

18/2015

Maximum : 100 marks

Time : 1 hour and 15 minutes

1. Which state of India has its secretariate in WRITERS BUILDING?  
(A) West Bengal (B) Tamil Nadu  
(C) Punjab (D) Bihar
2. "NOT JUST AN ACCOUNTANCY" is a service story written by :  
(A) Dr. Manmohan Singh (B) Dr. Thomas Issac  
(C) Vinod Rai (D) Dr. John Mathai
3. The well-known "Kuttankulam Satyagraha" was held in :  
(A) Irinjalakuda (B) Punjab  
(C) Vaikom (D) Punalur
4. "Guruvinde Dukham" written by :  
(A) M.K. Sanu (B) Sukumar Azhicode  
(C) Dr. Babu Paul (D) Ayyappa Panikkar
5. The Magazine "Yukti Vadi" founded by :  
(A) E.M.S (B) Sahodaran Ayyappan  
(C) K. Kelappan (D) A.K. Gopalan
6. The founder of Prathyaksha Raksha Daiva Sabha was :  
(A) Vaikunda Swamikal (B) Ayyankali  
(C) Poikayil Appachan (D) Mannath Padmanabhan
7. B.K.S Ayyangar recently passed away was a great expert of :  
(A) Modern Medicine (B) Bharat Natyam  
(C) Kathak (D) Yoga
8. KPAC is a drama troupe of :  
(A) Kannur (B) Kozhikode  
(C) Thrissur (D) Alapuzha

9. "Kanaleriyumkalam" is the autobiography of :
- (A) Kuthattukulam Mary (B) Rosama Punnose  
(C) Acama Cheriyan (D) K.R. Gouri
10. The brand ambassador of the "Clean Campus, Safe Campus" programme :
- (A) Mamotty (B) Mohan Lal  
(C) Fahad Fazil (D) Manju Warriar
11. When  $0 < \theta < \frac{\pi}{2}$ , the sum of the series  $1 - \cos \theta + \cos^2 \theta - \cos^3 \theta + \dots + (-1)^n \cos^n \theta + \dots$  is :
- (A)  $1 + \sin \theta$  (B)  $\sqrt{2} \tan \theta$   
(C)  $\frac{1}{2} \sec^2 \left( \frac{\theta}{2} \right)$  (D)  $\frac{\sec \theta}{\sqrt{2}}$
12. The angle between the lines  $x - y = 2$  and  $x + y = 1$  is :
- (A) 0 (B)  $\frac{\pi}{2}$   
(C)  $\frac{\pi}{4}$  (D)  $\pi$
13. Let A, B be two  $n \times n$  orthogonal matrices then which of the following is true :
- (A) AB is orthogonal (B) AB is symmetric  
(C) AB is triangular (D) AB is singular
14. The greatest rectangular area that can be enclosed by a 20 meter fencing is :
- (A) 100 (B) 50  
(C) 200 (D) 25
15. The area bounded by the straight lines  $x = 0$ ,  $y = 0$  and  $x + y = a$  is :
- (A)  $a^2$  (B)  $\frac{a}{2}$   
(C)  $\frac{a^2}{2}$  (D)  $a$

16. The solution of the system of linear equation  $x + y = 0$ ,  $2x + y + z = 1$ ,  $y + z = -1$  is :

(A) 1, -2, 2

(B) 1, -1, 0

(C) 1, 2, -2

(D) 1, -1, 1

17. The value of  $(\cos 15^\circ - \sin 15^\circ)^2$  is :

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

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

(C)  $\frac{1}{\sqrt{2}}$

(D)  $\frac{-1}{2}$

18. The solution of the differential equation  $(x + 2y^3) \frac{dy}{dx} = y$  is :

(A)  $x^2 + \frac{y^2}{2} = c$

(B)  $x = y^3 + cy$

(C)  $\frac{x^2}{2y} + \frac{2y^3}{3} = x + c$

(D)  $x = y^2(c - e^{-y})$

19.  $\int x e^{-x^2} dx$  is :

(A)  $(1 - x^2) e^{-x} = c$

(B)  $x e^{-x} = x + c$

(C)  $x e^{x^2} - e^{-x^2} = c$

(D)  $-\frac{e^{-x^2}}{2} + c$

20. If A is  $2 \times 2$  matrix with  $|A| = 3$ , then  $|A(\text{adj } A)|$  is :

(A) 6

(B) 9

(C) 4

(D) 12

21. The ingredient of brick earth that gives red colour to bricks is :

(A) Alumina

(B) Iron oxide

(C) Magnesia

(D) Silica

22. The steel which is used in RCC is :

(A) Cast steel

(B) Stainless steel

(C) Mild steel

(D) Nickel steel

23. The most economical foundation used when heavy structural loads from columns are required to be transferred to a soil of low bearing capacity is :
- (A) Raft foundation (B) Stepped foundation  
(C) Grillage foundation (D) Pile foundation
24. The basic principle of surveying is :
- (A) working from whole to the part (B) working from part to whole  
(C) Both (A) and (B) (D) Reconnaissance
25. The back sight on a B.M. of RL 150.205 is 1.505 m. Calculate the H.I. of the instrument :
- (A) 150.755 (B) 150.205  
(C) 148.700 (D) 151.710
26. The turning moment of a two-stroke cycle engine is more uniform than a four-stroke engine because :
- (A) Value operations are required in four-stroke engine, instead parts are used in two-stroke engine  
(B) In two-stroke engine, there is one power stroke in every revolution of the crank shaft  
(C) Both sides of the piston are effective during the operation of a two-stroke engine  
(D) Fuel supply is more uniform in two-stroke engine compared to four-stroke engine
27. Higher compression ratio is employed in diesel engine compared to petrol engine because :
- (A) self ignition temperature of diesel fuel is higher than petrol  
(B) specific gravity of diesel fuel is higher than petrol  
(C) hot compressed air is required to ignite the fuel injected in diesel engine  
(D) residual gases can be reduced at higher compression ratio
28. The function of propeller shaft in an automobile is :
- (A) to transmit power from gear box to the differential  
(B) to transmit power from engine to the gear box  
(C) to vary the power from minimum to maximum  
(D) to actuate the steering gear mechanism

29. The function of a surge tank in a hydro-electric power plant is :
- (A) to control the level of water in the reservoir
  - (B) to increase the power output from the turbine
  - (C) to store excess water from the reservoir
  - (D) to control the pressure fluctuation in the penstock pipe
30. Control rod is used in nuclear power plant, in order to :
- (A) control the pressure of coolant
  - (B) control the flow rate of coolant
  - (C) control the nuclear chain reaction
  - (D) slow down the fast moving neutrons in the reactor
31. The condition with which the Ohm's law is valid when :
- (A) Voltage is directly proportional to current
  - (B) Voltage is inversely proportional to current
  - (C) Current is proportional to resistance
  - (D) Temperature remains constant
32. Lenz's law is used to determine the direction of :
- (A) Dynamically induced emf
  - (B) Statically induced emf
  - (C) Magnetic field
  - (D) Mutually induced emf
33. Two resistors of 10 ohm and 20 ohm are connected in parallel. If the current in 10 ohm resistor is 2 A what is the current in the other resistor?
- (A) 1 A
  - (B) 3 A
  - (C) 2 A
  - (D) 4 A
34. The main function of Earth Leakage Circuit Breaker (ELCB) is to protect the circuit against :
- (A) over-current
  - (B) under voltage
  - (C) lightning
  - (D) earth leakage current
35. The voltage across an RLC series ac circuit is 10 V. What will be the voltage across the capacitor (C) if the voltage across the resistance (R) is 8 V and the inductor (L) is 12V?
- (A) 8 V
  - (B) 18 V
  - (C) 5 V
  - (D) 12 V

36. The ripple factor of a full bridge rectifier without any filter connected to it is :
- (A) 1.11 (B) 0.482  
(C) 1.00 (D) 1.21
37. An LED, 1 k ohm resistor and a 5 volt dc source is connected in series. Assume the voltage measured across the LED is 2 V. The current flow through the LED is :
- (A) 1mA (B) 10mA  
(C) 2mA (D) 3mA
38. A microprocessor is classified into 8-bit microprocessor based on its :
- (A) Data bus width (B) Address bus width  
(C) ALU width (D) Control bus width
39. The output voltage of a voltage source Pulse width modulated inverter depends on the following :
- (A) DC battery voltage alone  
(B) DC battery voltage and modulation index  
(C) Output frequency  
(D) Modulation index alone
40. A Bipolar Junction Transistor is used to drive an SPDT relay. When the relay is energized, the transistor will be operating in \_\_\_\_\_ region.
- (A) Saturation region (B) Cut-off region  
(C) Active region (D) Cut-off and saturation
41. Which of the following Access Control Methods is probabilistic?
- (A) Polling (B) Contention  
(C) Token Passing (D) Sliding Window
42. One of the addresses in a block is 167.199.170.82/27. What is the last address in this block?
- (A) 167.199.170.95 (B) 167.199.170.96  
(C) 167.199.170.255 (D) 167.199.170.224
43. A network layer firewall works as a :
- (A) frame filter (B) packet filter  
(C) both (A) and (B) (D) none of the mentioned

44. A logic circuit that provides a HIGH output for both inputs HIGH or both inputs LOW :
- (A) Ex-OR gate (B) Ex-NOR gate  
(C) OR gate (D) NOR gate
45. When referring to instruction words, a mnemonic is?
- (A) Shorthand for machine language  
(B) A short abbreviation for the data word stored at the operand address  
(C) A short abbreviation for the operand address  
(D) A short abbreviation for the operation to be performed
46. Dijkstra's Banking algorithm in an operating system solves the problem of :
- (A) Deadlock Avoidance (B) Deadlock Recovery  
(C) Mutual Exclusion (D) Context Switching
47. Gray code equivalent of  $(1000)_2$  is :
- (A)  $(1111)_G$  (B)  $(1100)_G$   
(C)  $(1000)_G$  (D) None of these
48. Which operator is used by Java run time implementations to free the memory of an object when it is no longer needed?
- (A) Delete (B) Free  
(C) New (D) None of the mentioned
49. In which ARQ, when a NAK is received, all frames sent since the last frame acknowledged are retransmitted?
- (A) Stop-and-wait (B) Go-back-N  
(C) Selective-Reject (D) Both (A) and (B)
50. A Noiseless 3 kHz channel transmits bits with binary level signals. What is the maximum data rate?
- (A) 3 kbps (B) 6 kbps  
(C) 12 kbps (D) 24 kbps
51. When an instruction is read from the memory, it is called?
- (A) Memory Read cycle (B) Fetch cycle  
(C) Instruction cycle (D) Memory write cycle

52. An HTML form is to be designed to enable purchase of office stationery. Required items are to be selected (Checked). Credit card details are to be entered and then the submit button is to be pressed. Which of the following options would be appropriate for sending the data to the server?

Assume that security is handled in a way that is transparent to the form design :

- (A) Only GET (B) Only POST  
(C) Either of GET or POST (D) Neither GET nor POST

53. Consider different activities related to E-Mail.

m1 : Send an e-mail from a mail Client to a mail Server

m2 : Download an e-Mail from mailbox to a mail client

m3 : Checking e-mail in a web browser

Which is the application level protocol used in each activity?

- (A) m1 : HTTP m2 : SMTP m3 : POP  
(B) m1 : SMTP m2 : FTP m3 : HTTP  
(C) m1 : SMTP m2 : POP m3 : HTTP  
(D) m1 : POP m2 : SMTP m3 : IMAP

54. In an IP packet, the value of HLEN is  $5_{16}$  and the value of the total length field is  $0028_{16}$ . How many bytes of data are being carried by this packet?

- (A) 8 Bytes (B) 40 Bytes  
(C) 64 Bytes (D) 20 Bytes

55. In asymmetric key cryptography, the private key is kept by :

- (A) sender  
(B) receiver  
(C) sender and receiver  
(D) all the connected devices to the network

56. DES encrypts data in block size of \_\_\_\_\_ bits each.

- (A) 64 (B) 128  
(C) 32 (D) 56