

Question86:-Which of the following statements is/are correct?

- (i) Surface miner cuts the coal with the help of buckets.
- (ii) Surface miner cuts the coal from the floor with the help of a cutting drum.
- (iii) Load Haul Dumper (LHD) is used for loading and hauling in underground mines.
- (iv) Coal plough is employed in bord and pillar working method.

A:-Only (ii) and (iii)

B:-Only (iii) and (iv)

C:-Only (i), (ii) and (iii)

D:-All (i), (ii), (iii) and (iv)

Correct Answer:- Option-A

Question87:-According to Bernoulli's theorem (neglecting friction), when a fluid flows through a passage, which of the following remains constant?

A:-Velocity only

B:-Kinetic pressure only

C:-Total head

D:-Static pressure only

Correct Answer:- Option-C

Question88:-In a centrifugal pump, the "eye of the impeller" refers to ____.

A:-The outer edger of the impeller

B:-The centre opening through which water enters

C:-The casing surrounding the impeller

D:-The discharge point of the pump

Correct Answer:- Option-B

Question89:-Why is priming required in a centrifugal pump before starting?

A:-To increase the speed of the pump

B:-To fill the pump and suction pipe with water and remove air

C:-To reduce power consumption

D:-To increase the discharge pressure

Correct Answer:- Option-B

Question90:-Super-elevation on a railway track is provided to _____.

A:-Increase the weight of the train

B:-Reduce the length of the track

C:-Increase the number of wagons

D:-Balance the centrifugal force on curves

Correct Answer:- Option-D

Question91:-In a mine ventilation system, the resistances of two splits A and B are $0.5 \text{ N s}^2/\text{m}^8$ and $2.0 \text{ N s}^2/\text{m}^8$ respectively. Combined resistance of two shafts and trunk airways is

$0.7 \text{ N s}^2/\text{m}^8$. A quantity of $20 \text{ m}^3/\text{s}$ of air passes through split A. The total air power of the ventilation system in kW is

A:-82.9

B:-48.9

C:-24.9

D:-27.9

Correct Answer:- Option-C

Question92:-Determine the correctness or otherwise of the following Assertion [a] and the Reason [r] :

Assertion : Both intake and return side stoppings must be closed simultaneously in the event of sealing off a coal mine panel with explosion hazard following a fire.

Reason : By continuously ventilating the area till simultaneous closure of the stoppings, the possibility of an explosion hazard due to gas build-up is avoided.

A:-[a] is true but [r] is false

B:-Both [a] and [r] are true and [r] is the correct reason for [a]

C:-Both [a] and [r] are true and [r] is not the correct reason for [a]

D:-Both [a] and [r] are false

Correct Answer:- Option-B

Question93:-A gas mixture contains CH_4 , C_2H_6 and H_2 with respective concentrations of 75%, 15% and 10% by volume. The lower explosibility limit of CH_4 , C_2H_6 and H_2 are 5.0%, 3.3% and 4.2% respectively. The lower explosibility limit of the gas mixture, in percentage, is _____.

Here are four suitable options :

A:-3.92%

B:-4.56%

C:-5.00%

D:-6.18%

Correct Answer:- Option-B

Question94:-At the inlet of a mine roadway, the dry and wet bulb temperatures of air are 38°C and 29°C , respectively. At the outlet, the corresponding temperatures are 32°C and 29°C , respectively. The process of heat transfer in the airway is described as

A:-Evaporative cooling

B:-Sensible cooling

C:-Sensible heating

D:-Dehumidification

Correct Answer:- Option-B

Question95:-Underground coal mines are, in principle, ventilated by an exhausting system, so that

A:-The spontaneous heating risk is reduced

B:-Fumes can be quickly removed in case of an underground fire

C:-The build-up of methane concentration is decreased

D:-Cool and fresh intake air can enter underground

Correct Answer:- Option-B

Question96:-In a CO self-rescuer, the purpose of the calcium bromide and lithium chloride mixture is to

A:-dry the incoming air

B:-convert the CO catalytically to CO₂

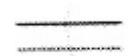
C:-absorb and thereby neutralise CO

D:-cool the inhaled air from excess exothermic heat due to the chemical reaction

Correct Answer:- Option-A

Question97:-Choose the correct alternative

In the context of ventilation plan symbols, match the following

Symbol	Description
P 	1. Temporary stopping
Q 	2. Regulator
R 	3. Air-crossing
S 	4. Ventilation stopping

A:-P-3, Q-4, R-2, S-1

B:-P-2, Q-3, R-1, S-4

C:-P-1, Q-3, R-4, S-2

D:-P-3, Q-2, R-1, S-4

Correct Answer:- Option-A

Question98:-The device used to control airflow in underground mines is

A:-Regulator

B:-Compressor

C:-Transformer

D:-Pump

Correct Answer:- Option-A

Question99:-If airway resistance increased by 50%, the pressure required to maintain same quantity will increase by

A:-25%

B:-50%

C:-75%

D:-100%

Correct Answer:- Option-B

Question100:-If air density increases, Atkinson resistance will :

A:-Increase

B:-Decrease

C:-Remain Constant

D:-Become Zero

Correct Answer:- Option-A