Total Marks	200

506

PHYSICS

(English Medium)

Category
A

506-PHYSICS

A 50600536

SEAL SEAL SEAL SEAL SEAL SEAL

Seat No. of the Candidate | | | | | | | | |

Block No. of the Candidate | |

Signature of the Candidate | |

Signature of the Block Supervisor | |

Important Instructions for Candidates	
(1)	Please do not open the question booklet until you are told to do so.
(2)	During examination, if a candidate is found having any literature guide, guide, piece of paper, handwritten or printed paper, mobile phone, calculator, spy camera, headphone or any other equipments then the candidate will be considered as disqualified.
(3)	During the examination if candidates are found conversing with each other, making noise or not following supervisor's instructions then they will be considered as disqualified.
(4)	After receiving question paper please write your seat number in **OMR SHEET** at the correct given place.
(5)	Please do not write your seat number at any other place than the allotted one in the **OMR SHEET** and if any sign of your identity or recognition is found then you will be considered totally disqualified for the examination.
(6)	Signatures of both the supervisor and the candidate in the certificate of **OMR SHEET** are compulsory without which **OMR SHEET** will not be evaluated, so it is compulsory for the candidate to get signature of the supervisor.
(7)	Candidates can use blue/black ball pen. They cannot use pens or pencils of any other colour and also whitener.
(8)	No marks should be made on any of the options in the question paper.
(9)	There are total 200 questions in this question paper. There is only one answer to each question from the options A, B, C and D. Four options are given for each question. All the questions are compulsory. Example: What is the capital of Gujarat? (A) Ahmedabad (B) Gandhinagar (C) Vadnagar (D) Patan Here, if option (B) Gandhinagar is correct then option (B) in the **OMR SHEET** will have to be darkened with pen. Ⓐ ● Ⓒ Ⓓ
(10)	One(1) mark is allotted to each correct answer. For each wrong answer 0.25 marks will be deducted. If a candidate does not want to answer any question then he/she will have to select option E. Negative marking will not be applicable for option E.
(11)	Cross marked answers, answers given on more than one option and answers re-marked after use of blade, eraser or whitener will be given **Negative 0.25 marks.**
(12)	Please hand over the **OMR SHEET** to the block supervisor after completion of examination before leaving the classroom. Any candidate failing to do so will be considered as disqualified for the examination.
(13)	Maximum time allotted for the examination is 180 minutes.
(14)	Most appropriate option will be considered as answer of the question.

(1) How many Indian languages have been declared endangered by UNESCO

(A) 195 (B) 196 (C) 189 (D) 197

(2) The National Education Policy (NEP) 2020, integrates ____ to root education in ancient knowledge of India and its contribution in modern India.

(A) Knowledgeable India (B) Indian Knowledge System

(C) Modern India (D) Ancient India

(3) The full form of PARAKH is _____.

(A) Private Assessment, Report and Analysis of Knowledge for Holistic

(B) Performance Assessment, Review and Analysis of Knowledge for Holistic development

(C) Performance Assistant, Review and Analysis of knowledge for Holistic development

(D) Personal Assistant, Review and Analysis of Knowledge for Holistic development.

(4) A scientist of Indian origin who made groundbreaking contribution in the study of DNA was____.

(A) Radha Krushnan (B) Amartya Sen

(C) Hargovind Khurana (D) Dr. A.P.J. Abdul Kalam

(5) The Three Tier Panchayati Raj System was recommended by _____.

(A) Mactapl Committee (B) British Commiittee

(C) Sevak Committee (D) Balwantrai Mehta Committee

(6) Commonwealth Games were previously known as_____.

(A) European Games (B) Euro–Asian Games

(C) Common Games (D) British Empire Games

(7) Who appoints CAG?

(A) Prime Minister (B) President

(C) Vice-President (D) Chief–Minister

(8) The battle between Porus and Sikander was fought on the bank of _____ river.

(A) Chenab (B) Ravi

(C) Satluj (D) Jhelum

(9) "Who among the following reigned during the Anno Domini Period?"

(A) Chandragupt Maurya (B) King Ashok

(C) Khilji Dynasty and Tughlaq Dynasty (D) Bindusara

(10) _____ is the most renowned form of dance of Maharashtra.

(A) Ghumar (B) Kalbeliya

(C) Kachhighodi (D) Laavani

(11). _____ was invented by Michael Faraday?

(A) Penicillin

(B) Periodic Table

(C) Precious Metal - Radium

(D) Conversion of Kinetic Energy into Electric energy

(12) _____ among the following was written by Manubhai Pancholi (Darshak)

(A) Upanas (B) Socrates

(C) Anunay (D) Hayaati

(13) Anup Kumar is a renowned _____ player.

(A) Kho – Kho (B) Kabaddi

(C) Cricket (D) Football

(14) _____ was Suggested by Swami Vivekanand to Promote nationalism in India.

(A) Pride of the nation

(B) Public awareness and upliftment of the poor

(C) Inclusive Vision

(D) Cultural Pride

(15) _____ is not a renewable energy resource.

(A) Forest (B) Wind

(C) Natural Gas (D) Sunlight

(16) _____ was considered as the "Soul of Indian constitution" by Dr. B. R. Ambedkar.

(A) Right to Education

(B) Cultural and Educational Right

(C) Right to go against exploitation

(D) Right to the Constitutional Remedies

(17) Panchayati Raj Institutions came to exist on ____ in Gujarat.

(A) 1st May, 1960

(B) 20th April, 1993

(C) 15th August, 1947

(D) 1st April, 1963

(18) _____ is not founded by the Government to implement the recommendations of Mudaliar Commission 1953.

(A) Rural Higher Education Committee

(B) University Grants Commission

(C) All India Education Council

(D) All India Council of Sports

(19) Astronaut Sunita Williams has an ancestral link with_____.

(A) Karnal, Haryana

(B) Vadodara, Gujarat

(C) Mahesana, Gujarat

(D) Kurukskhetra, Haryana

(20) _____ hosted the Kabaddi World Cup 2025.

(A) India

(B) England

(C) South Korea

(D) Malaysia

(21) Open and Distance Learning (ODL) is included in ____ education.

(A) Formal

(B) Informal

(C) Non-formal

(D) None of the above

(22) "I never teach my pupils; I only attempt to provide the conditions in which they can learn" who quoted it?

(A) Maharshi Arvind

(B) Albert Einstein

(C) Pestology

(D) Eric Crome

(23) "A person must use the development of his individuality by aligning it to the social needs and ideals." This is _____ aim of education.

(A) an Individual (B) a Social

(C) a Peculiar (D) a Sovereign

(24) _____ described education as a tri-polar process consisting of the teacher the learner the social environment or syllabus as a third pole".

(A) John Dewey (B) John Adams

(C) Herbert Spencer (D) Benjamin S. Bloom

(25) Idealism is also known as_____.

(A) Idealism (B) Realism

(C) Naturalism (D) Pragmatism

(26) John Dewey, Kilpatrick, and Mahatma Gandhi advocated_____.

(A) Existentialism (B) Naturalism

(C) Idealism (D) Pragmatism

(27) Social and National Integration can be attained through_____.

(A) Joint Family (B) Requirement of Food

(C) Democracy (D) Population growth

(28) What kind of education enables human to utilize free time more joyful and productive activities?

(A) Non-formal Education

(B) Continuing Education

(C) Life-long Education

(D) Education through correspondence

(29) The cultural objective of education emphasizes on_____.

(A) to enrich a person with knowledge

(B) to inculcate ideals and morals in life

(C) to Transfer Knowledge, Art, Literature, Music from generation to generation.

(D) to enable a person to earn livelihood

(30) "Human bears the competency of adapting to the situation and adapting one's needs to the situation" ____ form of pragmatism supports it.

(A) Nominalistic Pragmatism
(B) Experimental Pragmatism
(C) Biological Pragmatism
(D) Humanistic Pragmatism

(31) A person with IQ score 100, is placed in _____ category.

(A) Average Intelligence
(B) High Intelligence
(C) Lower Intelligence
(D) Superior Intelligence

(32) ____ type of Psychological conflict do Students Face when they neither want to stay at home nor go to school?

(A) Approach – Avoidance
(B) Approach – Approach
(C) Avoidance – Avoidance
(D) Dual Approach Avoidance

(33) A Psychologist who believed that "Motivation is cyclic"

(A) Lipid
(B) C.T. Morgan
(C) Lewin
(D) Emilicuma

(34) Which test is used to detect mental retardation among children?

(A) Achievement Test
(B) Reading Test
(C) Through General Observation
(D) Intelligence Test

(35) The full form of GATB is _____.

(A) Great Attitude Test Box
(B) Global Attitude Test Book
(C) Global Aptitude Test Book
(D) General Aptitude Test Battery

(36) ____ is placed the first among eight stages of Robert Gagne's approach.

(A) Stimulus – Response Approach
(B) Verbal – Association Approach
(C) Problem – Solving Approach
(D) Chaining Approach

(37) "Trial and Error Principle" of Thorndike is known as _____.

(A) Stimulus – Response Approach

(B) Theory of operant conditioning

(C) Cognitive Learning Theory

(D) Principle of motivation

(38) After fulfilling basic Physiological need, the next level in Maslow's Hierarchy of needs is_____.

(A) Love and Belongingness

(B) Esteem Needs

(C) Self–Actualization needs

(D) Safety Needs

(39) The measurement of intelligence was first successfully introduced by_____.

(A) Garrett and Menttest

(B) Binet and Simon

(C) Crow and Crow

(D) Thurston and Speareman

(40) The learning graph remains extended and horizontal during _____ temporary stage.

(A) Learning

(B) Maturity

(C) Plateau

(D) End

(41) To counsel a student towards the most suitable field of learning and future profession, educator usually rely on _____ test.

(A) Intelligence Test

(B) Personality Measurement Test

(C) Aptitude Test

(D) Diagnostic Test

(42) To enable a student to develop their creativity fully and completely, maximum importance should be given to_____.

(A) Process

(B) Idea

(C) Excellence

(D) Creativity

(43) While framing the teaching method in curriculum development, _____ state of students require prior consideration.

(A) Mental

(B) Physical

(C) Emotional

(D) Holistic

(44) _____ is Pre-requisite in order to promote concentration in Students.

(A) Proficiency of Teacher

(B) Selection of proper method, congruent to the unit

(C) Age level

(D) Mental level

(45) Any action that is derived from internal motivation and different from temptation is called____.

(A) Improper (B) Motivation

(C) Eligibility (D) Distress

(46) Classroom behaviour generally observes total ____ types of interactions.

(A) Five (B) Two

(C) Three (D) One

(47) Bakum developed an evaluation process to measure ____ development of student.

(A) Physical (B) Mental

(C) Holistic (D) Social

(48) ____ has released an education from the bandage of Time, Collection and number.

(A) Internet (B) Technology

(C) Website (D) Open University

(49) The research that scientifically studies the daily problems of the school is called, _____ research.

(A) Pragmatic (B) Action

(C) Conditioning (D) Visiting

(50) To find out the mid-point of the given group, _____ is calculated

(A) Median (B) Mode

(C) Mean (D) Any of the above

(51) _____ is also known as Skinnerian Instruction.

(A) Branchial Instruction (B) Linear Instruction

(C) Mathematical Instruction (D) All of the above

(52) Ned Flanders' Interaction analysis categories comprises Ten main categories, out of that three are..

(i) Teacher's Talk

(ii) Pupil's Talk

(iii) Silence

Which of the following shows the correct order?

(A) (i) 7 (ii) 1 (iii) 2 (B) (i) 4 (ii) 4 (iii) 2

(C) (i) 6 (ii) 3 (iii) 1 (D) (i) 7 (ii) 2 (iii) 1

(53) ____ is a correct formula for calculating Percentile Rate.

(A) $PR = 100 - \frac{(100R - 50)}{N}$

(B) $PR = 100\frac{(100R - 50)}{N}$

(C) $PR = 100 - \frac{(50R - 100)}{N}$

(D) $PR = 1 - \frac{(100R - 50)}{N}$

(54) _____ is a correct mean of 6, 9, 10, 12, 16, 17.

(A) 10 (B) 11

(C) 17 (D) 12

(55) "Teacher uses the change in gestures, modulation of voice and hands' movement so that students stay focused" – This is mainly applied in____ skill.

(A) Introductory (B) Illustration

(C) Learning aids Experiment Skill (D) Stimulus change

(56) _____ will replace the (?)

3000, 1500, 500, 125, (?)

(A) 100 (B) 50 (C) 25 (D) 20

(57) 'A' is the sister of 'B'. 'C' is the mother of 'B'. 'D' is the father of 'C'. Then D is the _____ of A.

(A) Maternal Uncle (Mama) (B) Father

(C) Maternal Uncle (Maasa) (D) Maternal Grandfather

(58) _____ among the following cannot be framed by using the letter of word "I N D E PE N D E N C E"

(A) NICE
(B) PINE
(C) PENDING
(D) INDEED

(59) Kavya begins to walk to the south from point A. She turns left after walking 30 metres. Then she walks 40 metres straight and reaches the point 'B'. Now find the distance between 'A' and 'B'.

(A) 50 metres
(B) 35 metres
(C) 70 metres
(D) 120 metres

(60) If B=2, BAG = 10 then find the value of BOX.

(A) 11
(B) 12
(C) 41
(D) 42

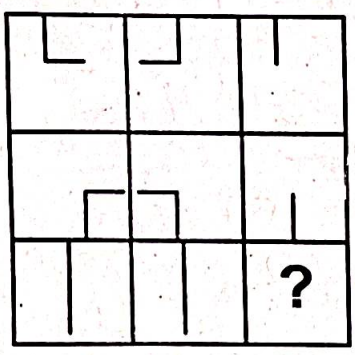
(61) Find the correct odd one from the following.

(A) DEGJ
(B) MNPS
(C) PQTX
(D) TUWZ

(62) Five friends are sitting in a line, A is sitting right to B, but not sitting the first. C is sitting left to D. If B is sitting right to E then who is exactly in the middle?

(A) A (B) B (C) D (D) E

(63) Figure is given. ____ among the option correctly replaces (?).



(A) 
(B) 
(C) 
(D) 

(64) 34, 18, 10, 6, 4, _____.

(A) 0 (B) 1 (C) 2 (D) 3

(65) If DOG is coded as '4157' Then LION will be_____.

(A) 1271514 (B) 1291514

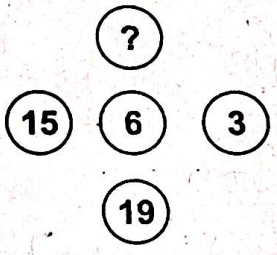
(C) 1291312 (D) 1181514

(66) There are total 65 students in a line. A stands 36th from the left, B Stands 36th from the right then total _____ students must be standing between both A and B.

(A) 9 (B) 13

(C) 15 (D) 11

(67) _____ will replace the (?)



(A) 91 (B) 610

(C) 691 (D) 587

(68) Thermometer : Temperature :: Earthquake : _____.

(A) Scale (B) Seismograph

(C) Anemometer (D) Odometer

(69) The angle formed by the minute and hour hands at 4:00 pm is _____.

(A) 120° (B) 100°

(C) 80° (D) 60°

(70) _____ among the following will stay first if arranged in alphabetical order.

(A) Overbid (B) Outstanding

(C) Oval (D) Outstep

(71) કયા વાક્યમાં અવ્યયનો ઉપયોગ થતો નથી ?

(A) તે પાસ થયો કેમ કે તેણે ખૂબ મહેનત કરેલી.

(B) શાબાશ છે એ બહાદૂર જુવાનને !

(C) એ પ્રાણઘાતક અકસ્માતથી તે મરી જાત.

(D) એ ચોરની પેઠે ઘરમાં ઘૂસ્યો.

(72) કયું વાક્ય કર્મણિ પ્રયોગમાં નથી ?

(A) તને વિમાન દેખાય છે ?

(B) મેં શીર્ષાસન કર્યું.

(C) મને વાત સમજાય છે.

(D) મારે આસને બેસવું છે.

(73) A સાથે Bનાં સાચાં જોડકાં દર્શાવતો વિકલ્પ કયો છે ?

A	B
(a) લખવાનું આપોને	(i) ભવિષ્યકૃદંત
(b) માગ્યા મેહ વરસે નહીં	(ii) સંબંધક ભૂ.કૃ.
(c) લખી લખીને થાક્યો	(iii) હેત્વર્થ
(d) વાંચવા આવજો	(iv) ભૂતકૃદંત

(A) (a) i, (d) ii, (b) iii, (c) iv

(B) (b) i, (c) ii, (d) iii, (a) iv

(C) (c) i, (b) ii, (d) iii, (a) iv

(D) (a) i, (c) ii, (d) iii, (b) iv

(74) કયા જોડકામાંના શબ્દો એક પ્રકારનો જ સમાસ દર્શાવે છે ?

(A) તપોધન, પાઠચેતર

(B) ઘનશ્યામ, કાપુરુષ

(C) કલ્પલતા, શ્રીયુત

(D) શેષશાયી, સ્વચ્છંદ

(75) એ શબ્દ શોધો કે જેનો અર્થ અન્ય કરતાં ભિન્ન છે.

(A) પુંડરિક (B) પર્યંક (C) રાજીવ (D) શતદલ

(76) સાચી જોડણી પસંદ કરો.

(A) હિમસૂતા

(B) હીમસુતા

(C) હીમસૂતા

(D) હિમસુતા

(77) એ, થી, થકી, વડે વગેરે પ્રત્યયો કઈ વિભક્તિમાં આવે છે ?

(A) સંપ્રદાન

(B) અપાદાન

(C) સંબંધ

(D) કરણ

(78) પોતાની વાતને કે વિષયને સ્પષ્ટ કરવાનો પ્રયત્ન કરતા ગદ્યને કયા પ્રકારનું ગદ્ય કહેવામાં આવે છે ?

(A) વાદાત્મક

(B) વિવરણાત્મક

(C) વર્ણનાત્મક

(D) ભાવાત્મક

(79) તમતમારે, જુદાજુદા, દૂરદૂરથી વગેરે કયા પ્રકારના શબ્દો છે ?

(A) નામયોગી શબ્દો (B) સંયુક્ત શબ્દો

(C) સામાસિક શબ્દો (D) દ્વિરુક્તિવાળા શબ્દો

(80) નીચેનામાંથી પરિમાણવાચક વિશેષણ જણાવો.

(A) આટલું (B) આવું

(C) કડવું (D) પહેલું

(81) નીચેનામાંથી કયા વિકલ્પમાં તમામ શબ્દોની જોડણી વ્યાકરણની દૃષ્ટિએ સંપૂર્ણ સાચી છે ?

(A) શારીરિક, આશીર્વાદ, જિજ્ઞવિષા, સુશ્રુષા

(B) શારીરિક, આશીર્વાદ, જિજ્ઞવિષા, શુશ્રૂષા

(C) શારિરીક, આશિર્વાદ, જ્ઞજ્ઞવિષા, શુશ્રુષા

(D) શારીરીક, આશિર્વાદ, જિજ્ઞવીષા, શુશ્રૂષા

(82) નીચેનામાંથી કયો શબ્દ 'અશ્વ'નો પર્યાયવાચી શબ્દ નથી ?

(A) હાય (B) વાજી

(C) તોખાર (D) કુંજર

(83) વાક્યશુદ્ધિના નિયમ અનુસાર નીચેનામાંથી વ્યાકરણની દૃષ્ટિએ શુદ્ધ વાક્ય પસંદ કરો.

(A) મેં આજે એક ગાય અને એક બળદને આવતી જોઈ.

(B) મેં આજે એક ગાય અને એક બળદ આવતાં જોયાં.

(C) મેં આજે એક ગાય અને એક બળદ આવતા જોયો.

(D) મેં આજે એક ગાય અને બળદને આવતી જોઈ.

(84) નીચેના વાક્યમાં વ્યાકરણીય રીતે કયો શબ્દપ્રયોગ ખોટો છે ? "તેણે મને સહૃદયતાપૂર્વક આવકાર આપ્યો."

(A) તેણે

(B) સહૃદયતાપૂર્વક

(C) આવકાર

(D) આપ્યો

(85) લેખનકાર્ય કરતી વખતે વાક્યના અંતે કે વચ્ચે કોઈ વિગત લખવાની બાકી રહી ગઈ હોય, ત્યારે તેને ઉમેરવા માટે કયા ચિહ્નનો ઉપયોગ થાય છે ?

(A) લોપચિહ્ન (') (B) કાકપદ / હંસપદ (^)

(C) લઘુરેખા (–) (D) ફુદડી (*)

(86) Pair the words with their antonyms.

Words	Antonyms
(a) lazy	(i) diligent
(b) active	(ii) blunt
(c) sharp	(iii) inert
(d) fertile	(iv) barren

(A) (c) i, (d) ii, (a) iii, (b) iv
(B) (a) ii, (c) iii, (b) i, (d) iv
(C) (c) ii, (d) i, (b) iii, (a) iv
(D) (a) i, (d) iii, (c) ii, (b) iv

(87) Which word has no suffix.

(A) Health
(B) Library
(C) Embrace
(D) Marriage

(88) Find out the odd pair.

(A) proud - pride
(B) bond - bind
(C) grieve - grief
(D) lose - loss

(89) Arrange these sentences in proper order to describe an accident-scene.

(i) Passengers were told to be ready to quit the ship.

(ii) Everyone knew there was fire on board.

(iii) Smoke oozed up between the planks.

(iv) Flames broke out here and there.

(v) Most people bore the shock bravely.

(A) iii, ii, v, iv, i
(B) i, ii, iv, iii, v
(C) iv, iii, ii, v, i
(D) iii, iv, ii, i, v

(90) Select the sentence with almost similar meaning to the sentence "At the moment the duck looked exhausted."

(A) The duck looked dreadful
(B) The duck was looking for a place to hide
(C) The duck looked very tired.
(D) The duck seemed unhappy.

(91) Put proper preposition in the blank. He was looking ..... his lost keys.

(A) at
(B) for
(C) after
(D) into

(92) ..... he finds a job, his family will starve. Fill in the blank with proper word.

(A) It (B) Unless (C) As (D) However

(93) The harder you work, the ..... result you will get.

(A) good (B) best

(C) better (D) lower

(94) Select the similar word for Inventory.

(A) Summary (B) Schedule

(C) Index (D) Questionnaire

(95) All the crows are black. We ..... find a white crow, put proper adverb to complete the sentence.

(A) frequently (B) usually

(C) rarely (D) always

(96) Which expression best conveys the idea ?

(A) During the curfew, the streets wearing desolate look.

(B) During the curfew, the streets wore a desolate look.

(C) During the curfew, the streets have had worn desolate looks

(D) During the curfew, the streets has been wearing desolation looks

(97) What is the correct noun form of the verb 'compel' ?

(A) Compelation (B) Compulsion

(C) Compulsory (D) Compellment

(98) Fill in the blank with the correct preposition : "The committee is totally opposed ..... the new proposal."

(A) for (B) against

(C) to (D) with

(99) Fill in the blanks with appropriate articles : "He is ..... heir to the throne and ..... honest man."

(A) a, a (B) an, a (C) an, an (D) the, a

(100) Identify the correct verb according to subject-verb Agreement : "Neither the principal nor the teachers ..... present at the meeting yesterday."

(A) was (B) were (C) are (D) is

(101) The dimensional formula of energy propagated per unit area at a given point in unit time is _____.

(A) $M^1L^0T^{-3}$ (B) $M^1L^0T^{-2}$ (C) $M^1L^2T^{-3}$ (D) $M^1L^2T^{-2}$

(102) A Body of mass m is suspended by a spring with spring constant k, which of the following have same dimension of $\left(\frac{k}{m}\right)^{\frac{1}{2}}$.

(A) Periodic time (B) Velocity (C) Frequency (D) Wavelength

(103) A player throws a ball upwards with an initial velocity of $20ms^{-1}$. After how long does the ball return to the player's hand? (Take $g=10ms^{-2}$ and neglect air resistance)

(A) 10 sec (B) 2 sec (C) 6 sec (D) 4 sec

(104) The position of an object moving along x-axis is given by $x=a+bt^2$, where $a=1\ m$ and $b=2ms^{-2}$ and t is measured in seconds. The average velocity of an object between $t=2.0\ s$ and t = 4.0 s is _____

(A) $15ms^{-1}$ (B) $12ms^{-1}$ (C) $10ms^{-1}$ (D) $8ms^{-1}$

(105) For a given deceleration, if the initial velocity is doubled, the stopping distance will be ____ times for a vehicle.

(A) eight (B) two (C) four (D) sixteen

(106) The angle between vectors $\vec{A}=\hat{i}-\hat{j}$ and $\vec{B}=\hat{i}+\hat{j}$ is _____.

(A) 90° (B) 45° (C) 60° (D) 120°

(107) A ball is projected at an angle 45° with the horizontal with kinetic energy of 100J. What will be its kinetic energy at the maximum height _____.

(A) 100 J (B) 75 J (C) 25 J (D) 50 J

(108) If $\vec{P}=\hat{i}+\hat{j}$ and $\vec{Q}=2\hat{i}+3\hat{j}$ then the component of vector $\vec{P}$ along the direction of $\vec{Q}$ is ____.

(A) $\frac{5}{\sqrt{2}}$ (B) $\frac{5}{\sqrt{13}}$ (C) $\frac{\sqrt{5}}{2}$ (D) $\frac{\sqrt{5}}{13}$

(109) A constant retarding force of 50N is applied to a body of mass 20 kg moving initially with a speed at $15ms^{-1}$. How long does the body take to stop ?

(A) 4 sec (B) 6 sec (C) 10 sec (D) 8 sec

(110) A nucleus is at rest in the laboratory frame of reference. If it disintegrates into two fragments, the angle between velocity vector of both fragments will be _____.

(A) 180° (B) 90° (C) 60° (D) 0°

(111) Two masses 8 kg and 12 kg are connected at two ends of a light inextensible string that goes over a frictionless pulley. When the masses are released, the deceleration of masses will be _____ ms^{-2}. (Take $g = 10\ ms^{-2}$)

(A) 6 (B) 4 (C) 2 (D) 10

(112) A body is initially at rest. It undergoes one-dimensional motion with constant acceleration. The power delivered to it at time t is proportional to _____.

(A) $t^{3/2}$ (B) t^2 (C) $t^{1/2}$ (D) t

(113) 1 kWh = _____ erg (Fill in the blank)

(A) 3.6×10^{13} (B) 3.6×10^6 (C) 3.6×10^9 (D) 3.6×10^{-6}

(114) A body constrained to move along y-axis of a co-ordinate system is subject to a constant force F given by $\overrightarrow{F} = (-\hat{i} + 2\hat{j} + 4\hat{k})N$. Where $\hat{i}, \hat{j}, \hat{k}$ are unit vectors along x, y and z axis respectively. The work done by the distance of 2 m along the y axis will be _____ J.

(A) 8 (B) 4 (C) –2 (D) 16

(115) A wheel starts from rest and obtains angular velocity of 60 rad/s at the end of 4 s, then its costant angular acceleration will be _____ rad/s^2.

(A) 10 (B) 24 (C) 30 (D) 15

(116) The distance between two particles of mass 4 g and 8 g respectively is 36 cm. What will be the distance of C.M. of the systems from the particle of mass 8 g ?

(A) 6 cm (B) 24 cm (C) 12 cm (D) 20 cm

(117) If the angular momentum of the body is increased by 100%, its rotational kinetic energy is increased by _____.

(A) 100% (B) 200% (C) 400% (D) 300%

(118) Four particles of equal mass m are placed at the four vertices of a square of side d. The gravitational potential at the centre of the square will be _____.

(A) $\frac{-4\sqrt{2}Gm}{d}$ (B) $\frac{-2\sqrt{2}Gm}{d}$ (C) $\frac{-\sqrt{2}Gm}{d}$ (D) $\frac{-Gm}{\sqrt{2}d}$

(119) Assuming the earth to be a sphere of uniform mass density, how much would a body weigh halfway down to the centre of the Earth if it weighed 200 N on the surface?

(A) 125 N (B) 100 N (C) 150 N (D) 50 N

(120) What kind of relation exists between kinetic energy (k) and the orbital radius (r) of the satellite revolving around the earth ?

(A) $k \propto r^2$ (B) $k \propto r$ (C) $k \propto \frac{1}{r}$ (D) $k \propto \frac{1}{r^2}$

(121) According to Hooke's law if stress increases, the ratio of stress to strain _____ (for small reformation)

(A) increases (B) remains constant (C) decreases (D) becomes zero

(122) How much should the pressure on a litre of water be changed to compress it by 0.20% ? (Bulk modulus $B = 2.2 \times 10^9\ N/m^2$)

(A) $4.4 \times 10^6\ Nm^{-2}$ (B) $2.2 \times 10^6\ Nm^{-2}$

(C) $22 \times 10^6\ Nm^{-2}$ (D) $44 \times 10^6\ Nm^{-2}$

(123) The formula of Elastic potential energy(U) stored in a stretched wire is _____.

(A) $U = \frac{1}{2}(Stress)^2 \times (Strain)^2 \times Volume\ of\ wire)$

(B) $U = \frac{1}{2}(Stress)^2 \times (Strain) \times Volume\ of\ wire)$

(C) $U = \frac{1}{2}(Stress) \times (Strain) \times Volume\ of\ wire)$

(D) $U = \frac{1}{2}(Stress) \times (Strain)^2 \times Volume\ of\ wire)$

(124) A sphere of mass m and radius r is falling in a viscous velocity fluid. The terminal velocity attained by the falling sphere will be proportional to _____.

(A) r (B) $\frac{1}{r}$ (C) $\frac{1}{r^2}$ (D) r^2

(125) Liquid is flowing through a tube of irregular cross section at both ends. The ratio of radii at the wide end and the narrow end is 3:2 . If the velocity of the liquid at the wide end is v, then the velocity will be _____.

(A) $\frac{3}{2}v$ (B) $\frac{4}{9}v$ (C) $\frac{9}{4}v$ (D) $\frac{2}{3}v$

(126) The SI unit of Stefan Boltzmann constant is _____.

(A) $Wm^2\ k^{-4}$ (B) $Wm^{-2}\ k^{-4}$ (C) $Wm^{-2}\ k^4$ (D) $Wm^2\ k^4$

(127) For what value of temperature will the values on the Celsius and Fahrenheit scales be the same ?

(A) –40 (B) –32 (C) 320 (D) 80

(128) In a thermodynamics process which one of the following statements is not true ?

(A) In an adiabatic process PV^{γ} = constant

(B) In an adiabatic process the system is insulated from the surrounding.

(C) In an isochoric process pressure remains constant

(D) In an isothermal process temperature remains constant.

(129) For a cyclic process, _____

(A) $W=0$ (B) $\Delta V=0$ (C) $\Delta Q=0$ (D) $\Delta U=0$

(130) A flask contains chlorine and argon in the ratio of 1:2 by mass. The temperature of the mixture is 27°C. The *n* ratio of average kinetic energy per molecule of the two gases will be _____.

(A) 4 : 1 (B) 1 : 2 (C) 2 : 1 (D) 1 : 1

(131) The numbers of translational degrees of freedom for a molecule of diatomic gas is ____.

(A) 6 (B) 5 (C) 3 (D) 2

(132) A particle is executing S.H.M. along *Y*-axis. At time $t=0$, particle (S.H.O.) is at position $Y=+\frac{A}{Z}$, and starts moving upward. After 2 oscillations its phase will be ___. (A = amplitude)

(A) $\frac{25\pi}{6}$ *rad* (B) $\frac{25\pi}{2}$ *rad* (C) 4π *rad* (D) $\frac{25\pi}{4}$ *rad*

(133) The relation between acceleration and displacement of four particles are given below, which one of the particles is executing simple harmonic motion?

(A) $a_x=+4x^2$ (B) $a_x=-4x$

(C) $a_x=+4x$ (D) $a_x=-4x^2$

(134) A particle executing SHM has a maximum speed of 20 cm/s and a maximum acceleration of 40 cm/s^2. The period of Oscillation is _____ sec.

(A) 4π (B) $\frac{\pi}{2}$ (C) 2π (D) π

(135) Sound waves of wavelength λ travelling in a medium with a speed of v m/s enter into another medium where its speed is $2v$ m/s. Wavelength of sound waves in the second medium is _____.

(A) $\frac{\lambda}{2}$ (B) 2λ (C) 4λ (D) λ

(136) Wave equation for one progressive harmonic wave is $y - 10^{-2} \sin\left(2x - 400t + \frac{\pi}{4}\right) m$ where x is in m and t is in s). Velocity of wave would be _____ m/s.

(A) 200 (B) 100 (C) 50 (D) 20

(137) Is a screw gauge with a smaller least count always better? If two screw gauges are given, one with 100 divisions on the circular scale and another with 200 divisions, which one would you prefer and why ?

(A) The 200 divisions gauge; it offers higher precision (small least count)

(B) The 100 divisions gauge; it is simple to read.

(C) Both are equally good; the number of divisions does not matter.

(D) The 100 division gauge; it is less prone to backlash error.

(138) Which measurement's accuracy mainly affects the result for the length of a second's pendulum ?

(A) Amplitude of swing (B) Effective length (L)

(C) Time period (T) (D) Mass of bob

(139) What is the effect of temperature on the co-efficient of viscosity of a liquid ?

(A) It remains constant with increase in temperature.

(B) It decreases with increase in temperature.

(C) It depends on the type of viscous liquid.

(D) It increases with increase in temperature.

(140) The "Self adjusting nature" of the force of friction refers to _____.

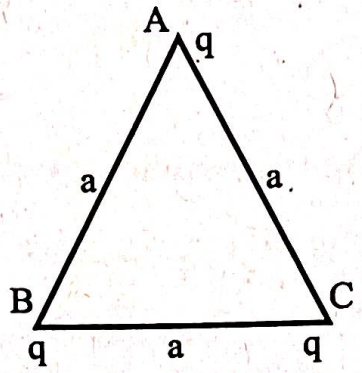
(A) Friction automatically changes the co-efficient of frictions based on the surface conditions

(B) Friction always adjusts to zero when body is at rest

(C) Friction only acts when the body is in motion

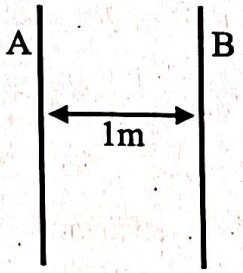
(D) Friction adjusts its magnitude to be exacting equal to the applied force until the limiting fraction is reached.

(141) A charge q is placed at each corner of a given triangle. What is the magnitude of electric field at the midpoint of side BC ?



(A) $\frac{q}{3\pi\varepsilon_0 a^2}$ (B) $-\frac{2q}{3\pi\varepsilon_0 a^2}$ (C) $\frac{q^2}{3\pi\varepsilon_0 a^2}$ (D) $-\frac{q^2}{3\pi\varepsilon_0 a^2}$

(142) What is the magnitude of electric field at midpoint of perpendicular distance between two parallel infinity long thin straight charged wires A and B, linear charge density 2×10^{-7} c/m and 3×10^{-7} c/m respectively?



(A) 2.4×10^3 N/C (B) 3.6×10^3 N/C

(C) 5.3×10^3 N/C (D) 8.5×10^3 N/C

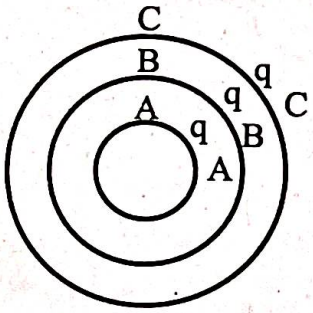
(143) If speed of an alpha particle changes from 2×10^5 m/s to 7×10^5 m/s in 2 ms along the direction of uniform electric field, then magnitude of electric field is _____ N/S. Take mass of alpha particle as 6.68×10^{-27} kg.

(A) 2.538 (B) 3.822 (C) 5.218 (D) 7.932

(144) If electric field at any point on surface of a uniformly charged metallic sphere of radius 5 cm is 2×10^5 n/s. Then electric flux associated with the sphere is _____ Nm^2/c

(A) 3.14×10^3 (B) 6.28×10^3 (C) 12.56×10^3 (D) 25.12×10^3

(145)



The co-centric conducting spherical shells A, B, C of radii a, b, c have charge q_a, q_b, q_c respectively. The electric potential on surface of spheres B is ____. $\left(Here\ k = \frac{1}{4\pi\varepsilon_0}\right)$

(A) $k\frac{q_A}{a} + k\frac{q_B}{b} - k\frac{q_C}{c}$

(B) $k\frac{q_A}{b} - k\frac{q_B}{c} + k\frac{q_C}{c}$

(C) $k\frac{q_A}{b} + k\frac{q_B}{b} + k\frac{q_C}{c}$

(D) $k\frac{q_A}{c} - k\frac{q_B}{b} - k\frac{q_C}{c}$

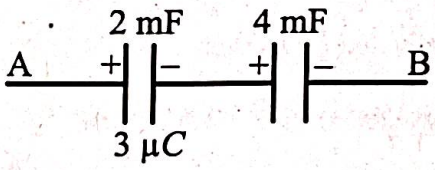
(146) A parallel plate capacitor initially has vacuum between its plates. It has a charge of $10\mu C$ and capacitance of $2\mu F$. The space between the plates is then filled with a dielectric of dielectric constant 3. What is the difference between initial and final potential difference across the plates?

(A) $3.33 \times 10^3\ V$ (B) $5.42 \times 10^3\ V$ (C) $7.93 \times 10^3\ V$ (D) $9.21 \times 10^3\ V$

(147) An electric dipole having dipole moment $2 \times 10^{-5}\ Cm$ is placed in a uniform electric field of $3 \times 10^5\ N/C$. It is rotated from a position parallel to a position anti-parallel to electric field. What is the work done by external force?

(A) 2 J (B) 6 J (C) 10 J (D) 12 J

(148)



What is the potential difference between points A and B?

(A) $0.67 \times 10^{-3}\ V$

(B) $1.21 \times 10^{-3}\ V$

(C) $1.89 \times 10^{-3}\ V$

(D) $2.25 \times 10^{-3}\ V$

(149) A cylindrical metallic wire is drawn to increase its length by 2% uniformly. Calculate the percentage change in its resistance.

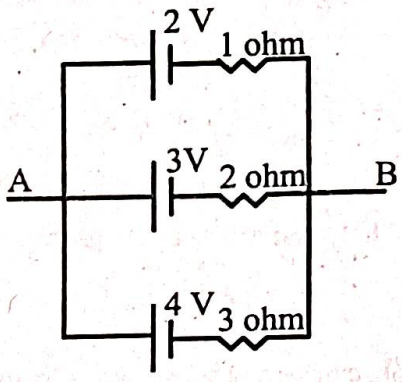
(A) increases by 2%

(B) decreases by 3%

(C) increases by 4%

(D) decreases by 2%

(150)



The equivalent emf between points A and B is _____ V.

(A) 1.58 (B) 2.64 (C) 4.83 (D) 7.58

(151) A conducting wire of uniform cross section having resistance 30Ω is bent into a closed equilateral triangle. The effective resistance between any two adjacent vertices is _____ Ω.

(A) 3.33 (B) 6.67 (C) 10.33 (D) 20.67

(152) When a charged particle enters a uniform electric field perpendicularly with some initial velocity, what kind of path will it follow?

(A) ellipse (B) circular (C) hyperbola (D) parabola

(153) The value of electric field at a perpendicular distance r due to a uniformly charged infinite plane sheet is proportional to

(A) r^{-1} (B) r^{-2} (C) r^{0} (D) r^{-3}

(154) An electron is moving away from another electron, then the potential energy of the system _____.

(A) decreases (B) increases

(C) remains constant (D) initially decreases then increases.

(155) A 24pF capacitor is connected to a 50V battery. The energy stored in the capacitor is _____ J.

(A) 1.5×10^{-8} (B) 2×10^{-8} (C) 4×10^{-8} (D) 3×10^{-8}

(156) Kirchoff's first and second law for electrical circuits are consequences of

(A) Conservation of electric charge and energy respectively

(B) Conservation of electric charge.

(C) Conservation of energy and electric charge respectively

(D) Conservation of energy.

(157) During Meissner effect in diamagnetic substance, the magnetic susceptibility of the substance becomes _____.

(A) 0 (B) ∞ (C) 1 (D) –1

(158) A Horizontal conducting rod of length 1 m is moving with constant velocity of 4 m/s perpendicular to uniform vertical magnetic field of 3 T, then time rate of change of potential difference generated between its two ends is _____ V/s.

(A) 12 (B) 4 (C) 3 (D) 0

(159) A 50 cm long solenoid has area 2 cm^2 and 25 turns per cm. What is its self inductance if vacuum is the medium inside it?

(A) $1.53 \times 10^{-4}\ H$ (B) $4.38 \times 10^{-4}\ H$

(C) $7.85 \times 10^{-4}\ H$ (D) $9.14 \times 10^{-4}\ H$

(160) A resistance of 5Ω and an ideal inductance of 2 H are connected in series with a DC source of 10 V. What is the phase difference between the current in the circuit and the source voltage ?

(A) 90° (B) 60° (C) 45° (D) 0

(161) A capacitor of 2 μF, a resistor of 5 ohm and an inductance of 30 mH are connected in series to an AC source of 230 V and 50 Hz frequency. What is the power factor of the circuit ?

(A) 0.35 (B) 0.54 (C) 0.71 (D) 0.88

(162) In series RLC AC circuit if capacitance doubles keeping inductance constant, what will be ratio of new to original resonance frequency ?

(A) $\frac{1}{\sqrt{2}}$ (B) $\frac{\sqrt{3}}{2}$ (C) 1 (D) $\sqrt{3}$

(163) If at any point an electromagnetic wave travelling in free space and far away from source , if the amplitude of electric field is 30 N/C, then what is the root mean square value of magnetic field at that point ?

(A) $5.38 \times 10^{-8}\ T$ (B) $7.07 \times 10^{-8}\ T$

(C) $10.73 \times 10^{-8}\ T$ (D) $13.69 \times 10^{-8}\ T$

(164) If the wavelength of a red colour light is 8000 Å and that of violet colour light is 4000 Å, then ratio of their speeds in vacuum is _____.

(A) 0.5 (B) 1 (C) 1.5 (D) 2

(165) A plano-convex lens is made of glass of refractive index 1.5 . The radius of curvature of its convex surface is 20 cm. Its focal length is _____ cm.

(A) 40 (B) 30 (C) 25 (D) 20

(166) For a light ray travelling from glass (refractive index 1.5) to water (refractive index 4/3) critical angle for total internal reflection is _____.

(A) $\sin^{-1}(0.89)$ (B) $\sin^{-1}(0.73)$

(C) $\sin^{-1}(0.6)$ (D) $\sin^{-1}(0.45)$

(167) A concave mirror has radius of curvature as 40 cm. If an object is placed at a distance 10 cm in front of the mirror then the magnification produced is _____.

(A) 2 (B) 4 (C) $\frac{1}{4}$ (D) -4

(168) Light rays from a source are incident on a glass prism of refractive index 1.5 and prism angle 5°. The angle of minimum deviation of the emerging ray is _____.

(A) 0.5° (B) 1° (C) 1.5° (D) 2.5°

(169) In Young's double slit experiment of interference of light waves, distance between two slits is 1 mm, distance of slits from screen is 1 m and wavelength of light is 6.5×10^{-7} *m*. Then distance between 3rd dark fringe and 6th bright fringe is _____ mm.

(A) 0.785 (B) 1.124 (C) 2.017 (D) 2.275

(170) Angular position of 3rd maximum formed with light of wavelength 6000 Å in Fraunhofer diffraction of slit width 1 mm is _____.

(A) 0.0018 rad (B) 0.0021 rad (C) 0.0036° (D) 0.0054°

(171) In Young's double slit experiment of interference of light waves, the intensity at a point on the screen where path difference is $\lambda / 3$ is *a*, then intensity at a point on the screen where path difference is $\lambda / 6$ is _____.

(A) 3*a* (B) 5*a* (C) 7*a* (D) 2*a*

(172) When frequency of light incident on a metal surface in photoelectric effect is 4×10^{14} *Hz* then the stopping potential is 2 *V*. Now when frequency of light incident is 6×10^{14} *Hz* then the stopping potential is _____ *V*.

(A) 2.28 (B) 2.47 (C) 2.69 (D) 2.83

(173) If the average intensity of solar radiation on earth's surface during summer is 1000 W/m^2, then how many photons are incident square meter per second on earth's surface ? Take average wavelength of solar radiation 6000Å.

(A) 3.02×10^{21} (B) 5.12×10^{21} (C) 7.53×10^{21} (D) 9.47×10^{21}

(174) If the kinetic energy of a proton is double that of an alpha particle, what is the ratio of their de Broglie wavelengths? Take the mass of alpha particle to be 4 times the mass of a proton.

(A) $\sqrt{2}$ (B) $\sqrt{3}$ (C) 3 (D) 4

(175) If n_h = number of holes and n_e = number of free electrons, then for pure semiconductor _____.

(A) $n_h = n_e$ (B) $n_h > n_e$ (C) $n_h < n_e$ (D) $n_h = n_e^2$

(176) Hole is _____.

(A) an artificially created particle

(B) an anti particle of electron

(C) a vacancy created when an electron leaves a covalent bond

(D) absence of free electrons

(177) The impurity atom needed to make an *n*-type semiconductor is _____.

(A) indium (B) aluminum (C) boron (D) arsenic

(178) What happens to the current in a forward biased p-n junction after the applied voltage crosses the threshold (cut-in) voltage ?

(A) The current stops flowing completely.

(B) The current increases significantly (exponentially)

(C) The current decreases significantly

(D) The current becomes constant (reverse saturation current)

(179) In the condition of minimum deviation, the refracted ray inside the prism _____.

(A) becomes parallel to the base

(B) becomes perpendicular to the base

(C) becomes parallel to the incident ray

(D) becomes parallel to the emergent ray

(180) If the metre bridge wire is not of uniform area of cross-section, how will it affect the observations ?

(A) The temperature of the wire will remain constant.

(B) It will only affect the resistance of the connecting wires.

(C) The resistance per unit length will vary along the wire.

(D) The experiment will be impossible to perform.

(181) Where was the idea of microteaching first originated ?

(A) Oxford (B) California (C) Mumbai (D) Kolkata

(182) Which of the following is not a basic skill of a science teacher ?

(A) Enthusiastic (B) Innovative

(C) Exam oriented (D) Interest in co-curricular activities

(183) Which of the following is a key advantage of the demonstration method in Physics?

(A) It is completely student centered

(B) It requires no preparation

(C) It reduces the risk of damage of apparatus from students during handling

(D) It marks difficult concepts easier to understand

(184) What is the main purpose of 'Remedial teaching' in Physics ?

(A) To identify bright students

(B) To teach new advanced topics

(C) To give extra marks

(D) To help students overcome learning gaps

(185) Which teaching method is most suitable for developing scientific attitude and critical thinking in Physics

(A) Lecture method (B) Laboratory method

(C) Textbook method (D) Story telling method

(186) What is the primary purpose of a 'lesson plan' in Physics teaching?

(A) To prepare students for final exam

(B) To outline the specific learning objectives and activities for a single session.

(C) To plan time schedule of a lesson

(D) To manage classroom disciple

(187) Mainly how many cognitive leaves are there in Bloom's taxonomy ?

(A) Three (B) Four (C) Five (D) Six

(188) Which of the following is not a characteristic of scientific attitude?

(A) Curiosity (B) Open mind

(C) Extreme hard work (D) Reasoning

(189) Which type of method is group discussion ?

(A) Learning centric method (B) Teacher centric method

(C) Teacher-learning centric method (D) School centric method

(190) According to Bloom's taxonomy, identifying the parts of telescope falls under which cognitive level?

(A) Knowledge (B) Application (C) Analysis (D) Synthesis

(191) 'Learning by Doing' is the basic principle of ...

(A) Lecture method (B) Demonstration method

(C) Project method (D) Rote learning

(192) Which of the following is an example of a formative assessment in a Physics classroom?

(A) A surprise quiz at the end of a chapter (B) End-of–year examination

(C) A final board exam (D) A term report card

(193) The process of collecting information for research is called ...

(A) data guessing (B) data collection

(C) data prediction (D) data deletion

(194) A Science teacher should always keep himself updated with _____.

(A) political news (B) entertainment programs

(C) latest development in his subject (D) sports activities

(195) Teaching aids in a lesson plan are used to ...

(A) reduce teaching time (B) replace the teacher

(C) decorate the classroom (D) make learning more effective

(196) What happens when the lecture-cum- discussion method is not properly used?

(A) All students may not get a chance to participate, violating the principle of 'learning by participating'

(B) All students get equal chance to participate in discussion

(C) Students become more creative and independent

(D) The principle of 'Learning by participating' is fully achieved

(197) What is the primary difference between fundamental research and applied research ?

(A) Fundamental research stresses on development of technology, while applied research develops scientific knowledge and predictions.

(B) Fundamental research tries to expand the existing scientific knowledge base, while applied research focuses on solving real life problems

(C) Both fundamental and applied research have the same practical approach

(D) Fundamental research focuses on real problems, while applied research is purely theoretical

(198) The term 'model' in teaching refers to ...

(A) A classroom building design

(B) A type of textbook

(C) A teaching episode demonstrated by an experience teacher

(D) A school rule

(199) Homework in a lesson plan is given to ...

(A) reduce teaching work

(B) punish students

(C) extend learning outside the classroom

(D) replace classroom learning

(200) In some teaching models, the student is considered as

(A) a school administrator

(B) a classroom monitor

(C) a partner in the education process

(D) passive listener

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