**Balochistan Board of Intermediate and Secondary Education, Quetta**

Model Paper for HSSC Examination 2017 and Onwards

Subject: Physics Total Marks = 85 Class XI

 **Section A**  (16)

**Note: Attempt all questions**

Q 1: (a) Choose the correct answers

 i) Which is a scalar quantity (force, momentum, torque, energy)

 ii) Which is a derived quantity (mass, Energy, time, temperature)

 iii) Dimension of gravitational constant G is (ML2T2, M3LT -2, ML2 T -2, none of them)

 iv) Power can be written as (F.V, Fxv, F.d, Fxd)

 v) Swing is the example of (free oscillation, mechanical resonance, damped oscillation,

 None of these)

 vi) When listener moves away from the stationary source of sound then apparent

 frequency of sound (decreases, increases, remains same, none of them)

 vii) Digital modulation is expressed in (bytes, bits, code, none of them)

 viii) The phenomenon of polarization is done by (selective absorption, refraction,

 Scatterings through particles, all of these)

 ix) Which one is the larger unit of energy (Joule, erg, kilowatt hour, electron volt)

 x) Longitudinal waves do not exhibit (reflection, refraction, interference, polarization)

(b) Fill in the blanks

 (i) The branch of science which deals with\_\_\_\_\_\_\_\_\_\_\_ and energy is called physics.

 (ii) The unit of torque\_\_\_\_\_\_\_\_\_\_\_\_

 (III) The prefix micro represents the \_\_\_\_\_\_\_\_ part of quantity.

 iv) The angular displacement per unit time is called\_\_\_\_\_\_\_\_\_\_\_
 v) The measurable properties of matter are known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_

 vi) Joule per Kelvin is the unit of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Section B** 14 x 3 = 42

**Note: Attempt any fourteen parts answer to each part should not exceed 03 to 04 lines.**

1. How vectors are added by rectangular components give its general rules.
2. Prove that vector product does not obey commutative law.
3. Prove that IKwH = 3.6x106 J.
4. Find the unit and dimensional unit of centripetal force.
5. Write down any three characteristics of stationary waves.
6. What is the unit vector in direction of A= 3i+4j.
7. Write down the main points of kinetic molecular theory of gases.
8. Write down the factors upon which moment of inertia depends.
9. Explain Hooks law.
10. Convert 50˚C into K and 80 K into ˚C.
11. Calculate the length of second pendulum.
12. Define impulse and show its relation with linear momentum.
13. What is Carnot engine and write down its equation for efficiency. What is the unit of efficiency of engine?
14. Show that in SHM the acceleration is zero when velocity is greatest.
15. Give the statement of Bernoulli’s theorem and write down its formula.
16. On what principle the refrigerator works. Explain.
17. Why fog droplets to be suspended in air?
18. Why three numbers of geostationary satellites are required for global coverage?

**Section: C** 6 x 3 =18

**Note: Attempt any three question**

Q.3: Prove that work done in a gravitational field along a closed path is equal to zero. Define conservative field.

Q.4: Find out the height of geostationary orbit from the surface of earth.

 Q.5: Explain the working of petrol engine.

Q.6: Discuss the construction and working of spectrometer.

Q.7: Prove that projectile motion is parabolic in nature. Give two examples of projectile motion.

 **Section D** 3 x 3 = 9

**Note: Attempt any three of the following problems**

Q.8: What force is required to accelerate a car of weighing 2x103 N from 30 km/h to 90 km/h in 20 sec

Q.9: What is the average translational kinetic energy of molecules in a gas at temperature of 27˚C (K=1.38 x 10-23jk-1)

Q.10: The magnitude of dot and cross product of two vectors or 6$\sqrt{3}$ and 6 and find the angle between them.

Q.11: A simple pendulum is 50cm long what will be its frequency of vibration at a place when g is 9.8 m/sec2.

Q.12: A heat engine performs 90 J of work at the same time rejects 360 joules of heat energy to cold reservoir. What is the efficiency of the engine?

**Model Paper Physics practical “A”**

Time 02 hours Marks 15 Pass Marks : 05

Note: Perform only one practical as allotted by the examiner.

 Within first 15 minutes the students should write the apparatus, draw table with formulas and write three precautions at least.

Q.No.1: To determine the volume of a given solid cylinder by vernier caliper.

Q.No.2: To determine the value of “g” by using simple pendulum. (10)

Q.No.3: To determine the focal length of a convex lens by using displacement method. (10)

Q.No.4: To determine the mechanical equivalent of heat “J” by electrical method. (10)

Viva Voce: 03 marks.

Note Book: 02 marks.