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RPSC AME

Previous Year Paper
21 May, 2014



प्रश्न पुस्तिका / QUESTION BOOKLET

कोड / Code : 01



बुकलेट
सीरीज

A

विषय / Subject :

Mining Engineering

पुस्तिका में पृष्ठों की संख्या /

Number of Pages in Booklet : 32

पुस्तिका में प्रश्नों की संख्या /

Number of Questions in Booklet : 100

समय / Time : 2.00 घंटे / Hours

पूर्णांक / Maximum Marks : 100

सहायक रवनि अभियंता सेवा परीक्षा 2011

7000569
पुस्तिका क्रम

आयोजित दिनांक 21-5-14

INSTRUCTIONS

1. Answer all questions.
 2. All questions carry equal marks.
 3. Only one answer is to be given for each question.
 4. If more than one answers are marked, it would be treated as wrong answer.
 5. Each question has four alternative responses marked serially as 1, 2, 3, 4. You have to darken only one circle or bubble indicating the correct answer on the Answer Sheet using BLUE BALL POINT PEN.
 6. 1/3 part of the mark(s) of each question will be deducted for each wrong answer. (A wrong answer means an incorrect answer or more than one answers for any question. Leaving all the relevant circles or bubbles of any question blank will not be considered as wrong answer.)
 7. The candidate should ensure that Series Code of the Question Paper Booklet and Answer Sheet must be same after opening the envelopes. In case they are different, a candidate must obtain another question paper of the same series. Candidate himself shall be responsible for ensuring this.
 8. Mobile Phone or any other electronic gadget in the examination hall is strictly prohibited. A candidate found with any of such objectionable material with him/her will be strictly dealt as per rules.
 9. Please correctly fill your Roll Number in O.M.R. Sheet. 5 marks will be deducted for filling wrong or incomplete Roll Number.
 10. If there is any sort of ambiguity/mistake either of printing or factual nature then out of Hindi and English Version of the question, the English Version will be treated as standard.
- Warning :** If a candidate is found copying or if any unauthorised material is found in his/her possession, F.I.R. would be lodged against him/her in the Police Station and he/she would liable to be prosecuted under Section 3 of the R.P.E. (Prevention of Unfairmeans) Act, 1992. Commission may also debar him/her permanently from all future examinations of the Commission.

निर्देश

1. सभी प्रश्नों के उत्तर दीजिए ।
2. सभी प्रश्नों के अंक समान हैं ।
3. प्रत्येक प्रश्न का केवल एक ही उत्तर दीजिए।
4. एक से अधिक उत्तर देने की दशा में प्रश्न के उत्तर को गलत माना जाएगा ।
5. प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिये गये हैं, जिन्हें क्रमशः 1, 2, 3, 4 अंकित किया गया है। अभ्यर्थी को सही उत्तर निर्दिष्ट करते हुए उनमें से केवल एक गोले अथवा बबल को उत्तर-पत्रक पर नीले बॉल प्वाइंट पेन से गहरा करना है ।
6. प्रत्येक गलत उत्तर के लिए प्रश्न अंक का 1/3 भाग काटा जायेगा। गलत उत्तर से तात्पर्य अशुद्ध उत्तर अथवा किसी भी प्रश्न के एक से अधिक उत्तर से है । किसी भी प्रश्न से संबंधित गोले या बबल को खाली छोड़ना गलत उत्तर नहीं माना जायेगा।
7. प्रश्न-पत्र पुस्तिका एवं उत्तर पत्रक के लिफाफे की सील खोलने पर परीक्षार्थी यह सुनिश्चित कर लें कि उसके प्रश्न-पत्र पुस्तिका पर बही सीरीज अंकित है जो उत्तर पत्रक पर अंकित है। इसमें कोई भिन्नता हो तो वीक्षक से प्रश्न-पत्र की ही सीरीज वाला दूसरा प्रश्न-पत्र का लिफाफा प्राप्त कर लें। ऐसा न करने पर जिम्मेदारी अभ्यर्थी की होगी।
8. मोबाईल फोन अथवा इलेक्ट्रॉनिक यंत्र का परीक्षा हॉल में प्रयोग पूर्णतया वर्जित है। यदि किसी अभ्यर्थी के पास ऐसी कोई वर्जित सामग्री मिलती है तो उसके विरुद्ध आयोग द्वारा नियमानुसार कार्यवाही की जायेगी।
9. कृपया अपना रोल नम्बर ओ.एम.आर. पत्रक पर सावधानी पूर्वक सही भरें । गलत अथवा अपूर्ण रोल नम्बर भरने पर 5 अंक कुल प्राप्तांकों में से अनिवार्य रूप से काटे जाएंगे।
10. यदि किसी प्रश्न में किसी प्रकार की कोई मुद्रण या तथ्यात्मक प्रकार की त्रुटि हो तो प्रश्न के हिन्दी तथा अंग्रेजी रूपान्तरों में से अंग्रेजी रूपान्तर मान्य होगा ।

चेतावनी : अगर कोई अभ्यर्थी नकल करते पकड़ा जाता है या उसके पास से कोई अनधिकृत सामग्री पाई जाती है, उस अभ्यर्थी के विरुद्ध पुलिस में प्राथमिकी दर्ज कराई जायेगी और आर. पी. ई. (अनुचित साधनों की रोकथाम) अधिनियम, 1992 के नियम 3 के तहत कार्यवाही की जायेगी। साथ ही आयोग ऐसे अभ्यर्थी को भविष्य में होने वाली आयोग की समस्त परीक्षाओं से विवर्जित कर सकता है।

- 1 Which of the following is not a deciding factor for hoisting system ?
- (1) Production rate
 - (2) Depth of Shaft
 - (3) Number of Levels
 - (4) Machinery deployed for loading
- 2 Which method is best suited to work flat coal seam of average thickness and shallow depth ?
- (1) Bord and Pillar
 - (2) Longwall
 - (3) Horizon mining
 - (4) Blasting gallery
- 3 Which gas is synonymous to white damp ?
- (1) CO_2
 - (2) CO
 - (3) SO_2
 - (4) CH_4
- 4 Which of the following is not related to air pollution ?
- (1) Sulphur dioxide
 - (2) Smoke
 - (3) Dust
 - (4) Global warming

- 5 The variation of the properties in two planes of same rock is referred as
- (1) Isotropy
 - (2) Anisotropy
 - (3) Plasticity
 - (4) Homogeneity
- 6 In a theodolite what is the axis about which the telescope rotates in vertical plane ?
- (1) Vertical axis
 - (2) Trunion axis
 - (3) Transit axis
 - (4) Swing axis
- 7 In the remote sensing through aerial photography, white tone indicates the probable presence of which rock ?
- (1) Granite
 - (2) Dolomite
 - (3) Shale
 - (4) Quartzite
- 8 Variograms, Krigging, Grade tonnage curve are features of
- (1) Geo-statistical reserve estimation
 - (2) Computer based mine scheduling
 - (3) Geophysical prospecting
 - (4) Equipment selection

9 In the selection of the wire ropes for hoisting purpose, which strength is of prime importance ?

- (1) Tensile strength
- (2) Compressive strength
- (3) Shear strength
- (4) Torsion strength

10 What is the duration of sample in high volume (HiVol) sampler for measurement of air pollution ?

- (1) Instantaneous
- (2) 2 hrs
- (3) 12 hrs
- (4) 24 hrs

11 Which of the following is expressed with prefixes like effective, run of mine, cut off and average ?

- (1) Grade
- (2) Reserve
- (3) Production
- (4) Man power

- 12 In the theodolite the point of intersection of both cross hairs should be brought into exact coincidence with station (where zero to be marked) by means of
- (1) Upper tangent screw only
 - (2) Lower tangent screw only
 - (3) Lower tangent screw and Vertical clamp
 - (4) Upper tangent screw and Vertical clamp
- 13 Through which of the following the earth's features are detected in the satellite remote sensing ?
- (1) Light
 - (2) Sound
 - (3) Electromagnetic wave
 - (4) Microwave
- 14 Which of the following is not a utility of circulating fluid in drilling ?
- (1) Cleaning the hole
 - (2) Control the dust
 - (3) Cool the bit
 - (4) Cutting at bit-rock interface
- 15 Which rope type has no individual strands of wire and the whole rope form a single strand ?
- (1) Round stranded rope
 - (2) Flat strand rope
 - (3) Oval strand rope
 - (4) Locked coil rope

- 23 The Coward's diagram is used for ascertaining presence of
- (1) Methane
 - (2) CO
 - (3) SO₂
 - (4) H₂S
- 24 The pneumoconiosis disease to the miners is caused by
- (1) Air pollution
 - (2) Water pollution
 - (3) Noise pollution
 - (4) Excessive work
- 25 What is the major problem associated with the dolomite marble as compared to calcite marble as a dimensional stone ?
- (1) It is very hard
 - (2) It is less polishable
 - (3) It weathers to buff or pink due to presence of FeCO₃
 - (4) It is costly
- 26 The factor of safety demanded for friction hoists as compared to drum hoists should be
- (1) Higher
 - (2) Lower
 - (3) Equal
 - (4) Without any relation

- 27 Which of the following is a common utilization of flyash in Rajasthan ?
- (1) In cement production
 - (2) In color industry
 - (3) As binder
 - (4) As filling material in mines
- 28 As per the ISRM standards, the ends of the rock specimen for rock testing should be flat to _____ mm.
- (1) 0.1
 - (2) 0.2
 - (3) 0.01
 - (4) 0.02
- 29 Which of the following is a main objective of job evaluation ?
- (1) To resolve wage disputes
 - (2) Standardization of wages
 - (3) Method for future promotion
 - (4) To estimate correct wages for work performance
- 30 If a curve deflects left of the direction of the progress of survey, it is called
- (1) Right hand curve
 - (2) Left hand curve
 - (3) Simple curve
 - (4) Compound curve

- 31** What is the total number of satellites in the network in the GPS navigation system ?
- (1) 12
 - (2) 24
 - (3) 48
 - (4) 60
- 32** The new marble policy of Rajasthan Government was announced in year
- (1) 1955
 - (2) 1982
 - (3) 1994
 - (4) 2002
- 33** Which of the following guides are flexible guides in shaft winding ?
- (1) Wooden
 - (2) Steel plates
 - (3) Rail
 - (4) Rope
- 34** Which of the following is not an advantage of large height benches in opencast mining ?
- (1) Increased efficiency of shovel
 - (2) Minimum ripping and leveling
 - (3) Efficiency of transport system
 - (4) Less slope failure

- 35 What is the minimum amount to be paid every year by the lessee until the lease is unexploited ?
- (1) Royalty
 - (2) Dead rent
 - (3) Retention tax
 - (4) Non working penalty
- 36 In which method of correlation survey the objective to be placed in the axis of a theodolite exactly in line with the plumb plane at both surface and underground ?
- (1) Weisbach Triangle method
 - (2) Weiss Quadrilateral
 - (3) Direct Traversing
 - (4) Co-planner method
- 37 What is the approximate waste generation in any marble mining in general ?
- (1) 20%
 - (2) 30%
 - (3) 50%
 - (4) 70%

38 The CMR-1957, MMR-1961 are framed under

- (1) Mines Rules 1955
- (2) Mines Act 1952
- (3) Mining Lease Rules 1956
- (4) Mine and Minerals (Regulation and Development) Act 1957

39 Fixed hair method and movable hair or subtense method are methods of

- (1) Traversing
- (2) Tacheometry
- (3) Corelation
- (4) Contouring

40 Vane type, Screw type, Turbo type and Twin lobe type are variants of

- (1) Rotary compressor
- (2) Reciprocating compressor
- (3) Compressor in general
- (4) Mine fans

- 41 The famous exhibition for stone industry "Stone mart" at Jaipur is organized by
- (1) MNIT
 - (2) DMG
 - (3) RSMM
 - (4) CDOS
- 42 According to Govt. of India entire country's production of Rock Phosphate is from public sector. Out of which the RSMML accounted _____% which is also the entire production of Rajasthan ?
- (1) 58
 - (2) 74
 - (3) 88
 - (4) 94
- 43 Which of the following is not a parameter for RMR rating of rock ?
- (1) Uniaxial compressive strength
 - (2) RQD
 - (3) Ground water condition
 - (4) Depth of deposit
- 44 In which of the following area the flaggy lime stone occurs in Rajasthan?
- (1) Udaipur
 - (2) Ajmer
 - (3) Kota
 - (4) Jalore

- 45 In which of the following the Screw clips, Smallman clips and lashing chains are used ?
- (1) Cage winding
 - (2) Rope haulage
 - (3) Conveyor
 - (4) Locomotive haulage
- 46 For the testing of physical properties of Dimensional stone which are the standard tests in Rajasthan ?
- (1) ASTM tests
 - (2) IRM tests
 - (3) IJRM test
 - (4) MEAI tests
- 47 To counter the throw of tubs or mine cars due to centrifugal force at curve, the outer rail is raised above inner rail. What this process is called ?
- (1) Curved radius
 - (2) Super elevation
 - (3) Ballasting
 - (4) Back staying

48 Which of the following can be an advantage of underground mining over surface mining ?

- (1) Less capital investment on equipment
- (2) Affected by weather
- (3) Require large deposits
- (4) Higher Production

49 Which of the following purpose, the Hoolamite tube is used ?

- (1) Detection of CO
- (2) Detection of CO₂
- (3) Detection of CH₄
- (4) Detection of H₂S

50 Which of the following is a Navratna Company of Government of India?

- (1) Coal India Ltd.
- (2) Oil and Natural Gas Commission
- (3) Neveyli Lignite Corporation
- (4) NTPC

- 51 A broken, caved and mined out portion of the deposit in an underground metalliferous mine is called
- (1) Gob
 - (2) Cap
 - (3) Rib
 - (4) Back
- 52 Which of the following can be an artificial aid to natural ventilation ?
- (1) Doors
 - (2) Crossings
 - (3) Furnace
 - (4) Regulator
- 53 Which term is used for a narrow vertical or inclined opening excavated in a deposit at the end of a stope to provide initial free face ?
- (1) Lateral
 - (2) Grizzly
 - (3) Slot
 - (4) Undercut
- 54 In regards to the shrinkage stoping, which of the following is true ?
- (1) Higher production
 - (2) Very high development
 - (3) Majority of ore tied up in stope
 - (4) Smooth and safe working

- 55 Which of the following cannot be used for expressing the moisture contents of air ?
- (1) Vapour pressure
 - (2) Relative humidity
 - (3) Dew point
 - (4) Air Pressure
- 56 The Ediograph and Pantagraph are used for enlargement and reduction of mine plans by means of
- (1) Re-plotting to same size
 - (2) Graphical method
 - (3) Mechanical method
 - (4) Photographic method
- 57 What is the name of an overhand, vertical stoping method which utilizes long hole drilling and the blasting carried from sublevels ?
- (1) Sublevel stoping
 - (2) Sublevel VCR stoping
 - (3) Blasthole stoping
 - (4) Shrinkage stoping

58 In which of the following mine the blast hole stoping is used ?

- (1) Kolihan copper mine
- (2) Balaria mine
- (3) Rajpura Dariba mine
- (4) Mochia Mine

59 Which of the following is a major disadvantage with raising by VCR technique ?

- (1) Only suitable for vertical and very steeply inclined raise
- (2) Very costly
- (3) Unsafe
- (4) Can only be used for softer rocks

60 The richest district of Rajasthan in terms of copper ore reserves is :

- (1) Ajmer
- (2) Bhilwara
- (3) Jhunjhunnu
- (4) Udaipur

61 Ore for metal "Lead" is :

- (1) Sphalerite
- (2) Chalcopyrite
- (3) Galena
- (4) Magnetite

62 The full form of VCR in mining is :

- (1) Very Competent Rock
- (2) Vibration Control Recorder
- (3) Vertical Crater Retreat
- (4) Vertical Compression in Rock

63 Rock Mass Rating (RMR) is used for designing :

- (1) Coal pillars
- (2) Roof support
- (3) Panel size
- (4) Shaft pillar

64 The principal mineral constituent of drilling mud is :

- (1) Bauxite
- (2) Barytes
- (3) Corundum
- (4) Beryl

65 The unit of intensity of illumination is :

- (1) Candle power
- (2) Watt
- (3) Ampere
- (4) Lux

66 The co-ordinate of two points A and B are given as (10, 10) and (10, 20).
The Co-ordinate of the midpoint of line joining A and B are :

- (1) (5, 15)
- (2) (10, 20)
- (3) (10, 15)
- (4) (20, 30)

67 In VCR method of Mining, the charge length to diameter of hole
(L : D) ratio is restricted to :

- (1) 2:1
- (2) 4:1
- (3) 6:1
- (4) 8:1

68 Porosity of a rock sample is defined as ratio of the volume of voids to the :

- (1) Volume of solids
- (2) Total volume of sample
- (3) Volume of water
- (4) Volume of air

69 The type of ventilation in which the movement of coal transportation and airflow takes place in the same direction is called :

- (1) Antitropical ventilation
- (2) Homotropical ventilation
- (3) Central ventilation
- (4) Boundary ventilation

70 The toxic mixture of gases left in a mine following an explosion is known as :

- (1) Firedamp
- (2) Chokedamp
- (3) Stinkdamp
- (4) Afterdamp

71 Crossing Point Temperature method is commonly used for determination of :

- (1) Proximate analysis of coal
- (2) Ultimate analysis of coal
- (3) Relative tendencies of coal to spontaneous heating
- (4) Thermal conductivity of coal

72 The most important cause of airflow in mines due to natural ventilation is :

- (1) Difference in depth of the downcast and upcast shafts
- (2) Difference in air density in downcast and upcast shafts
- (3) Leakage of air from downcast shaft to upcast shaft
- (4) Addition of gases with the mine air

73 Burnside boring apparatus is used for :

- (1) methane drainage from coal seams
- (2) taping of water from water-logged mine workings
- (3) water infusion
- (4) exploratory drilling

74 The working principle of Ringrose firedamp detector is :

- (1) thermal sensitivity
- (2) disintegration
- (3) diffusion-combustion-contraction
- (4) distribution

75 The distance from the surface below which the ambient temperature of rock is not effected by the day-to-day variation and the seasonal variation is known as :

- (1) Ambient temperature gradient
- (2) Geospatial temperature gradient
- (3) Geothermal gradient
- (4) Lithostatic temperature gradient

76 If the quantity of air has to be increased from $1500 \text{ m}^3/\text{min}$ to $3000 \text{ m}^3/\text{min}$, the required increase in the horsepower of the fan is :

- (1) 4 times
- (2) 6 times
- (3) 2 times
- (4) 8 times

77 The process of inducing artificial respiration in a person who is unconscious is known as :

- (1) Artificial ventilation
- (2) Resuscitation
- (3) Induced inspiration
- (4) Induced expiration

78 The permissible concentration (in mg/m^3) of dust containing more than 70% silica is :

- (1) 3.0
- (2) 2.0
- (3) 4.0
- (4) 1.0

79 The audible range of sound is :

- (1) 200 – 1500 Hz
- (2) 200 – 15000 Hz
- (3) 002 – 1500 Hz
- (4) 20 – 15000 Hz

80 A core sample of diameter 54mm and length 108mm failed at 40,000N under uni-axial compression, the compressive strength in MPa is :

- (1) 1750
- (2) 175.0
- (3) 1.75
- (4) 17.50

81 In which one of the following stoping operations the ore dilution is maximum ?

- (1) Cut-and-Fill
- (2) Shrinkage
- (3) Room-and-pillar
- (4) Sub-level

82 Transverse sub-level caving is a method adopted in an ore body which is :

- (1) very wide
- (2) laminated
- (3) weak ore body
- (4) massive

83 Work study is a generic term used for conducting :

- (1) Time study
- (2) Work measurement
- (3) Method study and work measurement
- (4) Method study

84 In the year 2013, India imported coal (in million tonnes) :

- (1) 625
- (2) 469
- (3) 113
- (4) 30

85 Rampura-Agucha mines (Lead-Zinc) is working by which method of mining ?

- (1) Open pit
- (2) Underground
- (3) Open-pit and underground both
- (4) Not being worked

86 The roof bolt that follows the principle of point anchorage is :

- (1) expansion shell bolt
- (2) full column grouted bolt
- (3) swellex bolt
- (4) split set bolt

87 In coal mining operation the blasting technique used for controlled throw of overburden is known as :

- (1) Coyote Blasting
- (2) Perimeter Blasting
- (3) Pre-split Blasting
- (4) Cast Blasting

88 The mine is plotted on a scale of 1 : 2000. If a planimeter measures the plotted area as 58 cm^2 , the actual mine area in m^2 is :

- (1) 5800
- (2) 11600
- (3) 23200
- (4) 29000

89 Nystagmus is a Miner's disease associated with :

- (1) Liver
- (2) Lung
- (3) Eye
- (4) Stomach

90 The maximum wet-bulb temperature at working faces as required under mines regulation is :

- (1) 36°C
- (2) 33°C
- (3) 30°C
- (4) 27°C

91 Among the following options, the specific energy for rock-drilling is lowest in :

- (1) rotary diamond drilling
- (2) rotary roller drilling
- (3) percussive drilling
- (4) jet piercing

92 Which is optimum composition of ANFO ?

- (1) 94% $\text{NH}_4 \text{NO}_3$ and 6% Fuel oil
- (2) 96% $\text{NH}_4 \text{NO}_3$ and 4% Fuel oil
- (3) 92% $\text{NH}_4 \text{NO}_3$ and 8% Fuel oil
- (4) 93% $\text{NH}_4 \text{NO}_3$ and 7% Fuel oil

93 India has coal reserves of 1,13,000 mn tonnes. What is the world rank of India's reserves ?

- (1) 7
- (2) 4
- (3) 3
- (4) 2

94 In drilling and blasting operations GPS may NOT be useful in :

- (1) Locating drill hole
- (2) Vibration measuring instrument
- (3) Face profile measurement
- (4) Allocating delay to DTH (Signal or shock tube)

- 95 100 ml of waste water is allowed to evaporate in a dish weighing 48.6232 g. The weigh of the dish with dry solids is 48.6432 g. The concentration of dry solids in waste water in mg/l is :
- (1) 200
 - (2) 220
 - (3) 260
 - (4) 320
- 96 Lignite reserves of Rajasthan are _____ MT and percentage share in India :
- (1) 31743.63 MT with 81.54% share
 - (2) 2662.75 MT with 6.84% share
 - (3) 4484.83 MT with 11.52% share
 - (4) 38929.56 MT with 100% share
- 97 The stoping method, where a large part of blasted ore is allowed to accumulate in the stope to serve the purpose of providing working platform for stoping as well as to support the wall rock, is known as :
- (1) square - set stoping
 - (2) shrinkage stope
 - (3) cut and fill stoping
 - (4) sublevel stoping

98 Which gives better control of blasting results in terms of vibrations, air blast (noise) and flyrock ?

- (1) Detonating cord + cord relays
- (2) Electric Detonators (milli second) + Detonating cord
- (3) Electronic Detonators
- (4) Detonating cord + Ordinary detonators

99 The following group of minerals / ore have one group which has only industrial mines. Which one is the group of Industrial minerals ?

- (1) Phosphorite + Beryllium + Tungsten
- (2) Bentonite + Fullers Earth + Apatite
- (3) Magnesite + Fluorite + Tin
- (4) Phosphorite + Fullers earth + Tungsten

100 A lignite mine in Rajasthan was temporarily closed due to one of the following reasons. Answer the correct reason :

- (1) Geotechnical reason
- (2) Hydrological aquifer
- (3) Slope stability problem
- (4) Environmental impact problem

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