

# FINAL ANSWER KEY

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Question1:-Who is known as the "Father of New France" ?

- A:-Christophed Columbus
  - B:-Samuel de Champlain
  - C:-Francisco Pizarro
  - D:-Bartolome de Las Casas
- Correct Answer:- Option-B

Question2:-Indulekha is the heroin of the famous Malayalam novel "Indulekha" written by O. Chandumenon. Who is the hero of the novel ?

- A:-Mahaveeran
  - B:-Mahadevan
  - C:-Madhavan
  - D:-Soori Namboothirippad
- Correct Answer:- Option-C

Question3:-Who is called "Praschanna Buddha" ?

- A:-Sankaracharya
  - B:-Sri Buddha
  - C:-Sahodaran Ayyappan
  - D:-C. V. Kunjuraman
- Correct Answer:- Option-A

Question4:-Who acts as the constitutional head ?

- A:-Governor
  - B:-Dr. B. R. Ambedkar
  - C:-Prime Minister
  - D:-President
- Correct Answer:- Option-D

Question5:-The Right to Information Act introduced in

- A:-2004
- B:-2005
- C:-2008
- D:-2009

Correct Answer:- Option-B

Question6:-What do you mean by Artificial Ground Water - recharge ?

- A:-Collection of rain water from the roof top into a collection tank
- B:-Collection of rain water from the roof top into wells
- C:-Allow the roof water in the channels
- D:-Nothing to do for collecting roof water

Correct Answer:- Option-B

Question7:-In which place Clive established Double Government ?

- A:-Madras
- B:-Delhi
- C:-Bengal
- D:-Hydrabad

Correct Answer:- Option-C

Question8:-Pick one which is not a cause of Muslim communalism

- A:-British Policy of Divide and Rule
- B:-Rise of Hindu reformers
- C:-Demand for communal representation
- D:-Govt. Policies of suppression

Correct Answer:- Option-D

Question9:-White paper is related to

- A:-Containing proposals for constitutional changes in India
- B:-Agreement of Britain to quit India
- C:-Agreement signed by the Indian rulers with the English East India Company
- D:-None of the above

Correct Answer:- Option-A

Question10:-To uphold and protect the sovereignty, unity and integrity of India. This comes under which category ?

- A:-Fundamental Rights
- B:-Fundamental Principles
- C:-Fundamental Duties
- D:-Fundamental Theories

Correct Answer:- Option-C

Question11:-Kandathil Varghese Mappilai is associated with

- A:-Mathrubhumi
- B:-Malayala Manorama
- C:-Janayugom
- D:-Deepika

Correct Answer:- Option-B

Question12:-The 2<sup>nd</sup> part of the film Bahubali is named as

- A:-Bahubali the completion
- B:-Bahubali the end
- C:-Bahubali Part II
- D:-Bahubali the conclusion

Correct Answer:- Option-D

Question13:-The translation of "Abhijana Sakuntalam" by

- A:-Kerala Varma Valiya Koyi Thampuran
- B:-Neelakantan Namboothiripad
- C:-G. Sankaran Kurup
- D:-Kunjikuttan Thampuran

Correct Answer:- Option-A

Question14:-The Central Hindu College founded by Annie Besant later developed into

- A:-Sankaracharya University
- B:-Benaras University
- C:-Benaras Hindu University
- D:-Sankaracharya Sanskrit College

Correct Answer:- Option-C

Question15:-Who said the temple entry proclamation is the "miracle of modern times" ?

- A:-Mannathu Padmanabhan
- B:-Gandhiji
- C:-K. Kelappan
- D:-A. K. Gopalan

Correct Answer:- Option-B

Question16:-The Savarna Jatha was led by

- A:-Ayyankali
- B:-K. K. Madhavan
- C:-Chattampi Swamikal
- D:-Mannathu Padmanabhan

Correct Answer:- Option-D

Question17:-In relation to the National Movement in Tranvancor, Action Council of the State Congress was led by

- A:-Accamma Cheriyan
- B:-Pattom A. Thanu Pillai
- C:-Ikkanda Warriar
- D:-Ali Musaliar

Correct Answer:- Option-A

Question18:-Who prepared the preamble of the Indian Constitution ?

- A:-Sardar Vallabh Bhai Patel
- B:-M. N. Roa
- C:-Jawaharlal Nehru
- D:-B. R. Ambedkar

Correct Answer:- Option-C

Question19:-Who became famous by his pen name "Kesari" ?

A:-Ponkunnam Varky

B:-Vengayil Kunhiraman Nayanar

C:-S. K. Pottakkad

D:-G. Sankara Kurup

Correct Answer:- Option-B

Question20:-The Malayali memorial signed in

A:-1891

B:-1821

C:-1857

D:-1862

Correct Answer:- Option-A

Question21:-Good opportunity for energy savings from continuous blow down of boiler is by

A:-Recovery of flash steam for use in deaerator

B:-Using the blow down steam to run steam turbine

C:-Reusing the hot water so formed as make-up water

D:-None of the above

Correct Answer:- Option-A

Question22:-Which fuel requires the lowest amount of excess air for combustion ?

A:-Pulverised coal

B:-Bagasse

C:-Fuel oil

D:-Natural gas

Correct Answer:- Option-D

Question23:-Which data is not required to calculate the efficiency of boiler by indirect method ?

A:-Flue gas temperature

B:-Ambient temperature

C:-Calorific value of fuel

D:-Blow down rate

Correct Answer:- Option-D

Question24:-The pour point of furnace oil (in deg. C) is

A:-100

B:-20

C:-50

D:-25

Correct Answer:- Option-B

Question25:-In which of the following equipment is stored heat used for preheating combustion air ?

A:-Convective recuperator

B:-Radiation recuperator

C:-Regenerator

D:-Heat pump

Correct Answer:- Option-C

Question26:-LPG is predominantly a mixture of propane and

A:-Butane

B:-Isopropane

C:-Methane

D:-Ethane

Correct Answer:- Option-A

Question27:-The unit of specific heat is

A:-KCal/kg

B:-KCal/`m^(3)`

C:-KCal/kg°C

D:-KCal

Correct Answer:- Option-C

Question28:-If the pressure of saturated steam is reduced through a pressure reducing valve

A:-Enthalpy of evaporation will reduce

B:-It will get superheated

C:-Enthalpy will reduce

D:-It will produce wet steam

Correct Answer:- Option-B

Question29:-Radiation losses from a boiler practically

A:-Increase with increase in its % loading

B:-Decrease with increase in its % loading

C:-Are independent of its % loading

D:-None of the above

Correct Answer:- Option-C

Question30:-Drain pockets are provided in a steam line for

A:-Effective removal of line condensate

B:-Effective removal of steam

C:-Removal of dirt

D:-Checking of steam line

Correct Answer:- Option-A

Question31:-Flash steam can be recovered from

A:-Leaking steam

B:-Condensate at vacuum

C:-Condensate at high pressure

D:-Condensate at atmospheric pressure

Correct Answer:- Option-C

Question32:-The correct value of 0° C on the Kelvin scale is

A:-273.15 K

B:-273 K

C:-273.85 k

D:-273.25 k

Correct Answer:- Option-A

Question33:-Light year is a unit of

A:-Time

B:-Distance

C:-Mass

D:-Energy

Correct Answer:- Option-B

Question34:-Temperature sensing can be achieved by the use of

A:-Thermocouples

B:-RTDs

C:-Thermistors

D:-All of the above

Correct Answer:- Option-D

Question35:-What causes the piezoelectric effect ?

A:-Heat or dissimilar metals

B:-Water running on iron

C:-A magnetic field

D:-Pressure on a crystal

Correct Answer:- Option-D

Question36:-Which among the following is not a fire tube boiler ?

A:-Cochran boiler

B:-Babcock and Wilcox boiler

C:-Lancashire boiler

D:-Locomotive boiler

Correct Answer:- Option-B

Question37:-Which among the following is the characteristic of Cochran boiler ?

i. Vertical, multi-tube boiler.

ii. Used for small capacity steam generation.

iii. Water tube boiler.

A:-i, ii and iii are true

B:-i and iii are true

C:-i and ii are true

D:-Only iii is true

Correct Answer:- Option-C

Question38:-What is the main requirement of locomotive boiler ?

- A:-Easy maintenance
  - B:-Compact in size
  - C:-Any type of fuel can be used
  - D:-Produces steam at very high rate
- Correct Answer:- Option-D

Question39:-What is the operating pressure range of a Babcock and Wilcox boiler ?

- A:-11.5 - 17.5 bar
- B:-17.5 - 22.5 bar` `
- C:-22.5 - 27.5 bar
- D:-5.5 - 11.5 bar

Correct Answer:- Option-A

Question40:-Which among the following boilers have minimum draught loss ?

- A:-Lancashire boiler
- B:-Scotch-marine boiler
- C:-Babcock and Wilcox boiler
- D:-Cochran boiler

Correct Answer:- Option-C

Question41:-Which boiler is used in ships ?

- A:-Cornish boiler
- B:-Locomotive boilers
- C:-Scotch-marine boiler
- D:-Cochran boiler

Correct Answer:- Option-C

Question42:-What is the rating of Fluidised Bed Boilers (FBB) ?

- A:-200 bar and 400° C
- B:-150 bar and 400° C
- C:-200 bar and 450° C
- D:-150 bar and 450° C

Correct Answer:- Option-B

Question43:-Where among the following is Waste Heat Recovery boiler is used ?

- i. Copper smelting industry.
- ii. Steel mills.
- iii. Pulp and paper.
- iv. Refineries.

- A:-i, ii and iii
- B:-ii, iii and iv
- C:-i, ii and iv
- D:-i, ii, iii and iv

Correct Answer:- Option-D

Question44:-The material used to control SO<sub>x</sub> in the FBC boiler is

- A:-Lime
- B:-Alumina
- C:-Silica
- D:-Limestone

Correct Answer:- Option-D

Question45:-In a glass tube type water indicator for a boiler, one end of the tube is connected to water space and the other end is connected to

- A:-Steam space
- B:-Water space also
- C:-Chimney
- D:-Superheater

Correct Answer:- Option-A

Question46:-Select a device which is not a boiler mountings ?

- A:-Safety valve
- B:-Water level indicator
- C:-Economiser
- D:-Pressure Gauge

Correct Answer:- Option-C

Question47:-State the location of safety valve in a boiler

- A:-Top of boiler shell

B:-Right side of boiler shell

C:-Bottom of boiler shell

D:-Left side of boiler shell

Correct Answer:- Option-A

Question48:-Where is High-steam low water safety valve used ?

A:-Cochran boiler

B:-Lancashire boiler

C:-Babcock and Wilcox boiler

D:-Locomotive boiler

Correct Answer:- Option-B

Question49:-Which among the following pressure measuring instrument is used as a pressure gauge in boiler ?

A:-Bellows

B:-Magnetic coupling

C:-Bourdon-tube

D:-Mc-Leod gauge

Correct Answer:- Option-C

Question50:-What is the function of fusible plug ?

A:-Regulate pressure inside boiler

B:-Supply excess water needed

C:-Check water level

D:-Put-off fire in furnace, as water level fall

Correct Answer:- Option-D

Question51:-What is the function of boiler accessories ?

A:-For operation and safety of boiler

B:-For cleaning and maintenance

C:-For increasing overall efficiency of boiler

D:-Anxillary part to support boiler

Correct Answer:- Option-C

Question52:-Which among the following boiler accessories preheats boiler feed water ?

A:-Air-preheaters

B:-Economiser

C:-Super-heaters

D:-Water-feeding equipment

Correct Answer:- Option-B

Question53:-Where is air preheater placed ?

A:-After the economiser

B:-In the furnace

C:-Before the economiser

D:-In the chimney

Correct Answer:- Option-A

Question54:-What is/are the advantage/s of super heater ?

i. It increases specific steam consumption of engines and turbines.

ii. It eliminates the erosion of the turbine blades.

iii. It reduces condensation losses in pipes and engine cylinder.

iv. Efficiency of steam plant is higher.

A:-i and iv

B:-ii and iv

C:-i, ii and iv

D:-i, ii, iii and iv

Correct Answer:- Option-D

Question55:-What are the functions of blow-off cock ?

i. Empty boiler for cleaning and maintenance purpose.

ii. Supply water to the boiler high pressure continuously.

iii. Prevent the back-flow of water from boiler to pump.

iv. Discharge mud and sediments accumulated at the bottom of the boiler.

A:-i and iii

B:-ii and iii

C:-i and iv

D:-ii and iv

Correct Answer:- Option-C

Question56:-Which of the following is the best way to assess boiler losses ?

- A:-Benchmarking evaporation ratio
- B:-Indirect efficiency evaluation
- C:-Direct efficiency evaluation
- D:-None of the above

Correct Answer:- Option-B

Question57:-A boiler trial indicated 2% O<sub>2</sub> at boiler exit and 7% O<sub>2</sub> at stack. The in-leak air quantity between these two measurement is

- A:-25%
- B:-50%
- C:-40%
- D:-5%

Correct Answer:- Option-C

Question58:-Enthalpy of evaporation of steam will be higher at

- A:-2 kg/cm<sup>2</sup>
- B:-8 kg/cm<sup>2</sup>
- C:-12 kg/cm<sup>2</sup>
- D:-20 kg/cm<sup>2</sup>

Correct Answer:- Option-A

Question59:-The element that does not contribute to heating value during combustion process is

- A:-Sulphur
- B:-Hydrogen
- C:-Carbon
- D:-Nitrogen

Correct Answer:- Option-D

Question60:-Which of the following is not one of the 3 T's of combustion ?

- A:-Time
- B:-Temperature
- C:-Turbulence
- D:-Tertiary

Correct Answer:- Option-D

Question61:-Which of the following is not required in the boiler efficiency evaluation by direct method ?

- A:-Steam flow
- B:-Fuel flow
- C:-Oxygen % in the flue gas
- D:-Feed water temperature

Correct Answer:- Option-C

Question62:-The dry saturated steam when throttled to a lower pressure will

- A:-Become wet
- B:-Become superheated
- C:-Remain dry saturated
- D:-Become condensate

Correct Answer:- Option-B

Question63:-Velocity of steam in a pipe does strongly depend on

- A:-Number of bends and valves in the pipe
- B:-Specific volume of steam
- C:-Length of the pipe
- D:-None of the above

Correct Answer:- Option-B

Question64:-Latent heat of steam at the critical point is

- A:-Zero
- B:-540 kCal/kg
- C:-Infinite
- D:-Equal to sensible heat

Correct Answer:- Option-A

Question65:-Furnace oil contains 84% carbon by weight. How many kg of `CO<sub>2</sub>` does complete combustion of 1 kg of furnace oil generate ?

- A:-2.4
- B:-4

C:-3.6

D:-3.1

Correct Answer:- Option-D

Question66:-Which fuel releases the most energy per kg on complete combustion ?

A:-Carbon

B:-Sulphur

C:-Hydrogen

D:-Nitrogen

Correct Answer:- Option-C

Question67:-How many kg of  $\text{CO}_2$  are produced in complete combustion of 16 kg of Methane ?

A:-42

B:-44

C:-16

D:-48

Correct Answer:- Option-B

Question68:-In flue gas the theoretical  $\text{CO}_2$  is 15.5% and measured  $\text{CO}_2$  is 11% by volume. The percentage of excess air will be

A:-40.90%

B:-90.90%

C:-240.90%

D:-140.90%

Correct Answer:- Option-A

Question69:-To drain condensate from main steam line, the following type of trap is a suitable trap

A:-Float

B:-Bimetallic

C:-Thermodynamic

D:-None of the above

Correct Answer:- Option-B

Question70:-With increase in the percentage of excess air for combustion of coal, percentage of  $\text{CO}_2$  in flue gas.

A:-Decreases

B:-Increases

C:-Remains same

D:-None of the above

Correct Answer:- Option-A

Question71:-The minimum capacity of any closed vessel which generates steam under pressure as per Indian Boilers Regulation Act is

A:-2.275 litres

B:-22.75 kilo litres

C:-227.5 litres

D:-22.75 litres

Correct Answer:- Option-D

Question72:-If pressure of saturated steam increases then

A:-Enthalpy of steam goes up

B:-Enthalpy of steam goes down

C:-Enthalpy of evaporation goes up

D:-None of the above

Correct Answer:- Option-A

Question73:-Water treatment for steam boilers is generally required to

A:-Remove hydrogen

B:-Prevent formation of scales

C:-Help improve combustion efficiency

D:-Reduce stack temperature

Correct Answer:- Option-B

Question74:-The TDS level in boiler water for boiler blow down, is measured through

A:-Alkalinity of water

B:-Thermal conductivity of water

C:-Electrical conductivity of water

D:-Turbidity of water

Correct Answer:- Option-C



Question75:-The heat which is required to change the phase from water at 100° C to saturated steam at 100° C at atm. pressure is

- A:-Sensible heat
- B:-Latent heat
- C:-Super heat
- D:-Specific heat

Correct Answer:- Option-B

Question76:-The equipment having the highest efficiency in case of thermal power plant is

- A:-Boiler
- B:-Turbine
- C:-Generator
- D:-Cooling tower

Correct Answer:- Option-C

Question77:-Excess air can be derived by measuring the % of \_\_\_\_\_ in flue gases.

- A:-CO
- B:-`O\_(2)`
- C:-`N\_(2)`
- D:-`SO\_(2)`

Correct Answer:- Option-B

Question78:-The heat loss dependant on chemical characteristics of liquid fuel is

- A:-Unburnt loss
- B:-Blowdown loss
- C:-Radiation loss
- D:-Hydrogen loss

Correct Answer:- Option-D

Question79:-What type of steam is used for electric power generation in thermal power plants ?

- A:-High pressure with superheat
- B:-Dry saturate
- C:-Wet steam
- D:-None of the above

Correct Answer:- Option-A

Question80:-High percentage of carbon monoxide presence in the flue gas of boiler is an indicator of

- A:-High excess air
- B:-Complete combustion
- C:-Good control of the pollutants
- D:-Low excess air

Correct Answer:- Option-D

Question81:-Reverse osmosis for water treatment involves

- A:-Removal of alkali salts
- B:-Removal of total salts
- C:-Removal of only hardness causing salts
- D:-Removal of non-hardness salts

Correct Answer:- Option-B

Question82:-When 100 kg of fuel with 60% carbon is burnt with theoretical air, the mass of `CO\_(2)` released is

- A:-319 kg
- B:-4400 kg
- C:-220 kg
- D:-4500 kg

Correct Answer:- Option-C

Question83:-Reduction of steam pressure in a process heating application will

- A:-Reduce the steam temperature
- B:-Reduce the sensible heat
- C:-Increase the enthalpy of evaporation
- D:-All of the above

Correct Answer:- Option-D

Question84:-When pure hydrogen is burned, with theoretical air, the volume percentage of nitrogen in flue gas on dry basis will be ?

- A:-100%
- B:-79%

C:-21%

D:-0%

Correct Answer:- Option-A

Question85:-Which of the following is not true of steam ?

A:-Highest specific heat and latent heat

B:-Low heat transfer coefficient

C:-Easy to control and distribute

D:-Cheap and inert

Correct Answer:- Option-B

Question86:-The draught produced by the chimney is due to the

A:-Density difference between the column of hot gases inside the chimney and the cold air outside

B:-Pressure difference between the column of hot gases inside the chimney and the cold air outside

C:-Velocity difference between the column of hot gases inside the chimney and the cold air outside

D:-All of the above

Correct Answer:- Option-A

Question87:-The efficiency of the chimney is directly proportional to the

A:-Height of the chimney

B:-Bottom area of the chimney

C:-Top area of the chimney

D:-None of the above

Correct Answer:- Option-A

Question88:-The theoretical available draught at about \_\_\_\_\_ percentage of total static draught calculated.

A:-20

B:-40

C:-60

D:-80

Correct Answer:- Option-D

Question89:-The function of a chimney in forced draught is

A:-To produce draught

B:-To discharge gases high in to the atmosphere

C:-To make draught and discharge gases to atmosphere

D:-None of the above

Correct Answer:- Option-B

Question90:-Induced draught is used when

A:-An economiser is used

B:-An air preheater is used

C:-An economiser and air preheater are used

D:-None of the above

Correct Answer:- Option-C

Question91:-Which is not true in the case of a steam jet draught ?

A:-It occupies minimum space

B:-It can't be started until high pressure steam is available

C:-Many classes of low grade fuels can be used

D:-Maintenance cost is very high

Correct Answer:- Option-D

Question92:-The efficiency of artificial draught is nearly

A:-7%

B:-15%

C:-25%

D:-30%

Correct Answer:- Option-A

Question93:-The efficiency of the chimney draught is hardly

A:-7%

B:-5%

C:-3%

D:-1%

Correct Answer:- Option-D

Question94:-The fuel burning capacity of the grate mechanical draught in comparison with natural draught is

A:-Less

B:-High

C:-Same

D:-No comparison

Correct Answer:- Option-B

Question95:-Which of the following statement is true as for as natural draught is concerned ?

A:-No smoke

B:-Height of the chimney is less

C:-The running and maintenance cost is practically nil

D:-Low grate fuel can be used

Correct Answer:- Option-C

Question96:-Which of the following fuel has maximum calorific value ?

A:-Paraffin

B:-Petrol

C:-Hydrogen

D:-Fuel oil

Correct Answer:- Option-C

Question97:-What is the use of Orsat Apparatus ?

A:-To do volumetric analysis of dry flue gas

B:-To measure the calorific value of fuel

C:-To measure the water vapour contained in fuel

D:-To measure the size of the coal

Correct Answer:- Option-A

Question98:-What is the higher calorific value of Natural Gas in (KJ/Cub.M) ?

A:-12200

B:-37800

C:-6080

D:-37000

Correct Answer:- Option-D

Question99:-Water flow through pipe is measured by

A:-X-Rays

B:-Pitot Tube

C:-Electric Field

D:-Laser beams

Correct Answer:- Option-B

Question100:-Reverse osmosis for water treatment involves

A:-Removal of total salts

B:-Removal of only hardness causing salts

C:-Removal of alkali salts

D:-Removal of non-hardness salts

Correct Answer:- Option-A