

PARLIAMENT OF INDIA
(JOINT RECRUITMENT CELL)

**EXAMINATION FOR THE *EX-CADRE* POST OF
TECHNICAL ASSISTANT
IN LOK SABHA SECRETARIAT
FOR PARLIAMENT MUSEUM**

9th FEBRUARY, 2013

APTITUDE TEST: Part A - Exhibits in Parliament Museum; and
Part B - Proficiency in Projectors and Other Electronic Equipment

INSTRUCTIONS : (i) Write your Roll No. at the appropriate column on the answer sheet. (ii) Put 'X' mark only in the correct Box like this {X}. No marks will be given for responses outside the Box. Use blue or black ball pen only to mark your response. (iii) In case you want to change your response to any question, fully blacken the first response like this ■ and {X} mark in the correct Box. (iv) There will not be negative marking.

Time: 40 MINUTES

Marks: 20 + 40

PART A: Exhibits in Parliament Museum

- 1) In which exhibit area in the Parliament Museum, Mahatma Gandhi's speech is played back?
 - a) Freedom Movement
 - b) Dandi March
 - c) Transfer of Power
 - d) Central Hall of Parliament
- 2) In which exhibit area in the Parliament Museum, computer multi-media is used?
 - a) Constitution of India
 - b) Dandi March
 - c) Transfer of Power
 - d) Central Hall of Parliament
- 3) 'Animatronics' is employed in the Parliament Museum for which political leader to deliver the 'Tryst with Destiny' speech?
 - a) Mahatma Gandhi
 - b) Subhas Chandra Bose
 - c) Jawaharlal Nehru
 - d) B R Ambedkar
- 4) Who chaired the committee for drafting the Constitution of India?
 - a) Jawaharlal Nehru
 - b) B R Ambedkar
 - c) Sardar Patel
 - d) Mahatma Gandhi
- 5) About how many large screen projection systems have been employed in the Parliament Museum?
 - a) one
 - b) three
 - c) ten
 - d) twenty
- 6) What kind of projection system is used in the multi-screen projection on 'Transfer of Power' in the Parliament Museum?
 - a) LCD projection
 - b) Plasma Screen
 - c) LED projection
 - d) Film projection
- 7) The brightness of a projector is expressed in terms of
 - a) kilowatt
 - b) lumen
 - c) candle power
 - d) voltage
- 8) The lamp life in a typical LED lamp projector is of the order of
 - a) 100 hours
 - b) 1000 hrs
 - c) 2000 hours
 - d) 20,000 hours
- 9) What is the Aspect Ratio in the projection system in Dandi March?
 - a) 4:3
 - b) 5:3
 - c) 5:4
 - d) 16:9

- 10) 100 inches screen of a projection system means
- a) width of the screen
 - b) distance between projector and screen
 - c) diagonal of the screen
 - d) area of the screen
- 11) Write the full expression of VCD
- a) View Capacitor Disc
 - b) Video Compact Disc
 - c) Video Capacitor Disc
 - d) Verified Compact Disc
- 12) Write the full expression of DVD
- a) Digital Voltage Disc
 - b) Digital Verified Disc
 - c) Digital Video Disc
 - d) Disc Voltage Digital
- 13) Write the full expression of ROM
- a) Read Only Memory
 - b) Random Old Memory
 - c) Random Only Memory
 - d) Read Only Mobile
- 14) Write the full expression of TFT
- a) Thin Film Terminal
 - b) Terminal For Transmission
 - c) Thin Fold Transistor
 - d) Thin Film Transistor
- 15) Write the full expression of LCD
- a) Liquid Crystal Diode
 - b) Liquid Crystal Display
 - c) Light Capacitor Diode
 - d) Light Crystal Display
- 16) Write the full expression of LED
- a) Liquid Emitting Diode
 - b) Light Electrical Display
 - c) Light Emitting Diode
 - d) Liquid Emitting Display
- 17) What is the full expression of UPS?
- a) United Power Service
 - b) United Power Station
 - c) Uninterrupted Power Supply
 - d) Uninterrupted Power Service
- 18) Which video compatibility is most common in India?
- a) PAL
 - b) NTSC
 - c) SECAM
 - d) IND
- 19) Which colour signifies 4 in the colour code of carbon resistors?
- a) Brown
 - b) Yellow
 - c) Green
 - d) Blue
- 20) Which capacitor is used for large value, say 1000 microfarad ?
- a) Paper Capacitor
 - b) Mica Capacitor
 - c) Electrolytic Capacitor
 - d) Air capacitor

PART B : Proficiency in Projectors and Other Electronic Equipment

1. For an insulating material, dielectric strength and dielectric loss should be respectively.
 - (a) High and high
 - (b) low and high
 - (c) High and low
 - (d) low and low
- ✓ 2. When a semiconductor bar is heated at one end, a voltage across the bar is developed. If the heated end is positive, the semiconductor is
 - (a) p-type
 - (b) n-type
 - (c) Intrinsic
 - (d) Highly degenerate
3. Which of the following phenomena is most important when foodstuff is cooked in a microwave oven ?
 - (a) Resistive Joule heating
 - (b) Induction heating
 - (c) Dielectric heating
 - (d) Radiation heating
4. Which material among the following possesses excellent dielectric properties and good reliability for use in making capacitors ?
 - (a) Silicon monoxide
 - (b) Silicon dioxide
 - (c) Tin oxide
 - (d) Chromium oxide
5. Fermions are the particles, which obey
 - (a) Maxwell-Boltzmann statistics
 - (b) Bose-Einstein's statistics
 - (c) Hinesburg's uncertainty principle
 - (d) Pauli's exclusion principle
6. An LED made using GaAs emits radiation in :
 - (a) Visible region
 - (b) Ultraviolet region
 - (c) Infra red region
 - (d) Microwave frequency region
7. A tunnel diode is :
 - (a) High resistivity p-n junction diode
 - (b) A slow switching device
 - (c) An amplifying device A very heavily doped p-n

(d) Junction diode

8. Which of the following will serve as a donor impurity in silicon ?
- (a) Boron
 - (b) Indium
 - (c) Germanium
 - (d) Antimony
9. An amplifier has an input power of 2 microwatts. The Power gain of the amplifier is 60 dB. The output power will be :
- (a) 6 microwatts
 - (b) 120 microwave
 - (c) 2 mill watts
 - (d) 2 watts
10. A Darlington pair is used for :
- (a) Low distortion
 - (b) High frequency range
 - (c) High power gain
 - (d) High current gain
11. A coil would behave as
- (a) An inductor at high frequency
 - (b) A capacitor at very low frequencies
 - (c) A capacitor at very high frequencies
 - (d) A resistor at high frequency
12. Which of the following meters does not exhibit square law response ?
- (a) Moving coil
 - (b) Moving iron
 - (c) Electrodynamometer
 - (d) Hot wire instrument
13. The sine wave output of a function generator is fed to both the horizontal (X) and vertical (Y) inputs of a CRO. What will be the pattern on the cathode ray screen ?
- (a) A circle
 - (b) An ellipse
 - (c) A straight line with 45° slope
 - (d) Sinusoidal
14. Which one of the following can be used as parallel to series converter ?
- (a) Decoder
 - (b) Digital counter
 - (c) Multiplexer
 - (d) De-multiplexer

15. A ring counter consisting of five flip-flop will have
- (a) 5 states
 - (b) 10 states
 - (c) 32 states
 - (d) infinite mode
16. A T-flip-flop function is obtained from a JK flip-flop, if the flip-flop belongs to a TTL family, the connections needed at the input must be
- (a) $J=K=1$
 - (b) $J=K=0$
 - (c) $J=1$ AND $k=0$
 - (d) $J=0$ and $K=1+$
17. Karnaugh map is used to
- (a) Minimize the number of flip-flop in a digital circuit
 - (b) Minimize the number of gates only in a digital circuit
 - (c) Minimize the number of gates and fan-in in a digital circuit
 - (d) Design gates
18. $(FE35)_{16} \text{ XOR } (CB15)_{16}$ is equal to
- (a) $(3320)_{16}$
 - (b) $(FE35)_{16}$
 - (c) $(FF50)_{16}$
 - (d) $(3520)_{16}$
19. How is inversion achieved using EX-OR gate ?
- (a) Giving input signal to the two input lines of the gate tied together
 - (b) Giving input to one input line and logic zero to the other line
 - (c) Giving input to one input line and logic one to the other line
 - (d) Inversion cannot be achieved using EX-OR gate
20. Which one of the following statements describes the operation of multiplexer ?
- (a) A logic circuit used to generate codes output
 - (b) A logic circuit used to generate F's complement
 - (c) A logic circuit that accepts two or more inputs and allows one of them at a time to get, through the output
 - (d) A logic circuit that transmits one input to several output lines
21. What is the octal equivalent of decimal 0.3125 ?
- (a) 0.42
 - (b) 0.3125

- (c) 0.24
- (d) 0.12

22. One decibel represents a power ratio of

- (a) 1.26 : 1
- (b) 2 : 1
- (c) 10 : 1
- (d) 20 : 1

23. A carbon microphone is a variable

- (a) Resistance
- (b) inductance
- (c) capacitance
- (d) all of the above

24. MODEM stands for

- a) Modulator at transmitting side and detector at the receiving side
- b) Which deals with analog signal and show digital side
- c) Analog to digital at transmitting side and digital to analog at a receiving side
- d) A device which deals with digital signals only

25. Frequency shift keying is used mostly in

- (a) Radio transmission
- (b) telegraphy
- (c) telephony
- (d) none of these

26. Magnetic flux can be measured by

- (a) Capacitor pick-up
- (b) Inductive pick-up
- (c) Resistance pick-up
- (d) Half-effect pick-up

27. Binary 111 represents

- (a) decimal 222
- (b) decimal 8
- (c) decimal 7
- (d) decimal 4

28. The Boolean expression for AND gate is

- (a) $A+B=Y$
- (b) $A.B=Y$

- (c) $A=B$
- (d) $A=B=Y$

29. In the spectrum of a frequency modulated waves

- (a) The carrier frequency cannot disappear
- (b) The total number of side bands depends on the modulation index
- (c) The carrier frequency disappears when the modulation index is large
- (d) The amplitude of any side band depends on the modulation index

30. In an FM signal, the power

- (a) Increases as the modulation index increases
- (b) Reduces as the modulation index increases
- (c) Increases as the modulation index decreases
- (d) Remains constant when the modulation index increases

31. Which of the following is the disadvantage of FM over AM ?

- (a) A much wider channel is required by FM as compared to that for AM
- (b) The area of reception is limited
- (c) The modulating & demodulating equipment is complex
- (d) All of the above

32. In television transmission in India

- (a) Picture is AM and sound is FM
- (b) Picture is FM and sound is AM
- (c) Both picture as well as sound are FM
- (d) Both picture as well as sound are AM

33. An amplitude modulated wave is

- (a) The sum of the carrier & the modulating wave
- (b) The difference between the carrier & the modulating wave
- (c) The product of the carrier & carrier wave
- (d) Sum of the carrier & its product with modulating signals

34. The three primary colours are

- (a) red, yellow purple
- (b) black, white & gray
- (c) violet, red & green
- (d) red, blue & green

35. The electromagnetic waves are reflected by the ionosphere due to their interaction with

- (a) Electrons
- (b) protons
- (c) ultraviolet rays
- (d) infrared rays

36. The polarization of electromagnetic waves
- (a) Is always vertical in an isotropic medium
 - (b) Is caused by reflection
 - (c) Is due to the transverse nature of the waves
 - (d) Results from the longitudinal nature of the waves
37. The absorption of radio waves by the atmosphere depends primarily on
- (a) Their frequency
 - (b) The polarization of the waves
 - (c) The absorption of the waves
 - (d) Their distance from the transmitter
38. Which of the following remains unaffected by changes on account of day and night ?
- (a) Ground wave
 - (b) Sky wave
 - (c) Tropospheric wave
 - (d) None of the above
39. The binary sum of 111010_2 and 11011_2 is
- (a) 1010101_2
 - (b) 1010111_2
 - (c) 1011111_2
 - (d) 1111111_2
40. PROM is
- (a) Permanent read only memory
 - (b) Polarized read only memory
 - (c) Positive read only memory
 - (d) Programmable read only memory

ROLL NO. _____

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APTITUDE TEST: Part C - Proficiency in Computers

Time: One hour

Marks: 40

1) What are the normal voltage or frequency levels for the followings in India?
(each question carries 2 marks) **-- 10 marks**

- a) Domestic supply voltage and phase:
- b) Industrial supply voltage and phase:
- c) Supply frequency:
- d) Small passenger car battery voltage:
- e) Voltage in a pencil battery in a flashlight or torch:

2) Write down the specifications of a desk top computer with current commonly available features: (each question carries 2 marks) **-- 10 marks**

- a) Operating system :
- b) Processor:
- c) Memory:
- d) Hard disc drive:
- e) Drive:

3) Write down the specification of an LCD/DLP projector with current commonly available features: (each question carries 2 marks) **-- 10 marks**

- a) Brightness:
- b) Native resolution:
- c) Video compatibility:
- d) Aspect ratio:
- e) Power supply:

4) Write down the specification of UPS for a single desk top computer run in India:
(each question carries 2 marks) **-- 10 marks**

- a) Approximate rated power:
- b) Input:
- c) Output:
- d) Battery capacity:
- e) Autonomy Time: