

**67/2019**

Maximum : 100 marks

Time : 1 hour and 15 minutes

1. What is a bullnose brick?  
(A) Brick with a rounded angle  
(B) Brick with two rounded angle on one end  
(C) Brick in the form of curved sector  
(D) Brick with rounded angle on four edges
2. Among the tests for bricks, which test is done with the help of finger nail?  
(A) Test for crushing strength  
(B) Soundness test  
(C) Hardness test  
(D) Efflorescence test
3. Which among the following sections contain only one flange and one web?  
(A) Rolled steel beams  
(B) T-sections  
(C) Channel sections  
(D) Angle sections
4. Which of the following is taken as fine aggregate?  
(A) Particles retained on 4.75 mm IS sieve  
(B) Particles passing through 4.75 mm IS sieve  
(C) Particles passing through 75 micron IS sieve  
(D) Particles retained on 80 mm IS sieve
5. Which mix is a M<sub>20</sub> concrete mix?  
(A) 1 : 1½ : 3  
(B) 1 : 2 : 4  
(C) 1 : 1 : 2  
(D) 1 : 4 : 8
6. Which pile is designed to take up the stresses during both driving and handling?  
(A) sand pile  
(B) compaction pile  
(C) cast-in-situ pile  
(D) pre-cast concrete pile
7. Which of the following is the feature of English bond?  
(A) header course starts with a header followed by a queen closer  
(B) each course consists of alternate header and stretcher  
(C) every course consists of brick bats  
(D) header course starts with a queen closer
8. What type of stone masonry is constructed using square or rectangular blocks?  
(A) Flint rubble masonry  
(B) Random rubble masonry  
(C) Polygonal rubble masonry  
(D) Ashlar masonry

A

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[P.T.O.]

9. Which of the following instruments is used in chain surveying?  
(A) Total Station (B) Dumpy level  
(C) Cross staff (D) Theodolite
10. Which of the following is usually not considered as a survey station?  
(A) end point of a survey line (B) temporary bench mark  
(C) point at which dumpy level is set up (D) point at which levelling staff is held
11. What is the area of a land plot of length 140 m and width 100 m?  
(A) 1.4 sq.m. (B) 1.4 acres  
(C) 1.4 Ares (D) 1.4 hectares
12. Which among the following is a satellite based navigation system that can be used to locate positions?  
(A) GIS (B) GPS  
(C) Total Station (D) Distomat
13. Among the following, which is a parameter that can not be measured using a total station?  
(A) Horizontal Angle (B) Vertical Angle  
(C) Slope Distance (D) Stopping Sight Distance
14. What is a dry rubble masonry?  
(A) Rubble masonry without mortar  
(B) Random Rubble masonry after complete curing  
(C) Random Rubble masonry without curing  
(D) Ashlar masonry
15. Which test is carried out to determine the workability of concrete?  
(A) Le-Chatelier test (B) Compression test  
(C) Compaction Factor test (D) Vicat apparatus test
16. Which of the following rules is used to calculate area of a plot?  
(A) Bowditch's Rule (B) Simpson's Rule  
(C) Compass Rule (D) Transit Rule
17. Among the following types of aggregates, which is preferred for concrete?  
(A) Uniformly graded aggregates (B) Well graded aggregates  
(C) Gap graded aggregates (D) Flaky and elongated aggregates

18. In triangulation, what should be the included angle for a well conditioned triangle?
- (A) between  $20^\circ$  and  $90^\circ$  (B) between  $20^\circ$  and  $130^\circ$   
(C) between  $30^\circ$  and  $90^\circ$  (D) between  $30^\circ$  and  $120^\circ$
19. Which of the following statement is incorrect?
- (A) Grillage foundation is constructed by rolled steel joists  
(B) Grillage foundation is constructed by mild steel beam sections  
(C) Grillage foundation is a deep foundation  
(D) Grillage foundation is a shallow foundation
20. Which is a plain bar section?
- (A) Fe 250 grade steel (B) Fe 415 grade steel  
(C) Fe 500 grade steel (D) Fe 550 grade steel
21. If the procurement cost become half and the carrying cost doubles the Economic Order Quantity become :
- (A) half (B) double  
(C) remain same (D) one forth
22. The wage plan which guarantees minimum wage is :
- (A) Hallsey Plan (B) Gnatt Plan  
(C) Emmersons efficiency plan (D) All of the above
23. As per ABC analysis, the item which consists more than 70% of total item with 5% to 10% inventory cost will come under :
- (A) A type (B) B type  
(C) C type (D) None of the above
24. The terms that is not included in the PERT terminology is :
- (A) Event (B) Node  
(C) Slack (D) Network Diagram
25. The control chart based on variables is :
- (A) P Chart (B) C Chart  
(C) R Chart (D) U Chart
26. The reversible engine has thermal efficiency of 20%. What will be the COP if it is used as a refrigerator with other conditions unchanged :
- (A) 2 (B) 3.33  
(C) 4 (D) 4.5

27. The property which is valid for prediction but not valid for forecasting is :  
 (A) Subjective (B) Reproducible  
 (C) Scientific (D) None of the above
28. The component which is not always in contact with fly wheel is :  
 (A) crank shaft (B) friction plate  
 (C) pressure plate (D) clutch cover
29. Draft tube is not mandatory for the following turbine :  
 (A) Francis turbine (B) Pelton turbine  
 (C) Keplan turbine (D) Deraiz turbine
30. The wet bulb depression decreases as :  
 (A) Humidity increases (B) Humidity decreases  
 (C) Temperature become 0°C (D) None of the above
31. The method of forecasting which is used when past data is not available is :  
 (A) Delphi method (B) Trend line technique  
 (C) Historical analogy (D) None of these
32. When the water level falls below the safe limit the following device will extinguish the fire in the furnace of the boiler?  
 (A) fusible plug (B) safety valve  
 (C) blow off cock (D) feed check valve
33. The ability of the material to withstand shock is called :  
 (A) ductility (B) toughness  
 (C) hardness (D) fatigue strength
34. The following alloying element will increase the corrosion resistance of steel :  
 (A) Titanium (B) Nickel  
 (C) Chromium (D) Manganese
35. The part used to support the core in mould is called :  
 (A) Chaplet (B) Slick  
 (C) Lifter (D) Binder
36. The angle at the point of drill bit is :  
 (A) 102° (B) 118°  
 (C) 130° (D) 135°

37. The process of embossing the diamond shaped pattern on work piece is called :
- (A) chamfering (B) parting  
(C) facing (D) knurling
38. The process of reducing activity time by adding resources resulting in the increase of cost is called :
- (A) reducing (B) updating  
(C) optimising (D) crashing
39. The PERT has an optimistic time of 4 days pessimistic time of 16 days and expected time of 10 days. The likely time of activity is :
- (A) 14 (B) 12  
(C) 10 (D) 8
40. The octane number of following fuel is 100 :
- (A) N heptane (B) butane  
(C) cetane (D) iso octane
41. Two equal resistance are connected in series across a constant voltage source the total power consumed is P. If the same resistance are connected in parallel the new total power is given by :
- (A) 4 P (B) 2 P  
(C) P/2 (D) P/4
42. The equivalent resistance across AB for the Fig. 1 is :

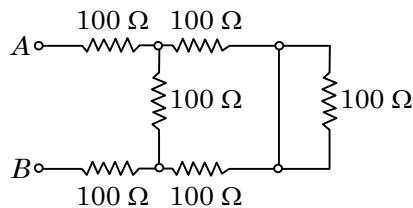


Fig. 1

- (A) 300 Ω (B) 700/3  
(C) 275 (D) 1000/3
43. The axial field strength of a solenoid increases :
- (A) with increase its length (B) independent of length  
(C) with decrease in length (D) decrease in number of turns

44. Aluminium can be classified as a :
- (A) Soft magnetic material (B) Diamagnetic material  
(C) Paramagnetic material (D) Ferromagnetic material
45. Two long single layer solenoids have the same length and same number of turns but are placed co-axially one within other. The diameter of inner coil is 4 cm and that of outer coil is 8 cm. The coefficient of coupling between the coils is :
- (A) 0.5 (B) 0.2  
(C) 0.6 (D) 0.12
46. The current changing at 0.1 A/sec induces an e.m.f. of 5 V. The self inductance of the coil is :
- (A) 0.05 mH (B) 5 mH  
(C) 0.5 mH (D) 20 mH

47. The total inductance across AB for the Fig. 2 is :

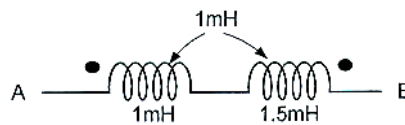
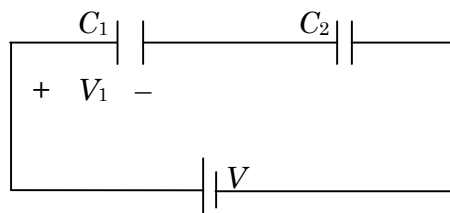


Fig. 2

- (A) 1 mH (B) 1.5 mH  
(C) 3.5 mH (D) 0.5 mH
48. The alternating voltage  $v=230\sin(314t+\pi/3)$  is applied across AC circuit draws a current of  $i=10\sin(314t-\pi/6)$ . The power absorbed by the circuit is :
- (A) 1150 w (B) 0 w  
(C) 2300 w (D) 23 w
49. Two voltage sources  $100\angle 25^\circ$  V and  $100\angle 25^\circ$  V are connected in parallel across  $50\Omega$  resistance. The currents through the resistance is :
- (A) 4 A (B) 2 A  
(C) 1 A (D) 0 A
50. Three  $100\Omega$  resistances are connected in delta across 400 V, 50 Hz, 3-phase line. If one of the resistor is disconnected, the power taken by the load is :
- (A) 3.2 kW (B) 4.8 kW  
(C) 2.7 kW (D) 5.54 kW

51. The input voltage, current and power to a balanced 3-phase system is measured as 415 V, 16.4 A and 6 kW respectively. The power factor of the system is approximately :
- (A) 1 (B) 0.8  
(C) 0.9 (D) 0.5
52. This among the following is not a renewable source of energy :
- (A) Hydro-power (B) Solar energy  
(C) Biomass energy (D) Geothermal energy
53. A fuel cell, in order to produce electricity, burns :
- (A) Carbon (B) Hydrogen  
(C) Nitrogen (D) Helium
54. The most nuclear fuel used in the world is :
- (A) Thorium-232 (B) Uranium-238  
(C) Uranium-235 (D) Plutonium-239
55. If the supply frequency to the transformer is increased, the iron loss will :
- (A) Not change (B) Decreases  
(C) Increase (D) Any of the above
56. The transformer ratings are usually expressed in :
- (A) Volts (B) Amperes  
(C) kW (D) kVA
57. Buchholz's relay gives warning and protection against :
- (A) Fault inside transformer (B) Fault outside transformer  
(C) For both outside and inside (D) None of the above
58. The ratio of starting torque to full load torque is least in :
- (A) Shunt motor (B) Series motor  
(C) Differential compound motor (D) Cumulative compound motor
59. Salient poles alternators are generally used on :
- (A) Low speed prime movers only  
(B) High speed prime movers only  
(C) Medium speed prime movers only  
(D) Low and medium speed prime movers
60. The main disadvantage of using short-pitch winding in alternators is that it :
- (A) Reduces harmonics in the generated voltage  
(B) Reduces the total voltage around the armature coils  
(C) Produces asymmetry in the three phase windings  
(D) Increases Cu of end connections

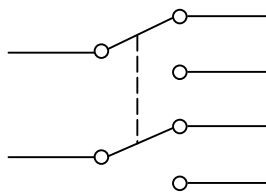
61. The current in a  $5 \mu\text{H}$  inductor is given by  $6t + 3A$ . What is the value of inductor voltage at  $t = 3 \text{ sec}$ ?
- (A)  $90 \mu\text{V}$  (B)  $30 \mu\text{V}$   
 (C)  $105 \mu\text{V}$  (D)  $15 \mu\text{V}$
62. When the charge on a capacitor is doubled, the energy stored, :
- (A) increases by a factor of 2 (B) increases by a factor of 4  
 (C) decreases by a factor of 4 (D) remains the same
63. When a p-n junction is reverse biased, :
- (A) holes and electrons move towards the junction  
 (B) holes and electrons move away from the junction  
 (C) movement of holes and electrons are seized  
 (D) width of depletion region decreases
64. In the circuit given below,  $C_1 = 3 \text{ F}$ ,  $C_2 = 6 \text{ F}$  and  $V_1 = 4 \text{ V}$ . Find the value of  $V$  :



- (A)  $2 \text{ V}$  (B)  $4 \text{ V}$   
 (C)  $12 \text{ V}$  (D)  $6 \text{ V}$
65. A zener diode with high breakdown voltage has :
- (A) both  $p$  and  $n$  regions are lightly doped  
 (B) both  $p$  and  $n$  regions are heavily doped  
 (C) either  $p$  or  $n$  regions is lightly doped  
 (D) none of the above
66. In a zener diode, the current is controlled by :
- (A) potential barrier (B) reverse bias voltage  
 (C) external circuits (D) zener diode resistance
67. For resistance measurement using a digital multimeter, it contains :
- (A) High voltage source (B) Low current source  
 (C) High resistance (D) Low capacitance



68. AC voltages are measured using a digital multimeter using :  
 (A) Capacitor and Resistors (B) Inductor and Resistors  
 (C) Rectifiers and Filters (D) Oscillator and Amplifiers
69. Material used for making solar cells is :  
 (A) Germanium (B) Silicon  
 (C) Silver (D) Aluminium
70. The type of output generated in a thermocouple sensor is :  
 (A) Current (B) Voltage  
 (C) Resistance (D) Capacitance
71. Pressure can be measured using :  
 (A) Venturimeter (B) Differential pressure transmitter  
 (C) Potentiometer (D) Manometer
72. GPRS stands for :  
 (A) Global Parallel Radio Service (B) Guided Public Radio Service  
 (C) General Packet Radio Service (D) None of the above
73. Bluetooth operates around the frequency :  
 (A) 4.8 GHz (B) 4.8 MHz  
 (C) 2.4 MHz (D) 2.4 GHz
74. Type of stack used in 8085 is :  
 (A) LIFO (B) FIFO  
 (C) FILO (D) LFFO
75. Type of switch shown in the figure is a :



- (A) SPST (B) SPDT  
 (C) DPDT (D) DPST
76. If an amplifier produces an output power 10 times greater than its input power, what will be the gain in decibels?  
 (A) 3 dB (B) 6 dB  
 (C) 10 dB (D) 20 dB

77. Type of microphone which converts acoustic signals to change in capacitance is :  
 (A) Condenser microphone (B) Ribbon microphone  
 (C) Dynamic microphone (D) Omni microphone
78. For a parallel plate capacitor with circular cross section, if the radius of the plate surface is halved, then the capacitance value :  
 (A) reduces by a factor of 2 (B) reduces by a factor of 4  
 (C) increases by a factor of 2 (D) increases by a factor of 4
79. Consider the following 8085 program :

LDA 3000 H	2000	52
MOV B, A	⋮	
LDA 4000 H	3000	38
STA 3000 H	⋮	
MOV A, B	4000	29
STA 4000 H		

After execution of the program, the contents of location 4000 H is

- (A) 52 H (B) 29 H  
 (C) 38 H (D) 67 H
80. If the following program is executed in an 8085 microprocessor, the contents in location 4000 H is :

LX1 H, 2000 H	2000	52
MOV A, M	⋮	
LX1 H, 3000 H	3000	38
ADD M	⋮	
LX1 H, 4000 H	4000	29
MOV M, A	⋮	
HLT	5000	74

- (A) 90 H (B) 29 H  
 (C) 52 H (D) 8A H

81. The \_\_\_\_\_ protocol is used for updating the main memory when a word is removed from the cache memory.  
 (A) Write-through (B) Cache hit  
 (C) Write-back (D) Protected Write

82. The operation of reading instructions from the memory is called :  
 (A) Instruction Cycle (B) Memory Write Cycle  
 (C) Memory Read Cycle (D) Fetch Cycle
83. The process of buffering data into the disk area for the later use by slower peripheral devices :  
 (A) Caching (B) Spooling  
 (C) Swapping (D) Thrashing
84. The static RAM consumes \_\_\_\_\_ power and \_\_\_\_\_ the dynamic RAM.  
 (A) More, Faster (B) Less, Faster  
 (C) More, Slower (D) Less, Slower
85. The 8's complement of the number 240 is :  
 (A) 537 (B) 538  
 (C) 540 (D) 648
86. What is the range of values that can be represented with an  $n$ -bit binary integers in signed 1's complement form?  
 (A)  $-(2^{n-1} - 1)$  to  $+(2^{n-1} - 1)$  (B)  $-(2^{n-1})$  to  $+(2^{n-1} - 1)$   
 (C)  $-(2^n - 1)$  to  $+(2^n - 1)$  (D)  $-(2^{n-1})$  to  $+(2^{n-1})$
87. The division operation of a number  $(110.01101)_2$  by  $(1.01)_2$  gives :  
 (A) 10.1001 (B) 101.001  
 (C) 1010.01 (D) 1101.01
88. If  $(11X1Y)_8 = (12C9)_{16}$ , then the values of  $X$  and  $Y$  are :  
 (A) 5, 1 (B) 7, 5  
 (C) 5, 7 (D) 3, 1
89. The binary equivalent of the decimal number  $(5.4375)_{10}$  is :  
 (A) 101.1100 (B) 101.0111  
 (C) 101.1011 (D) 101.1010
90. \_\_\_\_\_ is the base of the numbers for which the operation  $\frac{54}{4} = 13$  is correct.  
 (A) 8 (B) 6  
 (C) 12 (D) 10
91. Which system software translates the instructions in mnemonic form into the machine language equivalent?  
 (A) Compiler (B) Linker  
 (C) Macroprocessor (D) Assembler

92. \_\_\_\_\_ permits the programmer to develop a program with size larger than the size of the main memory.
- (A) Memory Interleaving (B) Cache Memory  
(C) Virtual Memory (D) Buffering
93. Portability of a software refers to the ability :
- (A) to operate with different softwares in the system  
(B) to run on different hardware platforms  
(C) to adapt the changes efficiently  
(D) to offer dynamic user interfaces
94. \_\_\_\_\_ is a preemptive scheduling algorithm.
- (A) FCFS (B) SJF  
(C) Priority (D) Round Robin
95. An interpreter will :
- (A) places programs into the memory for execution  
(B) translate assembly language program to machine language program  
(C) execute a source program without generating object program  
(D) link the object modules for execution
96. Which of the following is an example of divide and conquer algorithm?
- (A) Merge, Sort (B) Dijkstra's Algorithm  
(C) Banker's Algorithm (D) Prim's Algorithm
97. In which addressing mode, the effective address of the operand is calculated by adding a constant value to the content of register?
- (A) Absolute Mode (B) Immediate Mode  
(C) Index Mode (D) Indirect Mode
98. The time complexity of a linear search algorithm is :
- (A)  $O(\log_2 n)$  (B)  $O(n \log_2 n)$   
(C)  $O(n^2)$  (D)  $O(n)$
99. The way a card game player arrange his cards as he picks them up one by one is an example of :
- (A) bubble sort (B) insertion sort  
(C) selection sort (D) merge sort
100. Memory protection of a computer is normally done by :
- (A) Operating System (B) Processor  
(C) Compiler (D) User

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