

Online Examinations (Even Sem/Part-I/Part-II Examinations 2020 - 2021)

Course Name - –Fundamental Physics and Radiological Physics

Course Code - BMRIT202

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Answer all the questions. Each question carry one mark.

9. 1.Coulomb is the unit of which quantity?

Mark only one oval.

- field strength
- charge
- permittivity
- force

10. 2.Two charges 1C and -4C exists in air. What is the direction of force?

Mark only one oval.

- away from 1C
- away from -4C
- from -4C to 1C
- from 1C to -4C

11. 3.The S.I. unit of electric field intensity is

Mark only one oval.

- NC-1
- N-1C
- NC
- none of the above

12. 4.In a sinusoidal wave, average current is always _____ rms current.

Mark only one oval.

- greater than
- less than
- equal to
- not related

13. 5.Process in which A.C is converted into D.C is called

Mark only one oval.

- induction
- rectification
- inversion
- dispersion

14. 6.A moving charge produces

Mark only one oval.

- electric field only
- magnetic field only
- both of them
- none of these

15. 7.The divergence of magnetic flux density B

Mark only one oval.

- 0
- 1
- 1
- none of these

16. 8.Compressions and rarefactions are due to

Mark only one oval.

- movement if air molecules
- vibration of air molecules
- variability of air pressure
- variability of vibration of air molecules

17. 9.Which of the following is/ are not applications of Ultrasonic Waves?

Mark only one oval.

- for measuring the depth of sea
- in sterilizing of a liquid
- in Ultrasonography
- in sterilizing a needle

18. 10.Name the characteristic of the sound which distinguishes a sharp sound from a grave or dull sound?

Mark only one oval.

- intensity
- echo
- pitch
- resonance

19. 11.Which of the following can be measured using SONAR?

Mark only one oval.

- distance of underwater objects
- direction of underwater objects
- speed of underwater objects
- all of the above

20. 12.Which colour of heat radiation represents the highest temperature?

Mark only one oval.

- blood red
- dark chery
- white
- salmon

21. 13.According to Newton's law of cooling, the heat transfer from a hot body to a cold body is

Mark only one oval.

- directly proportional to the surface area
- directly proportional to the difference of temperatures between the two bodies
- either (A) or (B)
- both (A) and (B)

22. 14.The heat transfer takes place according to

Mark only one oval.

- Zeroth law of thermodynamics
- first law of thermodynamics
- second law of thermodynamics
- Kirchhoff's law

23. 15.Ripple factor of full wave rectifier is

Mark only one oval.

- 0.52
- 1.21
- 0.48
- 1

24. 16.A diode is a device which is

Mark only one oval.

- Linear
- nonlinear
- bilateral
- unilateral

25. 17.The base of a transistor isdoped

Mark only one oval.

- heavily
- moderately
- lightly
- none of the above

26. 18.If the doping level in a crystal diode is increased , the width of depletion layer

Mark only one oval.

- remains the same
- is decreased
- is increased
- none of the above

27. 19.The maximum possible efficiency of a half wave rectifier is

Mark only one oval.

- 0.406
- 0.812
- 0.5
- 0.25

28. 20. When a PN junction is reverse-biased

Mark only one oval.

- holes and electrons tend to concentrate towards the junction
- the barrier tends to break down
- holes and electrons tend to move away from the junction
- none of the above

29. 21. A PN junction

Mark only one oval.

- has low resistance in forward as well as reverse directions
- has high resistance in forward as well as reverse directions
- conducts in forward direction only
- conducts in reverse direction only

30. 22. If in an alternating current circuit, resistance is 5 ohm, capacitive reactance is 12 ohm, what is the impedance?

Mark only one oval.

- 5 ohm
- 10 ohm
- 12 ohm
- 13 ohm

31. 23.The capacitance C is charged through a resistor R . The time constant of the charging circuit is given by

Mark only one oval.

- C/R
 $1/RC$
 RC
 R/C

32. 24.Which of the following is used for measurement of high temperatures?

Mark only one oval.

- vapour thermometer
 energy meter
 resistance thermometer
 pyrometer

33. 25.Select the equation below that represents the relationship between charge (Q), capacitance (C) and voltage (V) for a capacitor.

Mark only one oval.

- $Q = CV$
 $C = QV$
 $C = Q^2/V$
 $C^2 = QV$

34. 26. In a sinusoidal wave, average current is always _____ rms current.

Mark only one oval.

- greater than
- less than
- equal to
- not related

35. 27. In case of filament lamp at higher voltages, resistance of lamp

Mark only one oval.

- decreases
- increases
- remains constant
- varies depending on the filament

36. 28. If connections across resistor are reversed, then graph between current and potential difference is

Mark only one oval.

- variable
- straight lined
- constant
- inverted

37. 29.The SI unit of Poynting vector is

Mark only one oval.

- Wm
- Wm⁻¹
- Wm²
- Wm⁻²

38. 30.A moving charge produces

Mark only one oval.

- electric field only
- magnetic field only
- both of them
- none of these

39. 31.The hearing range of human ear is

Mark only one oval.

- 20 Hz to 20,000 Hz
- less than 20 Hz
- more than 20,000 Hz
- 20 Hz to 25,000 Hz

40. 32.What is the effect of increase of temperature on the speed of sound?

Mark only one oval.

- it increases
- it decreases
- it may or may not increase
- no effect

41. 33.Which of the following sound waves are used in echocardiography?

Mark only one oval.

- infrasonic
- ultrasonic
- between 20 Hz and 2000 Hz
- none of these

42. 34.Which of the following can be measured using SONAR?

Mark only one oval.

- distance of underwater objects
- direction of underwater objects
- speed of underwater objects
- all of these

43. 35.Which of the following is the fastest process of heat transfer?

Mark only one oval.

- conduction
- convection
- radiation
- insolation

44. 36.According to Newton's law of cooling, the heat transfer from a hot body to a cold body is

Mark only one oval.

- directly proportional to the surface area
- directly proportional to the difference of temperatures between the two bodies
- either (A) or (B)
- both (a) and (b)

45. 37.The heat transfer takes place according to

Mark only one oval.

- Zeroth law of thermodynamics
- first law of thermodynamics
- second law of thermodynamics
- Kirchhoff's law

46. 38.Cork is a good insulator because it has

Mark only one oval.

- free electrons
- atoms colliding frequency
- low density
- porous body

47. 39.The thermal diffusivities for solids are generally

Mark only one oval.

- less than those for gases
- less than those for liquids
- more than those for liquids and gases
- more or less same as for liquids and gases

48. 40.Ripple factor of full wave rectifier is

Mark only one oval.

- 0.52
- 1.21
- 0.48
- 1

49. 41.A transistor has

Mark only one oval.

- one pn junction
- two pn junction
- three pn junction
- four pn junction

50. 42.Early effect in a transistor is known as

Mark only one oval.

- Zener breakdown
- Avalanche breakdown
- Thermal breakdown
- Reduction in width of base or base narrowing

51. 43.For X-rays to travel

Mark only one oval.

- No medium required
- Presence of water
- Presence of oxygen
- None of these

52. 44.Soft X-ray have the tube voltage of

Mark only one oval.

- 0-10 kV
- 20-60 kV
- 150-400 kV
- 400-3000 kV

53. 45.Anode is made up of

Mark only one oval.

- Tungsten with rhenium
- Pure tungsten
- Molybdenum
- None of these

54. 46.The amount of the kinetic energy utilized in production of X-rays are

Mark only one oval.

- Less than 1%
- Less than 40%
- Less than 90%
- Less than 99%

55. 47.The filters used in diagnostic X-ray tubes are made up of

Mark only one oval.

- Aluminium
- Copper
- Tin
- Lead

56. 48.Tungsten is the ideal material for anode because it has

Mark only one oval.

- High atomic number (74)
- High melting point (3370° C)
- High specific heat and high thermal conductivity
- All of these

57. 49.The “Heel effect” is

Mark only one oval.

- Higher on cathode side than anode side
- Higher on anode side than cathode side
- Equal on both on cathode and anode side
- All of these

58. 50. Anode "Heel effect can be used

Mark only one oval.

- Thicker parts of the body towards cathode
- Thicker parts of the body towards anode
- No effect
- All of these

59. 51. X-ray beam when fall on the body, act as

Mark only one oval.

- Reflected
- Absorbed
- Transmitted
- All of these

60. 52. In coherent scattering, the single electron is involved in interaction in

Mark only one oval.

- Thompson scattering
- Rayleigh scattering
- Both of these
- None of these

61. 53. Pair production occurs, if energy is of

Mark only one oval.

- 0.08 MeV
- 0.02 MeV
- 0.10 MeV
- 1.02 MeV

62. 54. Gas filled tubes have the following advantages

Mark only one oval.

- kV and mAs are difficult to control independently
- Produce blackening thus shortening its life
- Speed of the electron will be reduced thus energy of the X-rays would be lesser
- All of these

63. 55. The glass envelope of a diagnostic X-ray tube is made up of

Mark only one oval.

- Borosilicate
- Ordinary glass
- Steel
- None of these

64. 56. Early causes of X-ray tube failure are

Mark only one oval.

- Overheating
- Mechanical damage of filament/glass envelope
- Electric failure
- Any of these

65. 57. The X-ray tube said to be "gassy" when

Mark only one oval.

- Filament has burnt out
- Presence of the gas molecule
- Pitting of the anode
- None of these

66. 58. The current in X-ray tube range between

Mark only one oval.

- 1-100 mA
- 1-300 mA
- 1-500 mA
- Tue Dec 31 0999 23:36:32 GMT+0530 (IST)

67. 59.Modern X-ray tubes used in diagnostic radiology has

Mark only one oval.

- Vacuum
- Helium gas
- Carbon dioxide
- None of these

68. 60.X-ray tubes are surrounded by _____ to absorb unwanted radiation

Mark only one oval.

- Lead
- Glass
- Aluminium
- Oil

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