KATHMANDU UNIVERSITY
End Semester Examination
February/March, 2019

Mark scored :

Level : B. Sc. Course : PHYS 301

Year : III Semester: I

Exam Roll No. : Time : 30 mins. F.M. : 20

Registration No.: Date 17 FEB 2019

SECTION "A"
[10 Q. × 1 = 10 marks]

Choose and tick the most appropriate answer.

1. All of the following statements are correct except
   [a] Most of the weather activities take place in troposphere.
   [b] For long wave radiation, the albedo for the earth's surface is usually taken as zero.
   [c] Adiabatic lapse rate refers to the actual change in temperature with altitude for the stationary atmosphere.
   [d] In a stationary situation, the energy received from the sun is equal to the energy radiated by the earth into the space.

2. The layer above the stratosphere is the mesosphere which approximately extends from
   [a] 7 to 20 km [b] 17 to 50 km [c] 20 to 50 km [d] 50 to 80 km

3. GWP values are based on the heat-absorbing ability of each gas relative to that of
   [a] methane [b] nitrous oxide
   [c] carbon dioxide [d] chlorofluorocarbon

4. The Antarctic ozone hole occurs during the Antarctic spring from
   [a] March 21 – June 21 [b] June 22 – September 22
   [c] December 22 – March 20 [d] September 23 – December 21

5. The power available in the wind is proportional to the
   [a] air density, rotor diameter and wind speed
   [b] air density, rotor diameter and square of the wind speed
   [c] air density, square of the rotor diameter and cube of the wind speed
   [d] air density, square of the rotor diameter and square of the wind speed

6. For a HEP station with a head height h and volume flow rate Q, the maximum power output is about
   [a] Qh (W) [b] Qh (kW) [c] 10Qh (W) [d] 10Qh (kW)

7. Nuclear power plant workers should be constantly monitored
   [a] for nuclear waste disposal
   [b] for proper emergency response
   [c] for any over exposure of nuclear radiation
   [d] to separate them from outside environment

8. If the intensity level of a sound wave is 60 dB, then its intensity is equal to
   [a] $1\ W/m^2$ [b] $10^{-3}\ W/m^2$ [c] $10^{-6}\ W/m^2$ [d] $10^{-9}\ W/m^2$

9. Which of the following phenomenon is associated to the transport of energy?
   [a] viscosity [b] surface tension
   [c] diffusion [d] thermal conductivity

10. One of the instruments on UARS performs HALOE which means
   [a] halogen occurring experiment [b] halogen occultation experiment
   [c] hydrogen occurring experiment [d] hydrogen occultation experiment

SECTION "B"

[10 Q. × 1 = 10 marks]

Fill in the blanks.

11. The atmospheric ozone absorbs essentially all the radiation below a wavelength of ..... nm.

12. The level at which a parcel of air adiabatically lifted from near the surface first reaches saturation is called .....

13. Since the industrial revolution, specially since 1950, we have been putting enormous quantities of greenhouse gases into the atmosphere, primarily from the agriculture, fuel burning, use of CFCs and deforestation, among which the highest percentage coverage is from the .....

14. On 30^{th} of July, the extraterrestrial solar radiation G (measured on the plane normal to the radiation) has a value of about ..... (W/m^2). ($G_{sc} = 1353\ W/m^2$)

15. Carrying energy to where it is needed is called distribution while keeping it available until when it is needed is called .....

16. There are certain regions in which hot molten rock of the mantle called ..... has pushed up through the faults and cracks to near the earth's surface, creating hot spots.

17. Nuclear waste recycling is a new waste disposal method in which the nuclear waste is turned into ..... isotopes.

18. A separation wall has a surface area S and sound insulation of 50 dB. If a small hole of surface area S_1 is made in the wall such that $S_1/S = 10^{-3}$, then the sound insulation is reduced by an amount of about ..... dB.

19. A plume occurs under unstable condition such that both upward and downward movement of the plume is possible. Such a plume is named as .....

20. One of the remote sensing satellite SPOT is French acronym for .....
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