Andhra Pradesh State Council of Higher Education

Notations :

1.Options shown in green color and with ✔ icon are correct.

2.Options shown in red color and with ✖ icon are incorrect.

Question Paper Name :	Physics 3rd May 2024 Shift 2
Duration :	120
Total Marks :	140
Display Marks:	No
Share Answer Key With Delivery Engine :	Yes
Calculator :	None
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console?	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No

Show Progress Bar :	No
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

Research Methodology

Section Id :	971036463
Section Number :	1
Mandatory or Optional :	Mandatory
Number of Questions :	66
Section Marks :	70
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 1 Question Id : 97103632572 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How does mass media influence society?

Options :

1. ✖ Promotes critical thinking

2. ✔ Shapes public opinion

3. ✖ Limits access to information

4. ✖ Encourages isolation

Question Number : 2 Question Id : 97103632573 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is an example of an online teaching platform?

Options :

1. ✖ Tutorial class

2. ✖ Traditional classroom

3. ✖ Laboratory session

4. ✔ Swayamprabha

Question Number : 3 Question Id : 97103632574 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Some students who do not speak often in class and who typically develop ideas and questions in their minds before speaking are _____students.

Options :

1. ✔ Reflective

2. ✖ Active

3. ✖ Non-academic

4. ✖ Shy

Question Number : 4 Question Id : 97103632575 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Learning objectives mean?

Options :

1. ✖ Learning experience

2. ✖ Concise outcomes

3. ✖ Academic achievement

4. ✔ Intended learning outcomes

Question Number : 5 Question Id : 97103632576 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the following, which one is not considered in 'White Hat'?

Options :

1. ✔ Feelings

2. ✖ Data gathering

3. ✖ Facts

4. ✖ Information needs

Question Number : 6 Question Id : 97103632577 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The modern pedagogical standards are not related to _____ .

Options :

1. ✖ Learners- focussed process

2. ✔ Rigid teaching plan

3. ✖ Individual Students need

4. ✖ Learner diversity

Question Number : 7 Question Id : 97103632578 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How many domains of learning are identified by Benjamin Bloom ?

Options :

1. ✖ Two

2. ✔ Three

3. ✖ Four

4. ✖ Five

Question Number : 8 Question Id : 97103632579 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

As per Bloom's taxonomy, the objective of remembering refers to _____

Options :

1. ✖ Psychomotor

2. ✖ Affective

3. ✔ Cognitive

4. ✖ Social

Question Number : 9 Question Id : 97103632580 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the following quadrants of SWAYAM, which one is not figured?

Options :

1. ✖ Video lecture

2. ✖ E- content

3. ✖ Self-assessment tests

4. ✔ Podcasts

Question Number : 10 Question Id : 97103632581 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the following, which channel is broadcasting educational content of management and library science and related subjects of the SWAYAM platform?

Options :

1. ✖ Door Darshan

2. ✖ Vageesh-1

3. ✔ Prabandhan-5

4. ✖ Kautilya-7

Question Number : 11 Question Id : 97103632582 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How many quadrants are there in MOOCs?

Options :

1. ✖ Two

2. ✖ Three

3. ✔ Four

4. ✖ Five

Question Number : 12 Question Id : 97103632583 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the best advantage of a Choice Based Credit System of education?

Options :

1. ✔ Student-centric

2. ✖ Flexibility for teachers

3. ✖ Content specific

4. ✖ Teacher-centric

Question Number : 13 Question Id : 97103632584 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The computer-based testing learning domain covers _____ behaviour.

Options :

1. ✖ Conative

2. ✖ Effective

3. ✔ Cognitive

4. ✖ Psychomotor

Question Number : 14 Question Id : 97103632585 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The research activity pursuing based on observable facts is known as _____

Options :

1. ✖ Ethno methodology

2. ✖ Constructionist

3. ✔ Positivism

4. ✖ Manipulative

Question Number : 15 Question Id : 97103632586 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the purpose of using a Venn diagram in logic?

Options :

1. ✖ To confuse the audience

2. ✔ To visualize logical relationships

3. ✖ To simplify complex arguments

4. ✖ To present factual evidence

Question Number : 16 Question Id : 97103632587 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Experimental research is based on _____ methodology.

Options :

1. ✖ Qualitative

2. ✔ Quantitative

3. ✖ Subjective

4. ✖ Contextual

Question Number : 17 Question Id : 97103632588 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which type of research findings and conclusions are not generalised to other situations?

Options :

1. ✔ Descriptive

2. ✖ Fundamental

3. ✖ Experimental

4. ✖ Historical

Question Number : 18 Question Id : 97103632589 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the following approaches, which one is not quantitative research?

Options :

1. ✖ Correlation

2. ✔ Ground theory

3. ✖ Experimental

4. ✖ Deductive

Question Number : 19 Question Id : 97103632590 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The National Literacy Mission was started in the year _____

Options :

1. ✖ 1991

2. ✖ 1947

3. ✔ 1998

4. ✖ 2000

Question Number : 20 Question Id : 97103632591 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the best remedy for the student's problems related to learning?

Options :

1. ✖ Suggestion for private tuition

2. ✖ Suggestion for hard work

3. ✔ Diagnostic teaching

4. ✖ Suggestion to go to the library

Is Section Default? : null

Question Id : 97103632592 Sub Question Shuffling Allowed : Yes Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (21 to 25)

Read the Passage and answer the following questions:

If you wish to be a writer, you must learn to develop your own point of view. All good writers make us see things in a different light. You may be writing about the same thing as your classmates, but your presentation must reflect your personality and individuality. There are so many interesting subjects you can write about in different forms but here we will try to attempt writing short stories. There is a good market for the following types: humorous stories, adventurous stories, domestic stories, and mysterious stories and stories related to animals and strange experiences. Don't worry if your story turns out to be short-some of the stories are quite short. Be very careful about the climax or end of the story. It must be what the reader fears, desires, expect or best of all doesn't expect. So, get down to it. Think of a plot-make points on how the story will progress and pen it down.

Sub questions

Question Number : 21 Question Id : 97103632593 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The most important thing about being a writer is that

Options :

1. ✖ You must have a pen and paper

2. ✖ You must have a degree in writing

3. ✖ You must have a painful heart

4. ✔ You must learn to develop your own point of view

Question Number : 22 Question Id : 97103632594 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

The narrator advises the reader to write in order to _____.

Options :

1. ✖ Earn a livelihood

2. ✔ Encourage him to become a writer

3. ✖ Make him famous among his people

4. ✖ Show his intelligence to others

Question Number : 23 Question Id : 97103632595 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A successful writer's presentation must reflect _____.

Options :

1. ✔ His personality and individuality

2. ✖ His hand writing

3. ✖ His showy nature

4. ✖ His superiority to others

Question Number : 24 Question Id : 97103632596 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The phrase 'pen it down' here means _____.

Options :

1. ✖ To get down

2. ✔ To write

3. ✖ To throw the pen

4. ✖ To throw it down

Question Number : 25 Question Id : 97103632597 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

According to the passage, what is essential for aspiring writers to learn?

Options :

1. ✔ Developing their own point of view

2. ✖ Writing about the same topics as classmates

3. ✖ Avoiding short stories

4. ✖ Following popular writing trends

Is Section Default? : null

Question Number : 26 Question Id : 97103632598 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The fundamental function of SPSS software is _____.

Options :

1. ✖ To analyse quantitative data

2. ✖ Management reference tool

3. ✔ Statistical Package for analysing quantitative data

4. ✖ Useful for literature review

Question Number : 27 Question Id : 97103632599 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Plagiarism in research refers to _____.

Options :

1. ✖ Using previous data

2. ✖ Quoting findings of others

3. ✔ Unscrupulously copying others works

4. ✖ Incorporating earlier findings of the research.

Question Number : 28 Question Id : 97103632600 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the following, which one is considered a barrier of effective communication?

Options :

1. ✔ Differences of cultural aspects

2. ✖ Active listening

3. ✖ Clarity of message

4. ✖ Perfect information

Question Number : 29 Question Id : 97103632601 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the following communication, which one is considered as interpersonal?

Options :

1. ✖ Metaphorical

2. ✖ Philosophical

3. ✖ It is not participating in friendly

4. ✔ It is both focused and unfocussed.

Question Number : 30 Question Id : 97103632602 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following is not considered as verbal communication?

Options :

1. ✖ Instruction

2. ✔ Wordless messages

3. ✖ Practicals

4. ✖ Online classes

Question Number : 31 Question Id : 97103632603 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the following, which one is not considered a subjective aspect of culture ?

Options :

1. ✖ Belief

2. ✖ Attitude

3. ✔ Language

4. ✖ Values

Question Number : 32 Question Id : 97103632604 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The origin of the word communication is from _____.

Options :

1. ✖ Greek

2. ✖ German

3. ✔ Latin

4. ✖ French

Question Number : 33 Question Id : 97103632605 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Who is regarded as the father of reasoning?

Options :

1. ✖ Plato

2. ✖ Rousseau

3. ✖ Montesquieu

4. ✔ Aristotle

Question Number : 34 Question Id : 97103632606 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a college 400 students took a mock test. In that 60 percent of boys and 80 percent of the girls cleared the cut off in the test. Suppose the total percentage of students clearing the cut off in the test is 65 percent, how many girls appeared in the test?

Options :

1. ✖ 300

2. ✖ 250

3. ✖ 150

4. ✔ 100

Question Number : 35 Question Id : 97103632607 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

3,5,9,17, 33, _____. What is the next number?

Options :

1. ✖ 45

2. ✖ 35

3. ✔ 65

4. ✖ 75

Question Number : 36 Question Id : 97103632608 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How many types of reasoning are there?

Options :

1. ✖ Four

2. ✔ Two

3. ✖ Three

4. ✖ Five

Question Number : 37 Question Id : 97103632609 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Suppose AIRLINE is written as ENILRIA7, then RAILWAY will be written as _____

Options :

1. ✖ YAWILAR8

2. ✖ YAWILAR7

3. ✔ YAWLIAR7

4. ✖ YAWLIAR8

Question Number : 38 Question Id : 97103632610 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the following series 3W, 7V, 11U, 15T, ____ What comes next?

Options :

1. ✖ 22Q

2. ✖ 20P

3. ✔ 19S

4. ✖ 19Z

Question Number : 39 Question Id : 97103632611 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

What is the sum of (71/105) and (71/420)?

Options :

1. ✖ 83/84

2. ✖ 73/84

3. ✖ 79/84

4. ✔ 71/84

Question Number : 40 Question Id : 97103632612 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A car can finish a certain journey in 10 hrs at a speed of 48 kmph. To cover the same distance in 8 hours, the speed of the car must be increased by

Options :

1. ✔ 12 kmph

2. ✖ 15 kmph

3. ✖ 6 kmph

4. ✖ 7.5 kmph

Question Number : 41 Question Id : 97103632613 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Suppose the price of the commodity is increased by 50 percent and by what fraction must its consumption be reduced to keep the same expenditure consumption?

Options :

1. ✖ 1/2

2. ✔ 1/3

3. ✖ 1/4

4. ✖ 2/3

Question Number : 42 Question Id : 97103632614 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The selling price of a bicycle is Rs. 2,850 and the shopkeeper gains 14% profit. Suppose the profit is reduced to 8%, then the selling price will be Rs. _____.

Options :

1. ✖ 2,600

2. ✔ 2,700

3. ✖ 2,800

4. ✖ 3,000

Question Number : 43 Question Id : 97103632615 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Find out the simple interest, when principal is Rs. 3,000 at the rate of 5% per annum for 2 years?

Options :

1. ✔ 300

2. ✖ 305

3. ✖ 303

4. ✖ 307

Question Number : 44 Question Id : 97103632616 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A channel marked at a price Rs. 1,600 is available at a discount of 45%. What is the discount given?

Options :

1. ✖ 740

2. ✖ 800

3. ✔ 720

4. ✖ 760

Question Number : 45 Question Id : 97103632617 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The average marks of 25 students is 18. The average marks of first 12 students is 14 and the average marks of last 12 students is 17. What is the 13^{th} student result?

Options :

1. ✖ 69

2. ✖ 74

3. ✔ 78

4. ✖ 75

Question Number : 46 Question Id : 97103632618 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following statements is 'Contra positive' of " All Whales are Mammals"?

Options :

1. ✖ Some Whales are Mammals

2. ✖ Some Mammals are Whales

3. ✔ All non-Mammals are non-Whales

4. ✖ All Mammals are Whales.

Question Number : 47 Question Id : 97103632619 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the following statement, which informal fallacy is committed?
Statement: We should not ban smoking because it is a personal choice and people should have the freedom to do what they want.

Options :

1. ✖ False dilemma

2. ✖ Ad hominem

3. ✔ Appeal to emotion

4. ✖ Equivocation

Question Number : 48 Question Id : 97103632620 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A word or phrase that is understood by every person in a particular culture is known as its _____

Options :

1. ✖ Denotation

2. ✖ Connotation

3. ✔ Sense

4. ✖ Reference

Question Number : 49 Question Id : 97103632621 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the following types of reasoning, in the conclusion the word 'likely' is used.

Options :

1. ✔ Inductive

2. ✖ Deductive

3. ✖ Analogical

4. ✖ Syllogistic

Question Number : 50 Question Id : 97103632622 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Insect: Disease; War: _____?

Options :

1. ✖ Arsenal

2. ✖ Defeat

3. ✔ Destruction

4. ✖ Army

Question Number : 51 Question Id : 97103632623 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the meaning of 'pratyaksh' ?

Options :

1. ✖ Inference

2. ✔ Perception

3. ✖ Implied

4. ✖ Transcendental

Question Number : 52 Question Id : 97103632624 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In Indian logic, what is the meaning of 'Anumana"?

Options :

1. ✖ Determination

2. ✖ Credibility

3. ✔ Inference

4. ✖ Implication

Question Number : 53 Question Id : 97103632625 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the HTML, M refers to _____.

Options :

1. ✖ Machine

2. ✔ Markup

3. ✖ Margin

4. ✖ Micro

Question Number : 54 Question Id : 97103632626 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The receiving emails appear in _____.

Options :

1. ✖ Spam

2. ✖ Trash

3. ✔ Inbox

4. ✖ Archive

Question Number : 55 Question Id : 97103632627 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Internet standard protocol is _____.

Options :

1. ✖ FTP

2. ✖ WWW

3. ✔ TCP/IP

4. ✖ UDP

Question Number : 56 Question Id : 97103632628 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the following video-conferencing platforms, which one is popular?

Options :

1. ✖ Gmail

2. ✖ Spotify

3. ✖ Google Drive

4. ✔ Zoom

Question Number : 57 Question Id : 97103632629 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The purpose of the intranet is _____.

Options :

1. ✖ To facilitate online shopping

2. ✖ To make video calls

3. ✖ To provide unrestricted Access to information on the internet.

4. ✔ To allow communication within a specific company

Question Number : 58 Question Id : 97103632630 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

To improve Quality of research, the government has initiated a digital program and it is called _____.

Options :

1. ✖ National Knowledge Network

2. ✔ E-Shodh Sindu

3. ✖ Swayam

4. ✖ E-PG pathshala

Question Number : 59 Question Id : 97103632631 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the following sections, which one deals with the punishment for cyber terrorism as per IT Act 2000.

Options :

1. ✔ 66 F

2. ✖ 67 B

3. ✖ 66 B

4. ✖ 45 F

Question Number : 60 Question Id : 97103632632 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

'Joystick' refers to _____ device.

Options :

1. ✖ Output

2. ✖ Storage

3. ✔ Input

4. ✖ Network

Question Number : 61 Question Id : 97103632633 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which organisation is established in India to promote , review, encourage, assist and coordinate science research?

Options :

1. ✖ ICSSR

2. ✔ CSIR

3. ✖ NCAR

4. ✖ NCTE

Question Number : 62 Question Id : 97103632634 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the following gases, which one is not considered as 'Green House Gas'

Options :

1. ✖ Methane

2. ✖ Nitrous oxide

3. ✔ Oxygen

4. ✖ Carbon dioxide

Question Number : 63 Question Id : 97103632635 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Environmental protection Act in India was enacted in the year_____.

Options :

1. ✖ 1981

2. ✖ 1996

3. ✔ 1986

4. ✖ 1995

Question Number : 64 Question Id : 97103632636 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which type of pollution can cause respiratory problems ?

Options :

1. ✖ Acid rain

2. ✔ Smog

3. ✖ Ozone depletion

4. ✖ Eutrophication

Question Number : 65 Question Id : 97103632637 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the correct order of 3R principle?

Options :

1. ✖ Recycle, Reuse, Reduce

2. ✖ Reuse, Reduce,Recycle

3. ✔ Reduce, Reuse, Recycle

4. ✖ Recycle, Reduce,Reuse

Question Number : 66 Question Id : 97103632638 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Forest conservation Act was passed in the year _____.

Options :

1. ✖ 1986

2. ✖ 1990

3. ✔ 1980

4. ✖ 1988

Question Number : 67 Question Id : 97103632639 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____ is an international treaty signed in 1987 to protect the ozone layer.

Options :

1. ✖ Rio Summit

2. ✖ Kyoto Protocol

3. ✖ Vienna convention

4. ✔ Montreal Protocol

Question Number : 68 Question Id : 97103632640 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Study the following Table and answer the questions from:

Total Number of Employees in different departments of an organisation and percentage of females and males.			
Department	Total number of employees	Percentage of females	Percentage of Males
IT	840	45	55
Accounts	220	35	65
Production	900	23	77
HR	360	65	35
Marketing	450	44	56
Customer Service	540	40	60

What is the total number of employees in all the departments together ?

Options :

1. ✖ 3260

2. ✔ 3310

3. ✖ 3140

4. ✖ 3020

Question Number : 69 Question Id : 97103632641 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Study the following Table and answer the questions from:

Total Number of Employees in different departments of an organisation and percentage of females and males.			
Department	Total number of employees	Percentage of females	Percentage of Males
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Accounts	220	35	65
Production	900	23	77
HR	360	65	35
Marketing	450	44	56
Customer Service	540	40	60

What is the respective ratio of the number of females in production department to the number of females in the marketing department?

Options :

1. ✖ 22:23

2. ✖ 35:33

3. ✔ 23:22

4. ✖ 33:35

Question Number : 70 Question Id : 97103632642 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Study the following Table and answer the questions from:

Total Number of Employees in different departments of an organisation and percentage of females and males.

Department	Total number of employees	Percentage of females	Percentage of Males
IT	840	45	55
Accounts	220	35	65
Production	900	23	77
HR	360	65	35
Marketing	450	44	56
Customer Service	540	40	60

What is the total number of males in the IT and customer service departments together

Options :

1. ✖ 687

2. ✖ 678

3. ✖ 768

4. ✔ 786

Physics

Section Id : 971036464

Section Number : 2

Mandatory or Optional :	Mandatory
Number of Questions :	70
Section Marks :	70
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 71 Question Id : 97103632643 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The canonical momentum for a charged particle in an electromagnetic field is

Options :

1. ✔ $mv+(q/c)A$

2. ✖ $(1/2)mv^2+(q/c)A$

3. ✖ $Mv-(q/c)A$

4. ✖ $(1/2)mv^2-(q/c)A$

Question Number : 72 Question Id : 97103632644 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following constraint that may be expressed in the form of an equation relating to the coordinates of the system and time

Options :

1. ✖ Non-holonomic

2. ✔ Holonomic

3. ✖ Scleronomous

4. ✖ Rheonomic

Question Number : 73 Question Id : 97103632645 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A linear transformation of a generalised coordinates q and the corresponding momentum p to Q and P given by $Q=q+p$; $P=q+\alpha p$ is canonical if the value of the constant α is

Options :

1. ✖ -1

2. ✖ 0

3. ✖ 1

4. ✔ 2

Question Number : 74 Question Id : 97103632646 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A gamma ray of energy 2.2 MeV produces an electron positron pair. Then the energy imparted to each of the charge particles is nearly

Options :

1. ✖ 1.1 Mev

2. ✖ 0.81 MeV

3. ✔ 0.59 MeV

4. ✖ 2.8 MeV

Question Number : 75 Question Id : 97103632647 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A particle is moving in 1/r potential. Which of the following statement is incorrect?

Options :

1. ✖ Angular momentum of the particle is always conserved

2. ✔ Kinetic energy of the particle is always conserved

3. ✖ The particle always follows a closed path

4. ✖ Force on the particle is always radial

Question Number : 76 Question Id : 97103632648 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the Lagrangian of a particle moving in one dimensions is given by $L = \frac{\dot{x}^2}{2x} - V(x)$ the Hamiltonian is

Options :

1. ✔ $\frac{1}{2}xp^2 + V(x)$

2. ✖ $\frac{x}{2x} + V(x)$

3. ✖ $\frac{1}{2}\dot{x}^2 + V(x)$

4. ✖ $\frac{p^2}{2x} + V(x)$

Question Number : 77 Question Id : 97103632649 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Two bodies of equal mass m are connected by a mass less rigid rod of length l lying in the xy-plane with the centre of the rod at the origin. If this system is rotating about the z-axis with a frequency ω, its angular momentum is

Options :

1. ✖ $ml^2\omega$

2. ✔ $\frac{ml^2\omega}{2}$

3. ✖ $\frac{ml^2}{\omega}$

4. ✖ $2ml^2\omega$

Question Number : 78 Question Id : 97103632650 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The rest mass of an electron is m_0, when it moves with a velocity v=0.6C, then its mass is _____(C is the velocity of light)

Options :

1. ✖ $1\ m_0$

2. ✖ $\frac{4}{5}m_0$

3. ✔ $\frac{5}{4}m_0$

4. ✖ $2\ m_0$

Question Number : 79 Question Id : 97103632651 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When a negative charge is placed at the centre of the sphere, the direction of electric field on the Gaussian surface is

Options :

1.

✖ Radially outward

2. ✔ Radially inward

3. ✖ Along the tangent to the surface

4. ✖ Along normal to the surface

Question Number : 80 Question Id : 97103632652 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For good conductors' skin depth varies inversely with _____ power of the frequency

Options :

1. ✖ 1

2. ✖ 2

3. ✔ $\frac{1}{2}$

4. ✖ 4

Question Number : 81 Question Id : 97103632653 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When angle of incidence is greater than Brewster's angle, the reflected ray suffers a phase change of

Options :

1. ✖ 0

2. ✖ 2π

3. ✖ 4π

4. ✔ π

Question Number : 82 Question Id : 97103632654 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

"The total electric flux through any closed surface surrounding charges is equal to the amount of charge enclosed". This statement is associated with

Options :

1. ✖ Coulomb's square law

2. ✖ Maxwell's second law

3. ✔ Gauss's law

4. ✖ Faraday's law

Question Number : 83 Question Id : 97103632655 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If 'E' and 'B' represent electric and magnetic field vectors of the electromagnetic wave, the direction of propagation of the electromagnetic wave is

Options :

1. ✖ E

2. ✖ B

3. ✖ $B \times E$

4. ✔ $E \times B$

Question Number : 84 Question Id : 97103632656 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For a linear harmonic oscillator whose total mechanical energy is constant, the elongation reaches its maximum when

Options :

1. ✖ Potential energy is equal to zero

2. ✖ Potential energy is half of the kinetic energy

3. ✖ Potential energy equals the kinetic energy

4. ✔ Kinetic energy is equal to zero

Question Number : 85 Question Id : 97103632657 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the electrostatic potential in spherical polar coordinates is $\varphi(r) = \varphi_o e^{-r/r_o}$ where φ_o and r_o are constants, the charge density at a distance $r = r_o$ will be

Options :

1. ✖ $\frac{e\varepsilon_o\varphi_o}{2r_o^2}$

2. ✔ $\frac{\varepsilon_o\varphi_o}{er_o^2}$

3. ✖ $-\frac{\varepsilon_o\varphi_o}{er_o^2}$

4. ✖ $-\frac{2e\varepsilon_o\varphi_o}{r_o^2}$

Question Number : 86 Question Id : 97103632658 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A non-relativistic particle of mass m and charge e, moving with a velocity $\vec{v}$ and acceleration $\vec{a}$, emits radiation of intensity I. What is the intensity of the radiation emitted by a particle of mass $m/2$, charge 2e, velocity $\vec{v}/2$ and acceleration $2\vec{a}$?

Options :

1. ✖ $4I$

2. ✖ $8I$

3. ✔ $16I$

4. ✖ $2I$

Question Number : 87 Question Id : 97103632659 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Let uncertainty relation be $\Delta x\ \Delta p=h$. If the diameter of the nucleus is 10^{-15} m, the uncertainty in the momentum of proton remaining within the nucleus is of the order of ($h = 6.62 \times 10^{-34}$ Joule.Second)

Options :

1. ✔ 6.62×10^{-19} kg-m/s

2. ✖ 6.62×10^{-49} kg-m/s

3. ✖ 8.62×10^{-25} kg-m/s

4. ✖ 8.62×10^{-27} kg-m/s

Question Number : 88 Question Id : 97103632660 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following quantum mechanical operators is Hermitian?

Options :

1. ✖ (d/dx)

2. ✖ $(d/dx)^2$

3. ✖ $(d/dx)^3$

4. ✔ $i(d/dx)$

Question Number : 89 Question Id : 97103632661 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The de-Broglie wavelength of a proton and an alpha particle are equal. The ratio of their velocities is

Options :

1. ✖ 1:4

2. ✔ 4:1

3. ✖ 1:2

4. ✖ 2:1

Question Number : 90 Question Id : 97103632662 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Let φ_1 and φ_2 be orthonormal functions, find the value of n which normalizes the function
f=n(φ1+2iφ2)

Options :

1. ✖ N=(1+2i)

2. ✖ N=1/(1+2i)

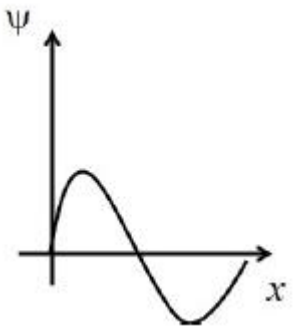
3. ✖ N=1/5

4. ✔ N=1/√5

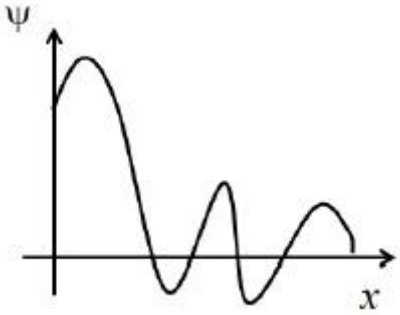
Question Number : 91 Question Id : 97103632663 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

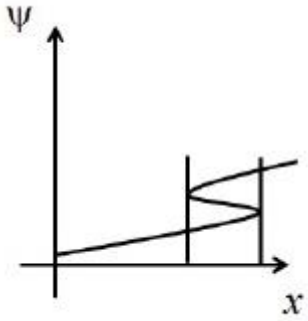
Which of the following graph represent the invalid wave function?

Options :

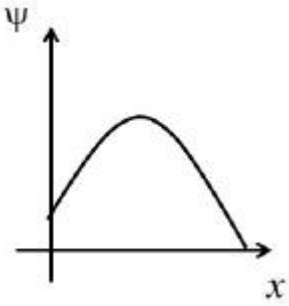
1. ✖ 

2. ✖





3. ✔



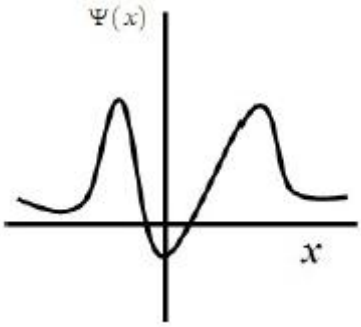
4. ✖

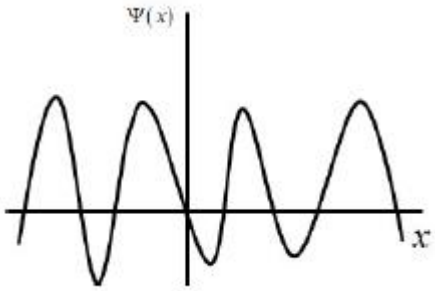
Question Number : 92 Question Id : 97103632664 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A particle energy E moves in one dimensional under the influence of a potential $V(x)$. If $E > V(x)$ for some range of x, which of the following graphs can represent a bound state wave function of a particle?

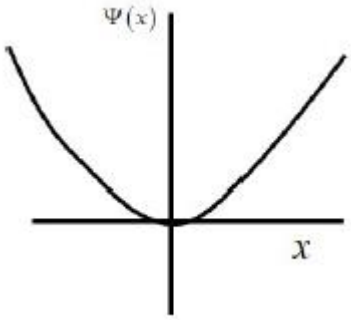
Options :

1. ✔

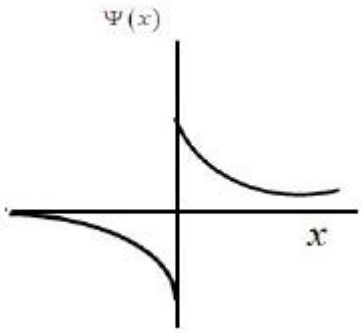




2. ✖



3. ✖



4. ✖

Question Number : 93 Question Id : 97103632665 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The wave function of a particle is given by $\psi = \left(\frac{1}{\sqrt{2}}\phi_0 + i\phi_1\right)$, where ϕ_0 & ϕ_1 are the normalized eigen functions with energies E_0 & E_1 corresponding to the ground state and first exited state, respectively. The expectation value of the Hamiltonian in the state ψ is

Options :

1. ✖ $\frac{E_0}{2} + E_1$

2. ✖ $\frac{E_0}{2} - E_1$

3. ✖ $\frac{E_0 - 2E_1}{3}$

4. ✔ $\frac{E_0 + 2E_1}{3}$

Question Number : 94 Question Id : 97103632666 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Clausius - Clapeyron equation indicates that an increase in pressure increases the melting point, in case of

Options :

1. ✖ All substances

2. ✖ Substances which expand on solidification

3. ✔ Substances which contract on solidification

4. ✖ Substances which neither expand nor contraction on solidification

Question Number : 95 Question Id : 97103632667 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Two ends of a rod are kept at 127 °C and 227 °C. When 2000 cal of heat flows in this rod, the change in entropy is

Options :

1. ✖ 1.0 cal/K

2. ✔ 20 cal/K

3. ✖ 7 cal/K

4. ✖ 0.7 cal/K

Question Number : 96 Question Id : 97103632668 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

(eB/2m) is called as

Options :

1. ✖ Debye angular frequency

2. ✖ Bohr magneton

3. ✔ Larmor angular frequency

4. ✖ Einstein angular frequency

Question Number : 97 Question Id : 97103632669 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The gas exerts pressure on the walls of the container, because the gas molecules

Options :

1. ✖ Have finite size

2. ✖ Obey Boyle's law

3. ✔ Have momentum

4. ✖ Collide with one another

Question Number : 98 Question Id : 97103632670 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Diffraction of X-rays is possible with crystals because

Options :

1. ✖ Crystals are transparent to transmit X-rays

2. ✔ Interatomic distance is comparable to wavelength of X-rays

3. ✖ X-rays have longer wavelength

4. ✖ Frequency of x-rays is comparable to the vibration frequency of atoms

Question Number : 99 Question Id : 97103632671 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Particles in degenerate energy levels all have the same

Options :

1. ✔ Energy

2. ✖ Quantum numbers

3. ✖ Momentum

4. ✖ Velocity

Question Number : 100 Question Id : 97103632672 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Three fermions are to be distributed in two non-degenerate distinct energy levels. The number of ways this can be done is

Options :

1. ✖ 8

2. ✔ 4

3. ✖ 3

4. ✖ 2

Question Number : 101 Question Id : 97103632673 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following decay is permissible?

Options :

1. ✖ $n \longrightarrow p+\beta^{-}+\nu$

2. ✔ $n \longrightarrow p+\beta^{-}+\nu^{-}$

3. ✖ $p \longrightarrow n+\beta^{-}+\nu$

4. ✖ $p \longrightarrow p+\beta^{+}+\nu^{-}$

Question Number : 102 Question Id : 97103632674 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Q- value of the alpha decay of Th^{232} to the ground state of Ra^{228} is 4082 keV. The Maximum possible kinetic energy of the alpha particle is closest to

Options :

1. ✖ 4082 keV

2. ✖ 4050 keV

3. ✖ 4035 keV

4. ✔ 4012 keV

Question Number : 103 Question Id : 97103632675 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A solid body heated to a very high temperature T emits radiation power proportional to

Options :

1. ✖ T

2. ✔ T^4

3. ✖ T^3

4. ✖ T^2

Question Number : 104 Question Id : 97103632676 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What type of nuclear reaction is responsible for liberation of energy in the nuclear reactor?

Options :

1. ✔ Nuclear fission

2. ✖ Nuclear fusion

3. ✖ Nuclear destruction

4. ✖ Nuclear generation

Question Number : 105 Question Id : 97103632677 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Nuclei having the same number of neutrons but a different mass number are called

Options :

1. ✖ Isotopes

2. ✖ Isobars

3. ✖ Isotherms

4. ✔ Isotones

Question Number : 106 Question Id : 97103632678 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Radius of $^{64}_{29}Cu$ nucleus is measured to be 4.8×10^{-13} cm. The radius of a $^{27}_{12}Mg$ nucleus can be estimated to be

Options :

1. ✔ 3.6×10^{-13}cm

2. ✖ 3.6×10^{13}cm

3. ✖ 1.6×10^{-13}cm

4. ✖ 1.6×10^{13}cm

Question Number : 107 Question Id : 97103632679 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The spontaneous decay of nuclei is called

Options :

1. ✖ Absorption

2. ✖ Ultraviolet explosion

3. ✔ Radiation

4. ✖ Permittivity

Question Number : 108 Question Id : 97103632680 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In an experiment on Photoelectric effect, the photocurrent increases if

Options :

1. ✖ The exposure time is increased

2. ✔ The intensity of the source is increased

3. ✖ The intensity of the source is decreased

4. ✖ The exposure time is decreased

Question Number : 109 Question Id : 97103632681 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Sodium has 11 electrons. If the sequence in which the energy levels are filled in 1s, 2s, 2p, 3s, 3p, 4s, 3d, the ground state of sodium is

Options :

1. ✖ $^3P_{1/2}$

2.

✖ $^2P_{1/2}$

3. ✖ $^2D_{1/2}$

4. ✔ $^2S_{1/2}$

Question Number : 110 Question Id : 97103632682 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following molecules does not exhibit a rotational and vibrational spectrum?

Options :

1. ✔ H_2

2. ✖ CO

3. ✖ HCl

4. ✖ HBr

Question Number : 111 Question Id : 97103632683 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The dependence of Doppler broadened line width of a laser transition on Temperature T is given by

Options :

1.

✖ T

2. ✖ $T^{-1/2}$

3. ✖ T^{-1}

4. ✔ $T^{1/2}$

Question Number : 112 Question Id : 97103632684 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ratio of intensities of the D_1 and D_2 lines of sodium at high temperature is

Options :

1. ✖ 1:1

2. ✖ 2:3

3. ✖ 1:3

4. ✔ 1:2

Question Number : 113 Question Id : 97103632685 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The first absorption spectrum of $^{12}C\ ^{16}O$ is at 3.842 cm^{-1} while that of $^{13}C\ ^{16}O$ is at 3.673 cm^{-1}. The ratio of their moments of inertia is

Options :

1. ✖ 1.851

2. ✖ 1.286

3. ✔ 1.046

4. ✖ 1.038

Question Number : 114 Question Id : 97103632686 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The separation between the first stokes and corresponding anti-stokes lines of the rotational Raman spectrum in terms of the rotational constant B is

Options :

1. ✖ $2B$

2. ✖ $4B$

3. ✖ $6B$

4. ✔ $12B$

Question Number : 115 Question Id : 97103632687 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Gold has atomic weight 197 and density 19.3 gm/cc. The spacing between the atoms in solid gold is

Options :

1. ✔ $2.57A^0$

2. ✖ $4.57A^0$

3. ✖ $5.67A^0$

4. ✖ $8.57A^0$

Question Number : 116 Question Id : 97103632688 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In NaCl, the Na ions are positively charged and Cl ions are negatively charged. In spite of coulomb attraction between them, the two ions do not collapse

Options :

1. ✖ Because of the presence of free electrons

2. ✖ Because of its low melting point

3. ✔ Because of short range repulsive forces

4. ✖ Because of long range repulsive forces

Question Number : 117 Question Id : 97103632689 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For Bragg's reflection by a crystal to occur, the X-ray wave length λ and inter-atomic distance d must be as

Options :

1. ✖ $\lambda > 2d$

2. ✖ $\lambda = 2d$

3. ✔ $\lambda \leq 2d$

4. ✖ $\lambda = 0$

Question Number : 118 Question Id : 97103632690 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the inter-planar distance of (231) planes of an fcc structure whose atomic radius is 0.175 nm.

Options :

1. ✔ 0.132 nm

2. ✖ 0.123 nm

3. ✖ 0.231 nm

4. ✖ 0.321 nm

Question Number : 119 Question Id : 97103632691 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A d.c. voltage of 1 μV is applied across a Josephson junction then the frequency of the Josephson current generated is (e=1.6 $\times 10^{-19}$ coulombs h=6.62 $\times$ 10^{-34} J.s)

Options :

1. ✖ 386.9 MHz

2. ✔ 482.9 MHz

3. ✖ 786.9 MHz

4. ✖ 986.9 MHz

Question Number : 120 Question Id : 97103632692 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Transition temperature T_c and critical field H_c for a superconductor are related as

Options :

1. ✖ $H_c = H_0 (T_c - 1)$

2. ✖ $H_c = H_0 (T_c + 1)$

3. ✖ $T_c = T_0 [1 - (H_0/H_c)^2]$

4. ✔ $H_c = H_0 [1 - (T_0/ T_c)^2]$

Question Number : 121 Question Id : 97103632693 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The radius of the Fermi sphere of free electrons in a monovalent metal with an fcc structure, in which the volume of the unit cell is a^3 is

Options :

1. ✔ $(12\pi^2/a^3)^{1/3}$

2. ✖ $(3\pi^2/a^3)^{1/3}$

3. ✖ $(\pi^2/a^3)^{1/3}$

4. ✖ $1/a$

Question Number : 122 Question Id : 97103632694 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

X-ray of wavelength $\lambda = a$ is reflected from the (111) plane of a cubic lattice. If the lattice constant is a, the corresponding Bragg angle (in radian) is

Options :

1. ✖ $\pi/6$

2. ✖ $\pi/4$

3. ✔ $\pi/3$

4. ✖ $\pi/8$

Question Number : 123 Question Id : 97103632695 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The amount of flux diverging from a point per unit area per second is called

Options :

1. ✖ Gradient of a scalar field

2. ✖ Divergence of a scalar field

3. ✔ Divergence of a vector field

4. ✖ Gradient of a vector field

Question Number : 124 Question Id : 97103632696 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The residue of $z^4/((z-1)^4(z-2)(z-3))$ at $z=1$

Options :

1. ✖ 16/81

2. ✔ 175/16

3. ✖ 525/7

4. ✖ 17/19

Question Number : 125 Question Id : 97103632697 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The maximum line integral of a vector per unit area along the boundary of an infinitesimal area is called

Options :

1. ✖ Divergence of a vector field

2. ✖ Divergence of a scalar field

3. ✔ Curl of a vector field

4. ✖ Curl of a scalar field

Question Number : 126 Question Id : 97103632698 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

From the following type of matrix , the diagonal elements of which matrix must be pure imaginary numbers or zero

Options :

1. ✔ Skew-Hermitian

2. ✖ Symmetric

3. ✖ Hermitian

4. ✖ Skew-symmetric

Question Number : 127 Question Id : 97103632699 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If A satisfies the condition $AA^{+}=1$, A will be

Options :

1. ✖ Hermitian

2. ✖ Symmetric

3. ✔ Unitary

4. ✖ Skew-symmetric

Question Number : 128 Question Id : 97103632700 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What are the eigen values of matrix M=$\begin{pmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{pmatrix}$

Options :

1. ✖ 0, 1, 2

2. ✔ 0, 0, 3

3. ✖ 1, 1, 1

4. ✖ -1, 1, 3

Question Number : 129 Question Id : 97103632701 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The generating function $F(x,\ t) = \sum_{n=0}^{\infty} P_n(x)t^n$ for the Legendre polynomials $P_n(x)$is

$F(x,t) = (1 - 2xt + t^2)^{-1/2}$. The value of $P_3(-1)$is

Options :

1. ✖ 5/2

2. ✖ 3/2

3. ✖ +1

4. ✔ -1

Question Number : 130 Question Id : 97103632702 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The solution of differential equation $\frac{dx}{dt} = x^2$ with the initial condition $x(0) = 1$ will blow up as t tends to

Options :

1. ✔ 1

2. ✖ 2

3. ✖ $\frac{1}{2}$

4. ✖ ∞

Question Number : 131 Question Id : 97103632703 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The inverse Laplace transforms of $\frac{1}{S^2(S+1)}$ is

Options :

1. ✖ $\frac{1}{2}t^2e^{-t}$

2. ✖

$\frac{1}{2}t^2 + 1 - e^{-t}$

3. ✔ $t - 1 + e^{-t}$

4. ✖ $\frac{1}{2}t^2(1 - e^{-t})$

Question Number : 132 Question Id : 97103632704 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following diodes that exhibit a negative resistance characteristic is

Options :

1. ✖ Schottky diode

2. ✔ Tunnel diode

3. ✖ Laser diode

4. ✖ Light emitting diode

Question Number : 133 Question Id : 97103632705 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A JFET always operates with

Options :

1. ✔ The gate to source p-n junction reverse biased

2. ✖ The gate to source p-n junction forward biased

3. ✖ The drain connected to ground

4. ✖ The gate connected to the source

Question Number : 134 Question Id : 97103632706 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When the reverse bias in a p-n junction is increased, the capacitance across the junction

Options :

1. ✖ Does not depend on the bias voltage

2. ✖ Decreases with the increase of reverse bias

3. ✖ Increases and then decreases with the forward bias

4. ✔ Increases with the increase of reverse bias

Question Number : 135 Question Id : 97103632707 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If α=0.98, I_C=6μA, I_β=100 μA for a transistor, the value of Ic will be

Options :

1. ✖ 2.3 mA

2. ✖ 3.1 mA

3. ✖ 4.6 mA

4. ✔ 5.2 mA

Question Number : 136 Question Id : 97103632708 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A signal of frequency 10 kHz is being digitized by an A/D converter. A possible sampling time which can be used is

Options :

1. ✔ 100 μs

2. ✖ 40 μs

3. ✖ 60 μs

4. ✖ 200 μs

Question Number : 137 Question Id : 97103632709 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

An LED operates at 1.5 V and 5 mA in forward bias. Assuming an 80 % external efficiency of the LED, how many photons are emitted per second?

Options :

1. ✖ 5.0×10^{16}

2. ✖ 1.5×10^{16}

3. ✖ 0.8×10^{16}

4. ✔ 2.5×10^{16}

Question Number : 138 Question Id : 97103632710 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An op-amp based voltage follower

Options :

1. ✖ Is useful for converting a low impedance source into a high impedance source.

2. ✔ Is useful for converting a high impedance source into a low impedance source.

3. ✖ Has infinitely high closed loop output impedance

4. ✖ Has infinitely high closed loop gain

Question Number : 139 Question Id : 97103632711 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An RC network produces a phase-shift of 30°. How many such RC networks should be cascaded together and connected to a Common Emitter amplifier so that the final circuit behave as an oscillator?

Options :

1. ✔ 6

2. ✖ 12

3. ✖ 9

4. ✖ 3

Question Number : 140 Question Id : 97103632712 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The power density of sunlight incident on a solar cell is 100 mW/cm^2. Its short circuit current density is 30 mA/cm^2 and the open circuit voltage is 0.7 V. If the fill factor of the solar cell decreases from 0.8 to 0.5, then the percentage efficiency will decrease from

Options :

1. ✖ 42.0 to 26.2

2. ✖ 24.0 to 16.8

3. ✖ 21.0 to 10.5

4. ✔ 16.8 to 10.5