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CODE .

परीक्षा दि. 3/3/2014

प्रश्नपुस्तिका क्रमांक

प्रश्नपुस्तिका

BOOKLET NO.

चाळणी परीक्षा

एकूण प्रश्न : 80

वेळ : 3 ( तीन ) तास

मेडिकल इलेक्ट्रॉनिक्स

एकूण गुण : 200

### सूचना

(1) सदर प्रश्नपुस्तिकेत 80 अनिवार्य प्रश्न आहेत. उमेदवारांनी प्रश्नांची उत्तरे लिहिण्यास सुरुवात करण्यापूर्वी या प्रश्नपुस्तिकेत सर्व प्रश्न आहेत किंवा नाहीत याची खात्री करून घ्यावी. असा तसेच अन्य काही दोष आढळल्यास ही प्रश्नपुस्तिका समवेक्षकांकडून लगेच बदलून घ्यावी.

परीक्षा-क्रमांक									

केंद्राची संकेताक्षरे

शेवटचा अंक

(2) आपला परीक्षा-क्रमांक ह्या चौकोनांत न विसरता बॉलपेनने लिहावा.

(3) वर छापलेला प्रश्नपुस्तिका क्रमांक तुमच्या उत्तरपत्रिकेवर विशिष्ट जागी उत्तरपत्रिकेवरील सूचनेप्रमाणे न विसरता नमूद करावा.

(4) या प्रश्नपुस्तिकेतील प्रत्येक प्रश्नाला 4 पर्यायी उत्तरे सुचविली असून त्यांना 1, 2, 3 आणि 4 असे क्रमांक दिलेले आहेत. त्या चार उत्तरपैकी सर्वात योग्य उत्तराचा क्रमांक उत्तरपत्रिकेवरील सूचनेप्रमाणे तुमच्या उत्तरपत्रिकेवर नमूद करावा. अशा प्रकारे उत्तरपत्रिकेवर उत्तरक्रमांक नमूद करताना तो संबंधित प्रश्नक्रमांकासमोर छायंकित करून दर्शविला जाईल याची काळजी घ्यावी. ह्याकरिता फक्त काळ्या शाईचे बॉलपेन वापरावे, पेन्सिल वा शाईचे पेन वापरू नये.

(5) सर्व प्रश्नांना समान गुण आहेत. यास्तव सर्व प्रश्नांची उत्तरे द्यावीत. घाईमुळे चुका होणार नाहीत याची दक्षता घेऊनच शक्य तितक्या वेगाने प्रश्न सोडवावेत. क्रमाने प्रश्न सोडविणे श्रेयस्कर आहे पण एखादा प्रश्न कठीण वाटल्यास त्यावर वेळ न घालविता पुढील प्रश्नाकडे वळावे. अशा प्रकारे शेवटच्या प्रश्नापर्यंत पोहोचल्यानंतर वेळ शिल्लक राहिल्यास कठीण म्हणून वगळलेल्या प्रश्नांकडे परतणे सोईस्कर ठरेल.

(6) उत्तरपत्रिकेत एकदा नमूद केलेले उत्तर खोडता येणार नाही. नमूद केलेले उत्तर खोडून नव्याने उत्तर दिल्यास ते तपासले जाणार नाही.

(7) प्रस्तुत परीक्षेच्या उत्तरपत्रिकांचे मूल्यांकन करताना उमेदवाराच्या उत्तरपत्रिकेतील योग्य उत्तरांनाच गुण दिले जातील. तसेच "उमेदवाराने वस्तुनिष्ठ बहुपर्यायी स्वरूपाच्या प्रश्नांची दिलेल्या चार पर्यायापैकी सर्वात योग्य उत्तरेच उत्तरपत्रिकेत नमूद करावीत. अन्यथा त्यांच्या उत्तरपत्रिकेत सोडविलेल्या प्रत्येक चार चुकीच्या उत्तरांसाठी एका प्रश्नाचे गुण वजा करण्यात येतील".

### ताकीद

ह्या प्रश्नपत्रिकेसाठी आयोगाने विहित केलेली वेळ संपेपर्यंत ही प्रश्नपुस्तिका आयोगाची मालमत्ता असून ती परीक्षाकक्षात उमेदवाराला परीक्षेसाठी वापरण्यास देण्यात येत आहे. ही वेळ संपेपर्यंत सदर प्रश्नपुस्तिकेची प्रत/प्रती, किंवा सदर प्रश्नपुस्तिकेतील काही आशय कोणत्याही स्वरूपात प्रत्यक्ष वा अप्रत्यक्षपणे कोणत्याही व्यक्तीस पुरविणे, तसेच प्रसिद्ध करणे हा गुन्हा असून अशी कृती करणाऱ्या व्यक्तीवर शासनाने जारी केलेल्या "परीक्षांमध्ये होणाऱ्या गैरप्रकारांना प्रतिबंध करण्याबाबतचा अधिनियम-82" यातील तरतुदीनुसार तसेच प्रचलित कायद्याच्या तरतुदीनुसार कारवाई करण्यात येईल व दोषी व्यक्ती कमाल एक वर्षाच्या कारावासाच्या आणि/किंवा रुपये एक हजार रकमेच्या दंडाच्या शिक्षेस पात्र होईल.

तसेच ह्या प्रश्नपत्रिकेसाठी विहित केलेली वेळ संपण्याआधी ही प्रश्नपुस्तिका अनधिकृतपणे बाळगणे हा सुद्धा गुन्हा असून तसे करणारी व्यक्ती आयोगाच्या कर्मचारीवृंदापैकी, तसेच परीक्षेच्या पर्यवेक्षकीयवृंदापैकी असली तरीही अशा व्यक्तीविरुद्ध उक्त अधिनियमानुसार कारवाई करण्यात येईल व दोषी व्यक्ती शिक्षेस पात्र होईल.

पुढील सूचना प्रश्नपुस्तिकेच्या अंतिम पृष्ठावर आहे

पर्यवेक्षकांच्या सूचनेविना हे सील उघडू नये

SEAL

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कच्चा कामसाठी जागा / SPACE FOR ROUGH WORK

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1. Oximeter uses \_\_\_\_\_ red and \_\_\_\_\_ infrared wavelengths for measuring oxygen saturation.
- (1) 650 nm and 850 nm                      (2) 605 nm and 680 nm  
(3) 650 nm and 805 nm                      (4) 605 nm and 805 nm
- 
2. Implantable defibrillator delivers \_\_\_\_\_ energy to the patient.
- (1) 30 - 35 J at 750 V                      (2) 30 - 35 J at 400 V  
(3) 30 - 400 J at 7000 V                      (4) 700 J at 4000 V
- 
3. Half adder circuit is used to add 2 bit \_\_\_\_\_ carry.
- (1) With    (2) Without  
(3) And    (4) None of the above
- 
4. For homeostasis of vessels not directly accessible to electrodes in case of hidden fissures \_\_\_\_\_ is recommended.
- (1) Spray coagulation                      (2) Forced coagulation  
(3) Desiccation                                      (4) Fulguration
- 
5. The protein free solution produced at glomerulus of the nephron is called \_\_\_\_\_.
- (1) Solvent                      (2) Urine                      (3) Creatinine                      (4) Filtrate
- 
6. In Ultrasonic Spirometer, the gas flow-meter operates in the range of \_\_\_\_\_.
- (1) 40 - 20 kHz                      (2) 20 - 20 kHz                      (3) 20 - 200 kHz                      (4) 40 - 200 kHz
- 
7. Hospital Centralized Gas supply system regulates and maintains oxygen and nitrous oxide gases at \_\_\_\_\_.
- (1) 300 - 345 kPa                      (2) 275 - 345 kPa  
(3) 375 - 425 kPa                      (4) None of the above
- 

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8. Excited state nuclides having the same mass number, atomic number and neutron number as ground state are known as \_\_\_\_\_.
- (1) Isobars            (2) Isotopes            (3) Isomers            (4) Isotones
- 
9. State True or False regarding lossless image compression techniques :
- (a) It is reversible            (b) Compression ratio is low
- (1) (a) True, (b) True            (2) (a) True, (b) False
- (3) (a) False, (b) True            (4) (a) False, (b) False
- 
10. Realisation of  $m^{\text{th}}$  order IIR digital filter requires \_\_\_\_\_ number of constant multipliers.
- (1)  $m$             (2)  $m/2$             (3)  $m^2$             (4)  $2m$
- 
11. Linearity of a system indicates \_\_\_\_\_.
- (1) Homogeneity            (2) Superposition
- (3) Both (1) and (2)            (4) None of the above
- 
12. Number of Leucocytes in  $\text{mm}^3$  of blood sample is \_\_\_\_\_.
- (1) 5,000 to 50,000            (2) 5,000 to 10,000
- (3) 2,000 to 7,500            (4) 10,000 to 1,00,000
- 
13. In interference filters the \_\_\_\_\_ of the dielectric layer determines the wavelength transmitted.
- (1) Thickness            (2) Material
- (3) Colour            (4) None of the above
- 
14. In auto analyzer used in pathology laboratory, the ratio of sampling time to wash time is normally \_\_\_\_\_.
- (1) 1 : 2            (2) 2 : 1            (3) 3 : 1            (4) None of the above
- 

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15. Average diameter of dialyzer membrane in AKD machine is \_\_\_\_\_.
- (1) 30 Å                      (2) 70 Å                      (3) 40 Å                      (4) 50 Å
- 
16. If  $H(z) = 1 / z - 1$  and its input is  $u(n)$ , then the response  $y(n)$  is \_\_\_\_\_.
- (1)  $u(n+1)$                       (2)  $nu(n)$   
(3)  $nu(n-1)$                       (4) None of the above
- 
17. The time duration during which the excitation wave is delayed in the fibres near the AV node is represented by \_\_\_\_\_.
- (1) ST segment                      (2) QRS complex  
(3) P-Q interval                      (4) None of the above
- 
18. The Laplace transform of  $x(t)$  can be interpreted as the \_\_\_\_\_ transform of  $x(t)$  after multiplication by real \_\_\_\_\_ signal.
- (1) Fourier, impulse                      (2) Z Transform, impulse  
(3) Z Transform, exponential                      (4) Fourier, exponential
- 
19. The angle response of Fourier spectrum of real  $f(t)$  is \_\_\_\_\_ function.
- (1) Even                      (2) Odd                      (3) Depends on  $f(t)$                       (4) None of the above
- 
20. The maximum current value that a subject is capable of releasing the conductor called as "let-go current" is \_\_\_\_\_.
- (1) 16 mA in males and 10.5 mA in females.  
(2) 16 mA in both males and females.  
(3) 10.5 mA in males and 12 mA in females.  
(4) None of the above
- 

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21. A series RLC circuit has resonance frequency of 1 kHz and a quality factor of  $Q=10$ . If each R, L and C is doubled from its original value, the new Q of the circuit will be \_\_\_\_\_.

- (1) 25                      (2) 50                      (3) 100                      (4) 200
- 

22. In gas filled detectors, GM counters operate in \_\_\_\_\_ region.

- (1) Region I              (2) Region II              (3) Region III              (4) Region IV
- 

23. Choose the function  $f(x)$  for which Fourier series cannot be defined in  $(-\infty, \infty)$  :

- (1)  $3 \sin(2x)$                       (2)  $2 \cos(3x+2) + 3\sin(5x)$   
(3)  $e^{-|x|} \sin(15x)$                       (4) 1
- 

24. Frequency of operation of solid state diathermy is \_\_\_\_\_.

- (1) 250 kHz to 1 MHz                      (2) 250 kHz to 500 MHz  
(3) 500 kHz to 1 MHz                      (4) None of the above
- 

25. Functional volume of the lungs that does **not** participate in gas exchange is \_\_\_\_\_.

- (1) End expiratory volume              (2) Tidal volume  
(3) Inspiratory volume              (4) Dead space
- 

26. What are the **three** steps in generating PCM in the correct sequence ?

- (1) Sampling, quantizing and encoding              (2) Encoding, sampling and quantizing  
(3) Sampling, encoding and quantizing              (4) Quantizing, sampling and encoding
- 

27. Expression relating wavelength of radiation and the angle of reflection in diffraction grating is given by \_\_\_\_\_.

- (1)  $m\lambda = 2d \sin\theta$               (2)  $\lambda = 2d \sin\theta$               (3)  $m\lambda = d \sin\theta$               (4)  $m/\lambda = 2d \sin\theta$
- 

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28. Find the output of system with  $h(n) = \{3, 2, 1\}$  and  $x(n) = \{3, \underset{\uparrow}{2}, 3\}$  such that  $y(n) = x(n) * h(n)$

- (1)  $\{9, \underset{\uparrow}{12}, 16, 3, 8\}$                       (2)  $\{\underset{\uparrow}{9}, 12, 16, 8, 3\}$   
 (3)  $\{9, \underset{\uparrow}{12}, 16, 8, 3\}$                       (4)  $\{\underset{\uparrow}{9}, 16, 12, 3, 8\}$

29. "Slope overload" occurs in delta modulation when the \_\_\_\_\_

- (1) frequency of the clock pulses is too low.  
 (2) rate of change of analog waveform is too large.  
 (3) step size is too small.  
 (4) analog signal varies very slowly with time.

30. In Ultrasonic imaging :

$\frac{\text{Velocity of sound in the medium} \times \text{Time}}{2}$  gives :

- (1) Intensity of Ultrasound                      (2) Attenuation of Ultrasound  
 (3) Change in velocity of Ultrasound                      (4) Depth of Penetration of Ultrasound

31. Ventricular fibrillation is produced spontaneously when current passes directly through the heart during "vulnerable period" which is represented by \_\_\_\_\_.

- (1) Q-R interval                      (2) ST segment  
 (3) Upstroke of T wave                      (4) QRS complex

32. What term describes the maximum expected error associated with measurement or a sensor ?

- (1) Resolution                      (2) Precision                      (3) Accuracy                      (4) Range

33. Extreme contrast stretching yields \_\_\_\_\_.

- (1) Grey level sliding                      (2) Dynamic range compression  
 (3) Power law transformation                      (4) Thresholding

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34. Which interrupt of 8085 has the highest priority ?

- (1) INTR                      (2) RST 7.5                      (3) TRAP                      (4) Ready
- 

35. SPECT Radionuclides Tc 99m has a half-life of \_\_\_\_\_.

- (1) 8.4 hrs                      (2) 6.02 hrs                      (3) 6.2 hrs                      (4) 8.1 hrs
- 

36. The order of convergence in Newton-Raphson method is \_\_\_\_\_.

- (1) 2                      (2) 0                      (3) 4                      (4) None of the above
- 

37. The posterior cavity of the eye contains a gelatinous mass called as \_\_\_\_\_.

- (1) Vitreous humor                      (2) Optic disc  
(3) Lacrimal apparatus                      (4) Fibrous tunic
- 

38. Conduction velocity in the Purkinje fibres is \_\_\_\_\_.

- (1) 1.5 to 2.5 m/sec                      (2) 0.8 to 1.9 m/sec  
(3) 1.0 to 1.5 m/sec                      (4) None of the above
- 

39. \_\_\_\_\_ is a spontaneous ventilation mode in which the ventilator maintains a constant positive pressure near or below PEEP level, in the patient's airway while the patient breathes at will.

- (1) Mandatory Minute Volume Ventilation (MMVV)  
(2) Continuous Positive Airway Pressure (CPAP)  
(3) Assisted Spontaneous Breathing (ASB)  
(4) Synchronized Intermittent Mandatory Ventilation (SIMV)
- 

40. Under normal circumstances the amount of oxygen taken up and carbon dioxide given out in 1 minute by lungs is \_\_\_\_\_.

- (1) 250 ml of oxygen and 250 ml of Carbon dioxide  
(2) 250 ml of oxygen and 200 ml of Carbon dioxide  
(3) 300 ml of oxygen and 300 ml of Carbon dioxide  
(4) 300 ml of oxygen and 250 ml of Carbon dioxide
- 

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41. A counter having  $N$  flip flops has a modulus of \_\_\_\_\_.

- (1)  $2^N$                       (2)  $N^2$                       (3)  $2/N$                       (4)  $N/2$

42. **Statement - I** : If  $A$  and  $B$  are square matrices then  $AB$  and  $BA$  have the same Eigen values.

**Statement - II** : If  $A = \begin{bmatrix} B & C \\ 0 & D \end{bmatrix}$  then Eigen values of

$A =$  Eigen values of  $B +$  Eigen values of  $D$ .

**Statement - III** : If  $S$  is an  $n$ -rowed real skew symmetric matrix and  $I$  is the unit matrix of order  $n$ , then  $I+S$  is a singular matrix.

- (1) Only statement - I is true.                      (2) Both statement - I and statement - II are true.  
 (3) Only statement - III is true.                      (4) All the statements are true.

43. Match List - I (Modulation / Reception techniques) with List - II (Disadvantages) and select the correct answer :

**List - I**

**List - II**

- |                              |                                    |
|------------------------------|------------------------------------|
| (a) Superheterodyne receiver | (i) Constant bandwidth             |
| (b) FM                       | (ii) Granular noise                |
| (c) PCM                      | (iii) Image frequency interference |
| (d) Delta modulation         | (iv) Quantization noise            |

- |     | (a)   | (b)   | (c)  | (d)  |
|-----|-------|-------|------|------|
| (1) | (i)   | (iii) | (iv) | (ii) |
| (2) | (iii) | (i)   | (iv) | (ii) |
| (3) | (i)   | (iii) | (ii) | (iv) |
| (4) | (iii) | (i)   | (ii) | (iv) |

44. Tungsten target in a stationary anode X-ray tube has a high melting point of \_\_\_\_\_.

- (1)  $3450^\circ\text{C}$                       (2)  $3800^\circ\text{C}$                       (3)  $8000^\circ\text{C}$                       (4)  $3400^\circ\text{C}$

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45. Six coins are tossed 6400 times. Using Poisson distribution find the approximate probability of getting six heads  $x$  times.

(1)  $\frac{e^{-640} (64)^x}{x!}$       (2)  $\frac{e^{-320} (320)^x}{x}$       (3)  $\frac{e^{-100} (100)^x}{x!}$       (4)  $\frac{e^{-640} (64)^x}{x}$

46. The amount of air that could be voluntarily expelled after completing a normal quiet respiration cycle is \_\_\_\_\_.

- (1) Tidal Volume                                      (2) Expiratory Capacity  
 (3) Expiratory Reserve Volume                  (4) Resting Tidal Volume

47. ZT  $\{(n+1)a^n \mu(n)\}$  is \_\_\_\_\_.

- (1)  $Z / (Z-a)^2$                                       (2)  $Z^2 / (Z-a)$   
 (3)  $Z^2 / (Z-a)^2$                                       (4) None of the above

48. If a clock loses 5 seconds/day, determine the alteration required in the length of the pendulum in order that the clock keeps correct time :

- (1) Length of Pendulum is enlarged by  $\frac{1}{864}$  of its original length.  
 (2) Length of Pendulum is enlarged by  $\frac{1}{8640}$  of its original length.  
 (3) Length of Pendulum is shortened by  $\frac{1}{8640}$  of its original length.  
 (4) None of the above

49. When Chyme is arrived in the duodenum due to secretion of hormone \_\_\_\_\_ pancreatic buffer secretion is triggered.

- (1) Pepsin                      (2) Secretin                      (3) Trypsin                      (4) Bile Salt

50. Image segmentation can be achieved by \_\_\_\_\_.

- (1) Discontinuities                                      (2) Similarities  
 (3) Both (1) and (2)                                      (4) Either (1) or (2)

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51. The register that allows movement of data in the right or left direction is called as a \_\_\_\_\_ register.

- (1) Shift (2) Universal  
(3) Left - Right (4) Right - Left
- 

52. Which out of the below is **not** a function of Liver ?

- (1) Plasma Protein Synthesis (2) Synthesis and Secretion of antibodies  
(3) Removal of antibodies (4) Storage and transportation of bile
- 

53. Microwave frequency for therapeutic heating is \_\_\_\_\_.

- (1) 2540 MHz (2) 2450 MHz  
(3) 2245 MHz (4) None of the above
- 

54. Sign flag is set when \_\_\_\_\_.

- (1) Result is 1FH (2) Result is FFH  
(3) Result is 8FH (4) Result is both FFH and 8FH
- 

55. The Inverse Laplace Transform of  $\tan^{-1} \frac{2}{s^2}$  is :

- (1)  $\frac{1}{t} e^t \sin t$  (2)  $\frac{2}{t} \sin t \sin ht$  (3)  $\frac{1}{t} \sin t \sin ht$  (4)  $\frac{1}{t} e^t \cos t$
- 

56. The frequency range of \_\_\_\_\_ waves recorded in EEG is 8 Hz to 13 Hz.

- (1) Delta (2) Theta (3) Beta (4) Alpha
- 

57. Electrical equivalent circuit of bio-potential electrode consists of \_\_\_\_\_

- (1) resistor and capacitor in parallel (2) resistor and capacitor in series  
(3) only resistor (4) only capacitor
- 

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58. A source of angular frequency 1 rad/sec has a source impedance consisting of 1  $\Omega$  resistance in series with 1 H inductance, the load that will obtain maximum power transfer will be \_\_\_\_\_.

- (1) 1  $\Omega$  resistance
- (2) 1  $\Omega$  resistance in parallel with 1 H inductance.
- (3) 1  $\Omega$  resistance in series with 1 F capacitor.
- (4) 1  $\Omega$  resistance in parallel with 1 F capacitor.

59. The value of  $\int_{-2}^1 \int_{x^2+4x}^{3x+2} dy dx$  is \_\_\_\_\_

- (1)  $\frac{5}{4}$
- (2)  $\frac{4}{5}$
- (3)  $\frac{9}{2}$
- (4)  $\frac{3}{7}$

60. What is the power contained in SSB transmission when the carrier power is 1kW and the modulation index is 0.3 ?

- (1) 22.5 W
- (2) 90 W
- (3) 300 W
- (4) 1 kW

61. The inverse Z-transform of :  $\frac{z}{(z-2)(z-3)}$ ,  $|z| > 3$  is \_\_\_\_\_.

- (1)  $2^{k-1} + 3^k$ ,  $k \geq 0$
- (2)  $-2^k$ ,  $k \geq 0$
- (3)  $2^k + 3^{k-1}$ ,  $k \geq 0$
- (4)  $-2^k + 3^k$ ,  $k \geq 0$

62. In an unbounded strain gauge, 1% change is observed in resistance due to 4000 micron strain, then the gauge factor will be equal to \_\_\_\_\_.

- (1) 25
- (2) 250
- (3) 0.4
- (4) 2.5

63. A thermistor with a material constant  $\beta$  of 4500K is used as a thermometer. If R at 37°C is equal to 85 k $\Omega$  then R at 25°C will be \_\_\_\_\_.

- (1) 15.25 k $\Omega$
- (2) 152.5 k $\Omega$
- (3) 152.5  $\Omega$
- (4) 1.52  $\Omega$

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64. In a Pacemaker during first part of the impulse current is determined by the internal resistance of the pacemaker and during second part of the impulse, the current is determined by the voltage available. Which type of pacemaker it is ?
- (1) Current pacemaker (2) Voltage pacemaker  
(3) Voltage limited current pacemaker (4) None of the above
- 
65. Which one of the following is the available noise power produced by a noisy resistor R ? [Boltzmann constant k, T and B Temperature and Bandwidth]
- (1)  $kTB$  (2)  $4kTB$  (3)  $4kTBR$  (4)  $2kTBR$
- 
66. \_\_\_\_\_ is used to achieve minimum reduction of logical expression.
- (1) D-Morgan's Theorem (2) Boolean Algebra  
(3) Karnaugh Map (4) None of the above
- 
67. In monochromatic X-ray,  $I_t = I_0 e^{-\mu x}$  where  $\mu$  represents the \_\_\_\_\_.
- (1) Characteristic attenuation coefficient of tissue  
(2) Thickness of tissue  
(3) Dielectric constant  
(4) None of the above
- 
68. Hounsfield number for air and bone in Computer tomography is \_\_\_\_\_ respectively.
- (1)  $-1000$  and  $+1000$  (2)  $0$  and  $+1000$   
(3)  $-1000$  and  $0$  (4)  $+1000$  and  $-1000$
- 
69. 8051 has \_\_\_\_\_ on chip ROM.
- (1)  $00$  kB (2)  $2$  kB (3)  $4$  kB (4)  $16$  kB
- 

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70. 8051 is a \_\_\_\_\_.
- (1) 8 bit microprocessor (2) 16 bit microprocessor  
(3) 8 bit microcontroller (4) 16 bit microcontroller
- 
71. In an electrical network, if a circuit has 5 nodes and 8 branches, then number of loops will be equal to \_\_\_\_\_.
- (1) 4 (2) 2 (3) 3 (4) 13
- 
72. R wave in ECG signal has typical amplitude of \_\_\_\_\_.
- (1) 1  $\mu$ V (2) 1 mV (3) 1 V (4) None of the above
- 
73. The typical value of Electro-retinogram is \_\_\_\_\_.
- (1) 850  $\mu$ V (2) 500  $\mu$ V (3) 690  $\mu$ V (4) None of the above
- 
74. After the execution of push operation of 8085, the stack pointer \_\_\_\_\_ and the contents of the register are copied onto the stack.
- (1) increases (2) decreases  
(3) either increases or decreases (4) none of the above
- 
75. Nominal values of pressures in the Arterial system are in the range of \_\_\_\_\_.
- (1) 10 - 20 mmHg (2) 6 - 25 mmHg (3) 3 - 30 mmHg (4) 30 - 300 mmHg
- 
76. Human Physiological microcontroller which intercepts various sensory and motor nerves to smooth out the muscle motion is \_\_\_\_\_.
- (1) Central Nervous System (2) Medulla oblongata  
(3) Cerebrum (4) Cerebellum
- 
77. First sound in original heart sounds represents \_\_\_\_\_ of ECG.
- (1) P wave (2) QRS complex (3) R wave (4) T wave
- 

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78. A plethysmograph is used for measurement of \_\_\_\_\_.

- (1) Displacement                      (2) Volume Change  
(3) Temperature                      (4) None of the above
- 

79. Ring counter uses \_\_\_\_\_ type of flip-flop.

- (1) J - K                      (2) S - R                      (3) D                      (4) T
- 

80. How many control signals are available in 8085 ?

- (1) 3                      (2) 4                      (3) 5                      (4) 6
- 

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### सूचना — ( पृष्ठ 1 वरून पुढे.... )

- (8) प्रश्नपुस्तिकेमध्ये विहित केलेल्या विशिष्ट जागीच कच्चे काम (रफ वर्क) करावे. प्रश्नपुस्तिकेव्यतिरिक्त उत्तरपत्रिकेवर वा इ कागदावर कच्चे काम केल्यास ते कॉपी करण्याच्या उद्देशाने केले आहे, असे मानले जाईल व त्यानुसार उमेदवारावर शासनाने जारी केलेल्या "परीक्षांमध्ये होणाऱ्या गैरप्रकारांना प्रतिबंध करण्याबाबतचे अधिनियम-82" यातील तरतुदीनुसार कारवाई करण्यात येईल व दोषी व्यक्ती कमाल एक वर्षाच्या कारावासाच्या आणि/किंवा रुपये एक हजार रकमेच्या दंडाच्या शिक्षेस पात्र होईल.
- (9) सदर प्रश्नपत्रिकेसाठी आयोगाने विहित केलेली वेळ संपल्यानंतर उमेदवाराला ही प्रश्नपुस्तिका स्वतःबरोबर परीक्षाकक्षाबाहेर घेऊन जाण्यास परवानगी आहे. मात्र परीक्षा कक्षाबाहेर जाण्यापूर्वी उमेदवाराने आपल्या उत्तरपत्रिकेचा भाग-1 समवेक्षकाकडे न विसरता परत करणे आवश्यक आहे.

### नमुना प्रश्न

Pick out the correct word to fill in the blank :

Q. No. 201. I congratulate you \_\_\_\_\_ your grand success.

- (1) for (2) at (3) on (4) about

ह्या प्रश्नाचे योग्य उत्तर "(3) on" असे आहे. त्यामुळे या प्रश्नाचे उत्तर "(3)" होईल. यास्तव खालीलप्रमाणे प्रश्न क्र. 201 समोरील उत्तर-क्रमांक "③" हे वर्तुळ पूर्णपणे छायंकित करून दाखविणे आवश्यक आहे.

प्र. क्र. 201. ① ② ● ④

अशा पद्धतीने प्रस्तुत प्रश्नपुस्तिकेतील प्रत्येक प्रश्नाचा तुमचा उत्तरक्रमांक हा तुम्हाला स्वतंत्ररीत्या पुरविलेल्या उत्तरपत्रिकेवरील त्या त्या प्रश्नक्रमांकासमोरील संबंधित वर्तुळ पूर्णपणे छायंकित करून दाखवावा. ह्याकरिता फक्त काळ्या शाईचे बॉलपेन वापरावे, पेन्सिल वा शाईचे पेन वापरू नये.

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