

Computer Based Examination System

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| Exported On * | 2021/04/13 10:13:44 |
| Title * | Question Paper Answer Key |
| OES Exam * | GPSC13202008 Assistant Professors in Government College in Physics Completed 2021-04-10 |

| | | |
|---|-----------------------------|--|
| 1 | Question Description | Proper length of rod is 100 cm. Length of rod moving with velocity $0.8c$ is |
| | A | 100cm. |
| | B | 30cm. |
| | C | 60cm. |
| | D | 80cm. |
| | Correct Answer | C |
| | Marks | 1 |

| | | |
|---|-----------------------------|---|
| 2 | Question Description | Avalanche photo diodes are preferred over PIN diodes in optical communications system, because of |
| | A | Higher sensitivity |
| | B | Larger band width |
| | C | Larger power handling capacity |
| | D | Speed of operation |
| | Correct Answer | C |
| | Marks | 1 |

| | | |
|---|-----------------------------|--|
| 3 | Question Description | <p>A gas of N particles is enclosed in a volume V at a temperature T. The logarithm of the partition function is given by</p> $\ln Z = N \ln[(V - bN)(k_B T)^{3/2}]$ <p>where b is a constant with appropriate dimensions. If P is the pressure of the gas, the equation of the state is given by</p> |
| | A | $P(V - bN) = Nk_B T$ |
| | B | $P(V - bN) = k_B T$ |
| | C | $P(V - b) = Nk_B T$ |
| | D | $P(V - b) = k_B T$ |
| | Correct Answer | B |
| | Marks | 1 |

| | | |
|---|-----------------------------|--|
| 4 | Question Description | A pendulum hangs from the ceiling of an elevator. Which of the following scenarios yields the largest time period of oscillations? |
| | A | Elevator moves upwards with constant speed of 8m/s |
| | B | Elevator accelerates upwards with 8m/s^2 |
| | C | Elevator moves downward with constant speed of 8m/s |
| | D | Elevator accelerates downward with 80m/s^2 |
| | Correct Answer | D |
| | Marks | 1 |

| | | |
|---|-----------------------------|---|
| 5 | Question Description | A system has energy levels $E_0, 2E_0, 3E_0, \dots$, where the excited states are triply degenerate. Four non-interacting Bosons are placed in this system. If the total energy of these Bosons is $5E_0$, the number of microstates is |
| | A | 3 |
| | B | 4 |
| | C | 5 |
| | D | 1 |
| | Correct Answer | A |
| | Marks | 1 |

| | | |
|---|-----------------------------|---|
| 6 | Question Description | If light is incident at Brewster angle on a glass slab results in |
| | A | The production of plane polarised light in reflection |
| | B | Total internal reflection of light |
| | C | The production of circularly polarised light in reflection. |
| | D | The production of circularly polarised lights in transmission. |
| | Correct Answer | A |
| | Marks | 1 |

| | | |
|---|-----------------------------|--|
| 7 | Question Description | The physical quantity that has the same dimension as the action S in Hamilton's principle is |
| | A | Linear momentum |
| | B | Energy |
| | C | Orbital angular momentum |
| | D | Torque |
| | Correct Answer | C |
| | Marks | 1 |

| | | |
|---|-----------------------------|--|
| 8 | Question Description | Identify which one is a first order phase transition ? |
| | A | A paramagnetic to ferromagnetic transition in the absence of a magnetic field. |
| | B | A liquid to gas transition close to its triple point. |
| | C | A metal to superconductor transition in the absence of a magnetic field. |
| | D | A liquid to gas transition at its critical temperature. |
| | Correct Answer | B |
| | Marks | 1 |
| 9 | Question Description | Electric fields associated with two electromagnetic waves are in the ratio 3:2. Then energy transmitted per unit area per unit time by these waves are in the ratio. |
| | A | 3: 2 |
| | B | 9 : 4 |
| | C | 4 : 9 |
| | D | 2 : 3 |
| | Correct Answer | B |
| | Marks | 1 |

| | | |
|----|-----------------------------|---|
| 10 | Question Description | The schroedunger wave equation for a particle of mass m, total energy E and potential V is given by |
| | A | $\nabla^2\Psi + \frac{2m}{\hbar^2}(E - V)\Psi = 0$ |
| | B | $\nabla\Psi + \frac{2m}{\hbar^2}(E - V)\Psi = 0$ |
| | C | $\nabla^2\Psi + \frac{4m}{\hbar^2}(E - V)\Psi = 0$ |
| | D | $\nabla^2\Psi \neq \frac{\hbar^2}{2m}(E - V)\Psi = 0$ |
| | Correct Answer | A |
| | Marks | 1 |

| | | |
|----|-----------------------------|--|
| 11 | Question Description | Choose the incorrect statement : |
| | A | In an n-type semiconductor, the Fermi level lies closer to the conduction band |
| | B | The holes and electrons have different mobilities in a semiconductor. |
| | C | Silicon is an indirect band gap semiconductor. |
| | D | The net charge of a p-type semiconductor is positive. |
| | Correct Answer | D |
| | Marks | 1 |

| | | |
|----|-----------------------------|--|
| 12 | Question Description | A op – amp amplifier has a gain of 10 in the inverting configuration and a band width of 1 MHz. At what gain will it have a bandwidth of 10 MHz. |
| | A | 1 |
| | B | 20 |
| | C | 100 |
| | D | 10^5 |
| | Correct Answer | C |
| | Marks | 1 |

| | | |
|----|-----------------------------|--|
| 13 | Question Description | Which differential equation has singularities at $X=1,-1,\infty$? |
| | A | Bessel differential equation |
| | B | Legendre differential equation |
| | C | Hermite differential equation |
| | D | Laguerre differential equation |
| | Correct Answer | B |
| | Marks | 1 |

| | | |
|----|-----------------------------|--|
| 14 | Question Description | Consider a $n \times n$ diagonalizable matrix A such that $A^2 = A, \quad Tr(A) = n - 1$ What is the value of $det(A)$? |
| | A | 1 |
| | B | $n-1$ |
| | C | n |
| | D | 0 |
| | Correct Answer | D |
| | Marks | 1 |

| | | |
|----|-----------------------------|---|
| 15 | Question Description | What is the approximate value of acceleration due to gravity at the top of mountain which is 8 km high if measured from the sea level ? |
| | A | 9.77 m/s^2 |
| | B | 9.88 m/s^2 |
| | C | 6.49 m/s^2 |
| | D | 8.85 m/s^2 |
| | Correct Answer | A |
| | Marks | 1 |

| | | |
|----|-----------------------------|--|
| 16 | Question Description | The number of independent components of a real antisymmetric tensor of rank two in 4 dimensions is |
| | A | 4 |
| | B | 6 |
| | C | 8 |
| | D | 10 |
| | Correct Answer | D |
| | Marks | 1 |
| 17 | Question Description | A diode that has a negative resistance characteristic is the |
| | A | Schottky diode |
| | B | Tunner diode |
| | C | Laser diode |
| | D | Zener diode |
| | Correct Answer | B |
| | Marks | 1 |

| | | |
|----|-----------------------------|---|
| 18 | Question Description | The black body spectrum of an object O1 is such that its radiant intensity, i.e., intensity per unit wavelength interval is maximum at a wavelength of 200 nm. Another object O2 has the maximum radiant intensity at 600 nm. The ratio of power emitted per unit area by O1 to that of O2 is |
| | A | 81 |
| | B | 1/81 |
| | C | 1/9 |
| | D | 9 |
| | Correct Answer | A |
| | Marks | 1 |

| | | |
|----|-----------------------------|---|
| 19 | Question Description | The order of magnitude of the energy band gap of a typical semiconductor is |
| | A | 1 MeV |
| | B | 1 keV |
| | C | 1 eV |
| | D | 1 meV |
| | Correct Answer | C |
| | Marks | 1 |

| | | |
|----|-----------------------------|---|
| 20 | Question Description | The electric field in a source free region is given by $\vec{E} = x\hat{i} + by\hat{j}$. The value of b is |
| | A | -1 |
| | B | 0 |
| | C | 1 |
| | D | ∞ |
| | Correct Answer | A |
| | Marks | 1 |

| | | |
|----|-----------------------------|--|
| 21 | Question Description | A beam of light moves in a slab of glass of refractive index n in the positive x-direction. The slab itself is moving in the positive x-direction with a speed v in the laboratory frame. What is the speed of the beam of light in the laboratory frame ? |
| | A | C |
| | B | $\frac{nc^2+cv}{c+nv}$ |
| | C | $c(1 - \frac{1}{n})$ |
| | D | $\frac{c^2+ncv}{nc+v}$ |
| | Correct Answer | D |
| | Marks | 1 |

22

Question Description

A particle of mass m is in a potential given by

$$V(r) = -\frac{a}{r} + \frac{ar_0^2}{3r^3}$$

where a and r_0 are positive constants. When disturbed slightly from its stable equilibrium position, it undergoes a simple harmonic oscillation. The time period of oscillation is

A

$$2\pi\sqrt{\frac{mr_0^3}{2a}}$$

B

$$2\pi\sqrt{\frac{mr_0^3}{a}}$$

C

$$2\pi\sqrt{\frac{2mr_0^3}{a}}$$

D

$$4\pi\sqrt{\frac{mr_0^3}{2a}}$$

Correct Answer

A

Marks

1

23

Question Description

A source of electromagnetic waves is moving with velocity v in the frame of Earth. It produces waves of frequency ν_0 in its own frame. What can be the possible frequency of the waves reaching Earth ?

A

$$\nu_0 \sqrt{\frac{c+v}{c-v}}$$

B

$$\nu_0$$

C

$$\nu_0 \sqrt{\frac{c-v}{c+v}}$$

D

$$\nu_0 \sqrt{\frac{c^2-v^2}{c^2+v^2}}$$

Correct Answer

C

Marks

1

| | | |
|----|-----------------------------|---|
| 24 | Question Description | Least count of voltmeter is 0.01V. It measures a voltage to be 2.38V. whereas the actual voltage is 2.50V in 20 trials. The voltmeter can be termed as. |
| | A | Precise but not accurate |
| | B | Accurate but not precise |
| | C | Both accurate and precise |
| | D | Neither accurate nor precise |
| | Correct Answer | A |
| | Marks | 1 |

| | | |
|----|-----------------------------|--|
| 25 | Question Description | In a canonical ensemble, |
| | A | the energy and the temperature are constants. |
| | B | the energy and the entropy are constants. |
| | C | the density and the entropy are constants. |
| | D | the density and the temperature are constants. |
| | Correct Answer | D |
| | Marks | 1 |

| | | |
|----|-----------------------------|---|
| 26 | Question Description | Mean total energy of a classical three-dimensional harmonic oscillator in equilibrium with a heat reservoir at temperature T is |
| | A | $2k_B T$ |
| | B | $3k_B T$ |
| | C | $k_B T$ |
| | D | $3/2k_B T$ |
| | Correct Answer | B |
| | Marks | 1 |

| | | |
|----|-----------------------------|--|
| 27 | Question Description | Entropy of N spin-half particles fixed at a lattice is |
| | A | zero |
| | B | $Nk_B \ln 2$ |
| | C | Nk_B |
| | D | $\frac{Nk_B \ln 2}{2}$ |
| | Correct Answer | B |
| | Marks | 1 |

| | | |
|----|-----------------------------|--|
| 28 | Question Description | Magnetic field of an infinitely long ideal solenoid of radius R, carrying current I |
| | A | Is constant inside and decays as $1/r$ outside solenoid |
| | B | Is constant inside and decays as $\exp(-r)$ outside solenoid |
| | C | Increases radially (proportional to r) inside and zero outside |
| | D | Is constant inside and zero outside the solenoid |
| | Correct Answer | D |
| | Marks | 1 |
| 29 | Question Description | The maximum number of i/o ports that can be interfaced to intel 8085 microprocessor is |
| | A | 2 |
| | B | 8 |
| | C | 64 |
| | D | 256 |
| | Correct Answer | D |
| | Marks | 1 |

| | | |
|----|-----------------------------|--|
| 30 | Question Description | The capacitance of two concentric spherical metal shells, with radii a & $5a$ is |
| | A | $16\pi\epsilon_0 a$ |
| | B | $6\pi\epsilon_0 a$ |
| | C | $18\pi\epsilon_0 a$ |
| | D | $5\pi\epsilon_0 a$ |
| | Correct Answer | D |
| | Marks | 1 |

| | | |
|----|-----------------------------|--|
| 31 | Question Description | If H is the Hamiltonian of a free particle of unit mass, then $[x, [x, H]]$ is |
| | A | h^2 |
| | B | $-h^2$ |
| | C | $h^2/2$ |
| | D | $-h^2/2$ |
| | Correct Answer | B |
| | Marks | 1 |

| | | |
|----|-----------------------------|--|
| 32 | Question Description | Two particles are said to be distinguishable when |
| | A | the average distance between them is small compared to their de-Broglie wavelength |
| | B | the average distance between them is large compared to their de-Broglie wavelength |
| | C | they have overlapping wave-packets |
| | D | their total wave-function is symmetric under particle exchange |
| | Correct Answer | B |
| | Marks | 1 |

| | | |
|----|-----------------------------|-----------------------------------|
| 33 | Question Description | A reversible adiabatic process is |
| | A | Isobaric |
| | B | Isochromic |
| | C | Isentropic |
| | D | Isothermal |
| | Correct Answer | C |
| | Marks | 1 |

| | | |
|----|-----------------------------|---|
| 34 | Question Description | There are 40 persons in a room all born in the month of April. The probability that at least two of them share the same birth day is closest to |
| | A | 0.4 |
| | B | 0.8 |
| | C | 0.7 |
| | D | 0.9 |
| | Correct Answer | C |
| | Marks | 1 |

| | | |
|----|-----------------------------|--|
| 35 | Question Description | Choose the incorrect statement : |
| | A | $\text{Tr}(AB) = \text{Tr}(BA)$ |
| | B | Trace of a unit matrix is always a fixed natural number. |
| | C | Trace of the sum of the two matrices is equal to the sum of their individual traces. |
| | D | Trace of a scalar matrix is some multiple of its order. |
| | Correct Answer | B |
| | Marks | 1 |

| | | |
|----|-----------------------------|--|
| 36 | Question Description | The value of integral $\oint_C Z^2 dz$, Where C is a unit circle |
| | A | 1/3 |
| | B | Zero |
| | C | $2\pi i$ |
| | D | $\frac{Z^3}{3}$ |
| | Correct Answer | B |
| | Marks | 1 |

| | | |
|----|-----------------------------|---|
| 37 | Question Description | Which of the following matrices are Hermitian? a) $\begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$ b) $\begin{bmatrix} 1 & 1 \\ 1 & -1 \end{bmatrix}$ c) $\begin{bmatrix} 0 & i \\ -1 & 0 \end{bmatrix}$ d) $\begin{bmatrix} i & 1 \\ 1 & -i \end{bmatrix}$ |
| | A | a, b, c |
| | B | b, c |
| | C | b, c, d |
| | D | a, d, c |
| | Correct Answer | B |
| | Marks | 1 |

| | | |
|----|-----------------------------|---|
| 38 | Question Description | If a scale shows your weight as 500 N in a stationary lift, what weight will it show as you ascend with an acceleration of 0.5g ? |
| | A | 250 N |
| | B | 750 N |
| | C | 500 N |
| | D | 555 N |
| | Correct Answer | A |
| | Marks | 1 |

| | | |
|----|-----------------------------|--|
| 39 | Question Description | The expression $B(A+B) + A(A+\overline{B})$ can be realised by a minimum number of |
| | A | 1 AND gate |
| | B | 1 OR gate |
| | C | 2 OR gates |
| | D | 2 AND gates |
| | Correct Answer | B |
| | Marks | 1 |

| | | |
|----|-----------------------------|---|
| 40 | Question Description | The Dirac delta function $\delta(x)$ satisfies the relation $\int_{-\infty}^{\infty} f(x)\delta(x) dx = f(0)$ for a well behaved function $f(x)$. If x has dimension of $(\text{torque})^{-1}$, then |
| | A | $f(x)$ has dimension of (torque) . |
| | B | $f(x)$ has dimension of $(\text{torque})^{-1}$. |
| | C | $f(x)$ is dimensionless |
| | D | $f(x)$ has dimension of $(\text{torque})^2$ |
| | Correct Answer | A |
| | Marks | 1 |

| | | |
|----|-----------------------------|--|
| 41 | Question Description | The volume of parallelo piped with edges $\vec{A} = \hat{i} + \hat{j}, \vec{B} = \hat{j} + \hat{k}$ and $\vec{C} = \hat{k} + \hat{i}$ is |
| | A | 8 |
| | B | 6 |
| | C | 4 |
| | D | 2 |
| | Correct Answer | D |
| | Marks | 1 |

| | | |
|----|-----------------------------|---|
| 42 | Question Description | The Eigen values of a 5 X 5 matrix B are 2, 1, 0, -1, -z. The determinant of e^B is |
| | A | e |
| | B | 1/e |
| | C | 1 |
| | D | 0 |
| | Correct Answer | C |
| | Marks | 1 |

| | | |
|----|-----------------------------|--|
| 43 | Question Description | Consider the Fermi-Dirac distribution function $f(E)$ at room temperature (300K), where E refers to energy. If E_F is the Fermi energy, which of the following is true ? |
| | A | $f(E)$ is a step function. |
| | B | $f(E_F)$ has a value of 1/2. |
| | C | States with $E < E_F$ are filled completely. |
| | D | $f(E)$ is large and tends to infinity as E decreases much below E_F . |
| | Correct Answer | B |
| | Marks | 1 |

| | | |
|----|-----------------------------|---|
| 44 | Question Description | Which one of the following diodes work on the principle of negative resistance? |
| | A | Schottky diode |
| | B | Light-emitting diode |
| | C | Gunn diode |
| | D | Photodiode |
| | Correct Answer | C |
| | Marks | 1 |
| 45 | Question Description | The electric flux through any closed surface is measure of |
| | A | The total charge inside the surface |
| | B | The total charge outside the surface |
| | C | Total charge at the surface |
| | D | Total charge, both inside and outside the surface |
| | Correct Answer | A |
| | Marks | 1 |

| | | |
|----|-----------------------------|--|
| 46 | Question Description | An electron is confined in a 1-D infinite square well potential of width 60 nm. If the electron is in the second excited state, what is the wavelength of the electron ? |
| | A | 120 nm |
| | B | 60 nm |
| | C | 40 nm |
| | D | 20 nm |
| | Correct Answer | C |
| | Marks | 1 |

| | | |
|----|-----------------------------|--|
| 47 | Question Description | A planet is revolving around a star in an elliptic orbit. The ratio of farthest distance of closest distance of planet from star is 1.5. the eccentricity of orbit is given by |
| | A | 1.5 |
| | B | 0.2 |
| | C | 0 |
| | D | 0.4 |
| | Correct Answer | B |
| | Marks | 1 |

| | | |
|----|-----------------------------|--|
| 48 | Question Description | Which of following is not the part of a lock-in amplifier? |
| | A | Phase sensitive detector |
| | B | Integrator |
| | C | Differentiator |
| | D | Small signal amplifier |
| | Correct Answer | C |
| | Marks | 1 |

| | | |
|----|-----------------------------|---|
| 49 | Question Description | Phase curve of a freely falling body under gravity is |
| | A | Ellipse |
| | B | Hyperbola |
| | C | Stable node |
| | D | Stable star |
| | Correct Answer | B |
| | Marks | 1 |

50

| | |
|-----------------------------|---|
| Question Description | Phase space trajectory of a one-dimensional simple harmonic oscillator is |
| A | Hyperbola |
| B | Parabola |
| C | Ellipse |
| D | Cycloid |
| Correct Answer | D |
| Marks | 1 |

51

Comprehension

Read the following passage and answer the questions given below:

The examination system is both an opiate and a poison. It is an opiate because it lulls us into believing that all is well when most is ill. 'Look,' the public says, 'at this list of scholarships; see how many children have got their School Certificates: something is happening; the school is doing its job.' Something no doubt is happening; but it may not be education: it may be the administration of a poison which paralyses or at least slows down the natural activities of the healthy mind. The healthy human being finding himself a creature of unknown capacities in an unknown world, wants to learn what the world is like, and what he should be and do in. To help him in answering these questions is the one and only purpose of education.

Question Description

As an opiate and a poison, the examination system respectively

A

paralyses or slows down natural activities and lulls the healthy mind

B

lulls the healthy mind and paralyses or slows down its physical activities

C

paralyses or slows down natural activities and lulls the mind

D

lulls the healthy mind and paralyses or slows down its natural activities

Correct Answer

D

Marks

1

Comprehension

Read the following passage and answer the questions given below:

The examination system is both an opiate and a poison. It is an opiate because it lulls us into believing that all is well when most is ill. 'Look,' the public says, 'at this list of scholarships; see how many children have got their School Certificates: something is happening; the school is doing its job.' Something no doubt is happening; but it may not be education: it may be the administration of a poison which paralyses or at least slows down the natural activities of the healthy mind. The healthy human being finding himself a creature of unknown capacities in an unknown world, wants to learn what the world is like, and what he should be and do in. To help him in answering these questions is the one and only purpose of education.

Question Description

Complete the following statement using a suitable option from among those provided below:
The overall passage implies that the public is impressed with the misconception

A

created by the list of scholarships

B

that the school is doing its job

C

that good education is being imparted

D

that something is happening

Correct Answer

C

Marks

1

53

Comprehension

Read the following passage and answer the questions given below:

The examination system is both an opiate and a poison. It is an opiate because it lulls us into believing that all is well when most is ill. 'Look,' the public says, 'at this list of scholarships; see how many children have got their School Certificates: something is happening; the school is doing its job.' Something no doubt is happening; but it may not be education: it may be the administration of a poison which paralyses or at least slows down the natural activities of the healthy mind. The healthy human being finding himself a creature of unknown capacities in an unknown world, wants to learn what the world is like, and what he should be and do in. To help him in answering these questions is the one and only purpose of education.

Question Description

The statement "The examination system lulls us into believing that all is well when most is ill" implies that it makes us falsely confident and relaxed that

A

all is not well with it, some is ill.

B

nothing is ill in it, when most is.

C

most is well with it, when some is ill.

D

most is ill with it, some is well.

Correct Answer

B

Marks

1

54

Comprehension

Read the following passage and answer the questions given below:

The examination system is both an opiate and a poison. It is an opiate because it lulls us into believing that all is well when most is ill. 'Look,' the public says, 'at this list of scholarships; see how many children have got their School Certificates: something is happening; the school is doing its job.' Something no doubt is happening; but it may not be education: it may be the administration of a poison which paralyses or at least slows down the natural activities of the healthy mind. The healthy human being finding himself a creature of unknown capacities in an unknown world, wants to learn what the world is like, and what he should be and do in. To help him in answering these questions is the one and only purpose of education.

Question Description

The term 'opiate' is used in the passage to suggest its ----- effect.

A

narcotic

B

addictive

C

analgesic

D

social

Correct Answer

A

Marks

1

Comprehension

Read the following passage and answer the questions given below:

The examination system is both an opiate and a poison. It is an opiate because it lulls us into believing that all is well when most is ill. 'Look,' the public says, 'at this list of scholarships; see how many children have got their School Certificates: something is happening; the school is doing its job.' Something no doubt is happening; but it may not be education: it may be the administration of a poison which paralyses or at least slows down the natural activities of the healthy mind. The healthy human being finding himself a creature of unknown capacities in an unknown world, wants to learn what the world is like, and what he should be and do in. To help him in answering these questions is the one and only purpose of education.

Question Description

As per the passage, the sole objective of education is to help an individual

A

find himself in the unknown world and enjoy it well.

B

know the world, himself and live ideally well in the world.

C

know the world, his ideal potential and function in the world.

D

reveal his unknown capacities in an unknown world.

Correct Answer

C

Marks

1

| | | |
|----|-----------------------------|---|
| 56 | Question Description | Fulhar lake is located in which state of India? |
| | A | Uttarakhand |
| | B | Bihar |
| | C | Madhya.Pradesh. |
| | D | Uttar Pradesh |
| | Correct Answer | D |
| | Marks | 1 |

| | | |
|----|-----------------------------|---|
| 57 | Question Description | Which of these organizations manages internet protocol numbers and Domain Name Systems roots? |
| | A | IUCN |
| | B | ICANN |
| | C | IUPAC |
| | D | IAEA |
| | Correct Answer | B |
| | Marks | 1 |

58 **Question Description** Where is Kanha National Park located in India?

A Assam

B Rajasthan

C Uttar Pradesh

D Madhya Pradesh

Correct Answer D

Marks 1

59 **Question Description** Which is the largest tiger reserve in India?

A Corbett

B Nagarjuna

C Manas

D screw

Correct Answer A

Marks 1

| | | |
|----|-----------------------------|--|
| 60 | Question Description | The first multi-purpose river valley project in India has been built on which of the following rivers? |
| | A | Kaveri |
| | B | Godavari |
| | C | Damodar |
| | D | Koyna |
| | Correct Answer | C |
| | Marks | 1 |

| | | |
|----|-----------------------------|---|
| 61 | Question Description | National Library, the largest library in India is in which state? |
| | A | Rajasthan |
| | B | Bihar |
| | C | West Bengal |
| | D | Tamil Nadu |
| | Correct Answer | C |
| | Marks | 1 |

62

| | |
|-----------------------------|--|
| Question Description | Which state is known as 'Scotland of the East' in India? |
| A | Assam |
| B | Tripura |
| C | Manipur |
| D | Meghalaya |
| Correct Answer | D |
| Marks | 1 |

63

| | |
|-----------------------------|--|
| Question Description | Pradhanmantri Suraksha Bima Yojana launch in which year? |
| A | 2014 |
| B | 2015 |
| C | 2020 |
| D | 2019 |
| Correct Answer | B |
| Marks | 1 |

| | | |
|----|-----------------------------|--|
| 64 | Question Description | How many languages does the Indian Constitution recognise? |
| | A | 18 |
| | B | 22 |
| | C | 24 |
| | D | 25 |
| | Correct Answer | B |
| | Marks | 1 |

| | | |
|----|-----------------------------|--|
| 65 | Question Description | Which of the following is the largest railway junction in India? |
| | A | Delhi |
| | B | Bhatinda |
| | C | Mathura |
| | D | Allahabad |
| | Correct Answer | C |
| | Marks | 1 |

66

Question Description

R1, R2, R3, R4, R5, R6, R7 are seven places on a map. The following places are connected by two-way roads: R1 and R2; R1 and R6; R3 and R6; R3 and R4; R6 and R7; R4 and R5; R2 and R3; R5 and R7. No other road exists. The shortest route (the route with the least number of intermediate places) from R1 to R7 is:-

A*R1–R3–R7***B***R1–R5–R7***C***R1–R2–R3–R6–R7***D***R1–R6–R7***Correct Answer**

D

Marks

1

67

Question Description

Here are some words translated from artificial language

Lapikaki means fruitcake

Kakibali means cakewalk

Malapalav means buttercup

Which word could mean “Fruitcup”

A

Palavkaki

B

Kakipalav

C

Lapibali

D

Lapipalav

Correct Answer

D

Marks

1

Question Description

Four friends, namely, Liyaqat, Lillian, Lima and Lalit are sitting on a horizontally placed wooden bench, all looking towards the same direction.

If:

- i. There is at least one person sitting between Lillian and Lima;
- ii. Liyaqat is towards the right of Lima but not towards the right of Lalit;
- iii. Lalit is seated immediately next to Lillian; &
- iv. Lima is seated at one of the extreme corners of the bench.

Which of the following is definitely true?

A

Lillian and Liyaqat are seated immediately next to one another.

B

Liyaqat is seated at one of the extreme corners of the bench.

C

There is at least one person seated between Lalit and Liyaqat.

D

There is at least one person seated between Lalit and Lima.

Correct Answer

D

Marks

1

| | | |
|----|-----------------------------|--|
| 69 | Question Description | 125 small but identical cubes have been put together to form a large cube. How many such small cubes will be required to cover this large cube completely? |
| | A | 208 |
| | B | 212 |
| | C | 254 |
| | D | 218 |
| | Correct Answer | D |
| | Marks | 1 |

| | | |
|----|-----------------------------|---|
| 70 | Question Description | <p>If $a+b$ means a is sister of b, $a-b$ means a is brother of b, $a \times b$ means a is daughter of b, $a \div b$ means a is mother of b, Which of the following relationship shows that p and r are wife and husband?</p> |
| | A | $p \div q \times r$ |
| | B | $p - q \times r$ |
| | C | $p + q \times r$ |
| | D | $p + q - r$ |
| | Correct Answer | A |
| | Marks | 1 |

| | | |
|----|-----------------------------|---|
| 71 | Question Description | Ruby has 4 children. Two of the children have blue eyes and two of the children have brown eyes Half of the children are girls Which of the following statement is true |
| | A | Among any three children, at least one girl has brown eyes |
| | B | Among any three children, at least two girls has blue eyes |
| | C | At least on girl has blue eyes |
| | D | At least one boy has brown eyes |
| | Correct Answer | A |
| | Marks | 1 |

| | | |
|----|-----------------------------|---|
| 72 | Question Description | Division A has 30% more students than division B Division C has 30 % less students than division B Division A has lesser students than division C If the first two statements are true then the third statement is |
| | A | True |
| | B | False |
| | C | Uncertain |
| | D | |
| | Correct Answer | B |
| | Marks | 1 |

73

| | |
|-----------------------------|--|
| Question Description | 60 men can dig 40 holes in 32 days. How long will 30 men take to dig 20 holes? |
|-----------------------------|--|

| | |
|----------|---------|
| A | 15 days |
|----------|---------|

| | |
|----------|---------|
| B | 16 days |
|----------|---------|

| | |
|----------|---------|
| C | 10 days |
|----------|---------|

| | |
|----------|---------|
| D | 18 days |
|----------|---------|

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| Correct Answer | B |
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|--------------|---|
| Marks | 1 |
|--------------|---|

74

Question Description

Four packets P, Q, R and S, three wallets A, B and C are kept on a table one after the other in a row from left to right. Wallet C has as many items to its left as to its right. No packet is at any extreme end of the row. Packet P is kept to the immediate left of packet R.

Packet P is to the immediate right of wallet A.

What is kept third from left end of the row on the table?

A

C

B

S

C

R

D

A

Correct Answer

C

Marks

1

75

| | |
|-----------------------------|---|
| Question Description | Find a pair that has similar relationship to frame: picture |
|-----------------------------|---|

| | |
|----------|---------------|
| A | Binding: book |
|----------|---------------|

| | |
|----------|---------------|
| B | Teacher: read |
|----------|---------------|

| | |
|----------|-----------------|
| C | Artist: drawing |
|----------|-----------------|

| | |
|----------|---------------|
| D | Mother: child |
|----------|---------------|

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|-----------------------|---|
| Correct Answer | A |
|-----------------------|---|

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|--------------|---|
| Marks | 1 |
|--------------|---|