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ASSISTANT ENGINEER(MECHANICAL),IRRIGATION

EXAM DATE:05-04-2017

1.The ratio of the actual work available at the turbine to energy imparted to the wheel is called:

- A.Hydraulic efficiency
- B.Mechanical efficiency
- C.Overall efficiency
- D.Turbine efficiency

Ans:A

2.A draft tube is used in:

- A.Pelton wheel turbine
- B.Impulse turbine
- C.Francis turbine
- D.Very high specific speed turbines

Ans:C,D

3.Choose the wrong statement:

- A.Impulse type turbine is suited for high heads
- B.Propeller type turbine is suited for low heads
- C.Francis turbine is a medium head turbine
- D.Impulse type turbine is a high specific speed turbine

Ans:D

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4.Saving of work done and power by fitting an air vessel to a single acting reciprocating pump is of the order:

A.39.2%

B.49.2%

C.84.8%

D.68.8%

Ans:C

5.Compressed air coming out from a punctured football:

A.Bacomes hotter

B.Becomes cooler

C.Remains at same temperature

D.May initially hotter and attains atmospheric temperature

Ans:C

6.The ratio of actual cycle efficiency to that of the ideal cycle efficiency is called:

A.Isentropic efficiency

B.Effectiveness

C.Work ratio

D.Net efficiency

Ans:-----

7Carnot cycle consists of following four processes:

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- A.Two isothermals and two isentropics
- B.Two isentropics and two isochorics
- C.Two isentropics and two isobarics
- D.None of the above

Ans:A

8.The expansion in a nozzle is a:

- A.Isentropic process
- B.Adiabatic process
- C.Isochoric process
- D.Isobaric process

Ans:A

9.When two gases suddenly mix up with each other then resultant entropy of the system will:

- A.Decrease
- B.Remain same
- C.Increase
- D.May increase or decrease depending upon the initial value

Ans:C

10.Following relationship defines Gibb's free energy G:

- A. $G=H+TS$
- B. $G=H-TS$

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C. $G=U+TS$

D. $G=U-TS$

Ans:B

11.Pick up the correct relationship from the following:

A. $TdS=dH-Vdp$

B. $TdS=dH+Vdp$

C. $TdS=dU-Vdp$

D. $Tds=dH-pdV$

Ans:D

12.All gases behave ideally under:

A.High temperature conditions

B.Low pressure conditions

C.High pressure conditions

D.High pressure and high temperature conditions

Ans:A,B

13.A diathermic wall is one which:

A.Permits thermal interactions

B.Prevents thermal interactions

C.Encourages thermal interactions

D.Does not exist

Ans:A

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14.During throttling process:

- A.There is no change in internal energy
- B.No work is done
- C.Heat exchange does not takes place
- D.All of the above

Ans:D

15.Dalton's law states that:

- A.Pressure exerted by a mixture of gases in a fixed volume is equal to the sum of the pressure that would be exerted by each gas alone in the same volume
- B.Pressure exerted is same in all directions in a fixed volume
- C.All of the above
- D.None of the above

Ans:A

16.Eutectoid steel contains the following percentage of carbon:

- A.0.02%
- B.0.03%
- C.0.33%
- D.None of the above

Ans:D

17.Induction hardening is the process of:

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- A.Relieving of stresses throughout a component
- B.Heating and cooling suddenly
- C.Hardening the surface of a work piece to obtain a wear resistant surface
- D.Hardening core

Ans:C

18.Depth of hardness of steel is increased by the addition of :

- A.Nickel
- B.Chromium
- C.Tungsten
- D.Vanadium

Ans:B

19.Pearlite is a combination of:

- A.Territe and cementite
- B.Ferrite and austenite
- C.Ferrite and iron graphite
- D.Cementite and gamma iron

Ans:A

20.Hypo eutectoid steels have carbon content:

- A.Equal to 0.93%
- B.Less than 0.83%
- C.More than 0.93% and upto 2%

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D.More than 2%

Ans:B

21.The effect of alloying zinc to copper is to:

A.Improve welding characteristics

B.Improve hardness

C.Impart free machining properties

D.None of the above

Ans:D

22.Pick up the wrong statement.Annealing results in:

A.Refining grain structure

B.Relieving internal stresses

C.Improving wear resistance

D.Improving machinability

Ans:C

23.Case hardening is the only method suitable for hardening:

A.High alloy steel

B.High carbon steel

C.High speed steel

D.Low carbon steel

Ans:D

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24.Martensite is the supersaturated solution of carbon in:

- A.Iron
- B.Steel
- C.Alpha-iron
- D.Beta-iron

Ans:C

25.Permalloy is a:

- A.Nonferrous alloy
- B.Combination of nickel and iron alloy
- C.Alloy of tin,lead and cadmium
- D.Kind of stainless steel

Ans:B

26The crystal structure of gamma iron is:

- A.Body centered cubic
- B.Orthorhombic crystal
- C.Face centered cubic
- D.Hexagonally closed packed

Ans:C

27.Following gases are used in Tungsten inert gas Welding:

- A.Hydrogen and Oxygen

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B. Carbon dioxide and Oxygen

C. Helium and Neon

D. Argon and Helium

Ans:D

28. Preheating is essential in welding of:

A. High speed steel

B. Stainless steel

C. Cast iron

D. German silver

Ans:C

29. Grey iron is usually welded by:

A. Gas welding

B. Arc welding

C. TIG welding

D. MIG welding

Ans:A

30. A process in which arc is maintained under a blanket of flux is called as:

A. TIG welding

B. Submerged arc welding

C. Thermit welding

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D.None of the above

Ans:B

31.The vacuum maintained in the electron beam welding is of the order:

A.1 torr

B.5 torr

C. 10^{-1} torr

D. 10^{-5} torr

Ans:D

32.Which of the following materials cannot be forged?

A.Wrought iron

B.Cast iron

C.Mild steel

D.High speed steel

Ans:B

33.A cylindrical section having no joints is called as:

A.Seamless

B.Perfect

C.Pointless

D.Ideal

Ans:A

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34.Which of the following rolling mills is required to reduce a slab directly to strip in one pass?

- A.Continuous rolling mill
- B.Two high mill
- C.Planetary mill
- D.None of the above

Ans:C

35.Symmetrical hollow parts of circular cross-section are made by hot:

- A.Forging
- B.Drawing
- C.Extrusion
- D.Spining

Ans:D

36.Flange wrinkling is the defect found in the following process:

- A.Deep drawing
- B.Metal spinning
- C.Bending
- D.None of the above

Ans:A

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37.If compression ratio of an engine working on Otto cycle is increased 3 to 6,its air standard efficiency will increase by:

- A.1%
- B.20%
- C.8%
- D.Remain the same

Ans:---

38.With increase in cut-off ratio,the thermal efficiency of a Diesel cycle having fixed compression ratio will:

- A.Increase
- B.Decrease
- C.Remains the same
- D.May increase initially and then decreases

Ans:B

39.Due to detonation the following parameters attains very high value:

- A.Rate of temperature rise
- B.Peak temperature
- C.Rate of rise of horse power
- D.Rate of pressure rise

Ans:D

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40.After cooler is used to:

- A.Cool the air
- B.Reduce volume
- C.Cause moisture and oil vapour to drop out
- D.Increase pressure

Ans:C

41.Compressor efficiency is the ratio of:

- A.Isothermal horse power to indicated horse power
- B.Isothermal horse power to shaft horse power
- C.Compressor work to motor input
- D.Total output to air input

Ans:A

42.Open cycle gas turbins works on:

- A.Carnot cycle
- B.Brayton cycle
- C.Joules cycle
- D.Ranking cycle

Ans:B

43.Intercooling in gas turbines results in:

- A.Increase in net both thermal efficiency and net output

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- B.Increase in thermal efficiency but decrease in net output
- C.Decrease in both thermal efficiency and net output
- D.Increase in net output but decrease in thermal efficiency

Ans:D

44.The concept of overall heat transfer coefficient is used in case of heat transfer by:

- A.Radiation
- B.Conduction
- C.Conduction and convection
- D.Convection

Ans:C

45.If there are 4 number of fundamental dimensions and 7 number of variables,then the number of pi terms for dimensional analysis will be:

- A.4
- B.3
- C.7
- D.11

Ans:B

46.Fourie's law of heat conduction is valid for:

- A.One dimensional flow

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- B.Two dimensional flow
- C.Three dimensional flow
- D.None of the above

Ans:A

47.Absorptivity of a body will be equal to its emissivity:

- A.At all temperature
- B.At one particular temperature
- C.When system is in thermal equilibrium
- D.For a polished surface

Ans:C

48.In free convection heat transfer,Nusselt number is a function of:

- A.Reynolds number and Pandtl number
- B.Reynolds number and Grashoffs number
- C.Prandtl number and Grashoffs number
- D.None of the above

Ans:C

49.The vapour compression refrigerator employs the following cycle

- A.Reversed Carnot
- B.Reversed Rankline

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C.Reversed Brayton

D.Reversed Joules cycle

Ans:A

50.Critical temperature is the temperature above which

A.Water will evaporate

B.A gas will liquefy

C.Water will solidfy

D.None of the above

Ans:A

51.In vapour compression cycle the condition of refrigeration is dry saturated vapour.

A.After passing the condense

B.Before passing the expansion valve

C.After passing the throttle valve

D.Before entering the compressor

Ans:D

52.Creep in belt drive is due to

A.Larger size of the driver pulley

B.Material of the pulley

C.Uneven extensions and contractions due to varying tension

D.Expansion of belt

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Ans:C

53.The gear which is used to transmit power from one rotating shaft to an other whose axes are neither parallel nor intersecting is

- A.Spiral gear
- B.Worm gear
- C.Spur gear
- D.Bevel gear

Ans:A,B

54.The brake commonly used on train bogies is

- A.Band and block brake
- B.Electric brake
- C.Shoe brake
- D.Internal expanding

Ans:C

55.The circle passing through the bottom of the teeth of gear is known as

- A.Dedendum circle
- B.Prime circle
- C.Addendum circle
- D.Base circle

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Ans:A

56.According to law of gearing

- A.Dedendum should be equal to 1.157 m
- B.Teeth should of cycloidal type
- C.Teeth should be of involute type
- D.None of these

Ans:D

57.Peaucellier mechanism has

- A.Eight links
- B.Six links
- C.Four links
- D.Twelve links

Ans:A

58.Transmission of power from the engine to the rear axle of an automobile is by means of

- A.Worm and wheel method
- B.Hooke's joint
- C.Crown gear
- D.Compound gears

Ans:B

59.Any point on a link connecting double slider crank chain

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will trace a

- A.Circle
- B.Parabola
- C.Ellipse
- D.Straight line

Ans:C

60.The gear train is which the first and last gear are on the same axis,is known as

- A.Simple gear train
- B.Compuound gear train
- C.Epicyclic gear train
- D.Reverted gear train

Ans:D

61.The power transmitted by a belt is maximum when the maximum tension in the belt compared to centrifugal tension is

- A.2 times
- B.1.5 times
- C.3 times
- D.4 times

Ans:C

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62.The included angle in Acme thread is

- A.60 degree
- B.55 degree
- C.47.5 degree
- D.30 degree

Ans:D

63.Choose the best suited type of screw thread for applications for stresses on threads in one direction only

- A.Buttress
- B.Square
- C.Metric
- D.BSW

Ans:A

64.Shaft coupling is used in machinery to

- A.Alter the vibrating characteristics of rotating unit
- B.Reduce transmission of shock loads
- C.Introduce protection against over loads
- D.All of the above

Ans:D

65.From coefficient of spring is defined as

- A.Ratio of coil diameter to wire diameter

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- B.Load required to produce unit deflection
- C.The capability of storing energy
- D.None of the above

Ans:C

66.Back lash in spur gears is the

- A.Difference between the dedendum of one gear and the addendum,of the mating gear
- B.Difference between the tooth space of one gear and the tooth thickness of mating gear measured on pitch circle
- C.Intentional extension of centre distance between two gears
- D.None of the above

Ans:B

67.In a laminated spring,the various strips are made of different length for the following reason

- A.Reduction in weight
- B.Ease in fabrication
- C.Equal distribution of stress
- D.Space consideration

Ans:C

68.The diameter of shaft in any power transmission system is proportional to

- A.Speed of the shaft

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B.Horse power to be transmitted

C.Torque to be transmitted

D.Allowable shear stress of the material

Ans:C

69.Excessive back and forth movement of the crankshaft is prevented by

A.Thrust bearing

B.Sleeve bearing

C.Shaft journal

D.Harmonic balance

Ans:A

70.Piston pins are usually either a press fit in the rod or

A.Locked to the rod with a bolt

B.Free floating in the rod and piston

C.Locked to the piston with a bolt

D.A press fit in the piston

Ans:A

71.If no resistance is encountered by displacement,such a substance is known as

A.Perfect solid

B.Perfect liquid

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C.Gas

D.Ideal fluid

Ans:D

72.Pressure coefficient is the ratio of pressure force to

A.Inertia force

B.Viscous force

C.Gravity force

D.Elasticity

Ans:A

73.A stream line is defined as the line

A.Parallel to central axis of flow

B.Parallel to outer surface of pipe

C.Along which the pressure drop is uniform

D.None of the above

Ans:A

74.Two pipe systems can be said to be equivalent,when the following quantities are same:

A.Velocity and diameter

B.Friction loss and flow

C.Length and diameter

D.Flow and length

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Ans:B

75.For pipes,transition flow occurs when Reynolds number is:

- A.Less than 2000
- B.In between 1800 and 2200
- C.In between 2300 and 4000
- D.More than 4000

Ans:C

76.The hydraulic gradient line is:

- A.Always moving up
- B.Always moving down
- C.The velocity head below the energy grade line
- D.Always above the energy grade line

Ans:B

77.In a single casing,multi stage pump running at constant speed,how the capacity rating is to be lowered:

- A.Coating a new material on the impeller
- B.Trimming the impeller size to the required size by machining
- C.Impossible
- D.None of the above

Ans:A

78.Negative slip in a reciprocating pump occurs when:

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- A.The speed of the pump is too high
- B.Actual discharge is greater than theoretical discharge
- C.All of the above
- D.None of the above

Ans:C

79.Motionof liquid in volute casingof a centrifugal pump is an example of:

- A.Spiral vortex flow
- B.Radial flow
- C.Forced cylindrical vortex flow
- D.Forced spiral vortex flow

Ans:D

80.Guide angle as per the aerofoil theory of Kaplan turbine a blade design is defined as the angle between

- A.Lift and resultant force
- B.Drag and resultant force
- C.Lift and tangential force
- D.Lift and drag

Ans:A

81.Ibn Battuta visited India in the :

- A.14th Century

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B.11th Century

C.17th Century

D.18th Century

Ans:A

82. Who is considered as “The Grand Old Man of India”?

A.A.O.Hume

B.S.N.Bannerji

C.Motilal Nehru

D.Dadabai Navaroji

Ans:D

83. Kurichiya leader in the Pazhassi revolt:

A.Kannavath Sankaran Nambiar

B.Thalakkal Chandu

C.Edachana Kungan Nair

D.Ambu Nair

Ans:B

84. Political pupil of Gopala Krishna Gokhale:

A.Sardar Vallabai Patel

B.Jawaharlal Nehru

C.Gadhiji

D.Azad

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Ans:C

85.The first five year plan started in India in:

A.1951

B.1948

C.1950

D.1949

Ans:A

86.The Slogan “Garibi Hatavo”introduced by:

A.Rajiv Gandhi

B.Lal Bahadur Sastri

C.Jayaprakash Narayan

D.Indira Gandhi

Ans:D

87.The river flowing through Attapadi:

A.Manimala River

B.Siruvani

C.Pampar

D.Kabani

Ans:B

88.Capital of Assam:

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- A.Dispur
- B.Impahi
- C.Itanagar
- D.Gangtok

Ans:A

89.Father of Malayalam film:

- A.Ramu Kariat
- B.K.G.George
- C.J.C.Daniel
- D.Adoor Gopalakrishnan

Ans:C

90.The -----served as a corridor between the Carnatic and the Malabar Coast.

- A.Bolan pass
- B.Khyber pass
- C.Aryankavu pass
- D.Palghat gap

Ans:D

91.Early name of Mohammed Ali,America professional boxer and activist

- A.Cassius clay

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B.Rocky Marciano

C.Jose Louis

D.Lennox Lewis

Ans:A

92.The present Vice Chairman of Kerala State Planning Board:

A.P.Ramachandran

B.N.Ramachandran

C.V.K.Ramachandran

D.Ramachandran

Ans:C

93."Ace against Odds" is the autobiography of:

A.Rafel Nadal

B.Sania Mirza

C.Andre Agass

D.Roger Federer

Ans:B

94."Big Bang" theory is associated with:

A.Alfred Wegener

B.Fred-Hoyle

C.Erasmus

D.Edwin Hubble

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Ans:D

95.Lowest layer of Atmosphere:

- A.Stratosphere
- B.Mesosphere
- C.Troposphere
- D.Thermosphere

Ans:C

96.Ezhava Memorial was submitted to:

- A.Sree Mulam Thirual
- B.Visakham Thirunal
- C.Ayilam Thirunal
- D.Uthram Thirunal

Ans:A

97.Who founded Aryasamajam?

- A.Subhananda Guru
- B.Velukutty Arayan
- C.Anandatheerdha
- D.Pandit Karuppan

Ans:D

98.Yachana Yathra led by:

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A.A.K.Gopalan

B.V.T.Bhattathirippad

C.Sahodaran Ayyappan

D.M.R.Bhattathirippad

Ans:B

99."Atmaanuthapam" is the work of:

A.Kuriakose Elias Chavara

B.Paulose Mar Gregorious

C.Philipose Mar Chrisostem

D.Paulose Mar Paulose

Ans:A

100.Swedesabhimani Ramakrishna Pillai died at:

A.Delhi

B.Burma

C.Kannur

D.Madras

Ans:C

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