Uniform circular motion worksheet 1

Continue

Vertical Circular Motion
Concept Check Sheet

Name:

1. A child is on a swing. What direction is the centripetal force on the child when they are at the bottom of the swing? What direction is the child's velocity? What direction is the child's acceleration? Draw vectors.

2. A bucket full of water is swung in a vertical circle by a rope. Where in its motion is the tension in the rope a maximum? Where in its motion is the tension in the rope a minimum?

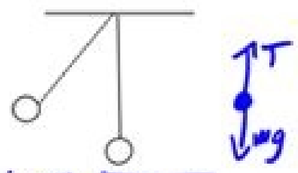
bottom

top

3. A pendulum bob with a mass of 1 kg is connected to a string 1m and allowed to swing so that its speed at the bottom of is swinging motion is 10 m/s.
   a. What is the centripetal force on the pendulum bob?

$F_{NET_c} = \frac{mv^2}{r} = \frac{(1\,kg)(10\frac{m}{s})^2}{1m} = 100\,N$

   b. What is the tension in the string at the bottom of its swing? (use a force diagram to help)



$F_{NET_c} = T - mg = 100 \Rightarrow T = mg + 100 = 100\,N + (1\,kg)(9.81\frac{m}{s^2}) = \boxed{109.81\,N}$

4. What is the period of a pendulum that has a length of 0.5 meters?

$T = 2\pi\sqrt{\frac{l}{g}} = 2\pi\sqrt{\frac{0.5m}{9.81\frac{m}{s^2}}} = 1.42\,s$

5. The period of the pendulum in a grandfather clock is 2 second (1 second over ("tick") and 1 second back ("tock")). How long is the pendulum in a grandfather clock?

$T = 2\pi\sqrt{\frac{l}{g}} \rightarrow \frac{T^2}{4\pi^2} = \frac{l}{g} \rightarrow l = \frac{gT^2}{4\pi^2} = \frac{(9.81\frac{m}{s^2})(2s)^2}{4\pi^2} = \boxed{1m}$

6. On planet X a pendulum with a length of 0.5 m has a period of 1.0 second. What is the acceleration due to gravity (g) on planet X?

$T = 2\pi\sqrt{\frac{l}{g}} \Rightarrow g = \frac{4l\pi^2}{T^2} = \frac{4(.5m)(\pi^2)}{(1s)^2} = \boxed{19.7\frac{m}{s^2}}$

7. A plane comes out of a power dive, turning upward in a curve of radius 1500 m. The plane's speed is 300 m/s.
   a. What is the Centripetal force on the pilot if he has a mass of 80 kg?

$F_{NET_c} = \frac{mv^2}{r} = \frac{(80\,kg)(300\frac{m}{s})^2}{1500\,m} = 4800\,N$

   b. What force must the seat of the plane apply to his body for this motion to happen? (use a force diagram)

$F_{NET_c} = F_N - mg = 4800\,N \Rightarrow F_N = 4800\,N + (80\,kg)(9.81\frac{m}{s^2}) \Rightarrow$

$\boxed{F_N = 5580\,N}$

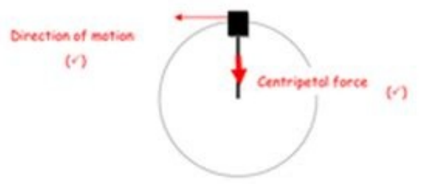
Circular Motion

1. An object which is rotating in a uniform circular path takes three seconds to make one complete rotation each time. Describe and explain the speed and velocity of the object which is moving in a regular circular motion around a fixed point.

The speed of the object will be constant (✓) because the same distance is being travelled in the same amount of time. (✓)

The velocity will be constantly changing (✓) as the direction which the object is moving is constantly changing. (✓)

2. A teacher decides to whirl a rubber bung on the end of a piece of string anticlockwise around his head to demonstrate centripetal force to their class.
   a) Draw and label an arrow on the diagram to represent the direction of motion in this experiment.



   b) Draw and label an arrow on the diagram to represent centripetal force in this experiment.

   c) Explain, as fully as possible, the factors which can affect the centripetal force acting on the bung.

The greater the mass of the bung (✓) the larger the centripetal force (✓) will be. In addition, the shorter the length of string (✓) that the bung is attached to the larger the centripetal force (✓) will be. When the speed of the bung's rotation is increased (✓) then the centripetal force will be larger. (✓)


Physics 231 Worksheet 16 | Name ___________

Non-uniform circular motion

Each of these problems involves non-uniform circular motion with a constant α

(1) Obtain each of the equations of motion for non-uniform circular motion under a constant acceleration, α. Show how these equations can be modified to obtain the equations of motion when the angular acceleration varies (i) as a function of time and (ii) as a function of angular velocity.

(2) A wheel is fixed at its center and has a radius of 0.7 m. At t=0, the wheel is at θ=0, is not moving but is subject to an acceleration α=0.05 "rad"/s². Answer the following at t=10 s.

(a) What is ω(10)?

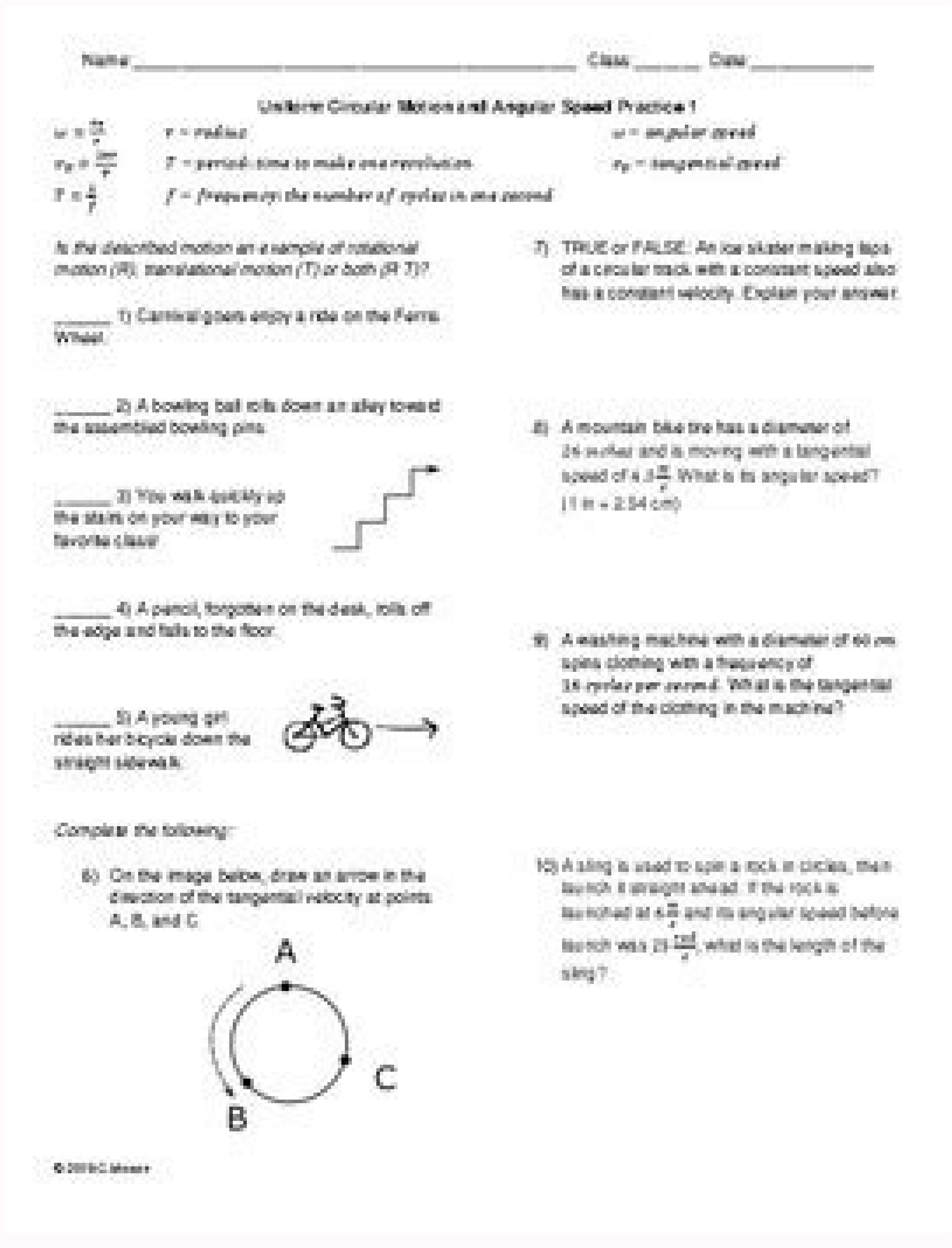
(b) What is θ(10)?

(c) What is the tangential velocity of a point on the rim at this time?
(d) What is the tangential acceleration of a point on the rim?
(e) What is the centripetal acceleration of a point on the rim?
(f) What is the magnitude of the total acceleration of a point on the rim?

(3) A wheel initially at rest is subject to a constant angular acceleration. After 20 seconds, the wheel has moved through an angle of 800 degrees.
(a) What is the angular acceleration of the wheel?
(b) What is the angular velocity at 20 seconds?

(4) A disk is initially rotating at 45 revolutions/minute. By placing a finger on the disk, it is observed that the disk stops in a time of 1.50 s. Answer the following:
(a) what is the average angular acceleration?
(b) what is the angle that the disk turns through during this time?

(5) A wheel initially at rest is rotated with α=3 rad/s² for 10 s. It is then brought to rest in 7 revolutions. Answer the following:
(a) What was the angular acceleration required?
(b) How long did it take to stop the wheel?


Name:______________________________ Class:_____ Date:__________

Uniform Circular Motion and Angular Speed Practice 1

$\omega = \frac{2\pi}{T}$ — *r = radius* — *ω = angular speed*
$v_T = \frac{2\pi r}{T}$ — *T = period: time to make one revolution* — *v_T = tangential speed*
$T = \frac{1}{f}$ — *f = frequency: the number of cycles in one second*

Is the described motion an example of rotational motion (R), translational motion (T) or both (R,T)?

______ 1) Carnival goers enjoy a ride on the Ferris Wheel.

______ 2) A bowling ball rolls down an alley toward the assembled bowling pins.

______ 3) You walk quickly up the stairs on your way to your favorite class!

______ 4) A pencil, forgotten on the desk, rolls off the edge and falls to the floor.

______ 5) A young girl rides her bicycle down the straight sidewalk.

Complete the following:

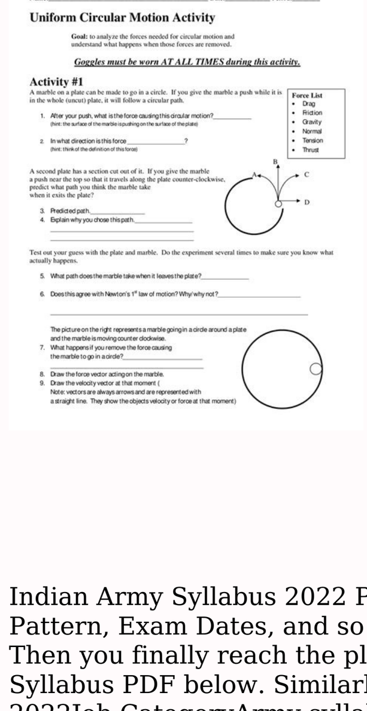
6) On the image below, draw an arrow in the direction of the tangential velocity at points A, B, and C.

7) TRUE or FALSE: An ice skater making laps of a circular track with a constant speed also has a constant velocity. Explain your answer.

8) A mountain bike tire has a diameter of 24 *inches* and is moving with a tangential speed of 4.3 $\frac{m}{s}$. What is its angular speed? (1 in = 2.54 cm)

9) A washing machine with a diameter of 60 *cm* spins clothing with a frequency of 16 *cycles per second*. What is the tangential speed of the clothing in the machine?

10) A sling is used to spin a rock in circles, then launch it straight ahead. If the rock is launched at 6 $\frac{m}{s}$ and its angular speed before launch was 23 $\frac{rad}{s}$, what is the length of the sling?


Name:______________________ Date:________ Period:______

Uniform Circular Motion Activity

Goal: to analyze the forces needed for circular motion and understand what happens when those forces are removed.

Goggles must be worn AT ALL TIMES during this activity.

Activity #1

Uniform circular motion worksheet 1 answers.

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Engines.Machining And Machine ToolMetrology AndOperationsInventory Control{Indian Army Technical Graduate Courses Syllabus}Indian Army Syllabus for JCO Recruitment 2022 is available here. The aspirants who applied for the Indian Army JCO Recruitment 2022 can check the Syllabus and Exam Pattern details here. However, check the topic-wise Indian Army Syllabus for Jr Commissioned Officer. Also, check the Section-wise Exam Pattern details in the sections following.Indian Army JCO Syllabus Details 2022DescriptionDetailsJob DesignationJunior Commissioned Officer (JCO)No. of Vacancies152Category NameSyllabusExam DateUpdated SoonJob LocationAcross IndiaOfficial Websitejoinindianarmy.nic.inIndian Army Exam Pattern for Pandi Vacancies 2022The Selection process for Indian Army JCO Recruitment 2022 is having three rounds. Where the Candidates are shortlisted for Screen tests and allowed to attend written Examinations. The applicants who passed in written Exams are allowed for personal Interviews. However, have a look at the Indian Army Exam Pattern for JCO Recruitment 2022 below. Also, check the Indian Army Syllabus details in the following sections.PaperSubject DetailsNo of QuestionMarks1General Awareness 501002Specific to Religion Denominations as applied by the Candidates50100Total100200Questions will be Objective type MCQs.Pass Mark: 40/100Each Question Carries 02 marks.0.5 Negative for wrong answer Questions.Indian Army JCO Physical TestCategoryMinimum StandardHeight (cm)160 (157 for Gorkhas & Ladakhi Region Candidates)Chest (cm)77Weight (kg)50 (48 for Gorkhas)Physical Fitness TestAble to run 1600 Metres in 05 Minutes 45 SecondsNote: Provisions for extra time for 1.6 Km run in Hilly Terrain Areas:-Between 5000 ft to 9000 ft – Additional 30 SecsBetween 9000 ft to 12000 ft – Additional 120 SecsIndian Army Syllabus PdfHowever, check the topic wise Indian Army Syllabus for Jr Commissioned Officer Post 2022. Here we have given the list of topics for reference purposes. Hence, go through the Indian Army Syllabus details below and start your preparation for written Examination. Moreover, the Syllabus listed below is only for reference purposes the original topics may vary.Indian Army Syllabus for JCO Written ExaminationGeneral AwarenessHere the Question related to General Awareness of the Candidates is asked. The test for checking the General Awareness of the applicants. The Topics that the candidates need to concentrate are as follows.Indian History, Economics, GeographyRecent Events, Indian Culture and Environment.Sports, Games, Awards, Books & Authors.Famous Places, Rivers, Religious, Policies.Famous Places, Scientific Research.Current Affairs, Politics Etc.New inventionsAbout India and its neighbouring countriesEconomic issues in IndiaConstitution of IndiaCountries & CapitalsInternational issuesScientific observationsIndian Army Model Question Papers for JCOIndian Army Soldier Syllabus 2022Looking for the Soldier Written Examination Syllabus 2022. 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Papers SubjectsNo of Questions MarksIGeneral Knowledge0520General Science0520Maths1040Computer Science0520IIEnglish25100Total50200The questions will be Objective Type only.The minimum Pass Marks in both the papers is 32.The Aggregate Pass Mark for the Examination is 80.Negative Marking in CEE is as per the rules of the BoardDownload Indian Army Soldiers Syllabus PDFPrevious Papers Download:Download the Indian Army Soldier Previous Papers Latest from the link given below. However, Aspirants can download free Indian Army Soldier Previous papers pdf below.{Indian Army Soldiers Previous Papers}Join Indian Army Soldier GD SyllabusApplicants searching for Indian Army Syllabus can get here. We have updated the Indian Army Soldier Syllabus for various posts, such as Soldier General Duty, Soldier Technical & Others. Hence, read the following article and download the Indian Army Exam Syllabus 2022 in Pdf format. 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No.Name of the SubjectsQuestionsMarks1General Knowledge10402Chemistry15603Biology15604Mathematics05205Physics0520Total50200Join Indian Army Soldier Clerk/ SKT Exam PatternS. No.Name of the SubjectsQuestionsMarksPart I1General Knowledge05202Maths10403Computer Science05204General Science0520Part II5General English25100Total50200General Knowledge:AbbreviationsSportsAwards & PrizesHistoryGeographyTerminologyUNOIndian Armed ForcesIndian Towns, States, and UtsContinents and Sub ContinentsInstitutions and Research Stations, International Space Stations and Festivals of India and WorldIndian News Agencies and DailiesEnvironmentReligious Communities and Principal LanguagesInventions and DiscoveriesThe Constitution of IndiaNational and International DaysBooks and AuthorsCurrent Affairs and "Who's Who"International OrganizationsThe World of Plants and AnimalsGeneral Science:Human BodyPhysicsChemistryBiologyMedical TermsScientific and Research Institute in IndiaScientific TermsIO/ Numeral AbilityMathematics:ArithmeticGeometryCalculusArea and VolumeAlgebraTrigonometryLines and AnglesHeights and DistancesMensurationCirclesParallelogramComputingProbabilityStatisticsPhysics:Motion, Force, and EnergyMatterGravitationWork and EnergyLightHeatElectricityMagnetismSoundWave MotionDomestic Electric CircuitSun as a Source of EnergyFuelsHeat EnginesNuclear EnergyChemistry:Matter-Nature and BehaviourOxidation and Reduction, Acid, bases, and saltsNature and BehaviourElectrochemical CellExtraction of MetalsClassification of ElementsCarbon and its CompoundsAirElectrolysisWaterChemical BondNatural ResourcesComputer Science:Computer SystemConcept of MemoryInput/ Output DevicesMS – WindowsMS ExcelIntroduction to WindowsMS WordMS PowerpointEnglish:ComprehensionGrammarVerbsTensesSentence StructureActive and Passive VoiceIdioms and PhrasesUse of PhrasesSynonyms and AntonymsOne Word SubstitutionDirect and Indirect speechDownload Indian Army Previous Papers PdfIndian Army SSC Technical Officer Syllabus 2022Candidates who have applied for Indian Army SSC Technical Recruitment 2022 can get the Indian Army SSC Technical Syllabus 2022 from this article. 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Hence, aspirants who applied for Pandit, Granthi, Bodh Monk, and Padre exams can check the Indian Army Exam Syllabus 2022 Pdf on this page. Reading the Indian Army Syllabus 2022 Pdf will help you to score high marks in the written exam.Indian Army Pandit Exam Pattern 2022PapersSubjectsTotal MarksMinimum MarksPaper IGeneral Awareness10040Paper-IIKnowledge specific to the particular religious denomination10040The examination will consist of Objective Type QuestionsIndian Army Junior Commissioned Officer Written Exam Syllabus 2022 PdfGeneral AwarenessCurrent AffairsAuthorsInternational and national organizationsAbbreviationsEnvironmentGeneral KnowledgeBookHistoryGeographyGeneral ScienceBudgetIndian EconomyAwardsIndian Army Pandit Written Exam Syllabus 2022 – Pandit Written Exam SyllabusIndian Army CEE Test Syllabus 2022The Indian Army Clerk Syllabus 2022 is here. Reading the syllabus will help you to prepare well for the exam. Check the Indian Army Clerk Exam Syllabus and Test Pattern here. There is a negative marking of 0.5 for each wrong answer to General Duty Candidates and there is no mark reduction for an answer left blank. Moreover, there is a -1 negative mark for each wrong answer to Soldier Technical, Soldier, Nursing Assistant, Soldier Clerk, or Soldier Tradesmen.Indian Army CEE Written Exam PatternThe following section explains the Indian Army Written Exam Syllabus and Pattern for various posts.Indian Army Clerk Syllabus 2022 and Exam PatternPapersSubjectsNo. of QuestionsNo.of MarksMin. Pass Marks in Each paperIGeneral Knowledge052032General Science0520Maths1040Computer Science0520IIEnglish2510032Total50200The aggregate pass marks will be 80 MarksDownload Indian Army Clerk Written Exam Syllabus 2022 PdfGeneral KnowledgeAbbreviations – National and InternationalSports – National and InternationalAwards & Prizes – National awards, Gallantry awards, Nobel PrizesHistory – Important dates & battles in India and WorldHistory and landmarks of Indian History, a national movementGeography – Solar System Space exploration, The earth's principal peaks, Deserts, Rivers, Lakes, and famousInventions and DiscoveriesEnvironmentThe Constitution of IndiaReligious communities and Principal LanguagesNational and International DaysInternational OrganizationsBooks and AuthorsThe world of plants and animalsCurrent Affairs and "Who's Who"Waterfalls, Geographical Tallest, Biggest, and Longest, etc.Terminology – Geographical terms, Economic terms, Astronomical terms, Legal terms, and Misc termsUNOIndian Armed ForcesIndian Towns, States, and UtsInstitutions and Research Stations, International Space Stations, and Festivals of India and WorldIndian News Agencies and DailiesContinents and Sub ContinentsGeneral ScienceHuman Body – Food and nutrition, diseases and prevention, vitamins and their uses.The question of General Science consists of topics related to Physics, Chemistry, and Biology.based on fundamentals and day-to-day activities.Medical Terms.Scientific Terms.Scientific and Research Institutes in IndiaIO/Numeral AbilityThe questions will be based on the ability of the candidates of the age group ranging between 16 and 20 years.Concentrate on the above topics and other than these topics as well. This is because questions may be asked other than the above topics but definitely within the syllabus of CBSE.Maths Syllabus of Indian ArmyArithmeticNatural numbersIntegersFractionsRational/irrational numbersDecimal fractions, HCF & LCMSquare rootRatio and proportionPercentages, averages, profit & loss, simple and compound interestAlgebraAddition, subtraction, multiplication, and division of algebraic expressionsHCF & LCM, Factorization, simple equations, surds, indices, logarithms, Solution of linear equations of two and three variables.Ratio and proportion meaning and standard formRoots and discriminant of a quadratic equation ax2 + bx + c = 0;MensurationArea and VolumeArea of four walls of a room, area of a circleSector and segment of a circle; surface area and volume of a cube, cuboids cone, cylinder, sphereTrigonometryTrigonometric ratios of an angle A of a right-angle triangle, Simple applications ofTrigonometric ratios for solving problems of different types, Simple identities based upon the above.Heights and DistancesThe solution to simple problems of height and distance using trigonometrically tables and logarithmic tablesGeometryLines and AnglesDifferent characteristics of lines and anglesParallel and perpendicular lines, inserting lines, some angles and triangles, interior and exterior anglesTriangles-properties, equality, congruency, and similarity with respect to sides and anglesParallelogram-types and propertiesCircles – Properties, arc, chords, tangents, secants, and angles subtended by arcs.StatisticsHistograms with given intervalsClassification of data, frequency, and frequency polygons, ogivesMean, median, and mode of grouped and ungrouped data, problems related to statistical techniques.Indian Army Clerk Syllabus for Computer FundamentalsComputer SystemCharacteristics of a computerBasic applications of a computerComponents of a Computer systemCentral Processing Unit (CPU), Visual Display Unit (VDU), KeyboardConcept of MemoryPrimary and Secondary MemoryRAM and ROM, Units of Memory – Byte, Kilobyte, Megabyte, Gigabyte, TerabyteInput / Output DevicesMouse, Joy Stick, Scanner, Microphone, OCR, MICR, Light pen, Barcode Reader, Digital Camera, Printer, Speaker, PlotterBooting procedure and Storage DevicesIndian Army Computer Syllabus MS-WindowsThe basic concept of an Operating System and its functionsIntroduction to WindowsUsing Mouse and moving icons on the screenMy computer, Recycle Bin, Task BarStart menu and menu selection, run an application, setting system date and timeWindows Explorer to view files, folders, and directories, creating and renaming files and foldersOpening and Closing of Windows Minimize, Restore and Maximize forms of windowsBasic components of a Window: Desktop, Frame, Title Bar, Menu Bar, Status Bar, Scroll Bars (Horizontal and Vertical), Using the right button of the MouseCreating Shortcut, Basic Windows, Accessories: Notepad, Paint, Calculator, WordPadMS WordIntroduction to a Word ProcessorCreating and Saving a Document, Editing and Formatting a Document; Text Style (B.I.U), Font Type, Size, changing colour, alignment of textFormatting paragraphs with a line or paragraph spacing; adding headers and footers, numbering pages, using grammar and spell utilitiesUsing subscript and superscript, inserting symbols, Print Preview, Printing a document, Inserting WordArtClipart and Pictures, Page setting, Bullets and Numbering, Borders and Shading, Format painterFind and Replace, Inserting Tables: inserting, deleting rows and columns, merging cells, splitting cells, using the auto format.MS PowerPointIntroduction to Presentation Graphics, understanding the concept of slides showsBasic elements of a slide, Different types of slide LayoutsCreating and saving a presentationDifferent views of a slide: Normal view, Slide Sorter view, and Slide ShowEditing and Formatting a slide: Adding Titles, Subtitles, Text, Background, Watermark; Headers and Footers, Numbering SlidesMS ExcelIntroduction to Spreadsheets, Concept of Worksheets, and workbookCreating and saving a worksheetWorking with a spreadsheet: entering numbers, text, date/time, and series using AutoFillEditing and formatting a worksheet including changing color, size, and font, alignment of text, inserting or deleting cells, rows, and columns.Indian Army GD Syllabus and Exam Pattern 2022S.NoSubjectsNo of QuestionsTotal MarksPass Marks1General Knowledge1530322General Science20403Maths1530Total50100Indian Army SyllabusGeneral KnowledgeAbbreviations – National and InternationalSports – National and InternationalAwards & Prizes – National awards, Gallantry awards, Nobel PrizesHistory – Important dates & battles in India and WorldHistory and landmarks of Indian History, a national movementGeography – Solar System Space exploration, The earth's principal peaks, Deserts, Rivers, Lakes and famous, waterfalls, Geographical Tallest, Biggest, and Longest, etc.Inventions and DiscoveriesEnvironmentThe Constitution of IndiaReligious communities and Principal LanguagesNational and International DaysInternational OrganizationsBooks and AuthorsThe world of plants and animalsCurrent Affairs and "Who's Who"Terminology – Geographical terms, Economic terms, Astronomical terms, Legal terms, and Misc termsUNOIndian Armed ForcesIndian Towns, States, and UtsInstitutions and Research Stations, International Space Stations, and Festivals of India and WorldIndian News Agencies and DailiesContinents and Sub ContinentsGeneral ScienceHuman Body – Food and nutrition, diseases and prevention, vitamins and their uses.The question of General Science consists of topics related to Physics, Chemistry, and Biology.based on fundamentals and day-to-day activities.Medical Terms.Scientific Terms.Scientific and Research Institutes in IndiaMathsArithmeticConsisting of numbers, HCF, LCM, Decimal fraction, square roots, percentage, AverageRatio and proportion, partnership, profit & loss, unitary method, time, work, and distanceSimple interestAlgebraBasic operations and factorizationHCF and LCMQuadratic equationsGeometryLines and Angles, triangles quadrilaterals, parallelograms and circlesMensurationArea and perimeters of Squares, rectangles parallelograms, and circles, volume and surface area of a cubeCuboids, cones, cylinders, and spheres.Indian Army Social Tradesman Syllabus 2022 Pdf and Exam PatternS.NoSubjectsNo of QuestionsTotal MarksPass Marks1General Knowledge1530322General Science20403Maths1530Total50100Indian Army SyllabusGeneral KnowledgeAbbreviations – National and InternationalSports – National and InternationalAwards & Prizes – National awards, Gallantry awards, Nobel PrizesHistory – Important dates & battles in India and WorldHistory and landmarks of Indian History, the national movementGeography – Solar System Space exploration, The earth's principal peaks, Deserts, Rivers, Lakes and famous, waterfalls, Geographical Tallest, Biggest, and Longest etc.Inventions and DiscoveriesEnvironmentThe Constitution of IndiaReligious communities and Principal LanguagesNational and International DaysInternational OrganizationsBooks and AuthorsThe world of plants and animalsCurrent Affairs and "Who's Who"Terminology – Geographical terms, Economic terms, Astronomical terms, Legal terms, and Misc termsUNOIndian Armed ForcesIndian Towns, States, and UtsInstitutions and Research Stations, International Space Stations, and Festivals of India and WorldIndian News Agencies and DailiesContinents and Sub ContinentsGeneral ScienceHuman Body – Food and nutrition, diseases and prevention, vitamins and their uses.The question of General Science consists of topics related to Physics, Chemistry, and Biology.based on fundamentals and day-to-day activities.Medical Terms.Scientific Terms.Scientific and Research Institutes in IndiaMathsArithmeticConsisting of numbers, HCF, LCM, Decimal fraction, square roots, percentage, AverageRatio and proportion, partnership, profit & loss, unitary method, time, work, and distanceSimple interestAlgebraBasic operations and factorizationHCF and LCMQuadratic equationsGeometryLines and Angles, triangles quadrilaterals, parallelograms and circlesMensurationArea and perimeters of Squares, rectangles parallelograms, and circles, volume and surface area of a cubeCuboids, cones, cylinders, and spheres.Indian Army Soldier Technical Syllabus 2022 and Exam PatternIndian Army Soldier Technical Written Exam SyllabusGeneral KnowledgeAbbreviations – National and InternationalSports – National and InternationalAwards & Prizes – National awards, Gallantry awards, Nobel PrizesHistory – Important dates & battles in India and WorldHistory and landmarks of Indian History, the national movementGeography – Solar System Space exploration, The earth's principal peaks, Deserts, Rivers, Lakes and famous, waterfalls, Geographical Tallest, Biggest, and Longest etc.Inventions and DiscoveriesEnvironmentThe Constitution of IndiaReligious communities and Principal LanguagesNational and International DaysInternational OrganizationsBooks and AuthorsThe world of plants and animalsCurrent Affairs and "Who's Who"Terminology – Geographical terms, Economic terms, Astronomical terms, Legal terms, and Misc termsUNOIndian Armed ForcesIndian Towns, States, and UtsInstitutions and Research Stations, International Space Stations, and Festivals of India and WorldIndian News Agencies and DailiesContinents and Sub ContinentsIndian Army Syllabus for MathematicsArithmeticNatural numbersIntegersFractionsRational/irrational numbersDecimal fractions, HCF & LCMSquare rootRatio and proportionPercentages, averages, profit & loss, simple and compound interestAlgebraAddition, subtraction, multiplication, and division of algebraic expressionsHCF & LCM, Factorization, simple equations, surds, indices, logarithms, Solution of linear equations of two and three variables.Ratio and proportion meaning and standard formRoots and discriminant of a quadratic equation ax2 + bx + c = 0;MensurationArea and VolumeArea of four walls of a room, area of a circleSector and segment of a circle; surface area and volume of a cube, cuboids cone, cylinder, sphereTrigonometryTrigonometric ratios of an angle A of a right-angle triangle, Simple applications ofTrigonometric ratios for solving problems of different types, Simple identities based upon the above.Heights and DistancesThe solution to simple problems of height and distance using trigonometrically tables and logarithmic tablesIndian Army Syllabus for MathsGeometryLines and AnglesDifferent characteristics of lines and anglesParallel and perpendicular lines, inserting lines, some of angles and triangles, interior and exterior anglesTriangles-properties, equality, congruency, and similarity with respect to sides and anglesParallelogram-types and propertiesCircles – Properties, arc, chords, tangents, secants, and angles subtended by arcs.StatisticsHistograms with given intervalsClassification of data, frequency, and frequency polygons, ogivesMean, median, and mode of grouped and ungrouped data, problems related to statistical techniques.Parallelogram CirclesArcs, chords, tangents, secants, and angles subtended by arcsProbabilityBasic problems related to the probabilityIndian Army Syllabus ChemistryFollowing are some of the lists of topics that come under the Indian Army Syllabus Chemistry.Matter-Nature and BehaviorNature and behaviorDifferent types of substances, elementsCompounds and their mixturesStructure of matterAtomic theory, molecules, and atomsStructure of atom electronsProtons and neutronsThe composition of the nucleus – atomic number and mass number, Valence electrons, and valencyPreparation and properties of Hydrogen, Oxygen, Nitrogen, and Carbon-di-oxideOxidation and Reduction, Acid, bases, and saltsElectrochemical cellConstruction of a simple voltaic cell; working of an electrochemical cellLead storage battery and dry cellClassification of elementsSimilarities and dissimilarities in the properties of some elementsPeriodic law, periods and groupsGradation of properties of elements along a period and in the groupsCarbon and its compoundsIntroductionAllotropies of carbon and their occurrenceStructure, related property and usesHydrocarbon and its elementary structure, related property and usesSimple compounds of carbon, hydrogen, and oxygen and their usesPetroleum products, an introductory account of synthetic fibers, plastics, rubber, soaps, and detergentsExtraction of metalsMetals and non-metalsOccurrence, general metallurgical operations for extraction of pure metalProperties of metals and some alloysUses of metals and non-metals, their compoundsChemical bondFormation of ionic and covalent bondsImportant properties of electrovalent and covalent compoundsElectrolysisMovement of ions during electrolysis; the relationship between current, time and amount of metal deposited during electrolysisElectroplatingSyllabus of Indian Army – ChemistryNatural ResourcesWaterWater as a natural resourceOrigin of life in water as a medium for the activity of the livingWater as a solventSaturated and unsaturated solutionSeawater as a habitat of an organismSalts from oceans, ocean current, use of waterDependence of man on natural resources – minerals from earth metals and non-metals, use of non-metalsAirRole of the atmosphere in protection from radiationComposition of the atmosphereWater and particulate matter in the atmosphereCarbon dioxide and its adverse effect on living organisms, the role of trees, the release of carbon dioxide from fossil fuels and automobilesCorrosion of metals, damage of historical monuments from acidic gasesToxic effects of metallic particles, asbestos etc. on living organism's carbon monoxide and its ill effectsSmog, air pollution noise pollution and its effects on human beingsThese are the syllabus topics of chemistry as per the Indian Army Syllabus 2022 Pdf.PhysicsMotion, Force, and EnergyMatterPhysical measurementsScalar and vector quantitiesSimple machinesStructure of matterMotionMotion and displacement, uniform and non-uniform motionSpeed and velocityAcceleration, equations of motion-derivation and simple numericalForceMeaning of force, the inertia of a body, Newton's laws of motion, momentum,Relationship between forcesAcceleration and mass of an object-simple numerical based on theseGravitationNewton's law of gravitation, free-fall, and acceleration due to gravitySimple pendulum and restoring forceThe relationship between length and time periodWork and EnergyEnergy, mechanical energy – potential and kinetic – their formulaeConcept of work, work was done by a constant force, the relationship between work and energy, simple numerical on work and energyLightReflection, the law of reflection, refraction, the law of refraction, refraction through prisms,Lenses and optical instrumentsSimple and compound microscopeHeatHeat as a form of energyMechanical work and heatHeat and temperatureMeasurement of temperature, the idea of Celsius and Fahrenheit scales and their conversion, specific heat, simple numerical based on it.The idea of conversion of heat into work and vice versa, the meaning of a mechanical equivalent of heat – its determination by Joule's experimentThe external and internal combustion engineElectricityA source of energy, conductors, and resistorsMeasurement of current, potential difference, and resistance – Ohm's law, simple numerical based on itHeating, the effect of the current, quantitative relationship between heats, electric current, the resistance of common electrical appliances based on the heating effectMeasurement of electrical energy – its unit, electrical power, simple numericalMagnetismType of magnet, properties of magnet, magnetic fieldElectromagnet and their applications, DC & AC motorsFleming's left-hand ruleSoundSound and its property, propagation of sound, velocityResonance, wave motion, and applicationsWave MotionNature of a wave, propagation of a wave through a mediumTypes of wavesLongitudinal and transverse Periodic motionThe idea of simple harmonic motion (graphical treatment)Definitions of displacement, amplitude, frequencyTime period, wavelength and unitsRelationship between wavelengthsFrequency and velocity of aWave, simple numerical, the energy transferred during propagation of wavesDomestic electric circuit Elementary ideas about wiring, fuse, possible hazards and safety measuresSun as a Source of energyAbsorption of solar energy by the earthPhotosynthesisSolar heaters, solar cells; wind energy – windmills; electricity from sea wavesFuelsBiomass as a fuel-biogas, fossil fuels-coal, types of coal; petroleumFractional distillation of petroleum, L.P.G, natural gasClassification of fuels –solid, liquid and gaseous fuelsCharacteristics of a fuel-calorific value of fuels and its determinationIgnition temperatureCombustion of fuelsCombustion of food in living organismsCharacteristics of an ideal fuelHeat enginesThe idea of conversion of heat into work and vice-versaMeaning of mechanical equivalent of heat – its determination by joule's experiment (simple numerical based on work and energy conversion)External combustion engine (basic idea)Working on internal combustion enginesNuclear energySources of the Sun's energy, the composition of sunlight; the basic idea of an atomic nucleus, nuclear fusion, nuclear fissionChain reactionEnergy released duringFissionExamples of uncontrolled fission and fusionThe simple idea of a nuclear reactor and atomic power plantRadiation hazardsEnergy crisis –causes and possible solutions for overcoming itIndian Army Nursing Assistant SyllabusPreparing for the Indian Army Exam using the Indian Exam Pattern 2022 Pdf helps you to score high marks on the CEE test. Let's read the Indian Army Exam Pattern 2022 in the following section.Indian Army Written Exam Pattern 2022 for Nursing Assistant Subject Total MarksPass Marks General Knowledge 200 80MathsBiologyChemistryBiologyTaxonomyCell and Molecular BiologyReproductionGenetics and evolutionHuman health and diseasesBiochemistryPlant physiologyHuman physiologyBiotechnology and its applicationsBiodiversity, ecology, and environmentDirect Links for downloading the Syllabus Indian Army 2022, Test Pattern, and Previous Papers PdfHere, you can easily get the direct links for downloading the Join Indian Army Syllabus, and Test Pattern Pdf. So, acquire all those useful stuff here and attend the exam without any trouble.Indian Army CEE Written Exam Syllabus – CEE Written Exam SyllabusIndian Army Fireman Syllabus 2022 PdfThe Indian Army Syllabus 2022 Pdf is available here. Hence, read the Indian Army Fireman Syllabus to get high marks in the written exam. The following exam explains the detailed syllabus of the Indian Army Exam Pattern 2022 Pdf.Indian Army Fireman Exam Pattern 2022SubjectsNo of QuestionsTotal MarksDurationGeneral Intelligence and Reasoning25252 hoursNumerical Aptitude2525General English5050General Awareness5050Total50100Download the Syllabus of the Indian ArmyReasoningSyllogismSeating Arrangement – Circular table and Line (North and South)PuzzleBlood RelationsStatement and ArgumentPassage and conclusionCoding and decodingOrder and rankingMaking judgmentsInequality or Decision MakingData SufficiencyLogical ReasoningInput-OutputNumber seriesNumerical AbilityPie – ChartsBar GraphsData AnalysisLine GraphsCase letsClocksVolumeSurface areaHeight and distancesPermutation and combinationSimple and compound interestCombined data setsProbability/ SeriesRootsAverageRatioTime and workTime and DistanceRateProfit and LossMixture & AllegationStocks and sharesPartnershipEquations and ProbabilityGeneral EnglishSources & PronounActionSources & conjunctiveTenseInterrogative sentenceSpelling mistake detectionSpotting the errorMood & voicePropositionSourcesDegree (positive comparative & superlative)Phrases & IdiomsSourcesAntonymsIndian Army Syllabus

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