

164/2016

Maximum : 100 marks

Time : 1 hour and 15 minutes

1. The maximum voltage  $E_{\max}$  is given by :

(A)  $N \phi_m \omega$

(B)  $2\pi \phi_m$

(C)  $\phi_m N 2\pi$

(D)  $\omega \phi_m$

2. Maximum value is greater than RMS value by the factor :

(A)  $\sqrt{3}$

(B)  $\frac{\sqrt{3}}{2}$

(C)  $\sqrt{2}$

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

3. Apparent power in a purely resistive circuit is :

(A) zero

(B)  $V \times I$

(C)  $VI \sin \phi$

(D)  $VI \cos \phi$

4. In a purely capacitive circuit voltage is :

(A) leading the current

(B) in phase with current

(C) anti phase with current

(D) lagging the current

5. The equation for 3 phase power is :

(A)  $3V_L I_L \cos \phi$

(B)  $\sqrt{3} V_{ph} I_{ph} \cos \phi$

(C)  $\sqrt{3} V_L I_L \cos \phi$

(D) None

6. Equation for induced emf in a transformer is :

(A)  $4.4 F N_2$

(B)  $4.44 \phi_m F N_2$

(C)  $4.44 F N_1 N_2$

(D)  $4.4 \phi_m N_1 N_2$

7. The reason for making laminations for core construction is :

(A) to reduce weight

(B) to reduce cu. loss

(C) to reduce lrm loss

(D) to reduce hysteresis loss

8. The transformation ratio of a transformer is :

(A)  $\frac{V_1}{V_2}$

(B)  $\frac{I_1}{I_2}$

(C)  $\frac{N_1}{N_2}$

(D)  $\frac{V_1}{I_1}$

9. An auto transformer transfers power:

(A) inductively only

(B) conductively only

(C) both inductively and conductively

(D) not transfers

10. When transformation ratio of an auto transformer is 0.8 and input is 3 kW the power transferred conductively from primary to secondary is :

(A) 0.6

(B) 0.8

(C) 1.2

(D) 2.4

11. The function of the commutator in a DC generator is :

(A) to induce DC voltage

(B) to convert DC into AC

(C) to convert AC into DC

(D) to induce AC voltage

12. When coil span equal to pole pitch the winding is :

(A) short pitched

(B) fractional pitched

(C) dull pitched

(D) over pitched

13. For a simplex lap wound generator equation for induced emf is :

(A)  $E_g = \frac{\phi ZN}{60} \times \frac{P}{Z}$

(B)  $E_g = \frac{\phi ZN}{60} \times \frac{P}{A}$

(C)  $\frac{\phi AN}{60} \times \frac{P}{Z}$

(D)  $\frac{\phi AP}{60} \times \frac{Z}{N}$

14. The equation for armature current in a DC motor is :

(A)  $I_a = \frac{V}{R_a}$

(B)  $I_a = \frac{Eb}{R_a}$

(C)  $I_a = \frac{V - Eb}{R_a}$

(D)  $I_a = \frac{V + Eb}{R_a}$

15. Armature torque of a DC motor in N.M. is :

(A)  $E_b I_a$

(B)  $\frac{E_b I_a}{2\pi N}$

(C)  $\frac{60 E_b I_a}{2\pi N}$

(D)  $\frac{2\pi N}{E_b I_a}$

16. A 3 point starter is used to :  
(A) control the speed (B) control the load  
(C) limit the current (D) decrease the efficiency
17. An AC Generator is equipped with :  
(A) commutator (B) split ring  
(C) end rings (D) slip rings
18. The speed of a rotating field is known as :  
(A) slip speed (B) field speed  
(C) synchronous speed (D) actual speed
19. An induction motor works on the basis of :  
(A) Fleming's rule (B) Thump rule  
(C) Ohms law (D) Lenz's law
20. A single phase induction motor has :  
(A) one stator winding (B) two stator winding  
(C) three stator winding (D) no stator winding
21. The ratio of ampere hour efficiency to Watt hour efficiency of a lead acid cell is :  
(A) less than one (B) one  
(C) greater than one (D) zero
22. A constant voltage charging system :  
(A) increases charging time (B) reduces charging time  
(C) same as constant current system (D) it may increase or decrease
23. A kWh meter is classified as :  
(A) indicating instrument (B) recording instrument  
(C) integrating instrument (D) measuring instrument
24. The torque of an ammeter varies as the square of the current through it. If a current of 5A produces a deflection of  $90^\circ$ , what deflection will occur for a current of 3A, when the instrument is spring controlled :  
(A)  $16.2^\circ$  (B)  $32.4^\circ$   
(C)  $44.4^\circ$  (D)  $66.2^\circ$

25. Multipliers are used for :
- (A) range extension of ammeters
  - (B) range extension of volt meters
  - (C) range extension of watt meters
  - (D) range extension of energy meters
26. An energy meter has:
- (A) no deflecting torque
  - (B) no controlling torque
  - (C) no damping torque
  - (D) no rotatory torque
27. The current coil of a watt meter is made of with :
- (A) low resistance wires
  - (B) high resistance wires
  - (C) medium resistance wire
  - (D) insulators
28. The secondary of a current transformer is always open circuited because of :
- (A) high current in secondary
  - (B) high voltage in secondary
  - (C) high power in secondary
  - (D) high energy in secondary
29. Dielectric heating uses :
- (A) high voltage
  - (B) high current
  - (C) high frequency
  - (D) high energy
30. Arc Furnaces differ from induction furnace by:
- (A) Current in the furnace terminals passes through the charged material
  - (B) Current is induced in the charged material
  - (C) Eddy current causes heating in arc furnaces
  - (D) High frequency voltage causes the heating
31. Which one is most suitable for back gear mechanism in a lathe?
- (A) Compound gear train
  - (B) Reverted gear train
  - (C) Epicyclic gear train
  - (D) Constant mesh gear train
32. Clapper box in a shaper is used to :
- (A) Hold the cutting tool rigidly
  - (B) Protect the table and vice from overload
  - (C) Free movement of cutting tool in return stroke
  - (D) Adjust the length of stroke
33. In a two stroke diesel engine, one cycle is completed in :
- (A)  $180^\circ$  of crank rotation
  - (B)  $540^\circ$  of crank rotation
  - (C)  $360^\circ$  of crank rotation
  - (D)  $720^\circ$  of crank rotation

34. Two isentropic and two constant volume process comprises in :
- (A) Dual cycle (B) Carnot cycle  
(C) Diesel cycle (D) Otto cycle
35. A forging operation in which the diameter increases with the expense of length is known as :
- (A) Jumping (B) Drawing  
(C) Fullering (D) Piercing
36. A system in which no mass and energy crosses the boundary :
- (A) Open System (B) Closed System  
(C) Isolated System (D) None of the above
37. Taps are used to :
- (A) Make internal threads (B) Make external threads  
(C) Enlarge drilled holes (D) Squaring the round holes
38. From the given statements choose the correct one :
- (A) Cross peen hammer head is used to spread metal at right angles to the line of striking  
(B) Cutting edge angle of cold chisel is greater than the cutting angle of hot chisel  
(C) Punches are used to expand the holes in forging operation  
(D) Drift is used for cutting hot metals
39. In which annealing process the metal is heated below lower critical temperature?
- (A) Full Annealing (B) Process Annealing  
(C) Spheroids Annealing (D) Isothermal Annealing
40. Which method is most suitable for making steep tapers?
- (A) Compound rest method (B) Tail stock offset method  
(C) Taper turning attachment method (D) Form tool method
41. A vernier calliper having one main scale division is 0.5mm and 49 divisions of the main scale is divided into 50 divisions in vernier scale. What is the least count of the instrument?
- (A) 0.02 mm (B) 0.01 mm  
(C) 0.5 mm (D) 0.05 mm
42. The snap gauge is used to :
- (A) Measure the length of rod (B) Check the internal dimensions  
(C) Check the external dimensions (D) Measure the internal threads

43. Which instrument is used to check the gaps between two mating parts?  
(A) Plug gauge (B) Feeler gauge  
(C) Dial gauge (D) Slip gauge
44. The shape of hardie hole in an anvil is :  
(A) Square (B) Circular  
(C) Hexagonal (D) Triangular
45. Scarfing is the process for :  
(A) Forming the metal to fit in pritchel hole  
(B) Coating flux around the metal before forge welding  
(C) Preparing the metal for forge welding  
(D) Clearing the scales in forging operation
46. An example for pressure welding :  
(A) Resistance welding (B) Gas welding  
(C) Metal arc welding (D) Tig welding
47. In a two stroke petrol engine which processes are done when the piston moves from TDC to BDC?  
(A) Suction and exhaust (B) Compression and exhaust  
(C) Compression, power and exhaust (D) Suction, power and exhaust
48. Steels with 0.8% carbon is called :  
(A) Eutectic steel (B) Hypo eutectoid steel  
(C) Hyper eutectoid steel (D) Eutectoid steel
49. A taper given to all vertical surface of a pattern is known as :  
(A) Rapping allowance (B) Distortion allowance  
(C) Draft allowance (D) Shrinkage allowance
50. The function of surge tank is :  
(A) To regulate the flow on penstock  
(B) To eliminate water hammering  
(C) To act as a reservoir when overflow occurs  
(D) To maintain the water head in the reservoir

51. Natural moulding sand contains :
- (A) 5-20% clay (B) 25-40% clay  
(C) 52-70% clay (D) less than 5% clay
52. Which instrument is most suitable to take the length of blind hole?
- (A) Vernier Calliper (B) Inside micro meter  
(C) Vernier depth gauge (D) Vernier height gauge
53. Continuous chips with built-up edge is formed when :
- (A) High cutting speed with greater rake angle  
(B) Low coefficient of friction  
(C) Smaller rake angle with lower cutting speed  
(D) Low cutting pressure and temperature
54. Force acting perpendicular to the axis of the work piece during metal cutting is :
- (A) Radial force (B) Feed force  
(C) Cutting force (D) Resultant force
55. Which law states that in a perfect gas the volume varies directly proportional to the absolute temperature when the pressure is constant?
- (A) Avogadro's Law (B) Boyel's Law  
(C) Gay Lucas's Law (D) Charles Law
56. Which one is an extensive property?
- (A) Volume (B) Temperature  
(C) Density (D) Pressure
57. Conventional method of gear manufacturing is :
- (A) Broaching (B) Hobbing  
(C) Honing (D) Milling
58. The main function of lead screw in a lathe is :
- (A) Support the work piece  
(B) To give correct longitudinal feed to the tool  
(C) To support the carriage  
(D) To lock the carriage while thread cutting
59. The unit of strain :
- (A)  $N/mm^2$  (B) Nm  
(C) Nms (D) Unit less

60. In a reciprocating pump the function of air vessel is :
- (A) To get more discharge (B) To maintain continuous flow  
(C) To avoid priming (D) To obtain high head
61. Zener diode is always connected in :
- (A) Forward bias (B) Reverse bias  
(C) Any of above (D) None
62. Cut in voltage in Germanium is :
- (A) 0.2 V (B) 0.7 V  
(C) 1 V (D) 0.02 V
63. For high frequency application which transistor configuration is preferred :
- (A) CE (B) CB  
(C) CC (D) None
64.  $\alpha$  - cut off frequency of a Bipolar Junction transistor :
- (A) increases with increase in basewidth  
(B) increases with increase in temperature  
(C) increases with increase in collector width  
(D) increases with decrease in basewidth
65. The bandwidth of a  $n$ -stage tuned amplifier with each stage having a bandwidth of  $B$  is given by :
- (A)  $B/n$  (B)  $B/\sqrt{n}$   
(C)  $B\sqrt{2^{\frac{1}{n}} - 1}$  (D)  $\frac{B}{\sqrt{2^{\frac{1}{n}} - 1}}$
66. The voltage series feedback results in :
- (A) increase in both input and output impedances  
(B) decrease in both input and output impedances  
(C) increase in input impedance and decrease in output impedance  
(D) decrease in input impedance and increase in output impedance
67. One of the following device does not have thermal run away problem :
- (A) BJT (B) P-N Junction diode  
(C) FET (D) None



68. The dynamic resistance of a semiconductor diode is :
- (A) same as static resistance
  - (B) much larger than static resistance
  - (C) much smaller than static resistance
  - (D) typically few ohms
69. One of the following bridge configuration is used as feedback circuit in one of the commonly used oscillator configuration :
- (A) Weinbridge
  - (B) Maxwell Weinbridge
  - (C) Wheat stone bridge
  - (D) Anderson bridge
70. The feedback network of a certain oscillator is frequency selective and satisfies Barkhausen Criterion for sustained oscillations at a single frequency. It implies that :
- (A) it is a square wave oscillator with symmetric O/P
  - (B) it is a sinusoidal oscillator
  - (C) it is a square wave oscillator with unsymmetric O/P
  - (D) sinusoidal oscillator with very high frequency stability
71. If both emitter-base and collector-base junction of a Bipolar transistor is forward biased the transistor is in :
- (A) active region
  - (B) saturation region
  - (C) inverse mode
  - (D) cut-off region
72. The multivibrator circuit configuration that can be used to convert a sinusoidal input into a square wave output is :
- (A) Astable multivibrator
  - (B) Monostable multivibrator
  - (C) Bistable multivibrator
  - (D) Schmitt Trigger
73. In transistor push pull amplifier :
- (A) there is no dc present in the output
  - (B) there is no distortion in the output
  - (C) there is no even harmonics in the output
  - (D) there is no odd harmonics in the output
74. The Zener diode based on Zener breakdown phenomenon have :
- (A) positive temperature coefficient of breakdown voltage
  - (B) negative temperature coefficient of breakdown voltage
  - (C) a breakdown voltage independent of temperature
  - (D) none of the above

75. One of the following is a negative resistance device :
- (A) P-N Junction diode (B) FET  
(C) SCR (D) BJT
76. Which one of the following oscillator circuit uses a LC tank circuit in its feedback circuit?
- (A) RC phase shift oscillator (B) Astable multivibrator  
(C) Colpitt oscillator (D) Weinbridge oscillator
77. A cascade amplifier stage is equivalent to :
- (A) A common emitter stage followed by common base  
(B) A common base stage followed by emitter follower  
(C) Emitter follower followed by common base stage  
(D) A common base stage followed by common emitter
78. Which of the following amplifier gives the collector current flows through entire AC signal?
- (A) Class A (B) Class B  
(C) Class C (D) Class AB
79. Zener diode works on the principle of :
- (A) Tunneling of charge carriers across the junction  
(B) Thermionic emission  
(C) Diffusion of charge carriers across the junction  
(D) Hopping of charge carriers across the junction
80. Power transistors are invariably provided with :
- (A) heat sink (B) mettalic casing  
(C) soldered connection (D) fan for heat removal
81. Sanchi stupa situated at :
- (A) Bhopal (B) Gaya  
(C) Saranath (D) Mathura
82. River Nubra originating from :
- (A) The Vindhya range (B) The Satpura range  
(C) Manasa sarovar (D) Siachin glaciers
83. Gandhi Sagar dam is situated in the river :
- (A) Champa (B) Narmada  
(C) Ramganga (D) Kosi

84. NITI Ayog was formed on :  
 (A) 2<sup>nd</sup> October 2014 (B) 15<sup>th</sup> November 2014  
 (C) 1<sup>st</sup> January 2015 (D) 26<sup>th</sup> January 2015
85. What is the rank of India in the sustainable development goal index 2016?  
 (A) 110 (B) 121  
 (C) 135 (D) 147
86. Name of the painter "Relief Lucknow" associated with the Revolt of 1857 is :  
 (A) Hugh Ross (B) Thomas Jones Barker  
 (C) Campbell (D) James Outram
87. At which session of Indian National Congress proclaimed "Poorna Swaraj" as its goal :  
 (A) Lucknow (B) Lahore  
 (C) Kolkatta (D) Bombay
88. Wagon Memorial in Kerala is at :  
 (A) Pothanur (B) Kolathur  
 (C) Tirur (D) Kondotty
89. Black soil seen in Kerala at :  
 (A) Chottupara (B) Ambalavayal  
 (C) Attappady (D) Chittur
90. First digital Panchayat in Kerala is :  
 (A) Panamaram (B) Ollur  
 (C) Vengaanur (D) Pampakuda
91. Athmavidya Sangham founded by :  
 (A) Agamanandan (B) Brahmananda Sivayogi  
 (C) Vagbhatanandan (D) Rajaram Mohan Roy
92. Who raised the slogan – "If we work we should be got paid" :  
 (A) Sahodharan Ayyappan (B) Vaikunda Swamikal  
 (C) K.P. Karuppan (D) Ayyankali

93. Yachan a Yathra conducted by :
- (A) A.K. Gopalan (B) Mannath Padmanabhan  
(C) V.J. Bhattatiripad (D) Sree Narayana Guru
94. Which event is Gandhiji hailed it as - "A miracle in the modern Times"?
- (A) Temple Entry Prodamation (B) August offer  
(C) Vaikkam Satyagraham (D) Guruvayur Satyagraha
95. Who wrote the book - Jnanakummi?
- (A) Ananda Theerthan (B) Brahmananda Sivayogi  
(C) Pandit Karuppan (D) Yagbhatananda
96. Which novel won Man Booker Prize of 2016?
- (A) A voice from Chernobin (B) A brief history of seven killings  
(C) A strang life in wild (D) The vegetarian
97. Who lit the 2016 Olympics cauldron during the open Ceremony at Rio de Janeiro?
- (A) Pele (B) Thomas Bach  
(C) Anna Meares (D) Vanderlee Cordeiro
98. Which Indian American Biotechnologist has been bestowed with university of Houston's highest teaching award in U.S?
- (A) Nandhini Kulkarni (B) Meera Nayyar  
(C) Rupa Iyer (D) Sindhusree Guller
99. Which Indian short film has won the audience choice award at the Seoul International Women's Film Festival (SIWFF) 2016?
- (A) Leeches (B) Chai  
(C) Namkaran (D) Ahalya
100. Human resource development minister of India is :
- (A) Smriti Sudir Irani (B) Prakash Javadekhar  
(C) Ravishankar Prasad (D) Dr. Harsh Vardhan