UPSEE 2019

PAPER- CHE: CODE AA*

ANSWER KEY, Examination Date: 21-04-2019

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

Note: **In case of any grievance, it must be reported at upseegrievance@aktu.ac.in along with Students Roll No. with Paper Code, Question Booklet Code, Question No. and suggested answer with supporting documents on or before 03rd May 2019.**

*प्रश्न पुस्तिका क्रमांक **AA** का प्रश्नपत्र एवं कुंजी प्रकाशित की जा रही है। प्रश्न पुस्तिका क्रमांक **BB, CC** तथा **DD** में प्रश्नों एवं उनके विकल्पों का क्रम परिवर्तित है कृपया तद्नुसार उत्तर मिलान करें।

CHE

Question Booklet Sr. No.

Q. Booklet Code

AA

Roll No.

OMR Answer Sheet No.

Declaration :
I have read and understood the instructions given on page No. 1

Seal of Superintendent of Examination Centre

Signature of Candidate
as signed in application)

Signature of the Invigilator

Name of Candidate :

To be copied by the candidate in your own handwriting in the space given below for this purpose is compulsory.
"You will know you are in the right profession when : you wake anxious to go to work, you want to do your best daily, and you know your work is important."

*** After cutting half upper part of this page, invigilator preserve it along with student's OMR sheet.**

No. of Pages in Booklet including title	16	Time 2 Hours	Marks 400	No. of Questions in Booklet	100

CHE

Question Booklet Sr. No.

Roll No.

Signature of the Invigilator

Q. Booklet Code

AA

Name of Candidate :

INSTRUCTIONS TO CANDIDATE

1. Use BLUE or BLACK BALL POINT PEN only for all entries and for filling the bubbles in the OMR Answer Sheet.
2. Before opening the SECURITY SEAL of the question booklet, write your Name, Roll Number (In figures), and OMR Answer-sheet Number in the space provided at the top of the Question Booklet. Non-compliance of these instructions would mean that the Answer Sheet can not be evaluated leading the disqualification of the candidate.
3. Each question carries FOUR marks. There will be negative marking on wrong answer. FOUR marks will be awarded for each correct answer and ONE mark will be deducted for each wrong answer. No marks will be deducted/awarded for unattempted questions.
4. Each multiple choice question has only one correct answer. More than one answer indicated against a question will be treated as incorrect answer.
5. Use of log table, mobile phones, any electronic gadget and slide rule etc. is strictly prohibited. Non-programmable calculator is permitted.
6. Candidate will be allowed to leave the examination hall at the end of examination time period only.
7. If a candidate is found in possession of books or any other printed or written material from which he/she might derive assistance, he/she is liable to be treated as disqualified. Similarly, if a candidate is found giving or obtaining (or attempting to give or obtain) assistance from any source, he/she is liable to be disqualified.
8. OMR sheet is placed within this paper and can be taken out from this paper but seal of paper must be opened only at the start of paper.
9. This booklet contains TWO Sections, Section A (Aptitude & Mathematics) has 30 Questions to be attempted and Section B (Subject domain) has 70 Questions to be attempted.

CHE

Section - A :
General Aptitude : Q. 1 to Q. 15
Mathematics : Q. 16 to Q. 30

Section - B :
Chemical Engineering : Q. 31 to Q. 100

001. Antonym of word "Dissent" is:
(A) Renounce (B) Adopt
(C) Agree (D) Give

002. Synonym of work "Impudent" is:
(A) Insolent (B) Partial
(C) Bankrupt (D) Restive

003. Find out which part of the sentence has an error. If there is no mistake, the answer is 'No error'
(A) I have seen
(B) that film last year
(C) but I do not remember its story
(D) No error

004. Chose the correct meaning of the phrase "To get into hot water":
(A) To be impatient
(B) To suffer huge financial loss
(C) To get into trouble
(D) To be in confused state of mind

005. Find out the word with correct spelling:
(A) Brassere (B) Brissiere
(C) Brasiiere (D) Brassiere

006. The value of 25-5 [2+3{2-2(5-3)+5}-10]÷4 is

(A) 5 (B) 23.25

(C) 23.75 (D) 25.75

007. If the sum of a number and its square is 182, what is the number?

(A) 12 (B) 13

(C) 28 (D) 91

008. The sum of the ages of a father and his son is 45 years. Five years ago, the product of their ages was 34. The ages of the son and the father are respectively:

(A) 6 and 39 (B) 7 and 38

(C) 9 and 36 (D) 11 and 34

009. A number, when 35 is subtracted from it, reduces to its 80%. What is four fifth of that number?

(A) 70 (B) 90

(C) 120 (D) 140

010. If the ratio of areas of two circles is 4:9 then the ratio of their circumstances will be:

(A) 3:2 (B) 2:3

(C) 4:9 (D) 9:4

011. Army is related to Soldier as Galaxy is related to:

(A) Planet (B) Satellite

(C) Meteor (D) Star

012. IGH:TRS::?:KIJ

(A) POQ (B) QOP

(C) OPQ (D) QPO

013. '1+2+3' stands for the 'the brave boy' '2+3+4' stands for 'brave boy swims' '1+2+4+5' stands for 'the brave girl swims'. What stand for 'brave'?

(A) 1 (B) 2

(C) 3 (D) 4

014. Manipulate the symbol and find the missing number.

If 3*6=18

4*7=22

9*1=20

then 5*2 =?

(A) 14 (B) 10

(C) 7 (D) 3

015. In a row of children, Kamal is sixth from the left and Appu is fourth from the right. When Kamal and Appu exchange positions, Appu becomes seventeenth from the right. Which will be Kamal's position from the left?

(A) Twentieth

(B) Nineteenth

(C) Twenty-first

(D) Seventh

016. If $A=\begin{bmatrix}3 & -3 & 4\\ 2 & -3 & 4\\ 0 & -1 & 1\end{bmatrix}$, then

(A) $A^2=A^{-1}$ (B) $A^3=A^{-1}$

(C) $A^4=A^{-1}$ (D) $A^5=A^{-1}$

where A^{-1} is the inverse matrix of A.

017. The rank of the matrix

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

(A) 1 (B) 2

(C) 3 (D) 4

018. If $A=\begin{bmatrix}1 & 0 & 0\\ 1 & 0 & 1\\ 0 & 1 & 0\end{bmatrix}$ then for every integer n ≥3

(A) $A^n=A^{n-2}+A^2-I$

(B) $A^n=A^{n-2}-A^2+I$

(C) $A^n=A^{n-3}+A^2-I$

(D) $A^n=A^{n-3}-A^2-I$

where I is the identity matrix of order 3.

019. $\lim_{x\to 0} x\sin\frac{1}{x}=$

(A) 0 (B) 1

(C) ∞ (D) $-\infty$

020. If $f(x)=\begin{cases}\dfrac{x\left(e^{\frac{1}{x}}-e^{\frac{1}{x}}\right)}{\left(e^{\frac{1}{x}}+e^{\frac{1}{x}}\right)}, x\neq 0\\ 0, x=0\end{cases}$, *then*

(A) f is continuous and derivable at $x=0$

(B) f is continuous but not derivable at $x=0$

(C) f is discontinuous at $x=0$

(D) f is derivable everywhere.

021. The sum of the serie

$1-\frac{1}{2^2}+\frac{1}{3^2}-\frac{1}{4^2}+....,$ is equal to

(A) $\frac{\pi^2}{4}$ (B) $\frac{\pi^2}{6}$

(C) $\frac{\pi^2}{8}$ (D) $\frac{\pi^2}{12}$

022. The general solution of the partial differential equation

$\left(\frac{y-z}{yz}\right)\frac{\partial z}{\partial x}+\left(\frac{z-x}{zx}\right)\frac{\partial z}{\partial y}=\frac{x-y}{xy}$, is

(A) $\phi(xyz, x^2+y^2+z^2)=0$

(B) $\phi(xyz, xy+yz+zx)=0$

(C) $\phi(xyz, x+y+z)=0$

(D) $\phi(xyz, x^2y+y^2z+z^2x)=0$

023. A unit vector normal to the surface $x^3+y^3+3xyz=3$ at the point *(1,2,-1)* is

(A) $\frac{\hat{i}+3\hat{j}+2\hat{k}}{\sqrt{14}}$ (B) $\frac{-\hat{i}+3\hat{j}+2\hat{k}}{\sqrt{14}}$

(C) $\frac{\hat{i}+2\hat{j}+3\hat{k}}{\sqrt{14}}$ (D) $\frac{-\hat{i}+2\hat{j}+3\hat{k}}{\sqrt{14}}$

024. The vector field defined by

$\vec{F} = (x + 2y + az)\hat{i} + (bx - 3y - z)\hat{j} + (4x + cy + 2z)\hat{k}$

is irrotational, if

(A) $a=4, b=2, c=-1$

(B) $a=4, b=-2, c=1$

(C) $a=1, b=2, c=4$

(D) $a=-1, b=4, c=2.$

025. The value of $\oint_c \left(x^2 + xy\right)dx + \left(x^2 + y^2\right)dy$ where C is the square formed by the lines $y = \pm 1, x = \pm 1$, is equal to

(A) 2π (B) 2

(C) 1 (D) 0

026. The only solution of the differential equation $x\frac{dy}{dx} - \frac{1}{2}y = x + 1$ for which x and y can attain the value unity is given by

(A) $y = 2x - \sqrt{x} + 2$

(B) $y = 2x + \sqrt{x} + 2$

(C) $y = 2x - \sqrt{x} - 2$

(D) $y = 2x + \sqrt{x} - 1$

027. The Laplace transform of $e^x x^{\frac{1}{2}}$ is

(A) $\frac{x}{\sqrt{s-1}}$ (B) $\frac{\sqrt{\pi}}{\sqrt{s-1}}$

(C) $\frac{\sqrt{\pi}}{\sqrt{s+1}}$ (D) $\frac{\pi}{\sqrt{s+1}}$

028. A die is tossed thrice. A success is getting *1* or *6* on a toss. Then the mean of the number of success is

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

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

029. A manufacturer knows that the condensers he makes contain on an average 1% of defectives. He packs them in boxes of 100. The probability that a box picked at random will contain 4 or more faulty condensers is

(A) $1 - \frac{8}{3e}$ (B) $1 - \frac{3}{8e}$

(C) $1 - \frac{4}{3e}$ (D) $1 - \frac{3}{4e}$

030. The order of convergence of Newton Raphson method is

(A) 0 (B) 1

(C) 2 (D) 3

031. $CaCO_3$ contains _____ percent of Ca by weight.

(A) 40 (B) 48

(C) 96 (D) 12

032. Solutions which distil without change in composition are called

(A) ideal

(B) saturated

(C) supersaturated

(D) azeotropic

033. The chemical nature of an element is independent of

(A) its atomic number.

(B) the number of protons or electrons present in it.

(C) the number of neutrons present in it.

(D) none of these.

034. Equal masses of CH_4 and H_2 are mixed in an empty container. The partial pressure of hydrogen in this container expressed as the fraction of total pressure is

(A) 1/9 (B) 8/9

(C) 1/2 (D) 5/9

035. Which of the following is not a colligative property

(A) Osmotic pressure

(B) Depression of freezing point

(C) Lowering of vapor pressure

(D) none of these.

036. Kopp's rule is concerned with the calculation of

(A) thermal conductivity.

(B) heat capacity.

(C) viscosity.

(D) surface tension.

037. Solution made by dissolving equimolar amounts of different solutes in the same amount of a given solvent will have the

(A) same elevation in boiling point.

(B) different elevation in boiling point.

(C) elevation in boiling point in the ratio of their molecular weights.

(D) none of these.

038. With rise in pressure, the solubility of gases in solvent, at a fixed temperature

(A) increases

(B) decreases

(C) remains unchanged

(D) decreases linearly

039. The activity co-efficient of a solution, which accounts for the departure of liquid phase from ideal solution behavior

(A) measures the elevation in boiling point.

(B) is not dependent on the temperature.

(C) is a function of the liquid phase composition.

(D) measures the depression in freezing point.

040. 6 gms of magnesium (atomic weight = 24), reacts with excess of an acid, the amount of H_2 produced will be _____ gm.

(A) 0.5 (B) 1

(C) 3 (D) 5

041. The head loss in turbulent flow in a pipe varies

(A) as velocity

(B) as (velocity)^2

(C) inversely as the square of diameter

(D) inversely as the velocity

042. The net positive suction head (NPSH) of a centrifugal pump is defined as the sum of the velocity head and the pressure head at the

(A) discharge.

(B) suction.

(C) suction minus vapor pressure of the liquid at suction temperature.

(D) discharge minus vapor pressure of the liquid at the discharge temperature.

043. The velocity profile for turbulent flow through a closed conduit is

(A) logarithmic

(B) parabolic

(C) hyperbolic

(D) linear

044. Which of the following denotes the effect of compressibility in fluid flow

(A) Weber number

(B) Mach number

(C) Euler number

(D) Reynolds number

045. The terminal velocity of a small sphere settling in a viscous fluid varies as the

(A) first power of its diameter.

(B) inverse of the fluid viscosity.

(C) inverse square of the diameter.

(D) square of the difference in specific weights of solid & fluid.

046. At high Reynolds number

(A) inertial forces control and viscous forces are unimportant.

(B) viscous forces predominate.

(C) inertial forces are unimportant and viscous forces control.

(D) none of these.

047. What is the normal range of exit cone angle of a venturimeter ?

(A) 2 to 5

(B) 7 to 15

(C) 15 to 25

(D) >25

048. The dimension of dynamic viscosity is

(A) $ML^{-1}T^{-1}$ (B) $L2T^{-1}$

(C) LT^{-2} (D) $ML^{-1}T^{-2}$

049. The maximum delivery pressure of compressors can be upto _____ atmospheres.

(A) 10 (B) 100

(C) 250 (D) 1000

050. Brownian movement is prominent in the particle size range of _____ microns in case of settling of a particle in a fluid.

(A) 2 to 3

(B) 0.01 to 0.10

(C) 200 to 300

(D) 100 to 1000

051. Fouling factor

(A) is a dimensionless quantity.

(B) does not provide a safety factor for design.

(C) accounts for additional resistances to heat flow.

(D) none of these.

052. In case of vertical tube evaporator, with increase in liquor level, the overall heat transfer co-efficient

(A) increases

(B) decreases

(C) is not affected

(D) may increase or decrease; depends on the feed

053. The steam ejector is used to

(A) remove condensate from the steam pipelines.

(B) create vacuum.

(C) superheat the steam.

(D) none of these.

054. Hot water (0.01 m^3 /min) enters the tube side of a counter current shell and tube heat exchanger at 80°C and leaves at 50°C. Cold oil (0.05 m^3/min) of density 800 kg/m^3 and specific heat of 2 kJ/kg.K enters at 20°C. The log mean temperature difference in °C is approximately

(A) 32 (B) 37

(C) 45 (D) 50

055. In a heat exchanger, floating head is provided to

(A) facilitate cleaning of the exchanger.

(B) increase the heat transfer area.

(C) relieve stresses caused by thermal expansion.

(D) increase log mean temperature gradient.

056. Leidenfrost point is a term concerned with the

(A) condensation of the saturated vapor on a cold surface.

(B) concentration of a corrosive solution by evaporation.

(C) heat transfer between two highly viscous liquids.

(D) boiling of a liquid on a hot surface.

057. A process stream of dilute aqueous solution flowing at the rate of10 $Kg.s^{-1}$ is to be heated. Steam condensate at 95°C is available for heating purpose, also at a rate of 10 $Kg.s^{-1}$. A 1 - 1 shell and tube heat exchanger is available. The best arrangement is

(A) counter flow with process stream on shell side.

(B) counter flow with process stream on tube side.

(C) parallel flow with process stream on shell side.

(D) parallel flow with process stream on tube side.

058. Presence of a non-condensing gas in a condensing vapour

(A) increases the rate of condensation.

(B) decreases thermal resistance.

(C) is desirable to increase the film co-efficient.

(D) none of these.

059. With the increase of temperature, the Col-burn jH factor

(A) increases.

(B) decreases.

(C) remains unchanged.

(D) may increase or decrease ; depending on temperature.

060. Baffles in the shell side of a shell and tube heat exchanger

(A) increase the cross-section of the shell side liquid.

(B) force the liquid to flow parallel to the bank.

(C) increase the shell side heat transfer co-efficient.

(D) decrease the shell side heat transfer co-efficient.

061. In a solution containing 0.30 Kg mole of solute and 600 kg of solvent, the molality is

(A) 0.50 (B) 0.60

(C) 2 (D) 1

062. Fenske's equation for determining the minimum number of theoretical stages in distillation column holds good, when the

(A) relative volatility is reasonably constant

(B) mixture (to be separated) shows negative deviation from ideality

(C) mixture (to be separated) shows positive deviation from ideality

(D) multicomponent distillation is involved

063. Air initially at 101.3 kPa and 40°C and with a relative humidity of 50%, is cooled at constant pressure to 30°C. The cooled air has a

(A) higher dew point

(B) higher absolute (specific) humidity

(C) higher relative humidity

(D) higher wet bulb temperature.

064. Stefan's law describes the mass transfer by

(A) diffusion (B) bulk flow

(C) both 'a' & 'b' (D) neither 'a' nor 'b'

065. Absorption factor is defined as (where, S1 = slope of the operating line S2 = slope of the equilibrium curve)

(A) S2/S1 (B) S1/S2

(C) S1 - S2 (D) S1 x S2

066. Mass transfer co-efficient (K) and diffusivity (D) are related according to film theory as

(A) $K \propto D$ (B) $K \propto D$

(C) $K \propto D^{1.5}$ (D) $K \propto D^2$

067. Pick out the wrong statement pertaining to the rotary dryer

(A) Flights (located in the inside shell of rotary dryer) lift the material being dried and shower it down through the current of hot air/gases. It extends from the wall to a distance which is about 8-12% of the inside diameter of shell.

(B) Hold up of a rotary drier is defined as the fraction of the dryer volume occupied by the solid at any instant. The best performance for rotary drier is obtained, when the hold up is in the range of 0.05 to 0.15.

(C) Rotary dryer is suitable for drying sticky material.

(D) Recommended peripherial speed of a rotary drier is in the range of 10 to 30 metres/minute.

068. Compound A is extracted from a solution of A + B into a pure solvent S. A Co-current unit is used for the liquid-liquid extraction. The inlet rate of the solution containing A is 200 moles of B/hr.m^2 and the solvent flow, rate is 400 moles of S/m^2. hr. The equilibrium data is represented by $Y = 3X^2$, where Y is in moles of a A/moles of B and X is in moles A/moles of S. The maximum percentage extraction achieved in the unit is

(A) 25% (B) 50%

(C) 70% (D) 90%

069. If the specific heats of a gas and a vapor are 0.2KJ/Kg.°K and 1.5 KJ/Kg.°K respectively, and the humidity is 0.01; the humid heat in KJ/°Kg. is

(A) 0.31 (B) 0.107

(C) 0.017 (D) 0.215

070. Liquid diffusivity is of the order of _____ cm^2 /second.

(A) 0.01 (B) 0.1

(C) 10^{-5} to 10^{-6} (D) >1

071. The fractional volume change of the system for the isothermal gas phase reaction, $A \rightarrow 3B$, between no conversion and complete conversion is

(A) 0.5

(B) 1

(C) 2

(D) 3

072. The space-velocity of 2 hr^{-1} means

(A) that every two hours one reactor volume of feed at specified conditions is being treated by the reactor.

(B) that two reactor volumes of feed at specified conditions are being fed into the reactor per hour.

(C) that the actual reactor volume is double that of the optimum reactor volume.

(D) that one-half reactor volume of feed at specified conditions are being fed into the reactor.

073. The vessel dispersion number of an ideal CSTR is

(A) -1 (B) 0

(C) 1 (D) infinite

074. For identical feed composition, flow rate, conversion and for all positive reaction orders, the ratio of volumes of the mixed reactor to the plug flow reactor is

(A) always one

(B) always less than one

(C) always greater than one

(D) equal to the order of reaction.

075. A catalyst

(A) initiates a reaction.

(B) lowers the activation energy of reacting molecules.

(C) is capable of reacting with any one of the reactants

(D) cannot be recovered chemically unchanged at the end of a chemical reaction.

076. In case of physical adsorption, the heat of adsorption is of the order of _____ kcal/kg.mole.

(A) 100 (B) 1000

(C) 10000 (D) 100000

077. The rate constant of a chemical reaction increases by 100 times when the temperature is increased from 400 °K to 500 °K. Assuming transition state theory is valid, the value of E/R is

(A) 9210 K

(B) 8987 K

(C) 8764 K

(D) 8621 K

078. For identical feed compostion and flow rate, N plug flow reactors in series with a total volume V gives the same conversion as a single

(A) plug flow reactor of volume V.

(B) CSTR of volume V

(C) Plug flow reactor of volume V/N

(D) plug flow reactor of volume NV

079. N plug flow reactors in series with a total volume V gives the same conversion as a single plug flow reactor of volume V. The above statement is true for

(A) zero-order reactions only

(B) first-order reactions only

(C) second-order reactions only

(D) all reaction orders

080. In order to produce fine solid particles between 5 and 10 μm, the appropriate size reducing equipment is

(A) Fluid energy mill

(B) Hammer mill

(C) Jaw crusher

(D) Smooth roll crusher

081. In a single tank system, the transfer function of level to inlet flow rate is

(A) $R/\tau S$ (B) $R/(\tau S + 1)$

(C) $l(\tau S + l)$ (D) $1/\tau S$

082. Transfer function of transportation lag is

(A) $e^{\tau S}$

(B) $e^{-\tau S}$

(C) $1/(\tau S+1)$

(D) none of these

083. For an input forcing function, $X(t) = 2t^2$, the Laplace transform of this function is

(A) $2/s^2$ (B) $4/s^2$

(C) $2/s^3$ (D) $4/s^3$

084. The second order system with the transfer function $4/(S^2+2S+4)$ has a damping ratio of

(A) 2.0 (B) 0.5

(C) 1.0 (D) 4.0

085. Which of the following is universally employed as the low expansion metal in the bimetallic thermometer, which is an iron-nickel alloy containing 36% nickel and has very low co-efficient of expansion (l/20th of ordinary metals) ?

(A) Invar

(B) Constantan

(C) Chromel

(D) Alumel

086. The temperature of tempering oil baths maintained at 400°C during heat treatment of steel is measured by a/an _____ thermocouple.

(A) chromel-alumel

(B) iron-constantan

(C) platinum-platinum/rhodium

(D) none of these.

087. Flapper nozzle is used in a/an _____ controller.

(A) hydraulic

(B) pneumatic

(C) none of these

(D) electronic

088. The closed loop pole of a stable second order system could be

(A) both real and positive.

(B) both real and negative.

(C) one real positive and the other real negative.

(D) complex conjugate with positive real parts.

089. Pressure of 0.01 psi (absolute) can be measured by _____ gauge.

(A) ionisation

(B) Mcloid

(C) none of these

(D) Pirani

090. The chamber process is

(A) preferred over contact process for producing 98 to 100% H_2SO_4 and various oleums.

(B) non-catalytic and operates only on pyrites

(C) none of these

(D) all of above

091. In sulphate pulp manufacture, the pressure and temperature in the digestor is

(A) 10 atm., 800 °C

(B) 10 atm., 170-180°C

(C) 1 atm., 170 - 180°C

(D) l atm., 800°C

092. Which of the following is the most adverse factor challenging the choice of mercury electrolytic cell process for the production of caustic soda?

(A) Non-availability of high purity mercury

(B) Pollution of water stream by mercury

(C) High cost of mercury

(D) High specific gravity of mercury

093. Starting raw material for the manufacture of alum is

(A) alumina

(B) gypsum

(C) ammonium bicarbonate

(D) bauxite

094. Sulphur addition in soap is done to

(A) cure pimples & dandruff

(B) improve the soap texture

(C) fasten lather formation

(D) increase its cleansing action

095. Which of the following fractions of a crude oil will have the maximum gravity API?

(A) Vacuum gas oil

(B) Diesel

(C) Gasoline

(D) Atmospheric gas oil

096. Accumulated sum at the end of 5 years, if Rs. 10000 is invested now at 10% interest per annum on a compound basis is Rs.

(A) 18105

(B) 12500

(C) 16105

(D) 15000

097. Utilities cost in the operation of chemical process plant comes under the –

(A) Fixed Charges

(B) Plant Overhead cost

(C) Direct Production

(D) General Expenses

098. Direct costs component of the fixed capital consists of:-

(A) Labor cost

(B) onsite and offsite costs

(C) contingencies

(D) raw material costs

099. Gross earning is equal to the total income minus:-

(A) Total product cost

(B) income tax

(C) fixed cost

(D) none of these

100. In a manufacturing industry, break-even point occurs, when the

(A) Annual profit equals the expected value

(B) Total annual rate of production equals the assigned value

(C) Annual sales equals the fixed cost

(D) Total annual product cost equals the annual sales

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