IC-15

CET15

Test Booklet Serial No: 11228

DON'T BREAK OPEN THE SEAL UNTIL YOU ARE ASKED TO DO.

Total Number of Pages: 44

Time Allowed: 03 Hours

Number of Questions: 170

Maximum Marks: 170

Roll No: [redacted]

Date of Examination: 13 June 2015

Name of the Candidate: [redacted]
(in capital letters)

Name of the Centre: [redacted]

Candidate's Signature: [redacted]

Invigilator's Signature: [redacted]

SOME INPORTANT INSTRUCITONS TO THE CANDIATES

1. **Fill up the information above by Pen/Ball Point Pen (Black or Blue).**
2. The OMR sheet to mark your answers is placed inside the test booklet. Without breaking the seal of the Test Booklet, take the Answer Sheet out.
3. There are 170 questions. Each correct answer gets a score of one mark. There is no negative marking.
4. Each question is followed by four answers. You should select one answer from A, B, C or D considered by you as the most appropriate or correct answer and fill the circle completely on the OMR Sheet in black/blue ink in the box opposite the question number.
5. Do your rough work only on the blank pages provided at the end of the question booklet.
6. Uses of mobile phone, calculators, calculator-watch, slide rules, mathematical table, etc. are not allowed.
7. Make sure that you do not possess any pages (Blank or Printed) or any unauthorized material. If such material is found in your possession during the examination, you will be disqualified from entrance examination.
8. If you are found copying/helping others you will be disqualified from entrance examination.
9. You are not allowed to leave the examination hall till the end of the entrance exam.
10. At the end of examination, candidate may be permitted to take the question booklet.
11. Please use **Only last five digit** of your roll no. in the space provided in the OMR Sheet.

ICET – 2015

Q.1 Choose the correct alternative to fill the blank in the following sentence:

This generation needs good _____ T.V. programmes.

A. educating
B. educative
C. educational
D. educated

Q.2 Which of the following words have not been formed by attaching the prefix '***dis-***' to a root word?

A. disillusioned
B. disagreement
C. disgraceful
D. educational

Q.3 The synonym of '***dexterous***' is:

A. skillful
B. clumsy
C. diligent
D. diplomatic

Q.4 The synonym of '***innovation***' is:

A. invention
B. discovery
C. renovation
D. novelty

Q.5 In which of the following sentences has the word '***like***' (or a form of it) been used as an ***adjective***?

A. Children ***like*** sweets.
B. The two men are of ***like*** built.
C. Do not talk ***like*** that.
D. We shall not see the ***likes*** of him again.

Q.6 Which of the following alternatives, would make the given sentence grammatically incorrect?

Such mistakes should <u>seldom</u> be made.

A. not
B. seldom or never
C. seldom if ever
D. seldom or ever

Q.7 In some poems, the same line (or a part of it) is repeated at the end (or the beginning) of each verse. This poetic device is called:

A. Alliteration
B. Refrain
C. Imagery
D. None of the above

Q.8 In the sentence, '***Reading is his favourite pastime.***', the word '**reading**' is a(n):

A. Gerund
B. Verb
C. Adjective
D. Noun

Q.9 What is the figure of speech used in '***To err is human; to forgive, divine.***' And '***Man proposes, God disposes.***'?

A. Synecdoche
B. Personification
C. Metaphor
D. Antithesis

Q.10 Name the mood of the underlined verb:

I wish I knew his name!

A. Imperative
B. Indicative
C. Interrogative
D. Subjunctive

Directions (Qs. 11-12): Each of the following questions has two statements labeled as I and II

Mark the answer as:-

A. if statement I by itself is sufficient to answer the question. (11)
B. if statement II by itself is sufficient to answer the question. (12)
C. if both the statements I and II taken together are sufficient to answer the question but neither statement by itself is sufficient.
D. if statements I and II taken together are not sufficient to answer the question and more data is required to solve the problem.

Q11. A rectangular-aquarium provides 36 square centimeters of water surface area per fish. How many fish are there in the aquarium?

I. The edges of the aquarium have lengths of 60, 42, & 30 centimeters.

II. The aquarium is filled to a depth of 40 centimeters.

A ✓

Q12. What is the ratio of boys to girls admitted into a medical college?

I. The number of girls admitted is 3 less than half the number of boys admitted.

III. The number of girls admitted is 2/5 of the number of boys admitted

C

B

Directions (Qs. 13-14): Each of these problems has a question followed by two statements labeled as I and II. Use the data given in I and II together with other information to decide whether the statements are sufficient to answer the question. Mark the answer as.?

A. if you can get the answer from statement I alone but not from Ii alone.

B. if you can get the answer from II alone but not from I alone.

C. if you can get the answer from both I and II together but not from I alone or II alone.

D. if you cannot get the answer from the statements I and II together and need more data. (13) (14)

Q.13 How many families in Jammu City own exactly two cars?

I. 150 families in Jammu City own at least one car.

II. 45 families in Jammu City own at least three cars.

D ✓

Q.14 How far is it from town P to Q? Town R is 30 kms from town P.

I. It is 20 kms from Q to R.

A

D

II. There is a railway line between town P and Q.

Q.15 Geeta is taller than Seeta, but not taller than Radha. Radha and Rani are of same height. Geeta is shorter than Paru. Amongst all girls who is the shortest?

A. Geeta
B. Seeta
C. Radha and Rani
D. Paru

Directions (Qs. 16-17): A missing term in the series in each of these questions is marked by a question mark (?). Choose the term to complete the series.

Q.16 ABD, DGK, HMS, MTB, SBL, ?

A. ZKW
B. ZKU
C. ZAB
D. XKW

Q.17 P3C, R5F, T8I, V12L, ?

A. Y 17 O
B. X 17 M
C. X 17 O
D. X 16 O

Directions (Qs. 18-22): Study the following information carefully to answer these questions. There are six persons A, B, C, D, E and F. C is the sister of F. B is the brother of E's husband. D is the father of A and grandfather of F. There are two fathers, three brothers and a mother in the group.

Q.18 Who is the mother?

A. A
B. B
C. D
D. E

Q.19 Who is E's husband?

A. B
B. C
C. A
D. F

Q.20 How many male members are there in the group?

A. One
B. Two
C. Three
D. Four

Q.21 How is F related to E?

A. Uncle
B. Husband
C. Son
D. Daughter

Q.22 Which of the following is a group of brothers?

A. ABF
B. ABD
C. BFC
D. BDF

Q.23

17	35	53
71	89	107
125	143	?

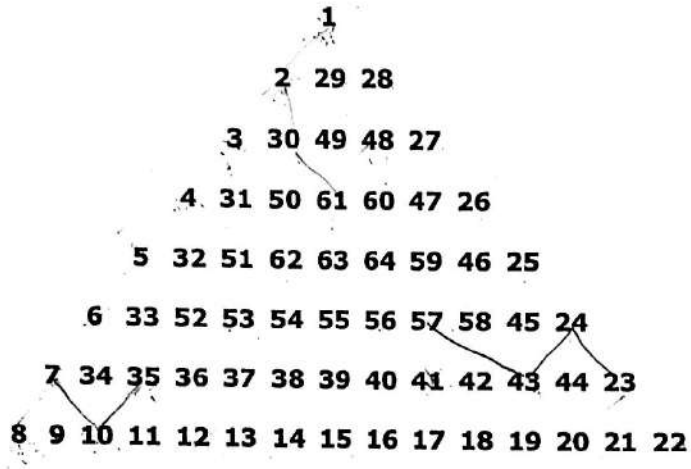
A. 161
B. 160
C. 163
D. 162

Q.24

20	4	16
42	?	36
6	2	4

A. 3
B. 2
C. 6
D. 12

Study the number pyramid carefully and find the missing entry in the following questions.



Q.25 123061 : ?

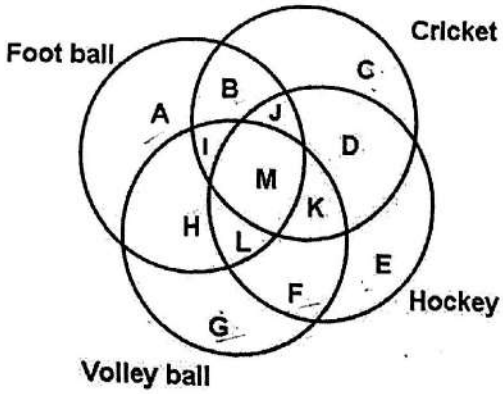
A. 1284861
B. 164825
C. 12589
D. 123894

Q.26 871035:? :: ? :23244357

A. 3629658, 124585
B. 5653356, 3398409
C. 763553, 22232043
D. 41480941, 440753

Diagrams below represent some information or show intersecting figures. Each portion in the diagram has been numbered or labeled with letter. Study the diagram and information given along and answer the questions given below the

diagram.



A = C = E = G
B = D= F = H
J = K = L = I
A = 2B = 3J = 4M ; M = 6

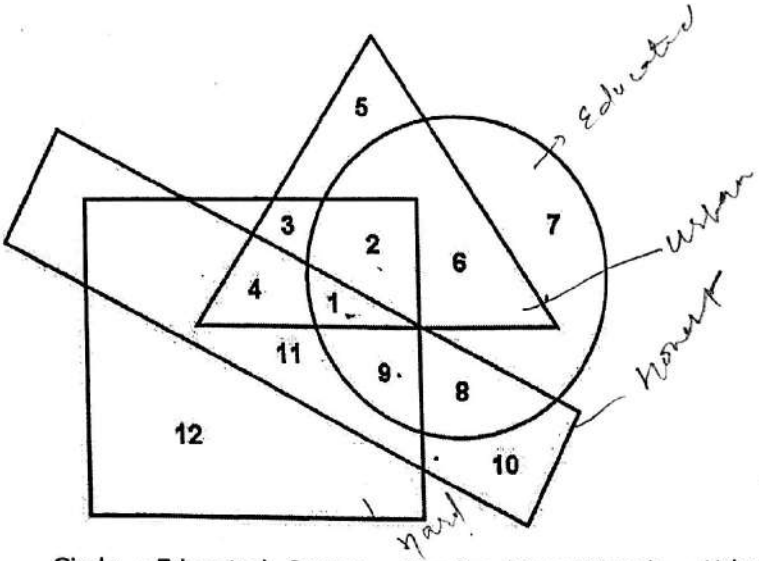
Q.27 How many participants can participate in all four games?

A. 12
B. 18
C. 6
D. 24

Q.28 How many players can not play Football, Cricket and Hockey?

A. 36
B. 18
C. 54
D. 24

Diagrams below represent some information or show intersecting figures. Each portion in the diagram has been numbered or labeled with letter. Study the diagram and information given along and answer the questions given below the diagram



Circle → Educated; Square → Hardworking; Triangle → Urban; Rectangle → Honest

Q.29 Educated, Hardworking and Honest Urban people are indicated by :

A. 1
B. 2
C. 3
D. 4

Q.30 Urban people who are Hardworking and Educated but not Honest are indicated by

A. 1
B. 2
C. 3
D. 4

Q.31 A beam of radioactive particles is measured as it shoots through the laboratory. It is found that, on the average, each particle "lives" for a time of 20ns; after that time, the particle changes to a new form. When at rest in the laboratory, the same particles "live" 7.5ns on the average. The particles in the beam are moving with velocity

A. 0.278×10^{8} m/s
B. 2.78×10^{8} m/s
C. 1.39×10^{8} m/s
D. 0.139×10^{8} m/s

Q.32 The rest energy of an electron with its rest mass, 9.11×10^{-31} kg is

A. 0.512 eV
B. 0.512 Mev
C. 512 eV
D. 5.12 Mev

Q.33 The energy given to the proton to achieve its mass to be twice its rest mass of 1.67×10^{-27} kg is

A. 938 MeV
B. 9.38 MeV
C. 938 eV
D. 93.8 MeV

Q.34 An electron (rest mass 9.11×10^{-31} kg, charge -1.60×10^{-19} C) is moving opposite to an electric field of magnitude $E = 5.00\times10^{5}$ N/C. The magnitude of acceleration at the instant when velocity is 0.01c is

A. 8.8×10^{8} m/s^2
B. 4.4×10^{8} m/ s^2
C. 8.8×10^{16} m/ s^2
D. 17.6×10^{8} m/ s^2

Q.35 A number of tiny spheres made of steel with density ρ_s , and having various radii r_s , are released from rest just after the surface of a tank of water, whose density is ρ. Assuming that the fluid flow around each descending sphere is laminar, the terminal speed v of a sphere in terms of r_s , ρ_s , ρ, and the viscosity η of the water is

A. $v = 2r_s^2(\rho_s + \rho)g / 9\eta$
B. $v = 2r_s(\rho_s - \rho)g / 9\eta$
C. $v = 2r_s^2(\rho_s - \rho)g / 9\eta$
D. $v = r_s^2(\rho_s - \rho)g / 9\eta$

Q.36 Five gas molecules chosen at random are found to have speeds of 500, 600, 700, 800, and 900 m/s. The rms speed is

A. 700 m/s
B. 1400m/s
C. 307 m/s
D. 714 m/s

Q.37 The expression of root mean square speed is

A. $\sqrt{\frac{3kT}{m}}$
B. $\sqrt{\frac{2kT}{m}}$
C. $\sqrt{\frac{3kT}{2m}}$
D. $\sqrt{\frac{kT}{m}}$

Q.38 The mean free path of a molecule of air with radius 2.0×10^{-10} m at 27^0 C and 1 atm pressure is (1 atm = 1.01×10^5 Pa)

A. 2.9×10^{-8} m
B. 2.9×10^{-8} cm
C. 5.8×10^{-8} cm
D. 5.8×10^{-8} m ✓

Q.39 Consider a glass window of area 1 m^2 and thickness 0.50 cm. If a temperature difference of 20°C exists between one side and the other, the heat flow through the window is (k = 0.80 W/m K)

A. 320 W
B. 3200 W ✓
C. 32 W
D. 320 mW

Q.40 An electron (q = -e, m = 9.1×10^{-31} kg) is projected out along the +x axis with an initial speed of 3×10^6 m/s. It goes 45 cm and stops due to a uniform electric field in the region. The magnitude of the field is

A. 114 N/C
B. 28.5 N/C
C. 57 N/C ✓
D. 14.2 N/C

Q.41 The acceleration of a proton (q = +e, m = 1.67×10^{-27} kg) in an electric field of intensity 500 N/C is

A. 4.8×10^{10} m/s^2 ✓
B. 9.6×10^{10} m/s^2
C. 2.4×10^{10} m/s^2
D. 4.9×10^{9} m/s^2

Q.42 A cathode ray beam (an electron beam; m = 9.1×10^{-31}kg, q = -e) is bent in a circle of radius 2 cm by a uniform field with B = 4.5 mT. The speed of the electron will be

A. 3.16×10^7 m/s
B. 6.32×10^7 m/s
C. 0.79×10^7 m/s
D. 1.58×10^7 m/s ✓

Q.43 An automobile rounds a curve of 80 m radius in an unbanked road without slipping. The coefficient of friction between the road and the tires is 0.81. The maximum speed of the automobile will be

A. 12.6 m/s
B. 50.4 m/s
C. 25.2 m/s ✓
D. 37.8 m/s

Q.44. The vector potential in a region is given as $(x, y, z) = -y\,\hat{\imath} + 2x\,\hat{\jmath}$. The associated magnetic induction **B** is

A. $\hat{\imath} + \hat{k}$
B. $3\hat{k}$
C. $-\hat{\imath} + 2\hat{\jmath}$
D. $-\hat{\imath} + \hat{\jmath} + \hat{k}$

Q.45 The amplitudes of the electric field **E** and magnetic field **B** associated with an electromagnetic radiation from a point source behave at a distance *r* from the point source as

A. $|\mathbf{E}|$ = constant, $|\mathbf{B}|$ = constant
B. $|\mathbf{E}| \propto 1/r$, $|\mathbf{B} \propto 1/r$
C. $|\mathbf{E}| \propto 1/r^2$, $|\mathbf{B} \propto 1/r^2$
D. $|\mathbf{E}| \propto 1/r^3$, $|\mathbf{B} \propto 1/r^3$

Q.46 The electric field $\mathbf{E}(\mathbf{r},t)$ for a circularly polarized electromagnetic wave propagating along the positive **Z**-direction is

A. $E_0(\hat{x} + i\,\hat{y}) \exp[\,i(kz - \omega t)]$
B. $E_0(\hat{x} + \hat{y}) \exp[\,i(kz + \omega t)]$
C. $E_0(\hat{x} + i\,\hat{y}) \exp[\,i(kz + \omega t)]$
D. $E_0(\hat{x} + \hat{y}) \exp[\,i(kz - \omega t)]$

where $\hat{x}$ and $\hat{y}$ are unit vectors along the X- and Y- directions.

Q.47 A dielectric material has non-uniform polarization **P**. The polarization volume charge density is given by

A. $|\mathbf{P}|^2$
B. $|\mathbf{P}|/\varepsilon_0$
C. $\nabla \cdot \mathbf{P}$
D. $-\nabla \cdot \mathbf{P}$

Q.48 A circular loop of radius *a* is made of a single turn of thin conducting wire. The self inductance of this loop is *L*. If the number of turns in the loop is increased from 1 to 8, the self inductance would be

A. 64*L*
B. 8*L*
C. $2\sqrt{2}L$
D. *L*/8

Q.49 Electromagnetic waves are propagating along a hollow metallic waveguide whose cross-section is a square of side w. The minimum frequency of the electromagnetic wave is

A. c/w

B. $2c/w$

C. $(nc)/w$

D. $(\sqrt{2}nc)/w$

where c is the speed of electromagnetic wave.

Q.50 An infinite conducting sheet in the XY-plane carries a surface current density **K** along Y-axis. The magnetic field **B** for $z > 0$ is

A. $\mathbf{B}=0$

B. $\mathbf{B} = \frac{\mu_0|K|}{z}\hat{k}$

C. $\mathbf{B} = \frac{\mu_0|K|}{z}\hat{\imath}$

D. $\mathbf{B} = \frac{\mu_0|K|}{\sqrt{x^2+z^2}}\hat{k}$

Q.51 A left circularly polarized light beam of wavelength 600nm is incident on a crystal of thickness d and propagates perpendicular to its optic axis. The ordinary and extraordinary refractive indices of the crystal are n_o=1.54 and n_e=1.55, respectively. The emergent light will be right circularly polarized if d is

A. 120μm

B. 60μm

C. 30μm

D. 15μm

Q.52 At large distances the electric field due to a quadrupole varies as

A. $1/r^3$

B. $1/r^4$

C. $1/r^5$

D. $1/r^6$

Q.53 If the electrostatic potential were given by $\varphi=\varphi_0(x^2+y^2+z^2)$, where φ_0 is constant, then the charge density giving rise to the above potential would be

A. zero

B. $-6\varphi_0\varepsilon_0$

C. $-2\varphi_0\varepsilon_0$

D. $-6\varphi_0/\varepsilon_0$

Q.54 A plane electro-magnetic wave travelling in vacuum is incident normally on a non-magnetic, non-absorbing medium of refractive index n. The incident E_i, reflected E_r and transmitted E_t electric fields are given as

$E_i=E\exp[i(kz-\omega t)]$, $E_r=E_{0r}\exp[i(k_r z-\omega t)]$, $E_t=E_{0t}\exp[i(k_t z-\omega t)]$.

If $E=2V/m$ and $n=1.5$ then the application of appropriate boundary conditions leads to

A. $E_{0r}=-(3/5)V/m$, $E_{0t}=(7/5)V/m$

B. $E_{0r}=-(1/5)V/m$, $E_{0t}=(8/5)V/m$

C. $E_{0r}=-(2/5)V/m$, $E_{0t}=(8/5)V/m$

D. $E_{0r}=(4/5)V/m$, $E_{0t}=(6/5)V/m$

Q.55 A toroidal coil has N closely-wound turns. Assume the current through the coil to be I and the toroid is filled with a magnetic material of relative permeability μ_r. The magnitude of magnetic induction **B** inside the toroid, at a radial distance r from the axis, is given by

A. $\mu_0\mu_r NIr$

B. $\frac{\mu_0\mu_r NI}{r}$

C. $\frac{\mu_0\mu_r NI}{2\pi r}$

D. $2\pi\mu_0\mu_r NIr$

Q.56 An electromagnetic wave with $\mathbf{E}=E_0\cos(\omega t-kz)\hat{\mathbf{i}}$ is travelling in free space and crosses a disc of radius $2m$ placed perpendicular to the Z-axis. If $E_0=60Vm^{-1}$, the average power crossing the disc along the Z-direction is

A. 30W

B. 60W

C. 120W

D. 270W

Q.57 The time-independent Schrodinger equation of a system represents the conservation of the

A. total binding energy of the system
B. total potential energy of the system
C. total kinetic energy of the system
D. total energy of the system

Q.58 A beam of mono-energetic particles having speed v is described by the wave function $\psi(x) = u(x)\exp(ikx)$, where u(x) is a real function. This corresponds to a current density

A. $u^2(x)v$
B. v
C. Zero
D. $u^2(x)$

Q.59 The wave function of a spin-less particle of mass m in a one-dimensional potential $V(x)$ is $\psi(x) = A\exp(-\alpha^2 x^2)$ corresponds to an eigenvalue $E_0 = \hbar^2\alpha^2/m$. The potential V(x) is

A. $2E_0(1-\alpha^2x^2)$
B. $2E_0(1+\alpha^2x^2)$
C. $2E_0\alpha^2x^2$
D. $2E_0(1+2\alpha^2x^2)$

Q.60 Let a particle move in a potential field given by

$$V(x) = \frac{1}{2}m\omega^2x^2 \quad for\ x > 0$$
$$= \infty \qquad for\ x \le 0$$

The allowed energies of this particle are

A. $(n+1/2)\hbar\omega$
B. $(2n+3/2)\hbar\omega$
C. $(2n+1/2)\hbar\omega$
D. $(n+5/2)\hbar\omega$

where n is non-negative integer.

Q.61 A parallel beam of electrons of a given momentum pass through a screen S_1 containing a slit and then produces a diffraction pattern on a screen S_2 placed behind it. The width of the central maximum observed on the screen S_2 can be increased by

A. decreasing the distance between the screen S_1 and S_2
B. increasing the width of the slit in screen S_1
C. decreasing the momentum of the electrons
D. increasing the momentum of the electrons

Q.62 A particle has the wave function $\psi(x,t) = A\exp(i\omega t)\cos(kx)$. Which one of the following is correct?

A. This is an eigenstate of both energy and momentum
B. This is an eigenstate of momentum and not energy
C. This is an eigenstate of energy and not momentum
D. This is not an eigenstate of energy and not momentum.

Q.63 A measurement establishes the position of proton with an accuracy of $\pm 1.00\times10^{-11} m$. The uncertainty in the proton's position 1.00 s later (assuming $v << c$) is

A. $\geq 1.15\times10^{2} m$
B. $\geq 3.15\times10^{3} m$
C. $\geq 5.15\times10^{3} m$
D. $\geq 6.15\times10^{3} m$

Q.64 In a He-Ne laser, the laser transition takes place in

A. He only.
B. Ne Only.
C. Ne first, then in He.
D. He first, then in Ne.

Q.65 X-rays of wavelength $\lambda = 0.200 nm$ are aimed at a block of carbon. The scattered x-rays are observed at an angle of 45.0^{0} to the incident beam. The increased wavelength of the scattered X-rays at this angle is

A. 0.100711 nm
B. 0.200711 nm
C. 0.300711 nm
D. 0.400711 nm

Q.66 If the wave function of a particle trapped in space between x=0 and $x = L$ is given by $\psi(x) = A\sin(\frac{2\pi x}{L})$, where A is a constant, for which value(s) of x will the probability of finding the particle be the maximum?

A. $L/4$
B. $L/2$
C. $L/6 and L/3$
D. $L/4 and 3L/4$

Q.67 An electron with an energy E passed through a circular hole of radius R. The corresponding uncertainty in the angle of emergence of the electron is

A. independent of R
B. independent of E
C. increases as E increases
D. increases as E decreases

Q.68 In a two beam interference pattern, the maximum and minimum intensity values are found to be $25I_0$ and $9I_0$ respectively, where I_0 is a constant. The intensities of the two interfering beams are

A. $16I_0$ *and* I_0
B. $5I_0$ *and* $3I_0$
C. $17I_0$ *and* $8I_0$
D. $8I_0$ *and* $2I_0$

Q.69 A laser beam of wavelength 600nm with a circular cross section having a radius of 10 mm falls normally on a lens of radius 20 mm and focal length 10 cm. The radius of the focused spot is approximately

A. $0.3\,\mu m$
B. $0.6\,\mu m$
C. $3.0\,\mu m$
D. $6.0\,\mu m$

Q.70 If $\left[x,p\right]=i\hbar$, the value of $\left[x^3,p\right]$ is

A. ∇
B. $-2i\hbar x^2$
C. $3i\hbar x^2$
D. $-3i\hbar x^2$

Q.71 If the magnitude of the vector **AB**, when A is (0, a) and B is (1, 2), is one. Then, a is equal to

A. -3 B. -2 C. -1 D. 2

Q.72 A vector **u**, when added to the vector **v** = 3 i + 4 j, yields a resultant vector that is in the positive y direction and has a magnitude equal to that of **v**. Then, the magnitude of **u** is

A. $\sqrt{10}$ B. $2\sqrt{2}$ C. $\sqrt{7}$ D. $2\sqrt{3}$

Q.73 The projection of vector $2\mathbf{i} + 3\mathbf{j} - 2\mathbf{k}$ in the $\mathbf{i} + 2\mathbf{j} + 3\mathbf{k}$ is

A. $3/\sqrt{14}$ B. $2/\sqrt{17}$ C. $2/\sqrt{14}$ D. $3/\sqrt{17}$

Q.74 Normal vector to the curve $\sqrt{x} + \sqrt{y} = 2$ at $(x, y) = (1, 1)$ is obtained as

A. $\frac{1}{2}(\mathbf{i} + \mathbf{j})$ B. $-\frac{1}{2}(\mathbf{i} - \mathbf{j})$ C. $-\frac{1}{\sqrt{2}}(\mathbf{i} + \mathbf{j})$ D. $-\frac{1}{2}(\mathbf{i} + \mathbf{j})$

Q.75 If $r^2 = x^2+y^2+z^2$, $\mathbf{r} = x\mathbf{i}+y\mathbf{j}+z\mathbf{k}$, $r = |\mathbf{r}|$, then $\nabla(\frac{1}{r})$ is

A. $-\frac{1}{r^3}\mathbf{r}$ B. $\frac{1}{r^3}\mathbf{r}$ C. $-\frac{1}{2r^3}\mathbf{r}$ D. $-\frac{1}{r^2}\mathbf{r}$

Q.76 For a simple closed curve C, $\oint_C [(y + z)\mathbf{i} + (z + x)\mathbf{j} + (x + y)\mathbf{k}]. d\mathbf{r}$ is equal to

A. 1 B. 2 C. 6 D. 0

Q.77 Evaluated value of the integral $\int_C \frac{-y}{x^2+y^2}dx + \frac{x}{x^2+y^2}dy$, where C is the circle $x^2 + y^2 = 1$ is

A. 3π B. 2π C. 4π D. 8π

Q.78 The series $\sum_{n=0}^{\infty} \frac{3n e^n}{n^2+1}$

A. Converges to 1 B. Converges to e

C. Converges to 3 e D. Does not converge

Q.79 The series $\sum_{n=1}^{\infty} \frac{3}{n^2+7n+12}$ converges to

A. 0 B. $\frac{3}{12}$ C. $\frac{3}{4}$ D. $\frac{7}{12}$

Q.80 The series $\sum_{n=0}^{\infty} 3^{2+n} 2^{1-3n}$

A. Does not Converges B. Converges to $\frac{144}{5}$

C. Converges to $\frac{72}{5}$ D. Converges to $\frac{36}{5}$

Q.81 The series $\sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)}$ equals to

A. $\frac{\pi}{4}$ B. $\frac{\pi}{2}$ C. 1 D. $\frac{\pi}{8}$

Q.82 The limit $\lim_{t\to\infty} \frac{\ln(3t)}{t^2}$ equals to

A. 1 B. ln(3) C. $\frac{3}{2}$ D. 0

Q.83 The equation of the tangent line to the curve $y^2 e^{2x} = 3y + x^2$ at (0, 3) is

A. $y - 6x - 3 = 0$ B. $y + 6x + 3 = 0$

C. $y + 6x - 3 = 0$ D. $y - 6x + 3 = 0$

Q.84 The equation of the normal line to the graph of $3y = x^3 + 3x^2 + 15$ at (3, 23) is

A. $15y + x = 348$ B. $15y - x = 348$

C. $5y + x = 348$ D. $5y - x = 348$

Q.85 The equation $M(x,y)dx + N(x,y)dy = 0$ becomes an exact equation under the condition

A. $\partial M/\partial y = \partial N/\partial x$

B. $\partial M/\partial y = \partial N/\partial y$

C. $\partial M/\partial x = \partial N/\partial x$

D. $\partial M/\partial x = \partial N/\partial y$

Q.86 Which of the following is a linear homogeneous differential equation

A. $\frac{d^2y}{dx^2} + 2y = x$

B. $x\frac{d^2y}{dx^2} + \frac{dy}{dx} + x^2y = 0$

C. $\frac{d^2y}{dx^2} + \frac{dy}{dx} + x\,y^2 = 0$

D. $\frac{d^2y}{dx^2} + y\,\frac{dy}{dx} = x$

Q.87 What is the solution of the following differential equation

$$\frac{d^2y}{dx^2} + 16\,y = \sin 2x$$

A. $a\cos 4x + b\sin 4x + \sin 2x$

B. $\cos 4x + \sin 4x + \sin 2x$

C. $a\cos 4x + b\sin 4x + \frac{1}{12}\sin 2x$

D. $a\cos 4x + b\sin 4x - \frac{1}{12}\sin 2x$

Q.88 A rectangular membrane is fixed at its edge in the xy –plane and set into transverse vibrations. Its transverse displacement $Z(x,y,t)$ at a point (x,y) and at a time t is given by the solution of the equation

A. $\frac{\partial^2 Z}{\partial x^2} + \frac{\partial^2 Z}{\partial y^2} + \frac{\partial^2 Z}{\partial t^2} = 0$

B. $\frac{\partial^2 Z}{\partial x^2} + \frac{\partial^2 Z}{\partial y^2} = \left(\partial Z/\partial t\right)^2$

C. $\frac{\partial^2 Z}{\partial t^2} = v^2\left(\frac{\partial^2 Z}{\partial x^2} + \frac{\partial^2 Z}{\partial y^2}\right)$

D. $\frac{\partial^2 Z}{\partial t^2} + \frac{\partial^2 Z}{\partial t^2} + \frac{\partial^2 Z}{\partial t^2} = v^2$

Q. 89 In solving problems about electric potential , the two important equations to be solved are Poïsson's equation and Laplace equation. These two equations mathematically are written as (Poisson's equation , Laplace equation)

A. $\nabla^2\phi = 0\,,\nabla^2\phi = -\rho/\varepsilon_0$

B. $\nabla^2\phi = -\rho/\varepsilon_0\,,\quad \nabla^2\phi = 0$

C. $\nabla^2 E = 0\,,\nabla^2 E = q/\varepsilon_0$

D. $\nabla^2 E = q/\varepsilon_0\,,\quad \nabla^2 E = 0$

Q.90 In the method of least squares , which quantity is not required to fit a given data in a straight line

A. $\sum x_i$

B. $\sum x_i^2$

C. $\sum x_i y_i$

D. $\sum y_i^2$

Q.91 Which of the following distribution is used to describe errors

A. Gaussian
B. Poisson
C. Binomial
D. Maxwell

Q.92 If $f(x)$ is a periodic function with a period $2L$, then its Fourier series expansion is

A. $\sum_{n=1}^{\infty}\left(a_n \cos\frac{n\pi x}{L} + b_n \sin\frac{n\pi x}{L}\right)$

B. $\sum_{n=1}^{\infty}\left(a_n \cos\frac{n\pi x}{2L} + b_n \sin\frac{n\pi x}{2L}\right)$

C. $\frac{a_0}{2} + \sum_{n=1}^{\infty}\left(a_n \cos\frac{n\pi x}{L} + b_n \sin\frac{n\pi x}{L}\right)$

D. $\frac{a_0}{2} + \sum_{n=1}^{\infty}\left(a_n \cos\frac{n\pi x}{2L} + b_n \sin\frac{n\pi x}{2L}\right)$

Q. 93 Fourier cosine transform can be defined only for a

A. odd function

B. even function

C. any function

D. only double valued function

Q. 94 Inverse Fourier sine transform is defined as

A. $f(x) = \frac{\sqrt{2}}{\pi}\int_0^{\infty} F_s(\alpha)\sin\alpha x\, dx$

B. $f(x) = \sqrt{\frac{2}{\pi}}\int_0^{\infty} F_s(\alpha)\sin\alpha x\, d\alpha$

C. $f(x) = \sqrt{\frac{2}{\pi}} \int_{-\infty}^{\infty} F_s(\alpha) \sin \alpha x \, d\alpha$

D. $(x) = \sqrt{\frac{2}{\pi}} \int_{-\infty}^{\infty} F_s(\alpha) \sin \alpha x \, dx$

Q.95 Convolution of $f(x)$ and $g(x)$ under Fourier transformation is defined as

A. $\int_{-\infty}^{\infty} f(u) g(x-u) e^{i\alpha u} \, du$

B. $\int_{-\infty}^{\infty} f(u) g(x-u) e^{i\alpha u} \, dx$

C. $\int_{-\infty}^{\infty} f(u) g(x-u) \, du$

D. $\int_{-\infty}^{\infty} f(x) g(u-x) \, du$

Q.96 Laplace transform of $\sin \omega t$ is

A. $s/(s^2 + \omega^2)$

B. $\omega/(s^2 + \omega^2)$

C. $s/(s^2 - \omega^2)$

D. $\omega/(s^2 - \omega^2)$

Q.97 Laplace transform of $f'(t)$ is

A. $sF(s) - f(0)$

B. $sF(s) - F(0)$

C. $s^2F(s) - f(0)$

D. $sF(s) - f'(0)$

Q.98 Laplace transform of unit step function $U(t)$ is given by

A. e^{-as}

B. e^{-as}/s

C. $s\,e^{-as}$

D. e^{as}

Q.99 Inverse Laplace transform of $\ln\frac{s+1}{s-1}$ is

A. $\ln t$

B. $\frac{2\sinh t}{t}$

C. 1

D. e^{-t}

Q.100 If $A=\begin{bmatrix}1 & 2\\ 3 & 4\end{bmatrix}$ and $A^2-5A=2I$, then A^4 is

A. $A^4=\begin{bmatrix}199 & 2\\ 3 & 4\end{bmatrix}$

B. $A^4=\begin{bmatrix}199 & 290\\ 405 & 634\end{bmatrix}$

C. $A^4=\begin{bmatrix}199 & 290\\ 3 & 4\end{bmatrix}$

D. $A^4=\begin{bmatrix}199 & 2\\ 3 & 634\end{bmatrix}$

Q.101 If $X=\begin{bmatrix}\cos\alpha & \sin\alpha\\ -\sin\alpha & \cos\alpha\end{bmatrix}$ then X^n is

A. $\begin{bmatrix}\cos n\alpha & \sin n\alpha\\ -\sin n\alpha & \cos n\alpha\end{bmatrix}$

B. $\begin{bmatrix}\cos n\alpha & -\sin n\alpha\\ -\sin n\alpha & \cos n\alpha\end{bmatrix}$

C. $\begin{bmatrix}-\cos n\alpha & \sin n\alpha\\ -\sin n\alpha & \cos n\alpha\end{bmatrix}$

D. $\begin{bmatrix}-\cos n\alpha & -\sin n\alpha\\ -\sin n\alpha & \cos n\alpha\end{bmatrix}$

Q.102 The value of the following determinant

$$\begin{vmatrix}1 & a & a^2 & a^3+bcd\\ 1 & b & b^2 & b^3+cda\\ 1 & c & c^2 & c^3+dab\\ 1 & d & d^2 & d^3+abc\end{vmatrix}$$

is

A. 0 B. 1 C. −1 D. 1/2

Q.103 The value of the following determinant

$$\begin{vmatrix} 1 & \omega & \omega^2 \\ \omega & \omega^2 & 1 \\ \omega^2 & 1 & \omega \end{vmatrix}$$

A. 0 B. 1 C. -1 D. ½

Q.104 The inverse of the matrix

$$A = \begin{bmatrix} 3 & 2 & -1 \\ 0 & 1 & 4 \\ 1 & 5 & -2 \end{bmatrix}$$

is

A. $-\frac{1}{57}\begin{bmatrix} -22 & -1 & 9 \\ 4 & -5 & -12 \\ -1 & -13 & 3 \end{bmatrix}$

B. $-\frac{1}{57}\begin{bmatrix} 22 & -1 & 9 \\ 4 & -5 & -12 \\ -1 & -13 & 3 \end{bmatrix}$

C. $-\frac{1}{57}\begin{bmatrix} -22 & 1 & 9 \\ 4 & -5 & -12 \\ -1 & -13 & 3 \end{bmatrix}$

D. $-\frac{1}{57}\begin{bmatrix} 22 & -1 & 9 \\ 4 & -5 & -12 \\ -1 & -13 & 3 \end{bmatrix}$

Q.105 The solution of the system of equations

$$\begin{aligned} 3x + y + 2z &= 3 \\ 2x - 3y - z &= -3 \\ x + 2y + z &= 4 \end{aligned}$$

is

A. $x=1, y=2$ and $z=-1$

B. $x=1, y=2$ and $z=1$

C. $x=1, y=-2$ and $z=-1$

D. $x=-1, y=2$ and $z=1$

Q.106 The following set of vectors in $\mathcal{R}^4$

$\overrightarrow{x_1} = (2, 1, 1, 0)$, $\overrightarrow{x_2} = (0, 2, 0, 1)$, $\overrightarrow{x_3} = (1, 1, 0, 2)$, $\overrightarrow{x_4} = (0, 2, 1, 1)$

are

A. linearly independent

B. linearly dependent

C. only $\overrightarrow{x_1}$, $\overrightarrow{x_2}$ are independent

D. only $\overrightarrow{x_1}$, $\overrightarrow{x_3}$ are independent

Q.107 The composite transformation which expresses x_1, x_2 in terms of z_1, z_2 when

$x_1 = 3y_1 + 2y_2$, $x_2 = -y_1 + 4y_2$, and $y_1 = z_1 + 2z_2$, $y_2 = 3z_1$

is

A. $\begin{bmatrix} 9 & 4 \\ 11 & 2 \end{bmatrix}$

B. $\begin{bmatrix} 9 & 6 \\ 11 & -2 \end{bmatrix}$

C. $\begin{bmatrix} -9 & 4 \\ 11 & 2 \end{bmatrix}$

D. $\begin{bmatrix} 9 & -6 \\ 11 & -2 \end{bmatrix}$

Q.108 The transformation

$$y_1 = x_1, \quad y_2 = cos\theta.x_2 - sin\theta.x_3 \ , \quad y_3 = sin\theta.x_2 + cos\theta.x_3$$

is

A. singular

B. one-to-one

C. orthogonal

D. noninvertible

Q.109 The values of λ for which the following equations

$3x + y - \lambda z = 0$, $4x - 2y - 3z = 0$, $2\lambda x + 4y + \lambda z = 0$

possess a non-trivial solution

A. $\lambda = 1$

B. $\lambda = -9$

C. $\lambda = 1, -9$

D. $\lambda = -1, 9$

Q.110 The independent eigen vector of the matrix

$$A = \begin{bmatrix} 1 & 1 & 0 \\ 0 & 1 & 1 \\ 0 & 0 & 1 \end{bmatrix}$$

is

A. $(0,0,1)^T$

B. $(0,1,0)^T$

C. $(0,1,1)^T$

D. $(1,0,0)^T$

Q.111 The eigenvectors of a 3×3 matrix A corresponding to eigenvalues 1,2,3 are $[-1,-1,1]^T$, $[0,1,0]^T$ and $[0,-1,1]^T$ respectively. The matrix A is

A. $\begin{bmatrix} 1 & 0 & 1 \\ -2 & 2 & 1 \\ 2 & 0 & 3 \end{bmatrix}$

B. $\begin{bmatrix} 1 & 0 & 0 \\ -2 & 2 & -1 \\ 2 & 0 & 3 \end{bmatrix}$

C. $\begin{bmatrix} -1 & 0 & 1 \\ -2 & 2 & 1 \\ 2 & 0 & 3 \end{bmatrix}$

D. $\begin{bmatrix} 1 & 1 & 1 \\ -2 & 2 & 1 \\ 2 & 0 & 3 \end{bmatrix}$

Q.112 The symmetric matrix for the quadratic form

$$Q = x_1^2 + 3x_2^2 + 2x_3^2 + 2x_1x_2 + 6x_2x_3$$

is

A. $\begin{bmatrix} 1 & 1 & 0 \\ 1 & 3 & 3 \\ 0 & 3 & 2 \end{bmatrix}$

B. $\begin{bmatrix} 1 & 0 & 0 \\ 1 & 3 & 3 \\ 0 & 3 & 2 \end{bmatrix}$

C. $\begin{bmatrix} 1 & 1 & 0 \\ 1 & 3 & 3 \\ 0 & 3 & 3 \end{bmatrix}$

D. $\begin{bmatrix} 1 & 0 & 0 \\ 1 & 2 & 3 \\ 0 & 3 & 2 \end{bmatrix}$

Q.113 The skew-symmetric matrix corresponding to the matrix

$$A = \begin{bmatrix} 3 & 1 & -2 \\ 2 & 1 & 7 \\ -4 & 5 & 3 \end{bmatrix}$$

is

A. $\begin{bmatrix} 0 & -1/2 & 1 \\ -1/2 & 0 & -1 \\ -1 & -1 & 0 \end{bmatrix}$

B. $\begin{bmatrix} 0 & -1/2 & 1 \\ -1/2 & 0 & 1 \\ -1 & -1 & 0 \end{bmatrix}$

C. $\begin{bmatrix} 0 & -1/2 & 1 \\ 1/2 & 0 & 1 \\ -1 & -1 & 0 \end{bmatrix}$

D. $\begin{bmatrix} 0 & -1/2 & 1 \\ 1/2 & 0 & -1 \\ -1 & -1 & 1 \end{bmatrix}$

Q.114 The Cauchy-Rieman equation in ploar coordinates are

A. $\frac{\partial v}{\partial r} = \frac{1}{r}\frac{\partial u}{\partial \theta}$ and $\frac{\partial v}{\partial \theta} = r\frac{\partial u}{\partial r}$

B. $\frac{\partial v}{\partial r} = -r\frac{\partial u}{\partial \theta}$ and $\frac{\partial v}{\partial \theta} = \frac{1}{r}\frac{\partial u}{\partial r}$

C. $\frac{\partial v}{\partial r} = -\frac{1}{r}\frac{\partial u}{\partial \theta}$ and $\frac{\partial v}{\partial \theta} = r\frac{\partial u}{\partial r}$

D. $\frac{\partial v}{\partial r} = -r\frac{\partial u}{\partial \theta}$ and $\frac{\partial v}{\partial \theta} = r\frac{\partial u}{\partial r}$

Q.115 The value of the integral

$$I = \oint_C \frac{dz}{z(z+2)}$$

where C is ny rectangle containing the points $z=0$ and $z=-2$ inside it.

A. $I = 0$

B. $I = \pi i$

C. $I = -\pi i$

D. $I = 2\pi i$

Q.116 The integral

$$I = \oint_C z^{-4} \sin z \, dz, \qquad C: \ |z| = 1$$

where the integration is taken counter-clockwise, has the value

A. 0

B. $\frac{\pi i}{3}$

C. $-\frac{\pi i}{3}$

D. $\frac{\pi^2 i}{3}$

Q.117 The integral

$$I = \int_0^{2\pi} \frac{d\theta}{2-\sin\theta}$$

has the value

A. 0

B. $\frac{2\pi}{\sqrt{3}}$

C. $\frac{2\pi}{3\sqrt{3}}$

D. $\frac{2\pi}{\sqrt{6}}$

Q.118 Suppose that a message is expected at sometime past 5*P.M.* From past experience it is known that *X*, the waiting period in hrs. after 5*P.M.* is a random variable with the probability density function

$$f(x) = \begin{cases} \frac{1}{1.5}; 0<x<1.5 \\ 0; \ otherwise \end{cases}$$

The expected waiting time of receiving the message is

A. 5.45*P.M* B. 6.45*P.M* C. 5.15*P.M* D. 6.15*P.M*

Q.119 The weekly demand for a certain drink in thousand of litres at chain of retail stores is continuous random variable $g(X)=X^2+X-2$, where X has the density function

$$f(x) = \begin{cases} 2(x-1), & 1 < x < 2 \\ 0, & otherwise \end{cases}$$

The expected weekly demand becomes

A. 1500Litres

B. 2000Litres

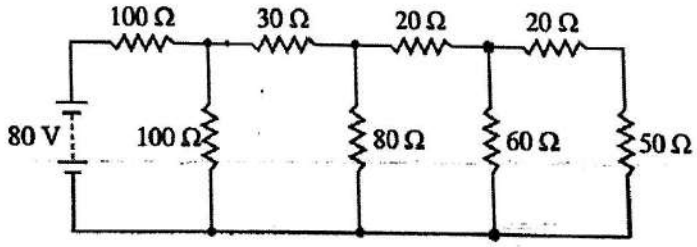
C. 2500Litres

D. 3000Litres

Q.120 In sampling a large number of parts manufactured by a machine, the man number of defectives in a sample of 20 is 2. Out of 1000 such samples, how many would be expected to contain at least three defective parts.

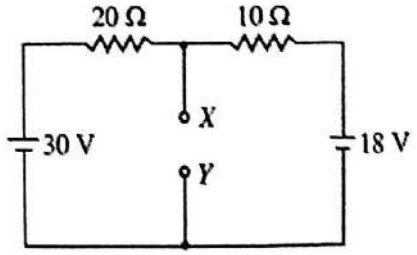
A. 300
B. 324
C. 350
D. 400

Q.121 The current through 50Ω resistance is:



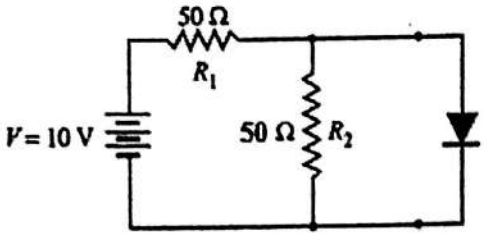
A. 0.1A
B. 1mA
C. 0.2A
D. 1.5mA

Q.122 The Norton equivalent resistance and voltage at the terminal X-Y for the circuit given below are:



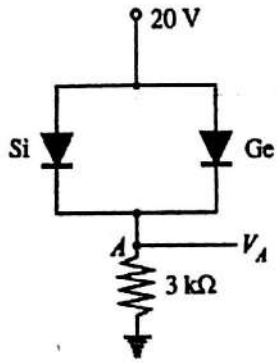
A. 6.67 Ω and 2V
B. 30 Ω and 22V
C. 6.67Ω and 22V ✓
D. 30 Ω and 2V

Q.123 The current through the ideal diode in the circuit shown below is:



A. 0.2A ✓
B. 0.1A
C. 0.194A
D. 0.37A

Q.124 The current through 3KΩ resistor in the circuit shown below is:



A. 6.33mA
B. 6.67mA
C. 6.43mA
D. 6.56mA ✓

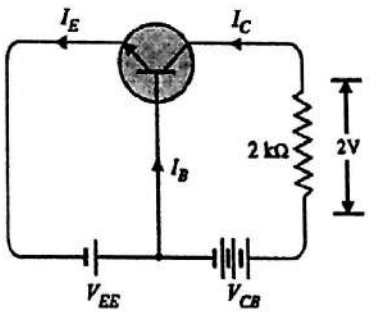
Q.125 An a.c. supply of 230 V is applied to a half-wave rectifier circuit through a transformer of turn ratio 10:1. The output d.c. voltage is:

A. 10.36V
B. 73.24V
C. 7.32V
D. 32.53V

Q.126 A full-wave rectifier uses two diodes, the internal resistance of each diode is assumed to be constant at 20Ω. The transformer r.m.s. secondary voltage from center tap to each end of secondary is 50 V and load resistance is 980Ω. Find the mean load current.

A. 73.24mA
B. 45mA
C. 22.51mA
D. 70.7mA

Q.127 In a common base connection, alpha= 0.95. The voltage drop across 2 kΩ resistance which is connected in the collector is 2V. V_{EE} and V_{CB} are zero. Find the base current.

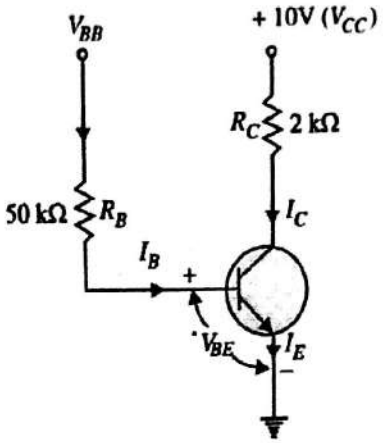


A. 1.05mA
B. 1mA
C. 0.05mA
D. 0.15mA

Q.128 The collector leakage current in a transistor is 300 μA in CE arrangement. If now the transistor is connected in CB arrangement, what will be the leakage current? Given that β =120.

A. 2.4μA
B. 2.4mA
C. 300μ A
D. 2.5μ A

Q.129 For the circuit given below, find the base supply voltage (V_{BB}) that just puts the silicon based transistor into saturation. Assume $\beta = 200$



A. 1.25V
B. 0.7V
C. 0.8V
D. 1.95V

Q.130 The voltage gain of an amplifier without feedback is 3000. Calculate the voltage gain of the amplifier if negative voltage feedback is introduced in the circuit. Given that feedback fraction m= 0.01.

A. 3000
B. 2903
C. 96.7
D. 103.4

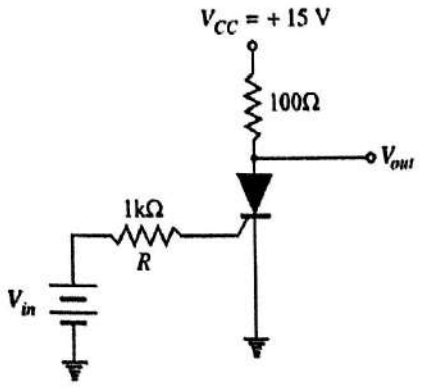
Q.131 A JFET has a drain current of 5 mA. If Idss= 10 mA and Vgs(off)= – 6 V, find the value of Vgs.

A. -1.76V
B. 1.76V
C. -3V
D. 3V

Q.132 For an Enhancement type MOSFET $I_D(on)$=500 mA at Vgs=10V and Vth=1V. Determine the drain current for V =5V.

A. 6.17mA
B. 111.11mA
C. 55.55mA
D. 98.73mA

Q.133 The SCR given below has gate trigger voltage V_t= 0.7V, gate trigger current I_t=7 mA and holding current I_h=6 mA. What is the input voltage that triggers the SCR ?



A. 7.3V
B. 7V
C. 0.7V
D. 7.7V

Q.134 A differential amplifier has a voltage gain of 150 and a CMRR of 90 dB. Input signals are 50 mV and 100 mV with 1 mV of noise on each input. Find the noise on the output.

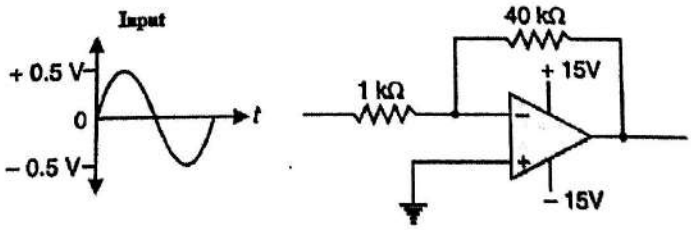
A. $5.3\mu V$

B. $4.7mV$

C. $4.7\mu V$

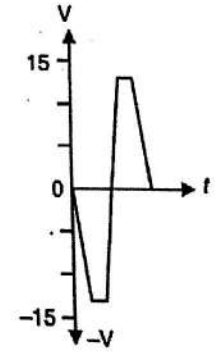
D. $5.3mV$

Q.135 Find the output voltage for the circuit shown

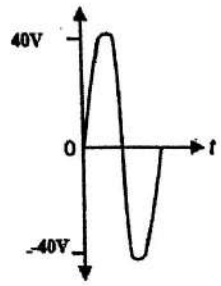


Output is:

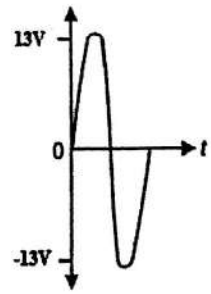
A.



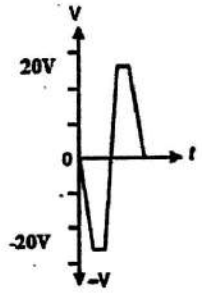
B.



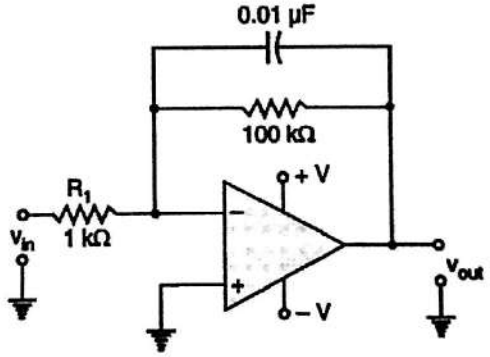
C.



D.

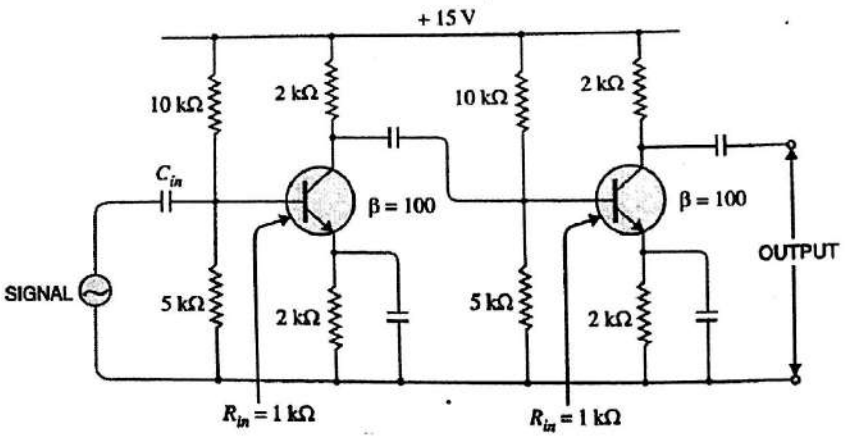


Q.136 Determine the lower frequency limit (critical frequency) for the integrator circuit shown below



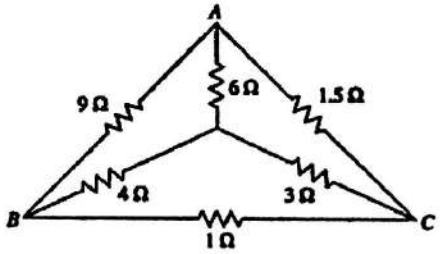
A. 159Hz
B. 159kHz
C. 15.9KHz
D. 15.9Hz

Q.137 The input resistance R_{in} of two-stage RC coupled amplifier in each stage is 1k. The overall voltage gain of the circuit is:



A. 400
B. 66
C. 200
D. 13200

Q.138 Find the equivalent resistance between terminal A and B



A. 1.35Ω
B. 0.9Ω
C. 1.64Ω
D. 6Ω

Q.139 Which of the following is minimum error code?

A. Octal code
B. Grey code
C. Binary code
D. Excess 3 code

Q.140 The A/D converter whose conversion time is independent of the number of bits is

A. Dual slope
B. Counter type
C. Parallel conversion
D. Successive approximation

Q.141 The minimum number of bits required to represent negative numbers in the range of -1 to -9 using 2's complement representation is

A. 2
B. 3
C. 4
D. 5

Q.142 A ring counter consisting of five Flip-Flops will have

A. 5 states
B. 10 states
C. 32 states
D. Infinite states

Q.143 When simplified with Boolean Algebra (x + y)(x + z) simplifies to

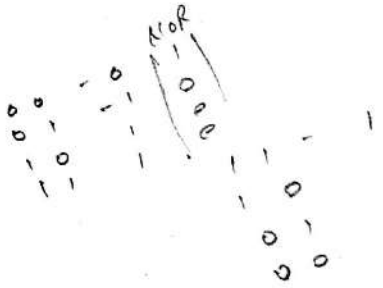
A. x
B. x + x(y + z)
C. x(1 + yz)
D. x + yz

Q.144 The maximum conversion time of a 10-bit staircase ADC using a 20 kHz clock is:

A. 500microseconds
B. 51.2milliseconds
C. 1.0seconds
D. 1.023seconds

Q.145 DeMorgan's first theorem shows the equivalence of

A. OR gate and Exclusive OR gate
B. NOR gate and Bubbled AND gate
C. NOR gate and NAND gate
D. NAND gate and NOT gate



Q.146 The following switching functions are to be implemented using a Decoder:

$f_1 = \Sigma$ m(1, 2, 4, 8, 10,14) $f_2 = \Sigma$ m (2, 5, 9,11) $f_3 = \Sigma$ m (2,4,5,6,7)

The minimum configuration of the decoder should be

A. 2 – to – 4 line
B. 3 – to – 8 line
C. 4 – to – 16 line
D. 5 – to – 32 line

Q.147 How many flip flops are required to construct a decade counter

A. 10
B. 3
C. 4
D. 2

Q.148 The output of a JK Flip-Flop with asynchronous preset and clear inputs is '1'. The output can be changed to '0' with one of the following conditions.

A. By applying J = 0, K = 0 and using a clock
B. By applying J = 1, K = 0 and using the clock
C. By applying J = 1, K = 1 and using the clock
D. By applying a synchronous preset input.

Q.149 How many select lines will a 32:1 multiplexer will have

A. 5
B. 8
C. 9
D. 11

Q.150 A sample and hold chip with an internal resistance of 4kohms and a capacitor value of .001μF will sample and then hold an accurate signal for how long?

A. 2.5 sec
B. 6.0 sec
C. 3 ms
D. 4 ms

Q.151 An eight stage ripple counter uses a flip-flop with propagation delay of 75ns. The pulse width of the strobe is 50ns. The frequency of the input signal which can be used for proper operation of the counter is approximately

A. 1MHz
B. 500MHz.
C. 2MHz
D. 4MHz

Q.152 Which of the following memories stores the most number of bits

A. 64K×8 memory
B. 1M×8 memory
C. 32M×8 memory
D. 64×6 memory

Q.153 A debouncing circuit is

A. an astable multivibrator
B. a bistable multivibrator
C. a latch
D. a monostable multivibrator

Q.154 The binary code of $(21.125)_{10}$ is

A. 10101.001
B. 10100.001
C. 10101.010
D. 10100.111

Q.155 The number 1000 would appear just immediately after

A. FFFF (hex)
B. 1111 (binary)
C. 7777 (octal)
D. All of the above.

Q.156 Which of following cannot be accessed randomly

A. DRAM
B. SRAM
C. ROM
D. Magnetic tape

Q.157 The precedence of arithmetic operators is (from highest to lowest)

A. %, * , / , + , -
B. %, +, /, *, -
C. +, -, %, *, /
D. % , +, -, *, /

Q.158 What will be the average waiting time using Round Robin Scheduling for the following processes if time quantum is 4ms.

Process	***Burst Time(ms)***
P1	24
P2	3
P3	3

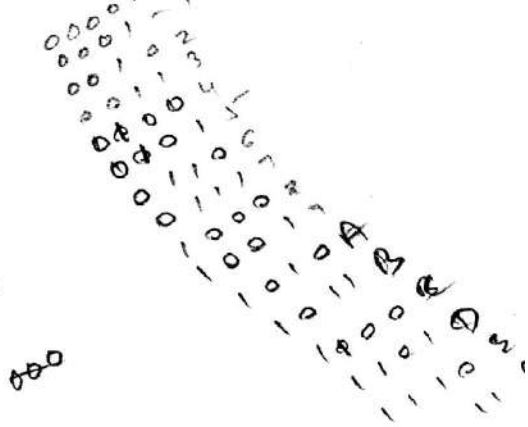
A. 5.03ms
B. 5.66ms
C. 4.59ms
D. 6.032ms

Q.159 In computer BIOS is

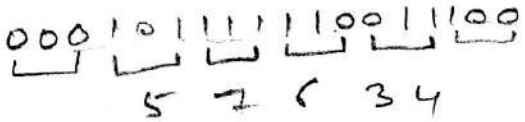
A. Basic Input Output System
B. Best Input Output System
C. Basic Input Output Symbol
D. Base Input output System

Q.160 EPROM can be used for

A. Erasing the contents of ROM
B. Reconstructing the content of ROM
C. Erasing and reconstructing the contents of ROM
D. Duplicating ROM



Q.161 Octal equivalent of 5F9CH is



A. 57634
B. 24476
C. 101111110011100
D. 5F9C

Q.162 Consider that a microprocessor has N bit wide data bus, all its instructions are N bit long and opcode of all the mnemonics are only 2 bit in length. If the microprocessor supports direct addressing mode, what is the size of its address bus

A. N bit
B. N – 2 bit
C. 2 bit
D. 1 byte

Q.163 How many pins are saved by multiplexing data bus with lower order address bus in 8085 microprocessor?

A. 0
B. 6
C. 7
D. 8

Q.164 Which one of the following is a 16-bit register in 8085 microprocessor?

A. Stack
B. W Register
C. Flags
D. Stack Pointer

Q.165 In 8085 microprocessor, stack is implemented as

A. LIFO
B. FIFO
C. Can be programmed as LIFO or FIFO
D. neither LIFO nor FIFO

Q.166 Which one of the following is level & edge triggered interrupt

A. TRAP
B. RST 7.5
C. RST 6.5 and RST 5.5
D. INTR

Q.167 How many T-states are required to execute DAD H instruction in 8085 microprocessor?

A. 4
B. 6
C. 7
D. 10

Q.168 Numbers are stored and transmitted inside a computer in

A. binary form
B. ASCII code form
C. decimal form
D. alphanumeric form

Q.169 The original ASCII codes

A. were 7 bits
B. 8 bits
C. represented 256 characters
D. represented 127 characters

Q.170 The storage required for an image such as an X-ray is approximately

A. a few bytes
B. a few hundred bytes
C. a few gigabytes
D. in the megabyte range.