

Roll. No.

Question Booklet Number

O.M.R. Serial No.

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M.Sc. (SEM.-IV) (NEP) (SUPPLE.) EXAMINATION, 2024-25



PHYSICS

(Electronics-II)

Paper Code

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**Question Booklet
Series**

A

Time : 1 : 30 Hours

Max. Marks : 75

Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.
2. The booklet contains 100 questions. Examinee is required to answer 75 questions in the OMR Answer-Sheet provided and not in the question booklet. All questions carry equal marks.
3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be got immediately replaced.
4. Four alternative answers are mentioned for each question as - A, B, C & D in the booklet. The candidate has to choose the correct / answer and mark the same in the OMR Answer-Sheet as per the direction :

(Remaining instructions on last page)

परीक्षार्थियों के लिए निर्देश :

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।
2. प्रश्न-पुस्तिका में 100 प्रश्न हैं। परीक्षार्थी को 75 प्रश्नों को केवल दी गई OMR आन्सर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। सभी प्रश्नों के अंक समान हैं।
3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR आन्सर-शीट को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका जिसमें कुछ भाग छपने से छूट गए हों या प्रश्न एक से अधिक बार छप गए हों या उसमें किसी अन्य प्रकार की कमी हो, उसे तुरन्त बदल लें।
4. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार सम्भावित उत्तर- A, B, C एवं D हैं। परीक्षार्थी को उन चारों विकल्पों में से सही उत्तर छानना है। उत्तर को OMR उत्तर-पत्रक में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

(शेष निर्देश अन्तिम पृष्ठ पर)

1. Square law modulator consists :
 - (A) Adder
 - (B) Non-linear device
 - (C) Band pass filter
 - (D) All of the above
2. AM is the process in which amplitude of the carrier signal changes with respect to :
 - (A) Modulating signal
 - (B) Carrier signal
 - (C) Suppressed carrier modulating signal
 - (D) None of the above
3. Why the carrier signal does not carry any signal?
 - (A) Frequency is constant
 - (B) Phase and amplitude is constant
 - (C) Amplitude is constant
 - (D) All of the above
4. The advantages of modulation are :
 - (A) High energy of carrier
 - (B) Noise can be reduced
 - (C) Multiplexing is possible
 - (D) All of the above
5. The number of bits conveyed or processed for unit time is called :
 - (A) Baud rate
 - (B) Bit rate
 - (C) ISI
 - (D) None of the above
6. Who invented superheterodyne receiver?
 - (A) Armstrong
 - (B) Oliver Lodge
 - (C) Guglielmo Marconi
 - (D) Samuel Morse
7. _____ noise is a static kind of noise which is generated due to electric disturbances?
 - (A) Atmospheric
 - (B) Extraterrestrial
 - (C) Industrial
 - (D) Shot
8. What are the external noise?
 - (A) Atmospheric
 - (B) Extraterrestrial
 - (C) Industrial
 - (D) All of the above

9. The DSB suppressed carrier comes under _____ modulation.
- (A) FM
(B) Analog pulse modulation
(C) AM
(D) Digital pulse modulation
10. In baseband signal, the audio frequency signal range is around :
- (A) 0 – 20 KHz
(B) 10 – 20 KHz
(C) 5 – 10 KHz
(D) 0 – 20 MHz
11. The sideband cancellation in phase shift method is done by using :
- (A) Selectivity
(B) Fidelity
(C) Sensitivity
(D) All of these
12. In super heterodyne receiver, at high frequency the :
- (A) BW is low
(B) Signal processing should be done
(C) Signal transmission should be done
(D) All of these
13. _____ quantizer minimizes the quantization error.
- (A) Uniform
(B) None-uniform
(C) LLOYD-Max
(D) None of these
14. The quantization error can be defined as :
- (A) $q = Q(m) + m$
(B) $q = Q(m) - m$
(C) $q = Q(m) / m$
(D) None of these
15. What are the advantages of angle modulation over amplitude modulation?
- (A) Noise reduction
(B) Improved system fidelity
(C) Efficient use of power
(D) All of these
16. Which noise comes under internal noise?
- (A) Resistor
(B) Transient
(C) Shot
(D) All of these

17. The SNR in delta modulation is :
- Fair
 - Poor
 - Good
 - None of these
18. The max. deviation in wideband FM is around :
- 75 MHz
 - 75 KHz
 - 70 MHz
 - 90 MHz
19. _____ is a differential modulation.
- FM
 - AM
 - Delta modulation
 - None of these
20. The no. of bits in DPCM is :
- Greater than PCM
 - Less than PCM
 - Equal to PCM
 - None of these
21. The levels in PCM are :
- More
 - Depends on the no. of bits
 - Less
 - None of these
22. In which case the step size is not fixed?
- PCM
 - Delta mod.
 - DPCM
 - Adaptive Delta modulation
23. In a uniform quantizer with an even no. of quantization levels, the quantizer characteristics arise from :
- $-\Delta$ to $+\Delta$
 - $-\frac{\Delta}{2}$ to $+\frac{\Delta}{2}$
 - $-\frac{\Delta}{4}$ to $+\frac{\Delta}{4}$
 - None of these
24. Analog communication uses _____ types of signals.
- Continuous
 - Discontinuous
 - Both (A) and (B)
 - None of these
25. Which of the following are the examples of digital communication technology?
- Photocopies
 - Audiotapes
 - E-mails
 - Both (A) and (B)

26. Digital communication is represented in _____ form.
- (A) 0' S
 - (B) 1' S
 - (C) Both (A) and (B)
 - (D) None of these
27. The function of a transmitter is :
- (A) Transmits signal to the receiver
 - (B) Accept signal from the transducer
 - (C) Accept input from information source
 - (D) Transmits signal over a channel
28. Which technique is used in the transmitter?
- (A) Modulation
 - (B) Demodulation
 - (C) Both (A) and (B)
 - (D) None of these
29. A periodic signal is of _____ pattern with respect to time.
- (A) Repetitive
 - (B) Non repetitive
 - (C) Alternative
 - (D) None of these
30. Which of the following modulation technique is used for analog modulation?
- (A) Continuous modulation
 - (B) Pulse modulation
 - (C) Both (A) and (B)
 - (D) None of these
31. Which of the following is pulse modulation?
- (A) Analog modulation
 - (B) F.M.
 - (C) Digital modulation
 - (D) Both (A) and (B)
32. What are the components in a balanced modulator?
- (A) AM type modulator two in number
 - (B) A local oscillator
 - (C) Summer
 - (D) All of these
33. DSBSC modulators are also called as :
- (A) Product Type Modulator
 - (B) Adder Modulator
 - (C) Summer Modulator
 - (D) None of these

34. How many types of demodulators are present in a DSBSC wave?
- (A) One
(B) Two
(C) Three
(D) Four
35. What is the Bandwidth of AM wave?
- (A) $BW = 2f_m$
(B) $BW = f_m$
(C) $BW = 2$
(D) $BW = 3$
36. Which of the following are the components of square law modulators?
- (A) Summer
(B) Square law device
(C) Band pass filter
(D) All of these
37. What is functionality of the envelop detector?
- (A) It detects AM wave with high frequency
(B) It detects FM wave with high frequency
(C) It detects PM wave with high frequency
(D) None of these
38. Which of the following oscillator is not found in FM?
- (A) Hartley
(B) Crystal
(C) Armstrong
(D) Dynatron
39. Which of the following is used in demodulation of PAM signal?
- (A) A band restricted filter
(B) A band pass filter
(C) A low pass filter
(D) A high pass filter
40. Which of the following is not a part of an analog communication?
- (A) PPM
(B) AM
(C) PCM
(D) PWM
41. For demodulation of PCM it is first converted into ____.
- (A) PAM
(B) PWM
(C) PPM
(D) FM

42. Frequency modulated broadcast band generally lies in ____.
- (A) VHF
 - (B) HF
 - (C) SHF
 - (D) LF
43. Amount of data transmitted for a given time is called :
- (A) Noise
 - (B) Frequency
 - (C) Bandwidth
 - (D) Power
44. A super heterodyne receiver receives signal within frequency range of 120-180 MHz. Then the required I.F. is :
- (A) 30 MHz
 - (B) 60 MHz
 - (C) 90 MHz
 - (D) 50 MHz
45. Which of the following stage is present in FM receiver but not in AM receiver?
- (A) Amplitude limiter
 - (B) Demodulator
 - (C) Am amplifier
 - (D) Mixer
46. Which of the following is the advantage of AM over FM?
- (A) High quality
 - (B) Large coverage area
 - (C) Low interference
 - (D) Noise reduction
47. Which method from the following is used in demodulating FM wave?
- (A) Distribution discriminator
 - (B) Amplitude discriminator
 - (C) Delay discriminator
 - (D) Phase discriminator
48. An FM signal can be detected by using :
- (A) An average detector
 - (B) A discriminator
 - (C) a PLL
 - (D) a LPF
49. The stage used to eliminate the noise effect in a FM detector is called :
- (A) Limiter
 - (B) Discriminator
 - (C) AFC
 - (D) Noise eliminator

50. A low ratio of the ac to the dc load impedance of a diode detector results in :
- (A) Diagonal clipping
 - (B) Poor AGC operation
 - (C) Negative-peak clipping
 - (D) Poor AF response
51. Vestigial side band is most commonly used in :
- (A) Radio transmission
 - (B) TV transmission
 - (C) Telephony
 - (D) All of these
52. VSB modulation is termed as :
- (A) Vestigial Side Band
 - (B) Vertical Side Band
 - (C) Single Side Band
 - (D) Variable Side Band
53. The amount of frequency deviation in FM signal depends on :
- (A) Amplitude of the modulating signal
 - (B) Carrier frequency
 - (C) Modulating Frequency
 - (D) Transmitter Amplifier
54. Armstrong method is used for the generation of :
- (A) Direct FM
 - (B) Induced FM
 - (C) SSB-Sc
 - (D) DSB-Sc
55. A PWM signal can be generated by :
- (A) An astable multivibrator
 - (B) A mono stable multivibrator
 - (C) Integrating a PPM signal
 - (D) Differentiating a PPM signal
56. Which circuit is called as regenerative repeaters?
- (A) Analog
 - (B) Digital
 - (C) Amplifier
 - (D) A/D converters
57. How many different combinations can be made from a 'n' bit value?
- (A) $2^{(n+1)}$
 - (B) 2^n
 - (C) $2^{(n)} + 1$
 - (D) None of these

58. What is Code Rate?
- (A) k/n
 - (B) n/k
 - (C) Both (A) and (B)
 - (D) None of these
59. Pulse shaping is done by which block or system?
- (A) Encoder
 - (B) Baseband modulator
 - (C) Pulse code modulator
 - (D) Demodulator
60. Equalizer is used for :
- (A) Filtering
 - (B) Diminish distortion
 - (C) Both (A) and (B)
 - (D) None of the mentioned
61. Which measurement considers phase as an important parameter?
- (A) Coherent
 - (B) Non-coherent
 - (C) Both (A) and (B)
 - (D) None of the mentioned
62. Digital communication is _____ to environmental changes.
- (A) Less sensitive
 - (B) More sensitive
 - (C) Does not depend
 - (D) None of these
63. Which system uses digital transmission?
- (A) ISDN
 - (B) LANs
 - (C) ISDN and LANs
 - (D) None of these
64. A/D conversion includes :
- (A) Sampling
 - (B) Quantization
 - (C) Sampling and Quantization
 - (D) None of these
65. Which corrects the sampling time problem in a digital system?
- (A) Interpolator
 - (B) Decimator
 - (C) Equalizer
 - (D) Filter

66. Transmission media used for medium frequency band are :
- (A) Co-axial cable
 - (B) Copper cable
 - (C) Optical fibre
 - (D) All of these
67. Matched filter techniques is used to :
- (A) Increase SNR
 - (B) Decrease SNR
 - (C) SNR is not affected
 - (D) None of these
68. Sampling theorem is used for converting :
- (A) Continuous time signal to discrete
 - (B) Discrete to continuous time signal
 - (C) Continuous time signal to discrete and visa-versa
 - (D) None of these
69. A signal can be recovered from its sample by using filter :
- (A) Low pass
 - (B) High pass
 - (C) Band pass
 - (D) Band stop
70. In flat top sampling scheme _____ is kept constant after sampling.
- (A) Amplitude
 - (B) Phase
 - (C) Frequency
 - (D) Time period
71. The size of the quantile interval is called as :
- (A) Inter level
 - (B) Step size
 - (C) Quantile size
 - (D) Level width
72. Non uniform quantization provides better quantization for :
- (A) Weak signal
 - (B) Coarse signals
 - (C) Weak and coarse signals
 - (D) None of these
73. When PCM is applied to non-binary symbols, we obtain wave form called as :
- (A) PCM
 - (B) PAM
 - (C) M-ary
 - (D) Line codes

74. Which method is called as differential encoding?
- (A) NRZ-L
 - (B) NRZ-M
 - (C) NRZ-S
 - (D) None of these
75. The return to zero waveform consists of :
- (A) Unipolar RZ
 - (B) Bipolar RZ
 - (C) RZ-AMI
 - (D) All of these
76. Some of the M-ary waveforms are :
- (A) PAM
 - (B) PPM
 - (C) PDM
 - (D) All of these
77. In _____ cod, symbols 1 and 0 are represented by transmitting pulse of amplitudes + and - :
- (A) Unipolar return to zero
 - (B) Polar non return to zero
 - (C) Unipolar non return to zero
 - (D) Bipolar return to zero
78. _____ is mostly preferred for telegraphy.
- (A) Single tone modulation
 - (B) On-off keying
 - (C) FSK
 - (D) PCM
79. In ASK, transmission bandwidth is equal to :
- (A) Base bandwidth
 - (B) Twice base bandwidth
 - (C) Half the base bandwidth
 - (D) Four times base bandwidth
80. FSK reception is :
- (A) Phase coherent
 - (B) Phase non coherent
 - (C) Both (A) and (B)
 - (D) None of these
81. In non-coherent reception _____ is measured.
- (A) Phase
 - (B) Energy
 - (C) Power
 - (D) None of these
82. Simulation is used to determine :
- (A) Bit error rate
 - (B) Symbol error rate
 - (C) Bit error
 - (D) Symbol error

83. Which is called as On-OFF Keying?
 (A) ASK
 (B) Unipolar PAM
 (C) Both ASK and Uni-polar PAM
 (D) None of these
84. Which has same probability of error?
 (A) BPSK and QPSK
 (B) BPSK and ASK
 (C) BPSK and PAM
 (D) BPSK and QAM
85. In DPSK technique, the technique used to encode bits is :
 (A) AMI
 (B) Differential code
 (C) Uni-polar RZ format
 (D) Manchester format
86. In MSK, the difference between the higher and lower frequency is :
 (A) Same as bit rate
 (B) Half of the bit rate
 (C) Twice of the bit rate
 (D) Four times of the bit rate
87. MSK is similar to :
 (A) Continuous phase frequency shift keying
 (B) Binary phase shift keying
 (C) Binary frequency shift keying
 (D) QPSK
88. BPSK system uses a phase shift of :
 (A) Π
 (B) $\Pi/2$
 (C) $\Pi/3$
 (D) 2Π
89. The data rate of QPSK is _____ of BPSK.
 (A) Twice
 (B) Four times
 (C) Thrice
 (D) Same
90. The maximum bandwidth is occupied by :
 (A) ASK
 (B) BPSK
 (C) FSK
 (D) None of these
91. The spectrum of BFSK may be viewed as :
 (A) Two ASK spectra
 (B) Two PSK spectra
 (C) Two FSK spectra
 (D) None of these

92. The frequency shift in the BFSK usually lies in the range :
- (A) 50 – 1000 Hz
 - (B) 100 – 200 Hz
 - (C) 200 – 500 Hz
 - (D) 500 – 10 Hz
93. The bandwidth of BFSK is _____ than BPSK.
- (A) Lower
 - (B) Same
 - (C) Higher
 - (D) Not predictable
94. The technique that may be used to reduce the side band power is :
- (A) MSK
 - (B) BPSK
 - (C) Gaussian MSK
 - (D) BFSK
95. QPSK is a modulation scheme where each symbol consists of :
- (A) 4 bits
 - (B) 2 bits
 - (C) 1 bit
 - (D) None of these
96. Which of the following gives the least probability of error?
- (A) ASK
 - (B) FSK
 - (C) PSK
 - (D) DPSK
97. In Adaptive Delta modulation, the slope error reduces and Quantization error :
- (A) Increases
 - (B) Remains same
 - (C) Decreases
 - (D) None of these
98. The digital modulation technique in which step size is varied according to the variation in the slope of the input is called :
- (A) Delta modulation
 - (B) PCM
 - (C) Adaptive delta modulation
 - (D) PAM
99. Differential pulse code modulation suffers from :
- (A) Slope over load distortion
 - (B) Quantization noise
 - (C) Both (A) and (B)
 - (D) None of these
100. In DPCM technique, the decoding is performed by :
- (A) Accumulator
 - (B) Quantizer
 - (C) Sampler
 - (D) PLL

Rough Work / रफ कार्य

Example :

Question :

Q.1 (A) ● (C) (D)

Q.2 (A) (B) ● (D)

Q.3 (A) ● (C) (D)

5. Each question carries equal marks. Marks will be awarded according to the number of correct answers you have.
6. All answers are to be given on OMR Answer Sheet only. Answers given anywhere other than the place specified in the answer sheet will not be considered valid.
7. Before writing anything on the OMR Answer Sheet, all the instructions given in it should be read carefully.
8. After the completion of the examination, candidates should leave the examination hall only after providing their OMR Answer Sheet to the invigilator. Candidate can carry their Question Booklet.
9. There will be no negative marking.
10. Rough work, if any, should be done on the blank pages provided for the purpose in the booklet.
11. To bring and use of log-book, calculator, pager & cellular phone in examination hall is prohibited.
12. In case of any difference found in English and Hindi version of the question, the English version of the question will be held authentic.

Impt. On opening the question booklet, first check that all the pages of the question booklet are printed properly. If there is any discrepancy in the question Booklet, then after showing it to the invigilator, get another question Booklet of the same series.

उदाहरण :

प्रश्न :

प्रश्न 1 (A) ● (C) (D)

प्रश्न 2 (A) (B) ● (D)

प्रश्न 3 (A) ● (C) (D)

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
6. सभी उत्तर केवल ओ०एम०आर० उत्तर-पत्रक (OMR Answer Sheet) पर ही दिये जाने हैं। उत्तर-पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।
7. ओ०एम०आर० उत्तर-पत्रक (OMR Answer Sheet) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाये।
8. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी OMR Answer Sheet उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें। परीक्षार्थी अपने साथ प्रश्न-पुस्तिका ले जा सकते हैं।
9. निगेटिव मार्किंग नहीं है।
10. कोई भी रफ कार्य, प्रश्न-पुस्तिका में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।
11. परीक्षा-कक्ष में लॉग-बुक, कैल्कुलेटर, पेजर तथा सेल्युलर फोन ले जाना तथा उसका उपयोग करना वर्जित है।
12. प्रश्न के हिन्दी एवं अंग्रेजी रूपान्तरण में भिन्नता होने की दशा में प्रश्न का अंग्रेजी रूपान्तरण ही मान्य होगा।

महत्वपूर्ण: प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्नपुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरिज की दूसरी प्रश्नपुस्तिका प्राप्त कर लें।