

No of Questions : 100

Time : 60 Mins [(100 Marks) 0.25 Negative Marking]

SCIENCE

1. There are two bodies A & B of same mass body. A is at rest while body B is undergoing uniform motion. Which is correct statement?
- Inertia of A > inertia of B.
 - Inertia of B > inertia of A.
 - Inertia of A = inertia of B.
 - Either 1st, 2nd or 3rd depending upon the shape of body.
2. A bird is sitting on stretched telephone wires. If its weight is W then the additional tension produced by it in the wires will be:
- T = W
 - T > W
 - T < W
 - T = 0
3. Select correct statement regarding pseudo force:
- It is electromagnetic in origin.
 - Newton's 3rd law is applicable for it.
 - It is a fundamental force.
 - It is used to make Newton's law applicable on non-inertial frame.
4. A thin uniform circular ring is rolling down an inclined plane of inclination 30° without slipping. Its linear acceleration along the inclined plane is :
- g
 - $g/2$
 - $g/3$
 - $g/4$
5. Statement – 1: A person feels weightlessness in an artificial satellite of the Earth. However a person on the Moon (natural satellite) feels his weight.
Statement – 2: Artificial satellite is a freely falling body and on the Moon surface, the weight is mainly due to Moon's gravitational attraction.
- Statement-1 is True, Statement-2 is True; Statement-2 is a correct explanation for Statement-1
 - Statement-1 is True, Statement-2 is True; Statement-2 is not a correct explanation for Statement-1
 - Statement-1 is True, Statement-2 is False.
 - Statement-1 is False, Statement-2 is True.
6. The bulk modulus of rubber is $9.1 \times 10^8 \text{ N/m}^2$. To what depth a rubber ball shall be taken in a lake so that its volume is decreased by 0.1%?
- 25m
 - 910
 - 200 m
 - 500 m
7. Two solids A and B float in water. It is observed that A floats with half its volume immersed and B floats with $2/3$ of its volume immersed. Compare the densities of A and B:
- 4:3
 - 2:3
 - 3:4
 - 1:3
9. Water rises to height of 2 cm in a capillary tube. If the tube is tilted 30° from horizontal then water will rise in the tube to a length of.....
- 4 cm
 - 2 cm
 - $4/\sqrt{3}$ cm
 - 1 cm
10. Select the incorrect statement about the specific heat of a gaseous system:
- Specific heat at no heat exchange condition, $C_A = 0$
 - Specific heat at constant temperature, $C_T = \infty$
 - Specific heat at constant pressure, $C_p = \frac{\gamma R}{\gamma - 1}$
 - Specific heat at constant volume, $C_v = \frac{\gamma}{R}$
11. The energy of BMO is less than combining atomic orbital because:
- Molecular orbital are more asymmetrical than atomic orbital.
 - Molecular orbitals are near to nucleus than atomic orbitals.
 - Probability of finding the electron in BMO is less than atomic orbital.
 - Probability of finding the electron in BMO is more than atomic orbital.
12. Ionisation energy depends upon :
- Principal quantum number
 - Azimuthal quantum number
 - Magnetic quantum number
 - (1) & (2) both
13. Solid Co_2 is...
- Ionic solid
 - Covalent solid
 - Molecular solid
 - Metallic solid
14. How many alkenes (only structural isomers) are possible with the molecular formula $\text{C}_4 \text{H}_8$?
- 4
 - 3
 - 5
 - 6
15. The mass of a molecule of water:
- 30×10^{-24} kg
 - 3×10^{-26} kg
 - 1.5×10^{-26} kg
 - 2.5×10^{-27} kg
16. Which of the following sub-shells is not permitted?
- 4f
 - 4d
 - 3s
 - 4g

c) $\sqrt{2}\left(\cos\frac{2\bar{\lambda}}{3}-i\sin\frac{2\bar{\lambda}}{3}\right)$

d) $\sqrt{2}\left(\cos\frac{\bar{\lambda}}{4}-i\sin\frac{\bar{\lambda}}{4}\right)$

34. The term independent of x in the expansion of

$\left(\frac{3}{2}x^2 - \frac{1}{3x}\right)^9$ is:

- a) $\frac{1}{24}$ b) $\frac{7}{18}$
 c) $\frac{8}{27}$ d) $\frac{5}{36}$

35. The total number of terms in the expansion of

$(x - y + 2z)^n$ is 45. Then, the value of n is:

- a) 7 b) 8
 c) 9 d) 22

36. $\sin^3\alpha(1 + \cot\alpha) + \cos^3\alpha(1 + \tan\alpha)$ is equal to

- a) $\sin\alpha - \cos\alpha$ b) $\sin\alpha + \cos\alpha$
 c) $\sin\alpha \cos\alpha$ d) $\operatorname{cosec}\alpha \sec\alpha$

37. A kite is flying with the string inclined at 60° with the horizon. If the string is 30m long, then the height of the kite from the ground is:

- a) 10m b) $10\sqrt{3}m$
 c) 15m d) $15\sqrt{3}m$

38. What is the locus of a point which is equidistant from the point $(m+n, n-m)$ and the point $(m-n, n+m)$?

- a) $mx = ny$ b) $nx = -my$
 c) $nx = my$ d) $mx = -ny$

39. The line $y = 0$ divides the line joining the points $(3, -5)$ and $(-4, 7)$ in the ratio

- a) 3 : 4 b) 4 : 5
 c) 5 : 7 d) 7 : 9

40. Which one of the following is correct is respect of

the equations $\frac{x-1}{2} = \frac{y-2}{3}$ and $2x + 3y = 5$?

- a) They represent two lines which are parallel
 b) They represent two lines which are perpendicular
 c) They represent two lines which are neither parallel nor perpendicular
 d) The first equation does not represent a line

41. What is the equation to the circle which touches both the axes and has centre on the line $x + y = 4$?

- a) $x^2 + y^2 - 4x + 4y + 4 = 0$
 b) $x^2 + y^2 - 4x - 4y + 4 = 0$
 c) $x^2 + y^2 + 4x - 4y - 4 = 0$
 d) $x^2 + y^2 + 4x + 4y - 4 = 0$

42. If $(0, 4)$ and $(0, 2)$ are respectively, the vertex and focus of a parabola, then its equation is

- a) $x^2 + 8y = 32$ b) $y^2 + 8x = 32$
 c) $x^2 - 8y = 32$ d) $y^2 - 8x = 32$

43. The equation of the ellipse, whose vertices are at $(\pm 5, 0)$ and foci at $(\pm 4, 0)$ is

- a) $\frac{x^2}{25} + \frac{y^2}{9} = 0$ b) $\frac{x^2}{9} + \frac{y^2}{25} = 1$
 c) $\frac{x^2}{16} + \frac{y^2}{25} = 1$ d) $\frac{x^2}{25} + \frac{y^2}{16} = 1$

44. The point on the parabola $y^2 = 4x$ nearest to focus has its abscissa

- a) $x = 0$ b) $x = a$
 c) $x = \frac{a}{2}$ d) $x = 2a$

45. If $y = \sqrt{\cos x + \sqrt{\cos x + \sqrt{\cos x + \sqrt{\cos x + \dots}}}}$, then $\frac{dy}{dx}$ is equal to

- a) $\frac{\cos x}{1-2y}$ b) $\frac{\sin x}{1-2y}$
 c) $\frac{-\sin x}{1-2y}$ d) $\frac{-\cos x}{1-2y}$

46. What is $\int_0^{4\pi} |\cos x| dx$ equal to?

- a) 0 b) 2
 c) 4 d) 8

47. Evaluate $\int \frac{\sin x dx}{(1 + \cos x)(2 + \cos x)}$

- a) $\log \frac{(1 + \cos x)}{(2 + \cos x)} + c$
 b) $\log \frac{(2 + \cos x)}{(1 + \cos x)} + c$
 c) $\log \frac{(1 + \sin x)}{(2 + \sin x)} + c$

- d) $\log \frac{(2 + \sin x)}{(1 + \sin x)} + c$
48. What is $\int \frac{dx}{\sqrt{4+x^2}}$ equal to?
- a) $\log \left| \sqrt{4+x^2} + x \right| + c$
 b) $\log \left| \sqrt{4+x^2} - x \right| + c$
 c) $\sin^{-1} \left(\frac{x}{2} \right) + c$
 d) None of these
49. $\lim_{h \rightarrow 0} \left(\frac{\sqrt{x+h} - \sqrt{x}}{h} \right) = ?$
- a) 0
 b) $\frac{1}{\sqrt{x}}$
 c) $\frac{2}{\sqrt{x}}$
 d) $\frac{1}{2\sqrt{x}}$
50. The unit vector perpendicular to the plane containing the vectors $\vec{a} = (3\hat{i} - j + 2k)$ and $\vec{b} = (3\hat{i} - j + 2k)$ is:
- a) $\frac{(\hat{i} - 7j + 5k)}{5\sqrt{3}}$
 b) $\frac{(-\hat{i} + 7j + 5k)}{5\sqrt{3}}$
 c) $\frac{(5\hat{i} + k)}{\sqrt{26}}$
 d) None of these

ENGLISH

Directions (Qns.51-52): In the following questions, you are provided with the beginning and the end of a passage. The other sentences are in jumbled order. Choose the correct answer from the alternatives given.

51. Many people enter the stock markets using strategies that stack the odds against their success.
- M. Predictions by economists usually vary widely.
 N. Stock market pundits speak one language and technical analysis speak another.
 O. One of the reasons this happens is because stock market is a confusing and complex phenomenon
 P. Stock market advisory letters offer differing opinions on the prospects of individual companies.

Moreover, if you listen to other investors you will hear yet different opinions.

- a) MPNO b) MNOP
 c) ONMP d) ONPM

52. The advent of cooking ranges has made cooking a hobby as well as a pleasure.
- M. Some have an automatic push button ignition system, thus doing away with match sticks.
 N. Other models have incorporated a flame failure device.
 O. It has converted smoke-filled kitchens of old into comfortable work places.
 P. Different types of cooking ranges are available in the market.

Now a housewife loves her kitchen.

- a) MOPN b) MNOP
 c) OMNP d) OPMN

Directions (Qns.53-54): Choose the alternative which best expresses the meaning of the underlined idiom or phrase.

53. It will certainly tell upon his health.
 a) Cover b) Speak about
 c) Improve d) Badly affect
54. P.T. Usha proved that she was a dark horse.
 a) Hidden genius b) Hardworking
 c) Brave d) Fast

Directions (Qns.55-57): Read the passage and select the most appropriate alternative to answer the questions that follow:

It's a role reversal that has allowed students to assess their teachers. The parameters for such an evaluation are many, including the teacher's regularity, competence in imparting understanding of and completing the course content, and the ability to motivate students, particularly through the use of innovative teaching methods. It is time to bring this practice to our universities and colleges where teachers often regard their jobs as a sinecure, which they can hang onto while freelancing as private tutors. There are other complaints against them: that they read from notes prepared decades ago. The teachers, on their part, might say that they are frustrated because the students show no interest in studies and skip classes at the drop of a hat.

55. The quality of teaching will improve if...
- The students are allowed to evaluate their teachers.
 - The students are forced to attend classes.
 - The teachers prepare fresh notes.
 - Private tutoring is stopped.
56. The word 'sinecure' in the passage means...
- Less money for more work.
 - Money without work.
 - A job of good status.
 - A secured position.
57. The author of the passage says that...
- The university authorities are sincere in their work.
 - The teachers do not do their duty sincerely.
 - The students do not take studies seriously.
 - Both the teachers and students are not serious about studies.

Directions (Q.58 to 59): In the following questions some part of the sentences have errors and some are correct. Find out which part of a sentence has an error. The number of that part is the answer. If a sentence is free from error then your answer is (d) i.e, No error.

58. He would certainly (a)/ have been drowned (b)/ if he did not know to swim.(c)/No error (d).
59. The municipality (a)/ is going to built (b) / a new school here.(c) / No error.(d)

Directions (Qns.60-61): In the following questions, spelling of one of the four words is wrong. Detect the wrong word.

60. a) Resonent b) Permanent
c) Redundant d) Resplendent
61. a) Gauge b) Vacillate
c) Oscilate d) Conjugate

Directions (Qns.62-63): Find out the synonym of the given word from the alternatives given under it.

62. PHLEGMATIC
a) solid b) lively
c) pneumatic d) stolid
63. FRACTIOUS
a) bad-mouthed b) inadequate
c) incomplete d) bad-tempered

Directions (Qns.64-65): In the following questions, out of the four alternatives, choose the one which can be substituted for the given words/ sentence.

64. A person who easily believes others is
a) Credulous b) Gullible
c) Fool d) Believer
65. To reduce in quantity, value and force
a) Abate b) Annual
c) Shorten d) Deduct

Directions Qns (66-67): In the following questions, a part of the sentence is underlined. Below are given alternatives to the underlined part at 'a, b and c' which may improve the sentence. Choose the correct alternative. In case no improvement is needed, your answer is 'd' i.e. No improvement.

66. She is waiting for you in the lounge since 6 o'clock.
a) She was waiting
b) She has been waiting
c) She had been waiting
d) No improvement.
67. He usually drinks coffee, but today he drinks tea.
a) has drunk b) is drinking
c) has been drinking d) No improvement.

Directions (Qns 68-69): In the following questions, four alternatives are given for the underlined idiom/phrase. Choose the alternative which best expresses the meaning of the underlined idiom/phrase.

68. My teacher goes to the movies once in a blue moon.
a) On full moon nights
b) Once in two weeks
c) Very rarely
d) Everyday
69. As she was turning out some papers, she came across the letter he had been looking for.
a) Saw from a distance
b) Found unexpectedly
c) Touched
d) Read quickly

70. From the given alternatives, choose the one which best expresses the given sentence in passive voice:

Our parents never informed us about their programme.

- We informed our parents about the programme.
- Their programme had never been informed.
- We were never informed about their programme by our parents.
- Our parents were informed about the programme.

71. Choose the correct alternative:

Her brother along with her parents insist that she remain at home.

- insists that she remains at home.
- are insisting that she remain at home.
- insists that she remain at home.
- insist that she remains at home.

Directions (Qns 72-73): In the following questions, sentences are given with blanks to be

filled in with an appropriate and suitable word. Four alternatives are suggested for each question. Choose the correct answer out of the four.

72. **The Sun... the clouds.**
 a) burned b) rose out of
 c) peeped out of d) broke through
73. **He would have been.... on any evidence he gave.**
 a) praised b) questioned
 c) challenged d) cross-examined

Directions (Qns 74-75): Find out the antonym of the given word from the alternatives given below it.

74. **IRASCIBLE**
 a) Picaresque b) Angry
 c) Good-natured d) Crack
75. **PERNICIOUS**
 a) Malicious b) Salutary
 c) Harmful d) Tedious

GENERAL AWARENESS

76. **On which river is the Nagarjunasagar Project located?**
 a) Krishna b) Godavari
 c) Kaveri d) Tapti
77. **In which area is the deodar tree commonly found?**
 a) Tropical evergreen forests
 b) Tropical deciduous forests
 c) Thorn forests
 d) Alpine forests
78. **The International Labour Organisation is head quartered at...**
 a) Geneva b) New york
 c) Rome d) None of these
79. **Yakshagan is the folk dance of...**
 a) Tamil Nadu b) Kerala
 c) Karnataka d) Andhra Pradesh
80. **The Chief Justice and other judges of the High Court retire at the age of**
 a) 60 years b) 62 years
 c) 65 years d) 70 years
81. **Which of the following statements correctly describes a hung parliament?**
 a) A parliament in which no party has a clear majority.
 b) The Prime Minister has resigned but the parliament is not dissolved.
 c) The parliament lacks the quorum to conduct business.
 d) None of these.
82. **On February 20, 1947 British Prime Minister announced the decision of British Government to leave India till...**
 a) August 1947 b) January 1948
 c) June 1948 d) August 1948
83. **Find the odd man out of the following sites of Harappa civilization?**
 a) Kalibangan b) Mohanjodaro
 a) Lothal b) Surkotada
84. **The SWADESHI movement in India was started during...**
 a) Champaran Satyagraha of Gandhi
 b) Movement against Partition of Bengal
 c) Movement against Rowllat Act
 d) First non-cooperation movement in 1919-22
85. **The first Indian pilotless rocket is...**
 a) Luna-9 b) Apollo
 c) Luna-10 d) Lakshya
86. **The famous Vishwanath temple is situated in...**
 a) Puri b) Pachmarhi
 c) Varanasi d) Ellora
87. **How many even numbers are there in the following sequence of numbers which are immediately followed by an odd number as well as immediately preceded by an even number?**
86 76 8 932 75 3 4 2 2 3 5 5 2 2 8 1 19
 a) Three b) Five
 c) Six d) None of these
88. **In a row of girls, Shilpa is eighth from the left and Reena is seventeenth from the the right. If they interchange their positions, Shilpa becomes fourteenth from the left. How many girls are there in the row?**
 a) 25 b) 27
 c) 29 d) None of these
89. **If x means /, - means X, / means + and + means-, then (3 – 15 / 19) X 8+6=?**
 a) 8 b) 4
 c) 2 d) -1
90. **If FRIEND is coded as HUMJTK, how is CANDLE written in the code?**
 a) EDRIRL b) DCQHQB
 c) ESJFME d) FYOBOC
- Directions (91-93): Read the following information carefully and answer the questions.**
- I. P, Q, R, S, T and U are the six members of a family in which there are two married couples.

ANSWER KEY

1. c)	21. c)	41. b)	61. c)	81. a)
2. b)	22. c)	42. a)	62. c)	82. c)
3. d)	23. a)	43. a)	63. b)	83. d)
4. d)	24. b)	44. a)	64. d)	84. b)
5. a)	25. d)	45. b)	65. a)	85. d)
6. a)	26. d)	46. d)	66. b)	86. c)
7. c)	27. b)	47. b)	67. b)	87. d)
8. a)	28. b)	48. a)	68. c)	88. d)
9. d)	29. b)	49. d)	69. b)	89. c)
10. d)	30. d)	50. b)	70. c)	90. a)
11. d)	31. c)	51. b)	71. c)	91. d)
12. c)	32. a)	52. d)	72. d)	92. a)
13. b)	33. c)	53. d)	73. d)	93. c)
14. b)	34. b)	54. a)	74. c)	94. c)
15. d)	35. b)	55. a)	75. b)	95. b)
16. c)	36. b)	56. b)	76. a)	96. a)
17. b)	37. d)	57. d)	77. b)	97. b)
18. d)	38. c)	58. c)	78. a)	98. b)
19. c)	39. c)	59. b)	79. c)	99. b)
20. a)	40. b)	60. a)	80. b)	100. a)

