

061/2016

Maximum : 100 marks

Time : 1 hour and 15 minutes

1. In India, political parties are given recognition by :
(A) President (B) Law Commission
(C) Election Commission (D) Prime Minister
2. English is the official language of which of the following states :
(A) Karnataka (B) Nagaland
(C) Manipur (D) Arunachal Pradesh
3. When did Mahatma Gandhi National Rural Employment Guarantee Act enacted?
(A) 2005 (B) 2003
(C) 2004 (D) 2006
4. Who was also known as 'Sree Bhatarakan'?
(A) Ramakrishna Pilla (B) V.T. Bhattathirippadu
(C) Ayyankali (D) Chattampi Swamikal
5. Who founded 'Keraleeya Nair Samajam' in 1907?
(A) V. T Bhattathiripad (B) Thycad Ayya
(C) Mannathu Padmanaban (D) Sahodaran Ayyappan
6. 'Jathikummi', which criticised the prevailing caste system was written by :
(A) Ramakrishna Pilla (B) V.T. Bhattathirippadu
(C) Ayyankali (D) Pandit Karuppan
7. Paliyam Satyagraha was in the year :
(A) 1947 (B) 1937
(C) 1939 (D) 1940
8. Who is known as father of Library Movement in Kerala?
(A) Ramakrishna Pilla (B) C.Kesavan
(C) P.N. Panicker (D) Krishna Pillai

9. Which Novel of Lalithambika Antharjanam got Kendra Sahithya Academy Award in 1976?

- (A) Kodumkatil Ninnu (B) Agnisakshi
(C) Takarna Talamura (D) Adyathe Kathakal

10. World Polio Day :

- (A) October 22 (B) October 21
(C) October 24 (D) October 20

11. If $P = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$, then $P^2 - 2P$ is :

- (A) P (B) $-P$
(C) O (D) $-2P$

12. Which of the following matrices is not invertible?

- (A) $\begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix}$ (B) $\begin{bmatrix} 1 & -2 \\ -2 & 1 \end{bmatrix}$
(C) $\begin{bmatrix} 2 & 1 \\ 6 & 3 \end{bmatrix}$ (D) $\begin{bmatrix} 4 & 4 \\ 1 & -1 \end{bmatrix}$

13. The number of terms in the expansion of $\left(x^2 - \frac{2}{x^2}\right)^5$ is :

- (A) 5 (B) 6
(C) 7 (D) 10

14. The value of $\cos 1^\circ \cos 2^\circ \cos 3^\circ \dots \cos 100^\circ$ is :

- (A) $\cos(100!)^\circ$ (B) $\cos 2550^\circ$
(C) 1 (D) 0

15. If $\frac{\sin \theta}{\cos \theta} + \frac{\cos \theta}{\sin \theta} = 2$, then the value of θ is :

- (A) $\frac{\pi}{2}$ (B) $\frac{\pi}{3}$
(C) $\frac{\pi}{4}$ (D) $\frac{\pi}{6}$

16. The acute angle between the lines $x - y = 0$ and $y = 0$ is :

(A) $\frac{3\pi}{4}$

(B) $\frac{\pi}{4}$

(C) $\frac{\pi}{3}$

(D) $\frac{\pi}{6}$

17. If $f(x) = \log_e(\log_e x)$, then the value of $f'(e)$ is :

(A) 0

(B) 1

(C) e

(D) $\frac{1}{e}$

18. The minimum value of $f(x) = \frac{x^2 - 1}{x^2 + 1}$:

(A) doesn't exist

(B) is 1

(C) is 0

(D) is -1

19. The integral of $x^3 e^{x^2}$ w.r.t x is :

(A) $\frac{1}{2}(x^2 - 1)e^{x^2} + C$

(B) $\frac{1}{2}x^2(e^{x^2} - 1) + C$

(C) $(x^2 - 1)e^x + C$

(D) $\frac{1}{3}e^{x^3} + C$

20. Solution of the differential equation $xdy - ydx = 0$ is :

(A) $y = Cx$

(B) $y = x$

(C) $x^2 - y^2 = C$

(D) $x^2 - y^2 = 0$

21. The number of bricks required for one cubic metre of brick masonry are :

(A) 250

(B) 550

(C) 300

(D) 850

22. The silica in port land cement should be :

(A) 10 to 20%

(B) 25 to 40 %

(C) 20 to 25%

(D) 40 to 60%

23. Pile foundation is generally used when the soil is :

(A) compressible

(B) water logging

(C) made-up-type

(D) all of these

24. The correction to be applied to each 30 m chain for a line measured along a slope of ' θ ' is :
- (A) $30(1 - \sin \theta)$ (B) $30(1 - \cos \theta)$
(C) $30(1 - \tan \theta)$ (D) $30(1 - \cot \theta)$
25. The vertical distance above or below the datum is called :
- (A) Reduced level of the point (B) Elevation of the point
(C) Height of the instrument (D) Either (A) or (B)
26. In compression ignition engines the compression ratio is :
- (A) 4 - 6 (B) 6 - 12
(C) 10 - 18 (D) 14 - 25
27. Which element is the final drive in power transmission of a vehicle?
- (A) Propeller shaft (B) Gear box
(C) Differential (D) Fly wheel
28. How the ignition happened in Diesel engine?
- (A) ratio of air fuel mixture (B) temperature in the compressed air
(C) use of a spark plug (D) use of a fuel injector
29. De - Laval turbine is a :
- (A) simple impulse turbine (B) simple reaction turbine
(C) velocity compounded turbine (D) pressure compounded turbine
30. The governing method commonly used in steam turbine is by :
- (A) hydraulic governing (B) by pass governing
(C) throttle governing (D) nozzle control governing
31. In a purely inductive circuit :
- (A) Voltage lags behind the current by 90°
(B) Current leads the voltage by 90°
(C) Voltage leads the current by 90°
(D) Voltage and current are inphase
32. A 25 watts 110 volts lamp is to be operated from 230 volts supply , the value of resistance required to connect in series is :
- (A) 0.22727Ω (B) 4.4Ω
(C) 525Ω (D) 528Ω

33. Capacitance of a spherical capacitor having 'r' metre radius with a charge of 'Q' coulombs at a potential of 'V' volts in the free space is :

(A) $4\pi\epsilon_0 r$ farads

(B) $\frac{Q}{4\pi\epsilon_0 r}$ farads

(C) $\frac{Q}{4\pi\epsilon_0\epsilon_r r}$ farads

(D) $4\pi\epsilon_0\epsilon_r r$ farads

34. An incandescent lamp of hot resistance 920 ohm, 230V is connected across 230 V, 50 Hz mains in 10 hours . The energy consumed by the lamp is :

(A) 57.5 Kwh

(B) 0.575 Kwh

(C) 575 Kwh

(D) 5.75 Kwh

35. Type of earthing is very suitable in rocky soil places is :

(A) Rod earthing

(B) Plate earthing

(C) Pipe earthing

(D) Strip earthing

36. Maximum forward current in case of signal diode is in the range of :

(A) 1-10 A

(B) 0.1 - 1A

(C) Few milliamperes

(D) Few nanoamperes

37. Which type of switch can move either one of the two positions?

(A) SPST

(B) SPDT

(C) DPDT

(D) DPST

38. The architecture of 8051 consists of :

(A) 4 latches

(B) 2-timer registers

(C) 4-onchip I/O ports

(D) All of the mentioned

39. During charging the specific gravity of the electrolyte of a lead acid battery :

(A) Increases

(B) Decreases

(C) Remains same

(D) Zero

40. The purpose of Linear Predictive Coding used in GSM is :

(A) Increase the bit rate

(B) Decrease the bit rate

(C) Maintain the bit rate

(D) None of the above

41. The stroke of the engine is known as :

(A) Volume of the cylinder

(B) Length of the connecting rod

(C) Internal diameter of cylinder

(D) Distance between TDC and BDC

42. Which part of a carburetor shuts off the air supply to aid cold starting?
(A) Throttle (B) Strangler
(C) Float Needle valve (D) Choke valve
43. The function of oil scraper ring is to :
(A) Retain compression (B) Lubricate cylinder walls
(C) Maintain vacuum (D) Reduce piston wear
44. The escape of burned gases from the combustion chamber to the pistons and into the crankcase is called as :
(A) Gas Loss (B) Blow by
(C) Crank case ventilation (D) Bypass
45. The maximum pressure of air fuel mixture at the end of compression in petrol engine varies from :
(A) 10-30 Kg/cm² (B) 30-100 Kg/cm²
(C) 6-10 Kg/cm² (D) 10-20 Kg/cm²
46. The percentage of energy in the petrol burnt in the engine which is actually utilized in propelling the vehicle is :
(A) 40% (B) 60%
(C) 25% (D) 20%
47. Cetane number of diesel fuel is a measure of :
(A) Volatility (B) Delay Period
(C) Viscosity (D) Specific gravity
48. Excessive pressure build up in force feed lubrication system prevented by :
(A) Relief valve (B) Stop valve
(C) Balancer (D) Pressure reducing valve
49. A single cylinder two-stroke engine rotates at 3000 rpm. The number of power strokes per minute is :
(A) 1500 (B) 3000
(C) 750 (D) 6000
50. Water circulation in a thermo-siphon cooling system caused by :
(A) Conduction currents (B) A belt driven water pump
(C) A belt driven impeller (D) Change in density of water

51. Cylinder block construction by mono block is preferred to individual engine construction because of :
- (A) Compact engine size (B) Stiff and combined structure
(C) Easy manufacturing operations (D) All of the above
52. The part of an overhead valve mechanism arranged between the valve tappet and rocker arm is :
- (A) Cam follower (B) Push rod
(C) Rocker shaft (D) Cam shaft
53. The device that permits variation in the distance between the spring eyes of leaf spring as the spring flexes is called :
- (A) Spring shackle (B) Spring U bolt
(C) Spring hanger (D) Spring leaf
54. A double acting shock absorber usually has :
- (A) Pressure acting only one side (B) Equal pressure on both side
(C) Unequal pressure on both sides (D) None of the above
55. In the transmission system provision of slip joints allows a change in the :
- (A) Angle of shaft (B) Length of shaft
(C) Speed of rotation (D) Amount of power transmission
56. The most effective section to build chassis frame against bending is :
- (A) Rectangular bar (B) Round Hollow tube
(C) Square hallow section (D) Round bar
57. The parts of the clutch cover assembly that hold the pressure against the clutch plate are the :
- (A) Release levers (B) Thrust bearings
(C) Struts (D) Springs
58. The coefficient of friction for the clutch facing is approximately :
- (A) 0.4 (B) 0.8
(C) 1.2 (D) 0.1
59. The central gear of an epicyclic gear box known as :
- (A) Ring gear (B) Sun gear
(C) Planet gear (D) Internal gear

60. Braking is produced by the frictional effect between the brake drum and the :
- (A) Wheel Studs (B) Wheel rim
(C) Brake shoes (D) Wheel cylinder pistons
61. An under inflated tyre will wear the tread most :
- (A) Near the centre (B) In the cross section direction
(C) In the lateral direction (D) Near the edges
62. Which of the following can be adjusted by modifying the tie rod attachment length?
- (A) Caster angle (B) Toe in and out
(C) Camber angle (D) Steering gear ratio
63. Ignition in a SI engine takes place when the piston is :
- (A) Exactly at TDC position on its compression stroke
(B) Leaving the TDC position on its compression stroke
(C) Approaching TDC position on its exhaust stroke
(D) Approaching TDC position on its Compression stroke
64. Critical whirling speed of a propeller shaft is increased by :
- (A) Increasing its length (B) Decreasing its diameter
(C) Decreasing its length (D) None of the above
65. The torque available at the contact between driving wheels and road is known as :
- (A) Brake effort (B) Tractive effort
(C) Clutch effort (D) None of the above
66. The tool employed to measure the shaft run out is the :
- (A) Feeler gauge (B) Micrometer
(C) Dial gauge (D) Caliper
67. Trafficators are light signal used for :
- (A) Indicating the direction in which turning
(B) Light traffic
(C) Reversing the car in traffic
(D) Heavy Traffic